

AIR+SEA+LAND+COMBAT



DCS USER MANUAL

This manual is the documentation for the user interface of the computer game, the combat simulator Digital Combat Simulator World (DCS World) 2.5. The manual describes the functions of the user interface, mission editor, settings window, other windows and panels.

To communicate with users, there is a forum <http://forums.eagle.ru/>, where you can get additional information about the game, the gameplay, as well as ask a question.

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Website: <http://www.digitalcombatsimulator.com>

Table of Contents

MAIN MENU.....	10
MODULE MANAGER	14
SPECIAL OFFERS TAB	14
MODULES TAB	14
AVAILABLE DLC TAB.....	15
INSTALLED TAB.....	17
OPTIONS	19
SYSTEM OPTIONS.....	21
Graphics Settings.....	22
Auxiliary Settings.....	27
CONTROLS SETTINGS	30
GAMEPLAY SETTINGS.....	40
Difficulties.....	40
F10 View Options	41
Additional Settings	44
Presets.....	47
MISCELLANEOUS.....	48
AUDIO SETTINGS	51
SPECIAL.....	53
VR	54
TRAINING	57
INSTANT ACTION	60
MISSION.....	62
BRIEFING	64
VIEW DEBRIEFING	66
CREATE FAST MISSION	70
SIMPLE MODE.....	71
ADVANCED MODE	73
Options	73
Forces	73
Battle Location	74
Briefing	74
LOGBOOK.....	75

PILOT PAGE.....	77
NATION, SQUADRON, AND AWARDS PAGE	79
REPLAY	80
MISSION EDITOR.....	83
THE MISSION EDITOR MAP AND NAVIGATION	85
The World Map.....	86
Navigating the Map	86
The Mission and Map Bar	86
THE SYSTEM BAR	87
FILE.....	87
EDIT.....	89
FLIGHT.....	89
CAMPAIGN BUILDER.....	92
CUSTOMIZE.....	92
MISSION GENERATOR.....	97
MISC.....	98
RESOURCE MANAGER	99
Warehouse in Airport.....	99
Resource Manager, Full Info.....	101
Supply Rates	101
Warehouse Inventory	102
Copy to Other Warehouses	104
Adding a Warehouse	104
THE TOOL BAR.....	106
CREATE NEW MISSION.....	107
OPEN MISSION FILE.....	107
SAVE MISSION FILE	107
CREATE MISSION BRIEFING.....	107
Kneeboard	109
CREATE WEATHER CONDITIONS.....	112
Static conditions	112
Dynamic conditions	115
SET RULES FOR TRIGGERS	117
Initialization Script	118
Trigger List	120
Trigger Conditions	124
Trigger Actions.....	138
COCKPIT TRIGGERS GUIDE	155
CONDITIONS	155
ACTIONS.....	158

TRIGGER PRACTICAL EXERCISE.....	165
Define Mission Goals.....	171
Battlefield Commanders	173
Set Mission Options	174
Fly Mission.....	174
TASK PLANNING FOR UNIT GROUPS	175
Fundamental Concepts	175
Group Artificial Intelligence (AI)	176
Perform Task	176
Start Enroute Task	176
Perform Command	177
Set Option.....	177
Panel Flags.....	177
Group Route Planning	179
Example 1	180
Example 2	181
Example 3	182
Example 4	184
Example 5	185
Example 6	187
Hints	189
PLACE AIRPLANE AND HELICOPTER GROUP.....	190
Modal Buttons.....	194
Route Mode.....	195
Waypoint Mode Buttons.....	200
Payload Mode	201
Triggered Actions Mode	204
Route Summary Mode	204
INU Fix Point Mode	205
Target Point Mode	206
Failures Mode.....	207
Waypoint Properties Mode.....	209
Radio Presets Mode	210
ADVANCED ACTIONS MODE (AIRCRAFT GROUPS)	211
Panel Interface Controls.....	211
Actions List	212
Triggered Tasks.....	215
Triggered Enroute Tasks.....	215
Action Properties Panel.....	216
Configuring Advanced Actions	220
Automatic Actions	221
Perform Task	222
No Task	222
Aerobatics	222
Attack Group	223
Attack Map Object.....	226

Attack Unit	227
Bombing.....	229
Bombing Runway.....	230
Cargo Transportation.....	231
Embarking.....	232
Disembarking.....	235
Escort	237
Follow	238
Ground Escort.....	239
FAC – Assign Group.....	240
Orbit.....	242
Land	244
Refueling.....	245
WW2: Carpet Bombing	247
WW2: Big Formation	248
Start Enroute Task	259
No Enroute Task	260
Search Then Engage.....	260
Search Then Engage in Zone.....	263
Search Then Engage Group.....	264
Search Then Engage Unit.....	265
Refueling.....	266
AWACS.....	267
FAC.....	267
FAC – Engage Group	268
Perform Command	271
No Action	271
Run Script.....	271
Script File	271
Set Frequency	271
Set Frequency for unit	272
Transmit Message.....	272
Stop Transmission.....	273
Switch Waypoint.....	273
Invisible.....	274
Immortal.....	274
EPLRS	274
Smoke On _Off	275
Set Option.....	276
No Option	276
ROE (Rules of Engagement).....	276
Reaction to Threat.....	277
Radar Using.....	278
Chaff – Flare Using.....	279
Formation	280
RTB on Bingo Fuel	281
RTB on out of ammo.....	282
Silence.....	282
ECM Using.....	282
Restrict Air-to-Air Attack	283

Restrict Jettison	283
Restrict Afterburner	283
Restrict Air-to-Ground Attack.....	284
AA Missile attack ranges	284
No Report Waypoint Pass.....	285
Radio usage when contact	285
Radio usage when engage.....	285
Radio usage when kill target	285
PLACE SHIP GROUP	287
Modal buttons.....	289
Route Mode.....	289
Waypoint Mode Buttons.....	292
Ammo Mode	292
Triggered Actions Mode	293
Route Summary Mode	293
Suppliers.....	294
ADVANCED ACTIONS MODE (NAVAL GROUPS)	296
Panel Interface Controls.....	296
Action Properties Panel for Naval Groups	297
Perform Task	297
No Task.....	297
Fire at Point.....	297
Attack Group	298
Start Enroute Task.....	299
Perform Command.....	299
No Action.....	299
Run Script	300
Script File	300
Invisible	300
Immortal.....	300
Set Option.....	300
No Option	300
ROE (Rules of Engagement).....	300
Alarm State.....	301
PLACE GROUND UNIT	303
Modal Buttons.....	305
Route Mode.....	305
Waypoint Mode Buttons.....	310
Ammo Mode	311
Triggered Actions Mode	311
Route Summary Mode	312
Notes regarding airbase and FARP ground vehicle support equipment.....	313
Ammo supply for ground units	316
ADVANCED ACTIONS MODE (GROUND GROUPS)	326
Panel Interface Controls.....	326
Action Properties Panel for Ground Groups	327

Perform Task.....	327
No Task	327
FAC – Assign Group.....	327
Fire at Point	330
Hold	331
Embark to Transport (work in progress).....	331
Go to Waypoint	332
Start Enroute Task	333
No Enroute Task	333
FAC.....	333
FAC – Engage Group	334
Perform Command	338
No Action	338
Run Script.....	338
Script File	338
Set Callsign.....	338
Set Frequency	339
Transmit Message.....	339
Stop Transmission.....	340
Go to Waypoint	340
Invisible.....	341
Immortal.....	341
EPLRS	342
Set Option.....	343
No Option	343
ROE (Rules of Engagement).....	343
Disperse Under Fire.....	343
Alarm State	344
Engage Air Weapons.....	345
PLACE STATIC OBJECT	346
PLACE INITIAL POINT (A-10C ONLY).....	348
PLACE BULLSEYE	349
CREATE AREA TRIGGER ZONE	350
CREATE UNIT TEMPLATE	352
AREA TRIGGER ZONE LIST.....	354
UNIT LIST.....	355
DELETE UNIT/OBJECT	356
MAP OPTIONS.....	356
DISTANCE TOOL.....	356
EXIT MISSION EDITOR.....	357
CAMPAIGN	359
CAMPAIGN BUILDER	361

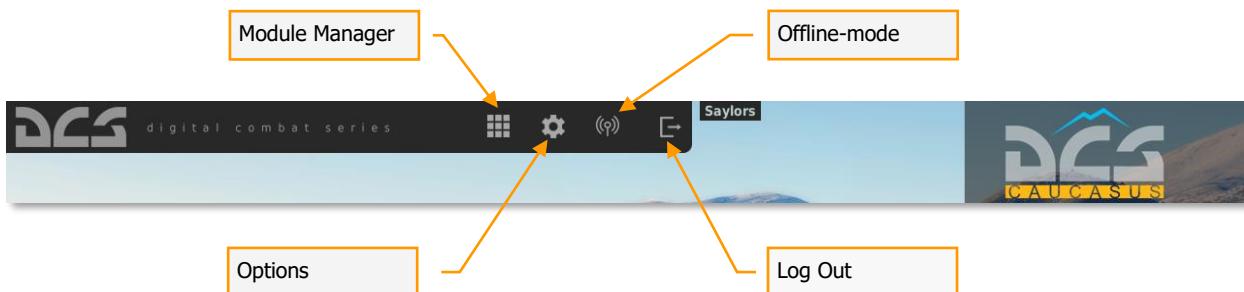
ENCYCLOPEDIA.....	366
MULTIPLAYER.....	369
NEW SERVER	373
Server settings.....	373
Server description	375
Mission list.....	375
SELECT ROLE (SERVER).....	377
CLIENT TO SERVER CONNECTION.....	381
SELECT ROLE (CLIENT).....	385
GAME SERVER CREATION (SERVER)	386
CONNECTING TO A SERVER (CLIENT)	386
ENDING THE SESSION	387
EXIT.....	389

DCS World

MAIN MENU

MAIN MENU

Upon starting DCS, the Main Menu screen will be displayed after a brief program loading screen. The top panel contains buttons:



- **MODULE MANAGER.** Use the Module Manager to see special offers, purchase new DCS modules, and view purchased ones.
- **OPTIONS.** The Options screen consists of several tabs and allows you to customize your graphics, audio, input, and game play options.
- **OFFLINE-MODE.** Use this mode if expecting to be unable to connect to the internet for an extended period of time. Activating this mode switches DCS to an offline-only mode only after successful authorization, i.e. the user MUST be online and logged-in to switch on this function. DCS may be kept in this mode indefinitely, but keep in mind that all network services (Module Manager, multiplayer, news) will be unavailable.

The user may exit offline mode only from the same computer on which it was initially activated.* If this is not possible, contact technical support to clear the active game session.

* **BIOS and Windows version MUST BE IDENTICAL.** For example, changing the BIOS while DCS is in offline mode will no longer allow the user to log in.

- **LOG OUT.** Log in/ Log out/ Change account. The DCS application uses accounts registered at <http://www.digitalcombatsimulator.com>, which is also the same account used for technical support cases. A separate account is required for participation in the Eagle Dynamics forum at <http://forums.eagle.ru/>.

From the Main Menu, you may select captions in the right main menu. Each of these captions directs you to a different aspect of the game or exits the game back to desktop. To make a selection, place your mouse over the caption and the caption will be illuminated. By then left mouse clicking, you will be directed to the selected area of the program.



At the left side there is a retractable News Panel that shows the latest news about ED games and events. News can be thumbing by the two "<>" arrows in the upper-right panel corner.

Main Menu buttons include:

- **INSTANT ACTION.** Allows you to quickly fly a pre-built mission that bypasses the briefing screen. When you click on this button, a pop-up screen will be displayed that allows you to select an aircraft and mission scenario to fly. To exit this screen without selecting a mission, click on the yellow X in the top right corner.
- **CREATE FAST MISSION.** Using the built-in mission generator, you can quickly create missions according to your specified parameters. Missions can be created in either simple or advanced modes (increased number of mission options).
- **MISSION.** Open a single mission. Using the built-in Mission Editor, you can build your own missions or download them from the Internet. You can access such missions from this screen.
- **CAMPAIGN.** To select a campaign to fly or continue an existing one, select this option. Unlike Missions, Campaigns are a series of missions linked together in a logical way resulting from your mission outcomes.
- **MULTIPLAYER.** Open the multiplayer interface to host or join an online game.
- **LOGBOOK.** From this screen you may create a pilot persona(s) and track their accomplishments and statistics.

- **ENCYCLOPEDIA.** The Encyclopedia is a resource that provides data and images of all the air, land, and sea units in the game.
- **TRAINING.** An extensive set of training missions are provided to teach you to fly and operate the aircraft.
- **REPLAY.** After each mission you fly, you have the option to save the mission as a replay file (Track file). You can access these replay files from this screen.
- **MISSION EDITOR.** The Mission Editor allows you to create missions big and small. These missions can then be used as single player missions, multiplayer missions, training missions, or to populate a campaign. This is a powerful tool and is the same one used to create the missions and campaigns included with the game.
- **CAMPAIGN BUILDER.** Using missions created in the Editor, you may use the Campaign Builder to create your own campaigns that you can play yourself or share with friends.
- **EXIT.** To exit the game and return to desktop, press the red Exit button.

Along the bottom edge of the screen are the game icons. These icons represent available and installed DCS modules. You can read information on each module and select a background theme by clicking an icon.



MODULE MANAGER

The DCS Module Manager is an in-game tool that allows you to purchase new DCS modules, update purchased ones, review installed modules, and read about new DCS special offers.

At any time, you can refresh your modules and module status by clicking the Refresh button in the bottom right portion of the Module Manager.

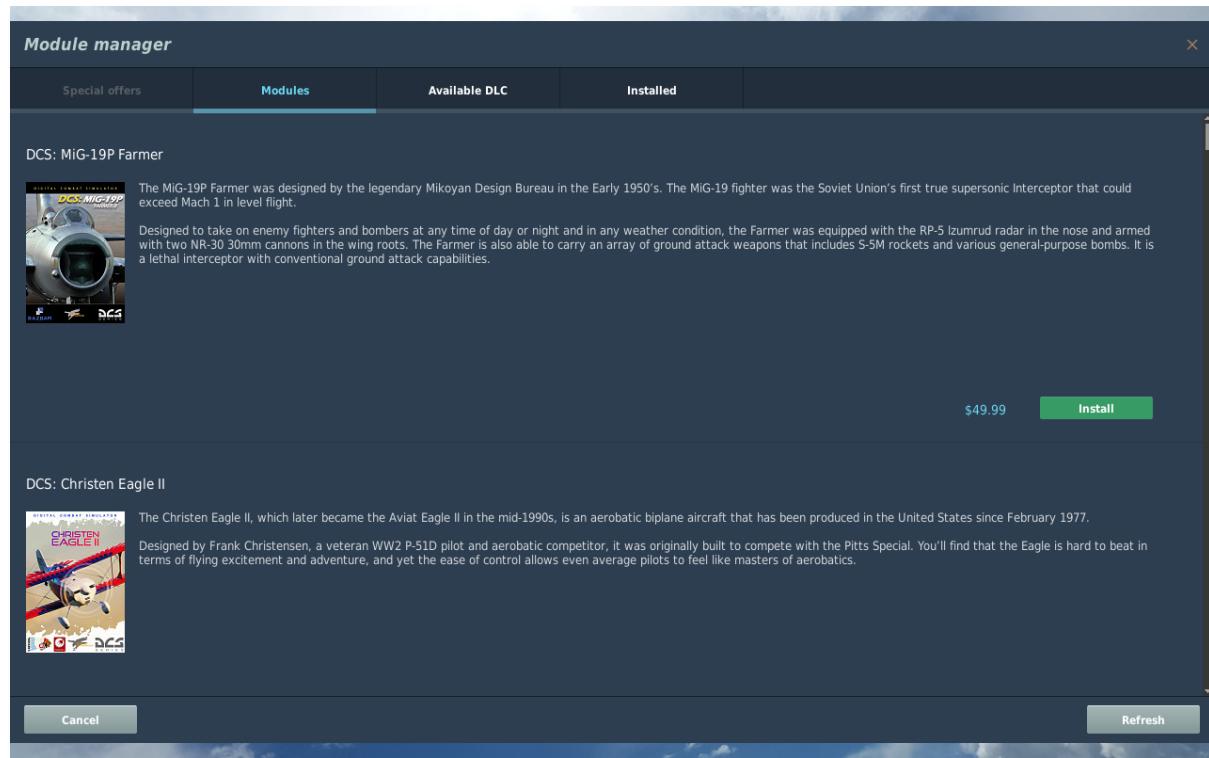
The Module Manager is divided into four tabs:

- Special Offers
- Modules
- Available Add-Ons
- Installed

Special Offers Tab

When DCS special offers are available, such as sales, these will be listed when the Special Offers tab is selected.

Modules Tab

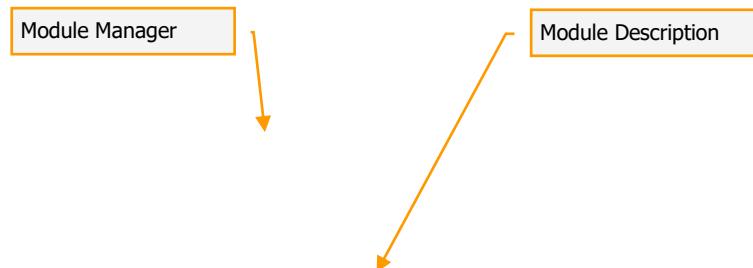


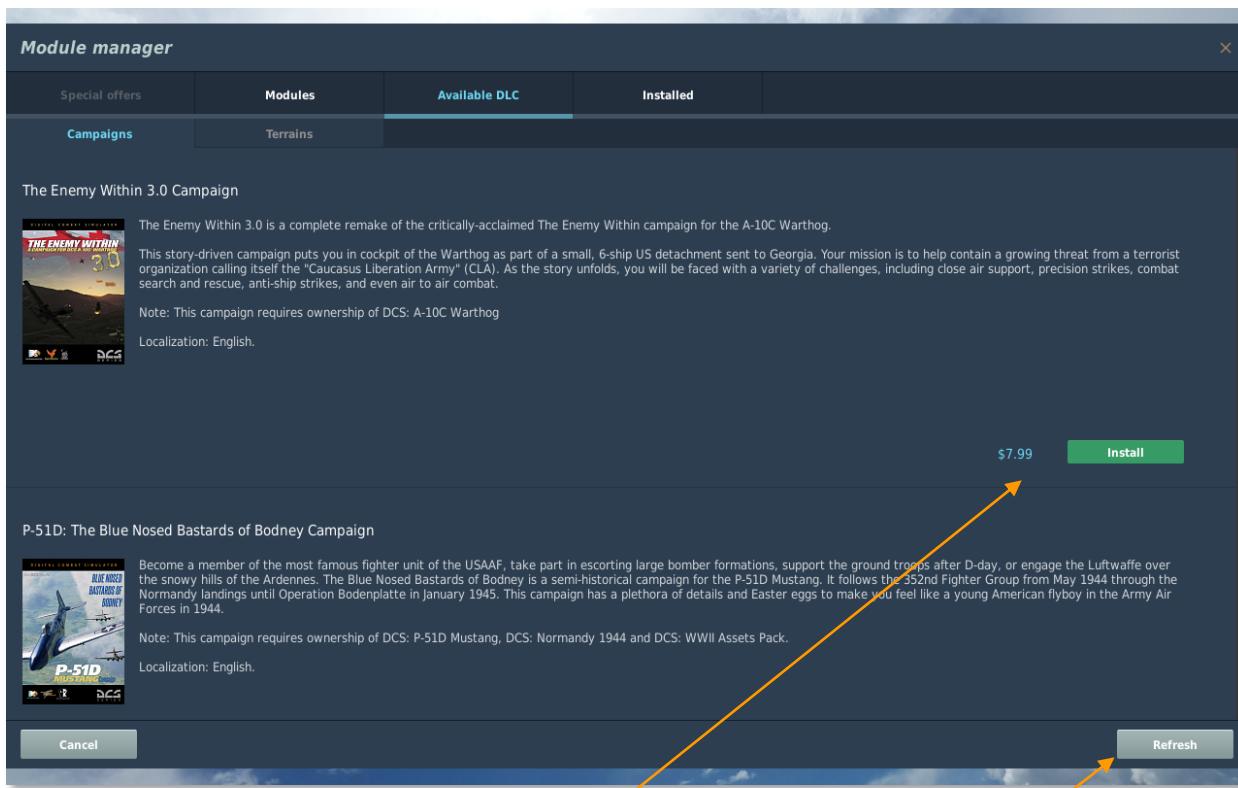
This page displays all available DCS modules and if they are already purchased.

Available DLC Tab

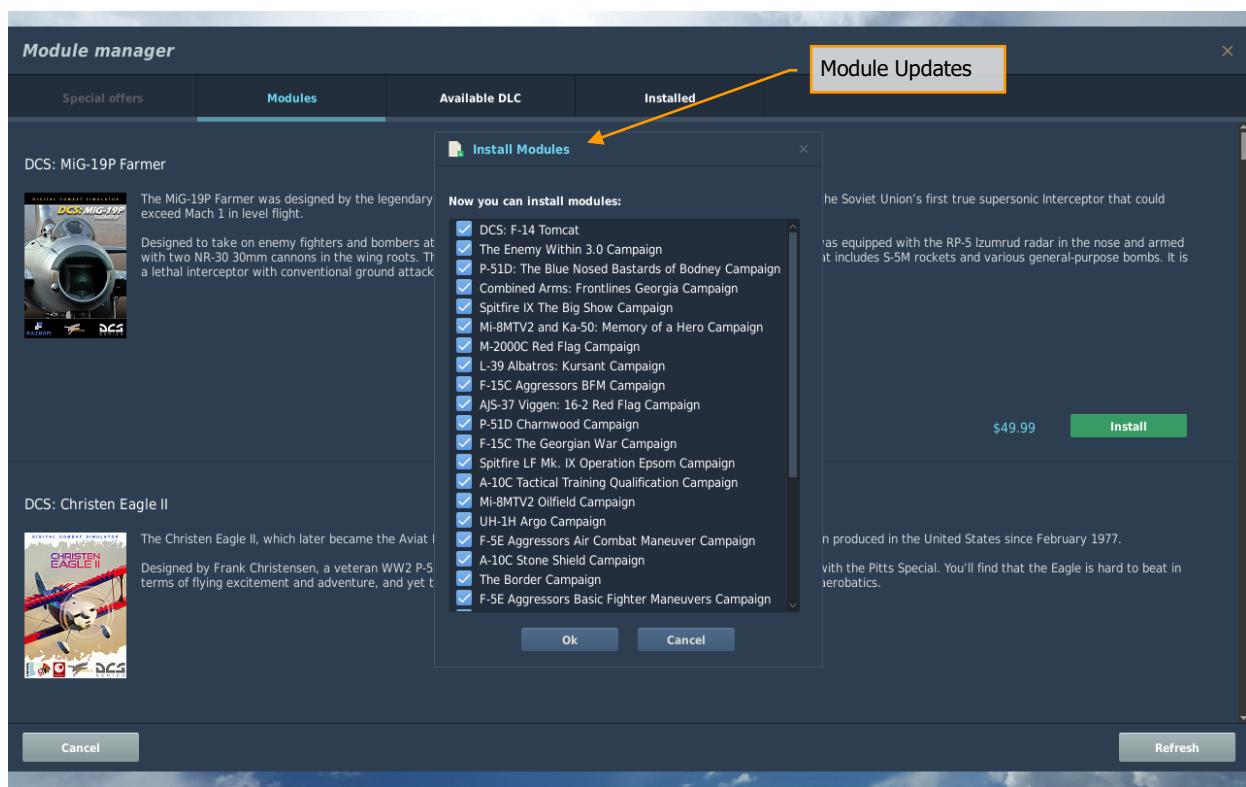
This page displays all available DLC and if they are already purchased. If a module is already purchased, "Install" will be displayed at the far right of the module listing. Pressing the Install button will install or re-install the module. If "Buy" is displayed, you can press the button to start the purchase option of the selected module.

To the left of the Install/Notification is the price of the module and a description of the module to the left of that.





Upon starting the Module Manager, if new updates to a purchased module are detected, a pop-up window is displayed that lists the updates available and provides you an option to install or cancel the updates.



Installed Tab

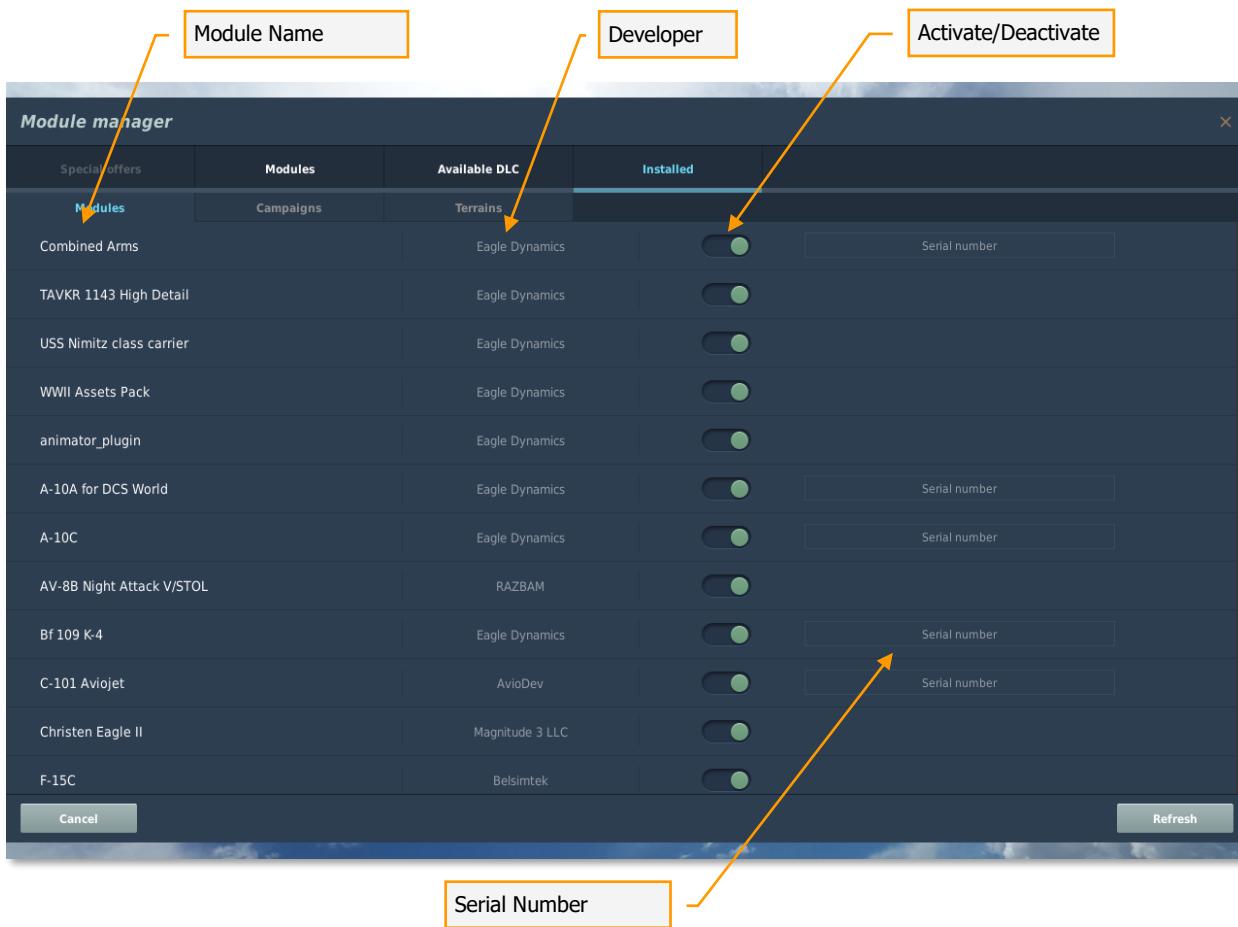
This tab page shows all installed DCS modules. Each row displays a different module and each column provides information about the module.

Module Name. The name of the installed DCS module.

Developer. Developer name of the selected module.

Activate/Deactivate. Unchecking this box will deactivate the selected module. A checked box indicates that the module is activated.

Serial Number. This column displays the serial number of the selected module. When the Serial Number field is clicked on, the serial number is displayed and you have the option to copy the serial number to clipboard or hide the serial number.



DCS World



OPTIONS

OPTIONS

The Options screen allows you to customize your graphics and audio settings, input options, and game play settings. To access the Options screen, left mouse click on the Options button (gear icon) on top of on the Main Menu.



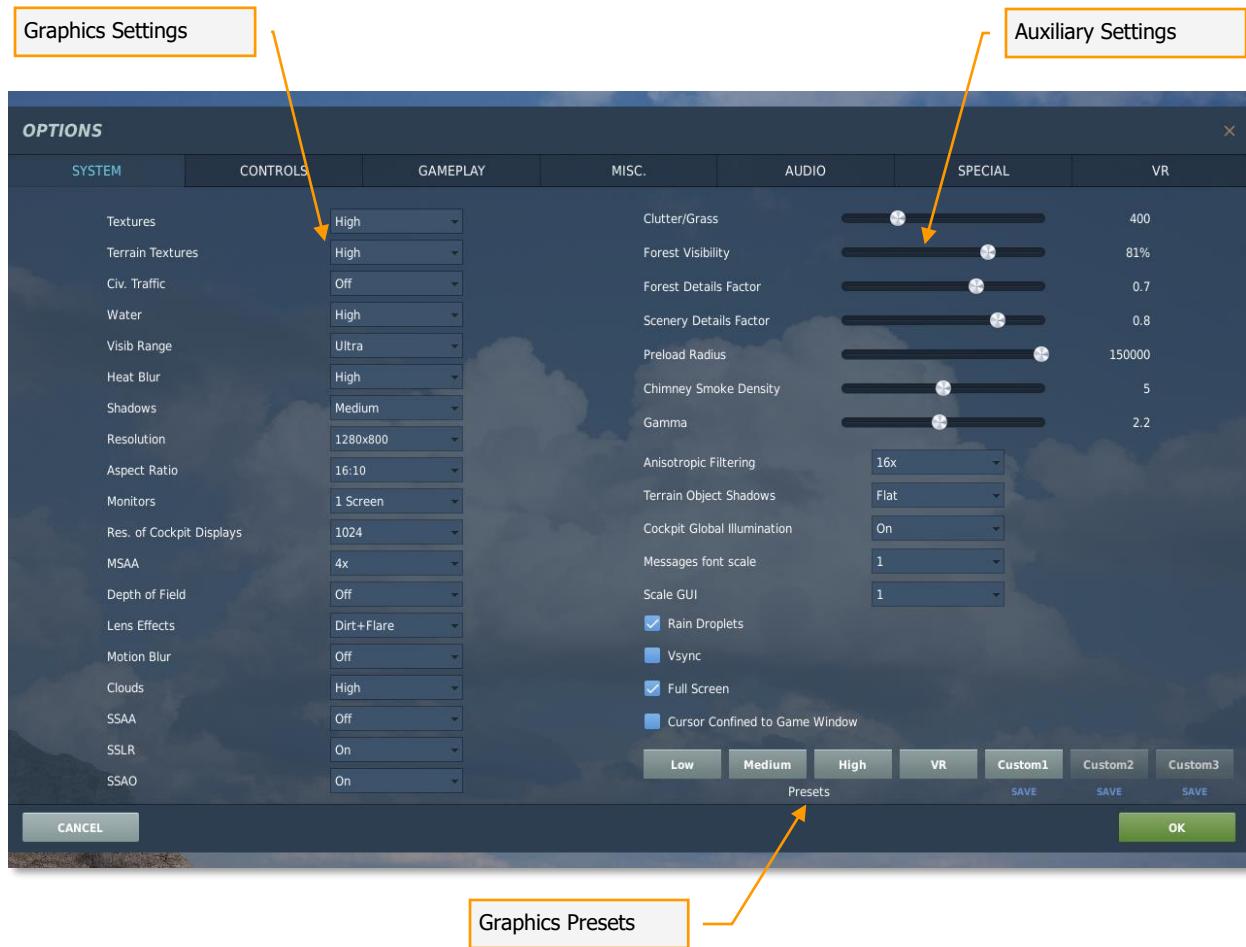
The Options page has a number of tabs at the top that allow you to adjust your settings for graphics, inputs, game play, miscellaneous, audio, special and virtual reality. Left mouse click on a tab to display the desired options settings page.

Along the very bottom of the screen are the CANCEL button which will return you to the Main Menu without saving any changes to Options, and the OK button which will return you to the Main Menu page but will save your changes.

You can also exit the Options page by pressing the yellow X in the top right of the screen.

System Options

The System Options screen allows you to customize your graphics settings to best suit your personal preferences and hardware (CPU, RAM, and graphics card).



Along the very bottom of the screen are the CANCEL button which will return you to the Main Menu without saving any changes to Options, and the OK button which will return you to the Main Menu page but will save your changes.

You can also exit the Options page by pressing the yellow X in the top right of the screen.

Graphics Settings

Several graphics settings are available along the left side of the screen. Selection of a graphics option is done by using the drop-down list for each item and selecting the desired setting.

Textures

Sets the object texture resolution. Options are Low, Medium, and High. Higher texture resolutions appear crisper but use more VRAM.

- **Low** – Low resolution textures for terrain, objects, and cockpit.
- **Medium** – Medium resolution textures for terrain, objects, and cockpit.
- **High** – High resolution textures for terrain, objects, and cockpit.

Terrain Textures

The option affects the level of detail for terrain and building textures. If this option is changed after DCS has already loaded in the terrain (loaded into a mission or the mission editor) a restart is required for the changes take effect. If a player entered the options menu immediately after loading the game interface, a restart is not required.

- **Low** – Terrain surface textures for the chosen map will be loaded in a low resolution.
- **High** – Terrain surface textures for the chosen map will be loaded in a high resolution.

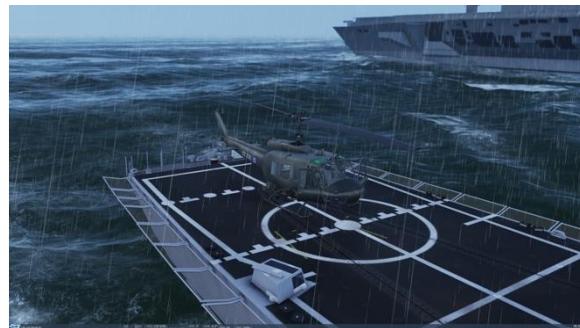
Civ. Traffic

- **Off** – No road and rail traffic.
- **Low, Medium, High** – The density of road and rail traffic.

Water

Sets the level of detail for water effects.

- **Low** – Water has no 3D surface effects.
- **Medium** – Water has 3D surface effects, including waves and wakes.
- **High** – Water has 3D surface, shelf and full reflections.



Example of water detail set to Low (left) and High (right). In High, the water surface has a 3D undulation effect in high winds, and ships generate wakes and churn.

Visib Range

Sets the distance at which objects are rendered. Options are Low, Medium, High, and Extreme. Actual distances depend on object type (e.g., buildings are rendered at further distances than trees).

- **Low** – Objects are rendered out to approximately 7 km.
- **Medium** – Objects are rendered out to approximately 12 km.
- **High** – Objects are rendered out to approximately 17 km.
- **Ultra** – Objects are rendered out to approximately 24 km.
- **Extreme** – Objects are rendered at their maximum distance.

Heat Blur

Sets the amount of visible atmospheric refraction caused by hot exhaust air.

- **Off** – Heat blur is not present.
- **Low** – Heat blur partially displayed behind the aircraft engine nozzles.
- **High** – Heat blur fully displayed behind the aircraft engine nozzles.

Shadows

Sets the level of detail for object shadows. Shadows can be planar (appearing as flat translucent planes) or soft (a more realistic appearance). Shadows can be cast by the subject (the object that is the focus of the current view) or by other objects in the scene. Self-casting shadows are shadows that one part of an object casts upon itself.

- **Off** – No shadows will be rendered.
- **Flat Only** – The view subject will cast planar shadows.
- **Low** – All objects in the view will cast planar shadows.
- **Medium** – The view subject will have self-casting shadows, and all other objects will cast planar shadows.
- **High** – The view subject will cast soft shadows as well as self-casting shadows, and all other objects will cast planar shadows.

Resolution

Sets the size and resolution of the rendered image. In windowed mode, this sets the size of the game window. In full-screen mode, this sets the display resolution. For multi-monitor setups, the total resolution can be entered manually.

Aspect Ratio

The aspect ratio is the ratio of display width to height. It's normally set automatically when a new resolution is chosen, but can also be set manually.

Monitors

For multi-monitor setups, this option configures what is rendered on each monitor:

- **1 Screen** – Pilot view will be displayed on a single monitor (default).
- **3 Screen** – Pilot view will be split equally across three monitors (triple-head setup).
- **Camera + LMFCD (on right side)** – Video will be split between 2 monitors - one for the main camera and one on the right side for the left MFCD.
- **Camera + LMFCD** – Video will be split between 2 monitors - one for the main camera and one for the left MFCD.
- **Camera + LMFCD (automatic placement)** – Video will be split between 2 monitors with non-fixed position. Positioning on the real position of monitors in the cabin of the aircraft.
- **Camera + RMFCD (on left side)** – Video will be split between 2 monitors - one for the main camera and one on the left side for the right MFCD.
- **Camera + RMFCD** – Video will be split between 2 monitors - one for the main camera and one for the right MFCD.
- **Camera + RMFCD (automatic placement)** – Video will be split between 2 monitors with non-fixed position. Positioning on the real position of monitors in the cabin of the aircraft.
- **LMFCD + Camera + RMFCD** – The center monitor will display the pilot view, and the left and right monitors will display the left and right MFCDs.
- **Stereo** – Pilot video will be split into a stereoscopic pair and output separately. This should only be used by players with stereoscopic display setups.

Note: To customize these configurations or create your own new configurations, navigate to `[Saved Games|DCS\Config\MonitorSetup]`. Each configuration is defined by a separate `.lua` file.

Res. of Cockpit Displays

Set the resolution of cockpit displays such as mirrors, multifunction displays, moving maps, etc. Note that higher resolution settings can negatively impact the smoothness of game play.

- **256** – Low quality. The picture is rendered into a texture of 256x256 pixels. It is updated through the frame.
- **512** – Standard quality. The image is rendered into a texture of 512x512 pixels. It is updated through the frame.
- **512 Every Frame** – Standard quality. The image is rendered into a texture of 512x512 pixels. Each frame is updated, but it reduces the overall performance of the game in comparison with the choice of the preset updated through the frame.

- **1024** – High quality. The image is rendered into a texture of 1024x1024 pixels. It is updated through the frame.
- **1024 Every Frame** – High quality. The image is rendered into a texture of 1024x1024 pixels. Each frame is updated, but it reduces the overall performance of the game in comparison with the choice of the preset updated through the frame.

MSAA

MSAA (MultiSample Anti-Aliasing) – Is an improved version of SSAA super-sampling that consumes less resources. Smoothing takes place only along the edges of objects, not the entire scene as in SSAA. When the resolution in the game increases, it requires more video memory on the graphics card.

- **Off** – Turns off MSAA anti-aliasing.
- **2x** – Two-pass MSAA.
- **4x** – Four-pass MSAA. This improves anti-aliasing quality at the expense of FPS.

Depth of Field

Depth of field is the distance between the nearest and the furthest objects that are in acceptably sharp focus in an image.

- **Off** – Depth of field effects are disabled.
- **Bokeh** – Enables a very shallow depth of field, blurring parts of the scene closer to or further from the view subject. The blurred objects take on a "bokeh" effect simulating lens distortion. Severely reduces performance and is mainly used to create video/screen shots only.
- **Simple** – Enables a very shallow depth of field, blurring parts of the scene closer to or further from the view subject.

Lens Effects

Enables camera effects caused by dirt or lens flares.

- **None** – Lens effects are disabled.
- **Dirt** – Simulates occasional specks of dust on the camera lens in exterior views.
- **Flare** – Simulates lens distortion caused by direct sunlight.
- **Dirt+Flare** – Enabled both the Dirt and Flare effects, but can make it difficult to detect contacts.

Motion Blur

The effect of blurring the image when the camera moves quickly. Can be successfully applied when the scene needs to be given more dynamics and speed. Proper use of Motion Blur can add cinematography to what is happening on the screen. It can also help you veil low frame rates and add smoothness to your gaming experience as needed.

- **Off** – Turns off motion blur.
- **On** – Includes the Motion Blur effect, which makes the entire image blurred and unfocused at speed, without highlighting any area.

Clouds

Sets the level of quality for clouds and weather effects. Options are **Low**, **Standard**, **High** and **Ultra**.

Higher values render the clouds better and have a greater influence on the performance. The Standard option is the best choice to start with.



Example of Clouds detail set to Low (left) and Ultra (right). In Ultra, cloud shapes are higher resolution.

SSAA

SSAA (SuperSample Anti-Aliasing) – The heaviest, but also the most qualitative and easily loading a video card. Smoothes the whole scene. It works by rendering the image at a larger size and downsampled it to the display size. For powerful top-of-the-range graphics cards.

- **Off** – SSAA is disabled.
- **x1.5** – The image is rendered at $\times 1.5$ and downsampled to smooth edges.
- **x2** – The image is rendered at $\times 2$ size and downsampled to smooth edges.

SSAA is limited to 4k, so if resulting required buffer size is over 4k – this option will not be available.

Simultaneously, multi-sampling (MSAA) and super-sampling (SSAA) should not be enabled to avoid conflict and performance degradation (either MSAA – or SSAA).

SSLR

SSLR (Screen Space Local Reflections) – Enables a reflection effect caused by ambient lighting. It is best seen on smooth and chromed surfaces.

- **Off** – Turns off reflections on smooth surfaces.
- **On** – Turns on reflections on smooth surfaces.

SSAO

The SSAO (Screen Space Ambient Occlusion) – Enables a shading effect caused by ambient lighting. It is an approximation of the global illumination technology with reduced GPU load. Improves realism of the picture.

- **Off** – Turns SSAO off.
- **On** – Enables SSAO.



Example of SSLR and SSAO disabled (left) and enabled (right). When enabled, the cockpit shading is more affected by ambient lighting conditions.

Note: If you wish to increase frame rates, the most import graphics settings to adjust lower are Terrain Textures, Water, Visib Range, Shadows and MSAA.

The right side of the page contains auxiliary graphics settings.

Auxiliary Settings

Clutter/Grass

Adjusts the distance that ground clutter such as grass, bushes, rocks, etc. are rendered.

Forest Visibility

Adjusts the distance that 3D trees are rendered. As the value increases, the trees are drawn in forests, fields, along rivers, roads and cities. If the value decreases, the trees are only in the forest belts in a smaller number. Beyond this distance, forests are rendered as flat ground textures.

Forest Details Factor

The slider adjusts the GPU load by the number of tree triangles rendered. Minimum value is 0.1 and possible maximum is 1.0.

Scenery Details Factor

The slider adjusts the GPU load by the number of overall scene triangles rendered (map objects such as buildings, constructions, etc.). Minimum value is 0.1 and possible maximum is 1.0.

Preload Radius

Sets the radius (in meters from user position) that terrain is preloaded. A larger setting reduces slowdowns due to hard disk swapping, but requires more RAM.

Chimney Smoke Density

Sets the density of smoke coming from building chimneys.

Gamma

Changes the overall luminosity of the rendered image. Lower values produce darker scenes.

Anisotropic Filtering

Sets the level of anisotropic filtering. Lower values will increase FPS but cause textures to appear blurry when viewed from shallow angles. Examples include runway and taxiway textures when viewed from the ground, or tanker director lights when viewed from the contact position.

- **Off** – Turns off anisotropic filtering.
- **2x, 4x, 8x, 16x** – Includes an anisotropic filtering with the selected filtering factor. Improves the display of deleted objects and textures on surfaces at a certain angle.

Terrain Object Shadows

Sets the type of shadows rendered on the terrain from scenery objects.

- **Default** – Shadows follow terrain contours. This option has the highest FPS impact.
- **Flat** – Shadows are planar.
- **Off** – Shadows are not rendered.

Cockpit Global Illumination

A lighting method that takes into account not only direct light from light sources, but also reflexes (reflections and refractions of light inside the cockpit, dancing shadows), resulting in a much more realistic image.

- **Off** – Direct lighting only.
- **On** – Enables the global lighting algorithms used for more realistic simulation of light. Requires more PC resources and may have a considerable impact on frame rates.

Messages font scale

Sets the scale of in-game tooltips, radio menus, and popup messages.

Scale GUI

Sets the scale of windows, menus, and dialogs.

Rain Droplets

When enabled, raindrops will appear on the canopy when in rain and at slow enough speeds.

Vsync

When enabled, your monitor's frame rate will be synchronized to the game's frame rate. This will reduce tearing artifacts that can occur at high frame rates.

Full Screen

When checked, the game will run in full-screen mode. When unchecked, the game will run in a window.

Cursor Confined to Game Window

Check this box to prevent the mouse cursor from moving beyond the game window bounds. This is useful when playing in VR, to make sure you do not inadvertently click on something outside the game window.

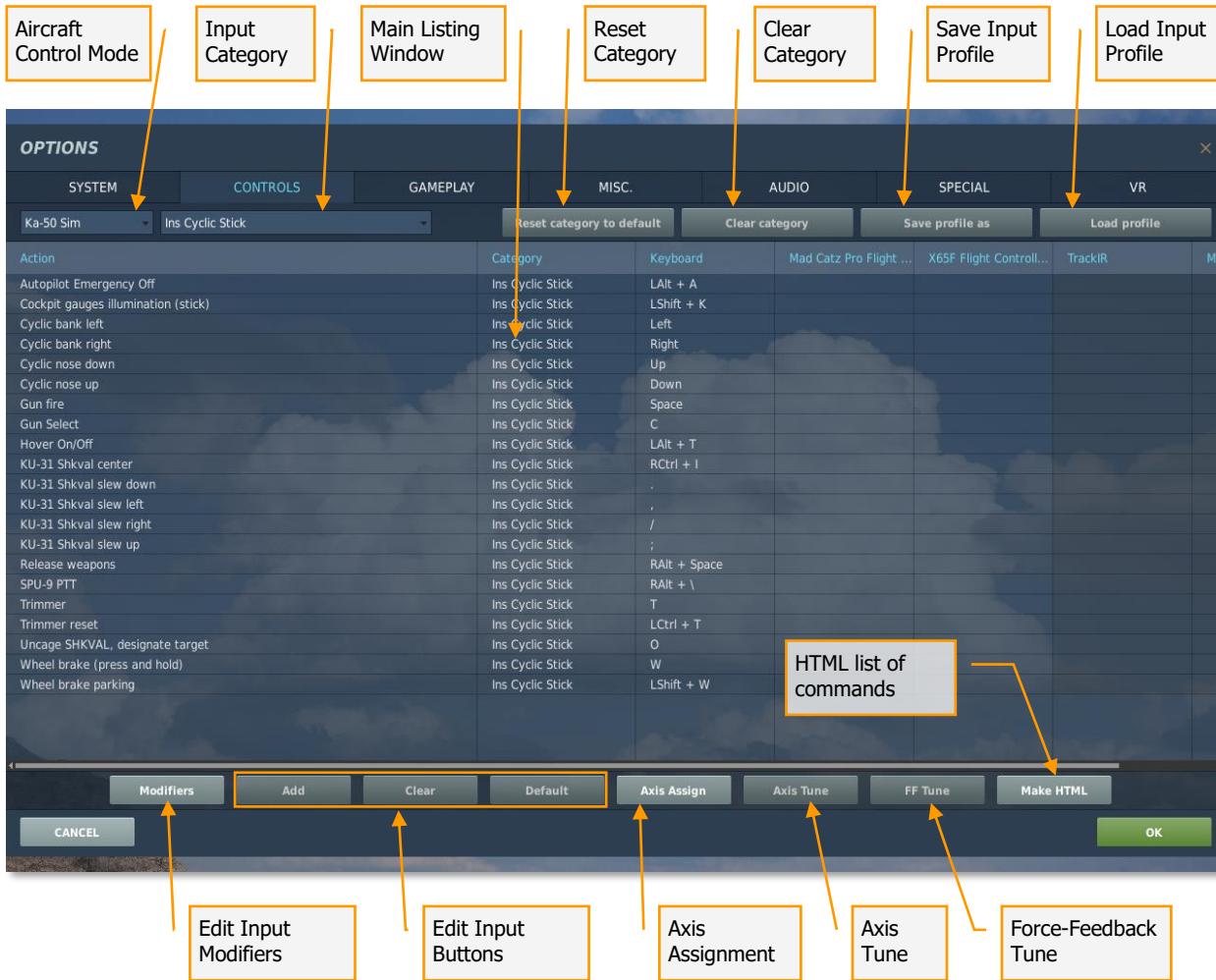
Presets

DCS World comes with four graphics presets: Low, Medium, High, and VR. You can use "**Low**", "**Medium**", or "**High**" to quickly set the graphics level to something appropriate for your PC capabilities. "**VR**" preset is tuned to maximize frame rates when playing in VR.

In addition, you can save your own presets under "**Custom1**", "**Custom2**", and "**Custom3**". Click the **SAVE** link underneath each button to save the current graphics settings to that preset. Click the button itself to load those graphics settings you saved. User profiles are rewritable.

Controls Settings

The control settings tab allows you to customize your control input devices. Such controls can include joysticks, mice, keyboards, rudders, etc. Using the manager, you can map functions to keys, create axis curves and assignments, and adjust force feedback levels. Of note, you can create and save multiple input profiles.



Along the very bottom of the screen are the CANCEL button which will return you to the Main Menu without saving any changes to Options, and the OK button which will return you to the Main Menu page but will save your changes.

You can also exit the Options page by pressing the yellow X in the top right of the screen.

Aircraft Control Mode. The Aircraft Control Mode drop down list shows the different control modes possible in a mission:

- Aircraft Game. Active when a mission is launched with Game Avionics mode on.
- Aircraft Sim. Active when a mission is launched with Game Avionics mode off.

- General. Active when a mission is launched with no player or client-controlled aircraft.

Input Category. The Input Category drop down list displays all the general input categories of the player aircraft. To select a category from the list, left mouse click on it and the input actions of that category will be displayed in the main listing window.

Main Listing Window. This vertically organized list displays each assignable action in regards to each detected input device connected to your computer. On the left side of the list is the column that lists each assignable Action. The list of Actions is determined by your Input Category and Player Mode selections. To the right of the Action column are columns for each detected input device. To assign an action an input device, left mouse click in the field where the Action line and the device column intersect. This will then be indicated by a white box in the field. Note, you can test whether an input command is mapped on a particular controller by pressing the command while the controller's column is highlighted.

Reset category to default. Pressing this button resets all keyboard or button combinations in the selected category for the selected device to their default values. The selected device is determined by the highlighted cell.

Clear category. If you wish to clear all input assignments for a controller, left click on any input command for the controller and then click on the CLEAR CATEGORY button. This will erase all input assignments for the controller column.

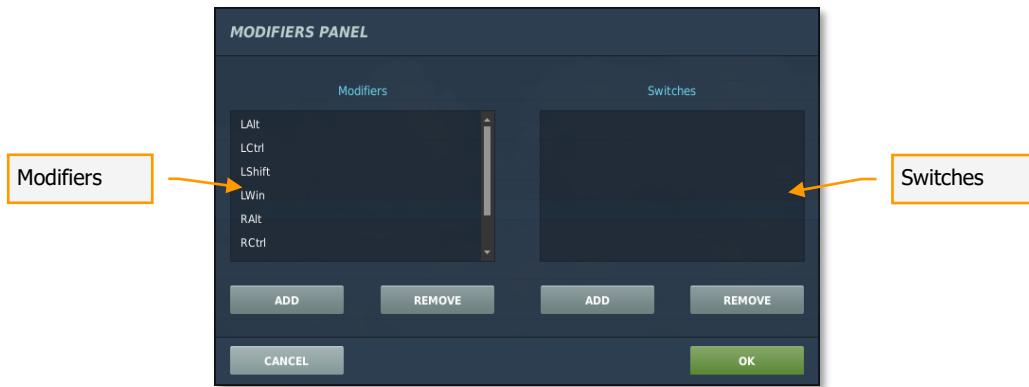
Save profile as. After you have modified (added, deleted, or changed) an input option to a profile, you can save it using the SAVE PROFILE AS button. Upon pressing this button, the Save Profile As browser window will be displayed. This window allows you to browse to a location on your computer and save the profile. You can either save the profile under the default name or create a new profile under a different name. As such, you can create multiple profiles for a single aircraft if you wish.



Load profile. Once an input profile is created, you may load it as the active profile by selecting the LOAD PROFILE button. This button will display the Load Profile browser window and allow you to select the desired profile to load. After selecting the desired profile, press the OK button.

Note: The loading and saving functions are specific to the device and not global for the profile.

Modifiers. Pressing the MODIFIERS button will display the MODIFIERS PANEL window and allow you to set control modifiers and control switches to allow additional control assignments.

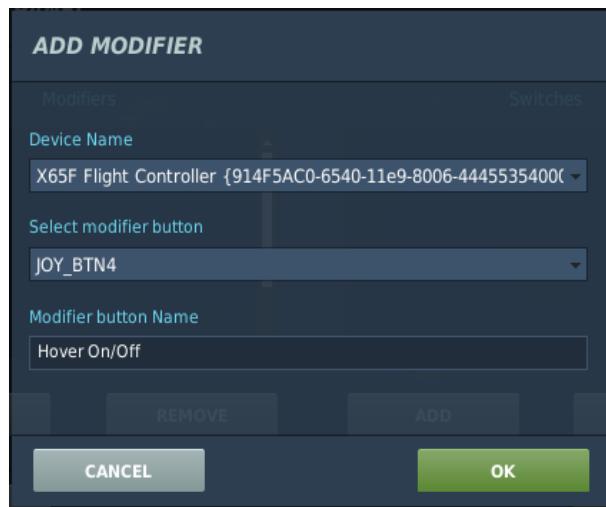


The Modifiers panel consists of two parts, the Modifiers at the left and the Switches at the right. Modifiers usually use a key or button combination with [SHIFT], [CTRL] or [ALT] (by default) or any custom keys assigned to act as a modifier. For example, you can assign any joystick button as a modifier and use it to expand the available joystick's commands that can be assigned to your input device.

By default, several Modifiers are included in the Modifiers window: [LALT](#), [LCTRL](#), [LSHIFT](#), [RALT](#), [RCTRL](#), [RSHIFT](#) and [RWIN](#). However, by pressing the ADD button below the Modifiers list window, you can also create your own. The window for adding a modifier will appear.

There are three fields present in the window:

- Device Name. In this field you must select the name of the device to which you want to assign a modifier.
- Select modifier button. This field displays the key or button you pressed.
- Modifier button Name. In this field you can enter your own modifier or switch name.



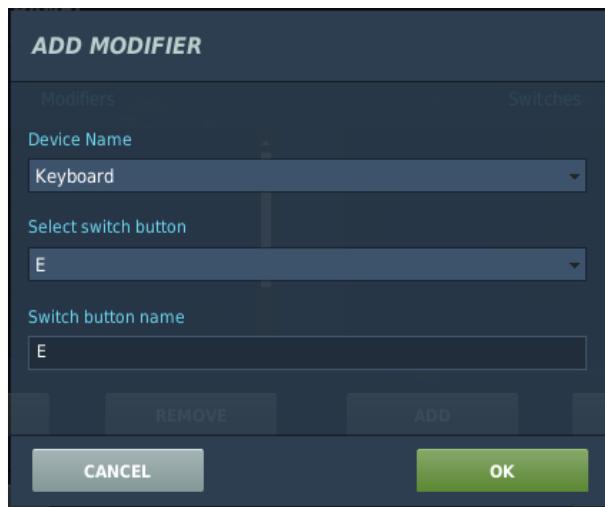
From the ADD MODIFIER panel, first select the device you wish to set the modifier from. This could range from a keyboard, to a mouse, to a joystick or a throttle. Once the device is defined, select the specific key or button on the device from the Select Modifier Button field. Once complete, press the OK button to save your new Modifier and it will be displayed in the Modifier list window.

To remove a modifier, select it from the window and then press the REMOVE button.

With at least one modifier in the list, you can now assign a modifier to any Action from the Add Assignment Panel.

Switches

The switches window in the right part of the Modifiers Panel works as a toggle as opposed to the modifiers. With modifiers you must press the modifier and key simultaneously, for example Ctrl and T. With a switch you can first activate the switch, then press any needed keys and then turn off the switch. You can think of it as setting a key to a mode. For example, you could assign the "E" button on the throttle as a switch and the Hat on the stick to control the trim. In flight, you could then press "E" one time and use the hat to trim the aircraft instead of its default function of view panning.



From the ADD SWITCHES panel, first select the device you wish to set the switch from. This could range from a keyboard, to a mouse, to a joystick or a throttle. Once the device is defined, select the specific key or button on the device from the Select Switch Button field. Once complete, press the OK button to save your new Switch and it will be displayed in the Switch list window.

To remove a switch, select it from the window and then press the REMOVE button.

With at least one switch in the list, you can now assign a switch to any Action from the Add Assignment Panel.

Edit Input Buttons. When creating, editing, or deleting an Action on the Main Listing Window, the ADD, CLEAR and DEFAULT buttons will be needed.

To add, clear or set to default an input to an Action, you first need to select the Category that lists the desired Action. Once the Action is located, Left mouse click in the field that intersects between the Action and the Input Device that you want to map. For example, you may wish to change the keyboard assignment of the key that changes the landing gear cycle. In this example you would locate the Landing Gear toggle Action row and then left mouse click in the field where it intersects the Keyboard column. Once selected, the field will have a blue box in it.

With the Action and Input Device now selected, you can press one of three buttons:

ADD. Pressing the ADD button displays the ADD ASSIGNMENT PANEL. This panel has the following fields:

- **Action.** Displays the name of the Action as displayed in the Main Listing Window.
- **Key / Button.** Pressing the desired key or by moving the desired input axis, the name of the key, button or axis will be displayed here. Additionally, you may click on the drop-down arrow and display all the possible inputs that can be assigned to the Action manually.
- **Add Modifier.** Use the drop-down list to view all Modifiers and Switches that can be assigned to the Action. Note that this list can be edited from the Modifiers Panel.

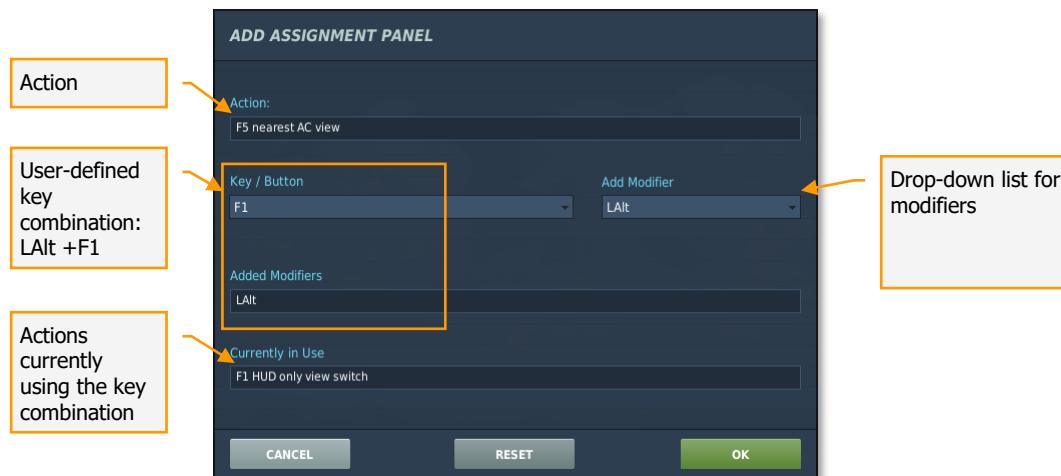
- **Added Modifiers.** Once you have added a modifier or switch, it will be automatically listed in this field.
- **Currently in Use.** If the assigned key or button is already in use with another Action, the conflict will be listed here.
- **RESET.** Pressing the RESET button will return the Action to its default setting.

CLEAR. Once a field is selected, you can press the CLEAR button to remove the assignment.

DEFAULT. With a field selected, you can press the DEFAULT button and the originally assigned assignment to the Action will be restored.

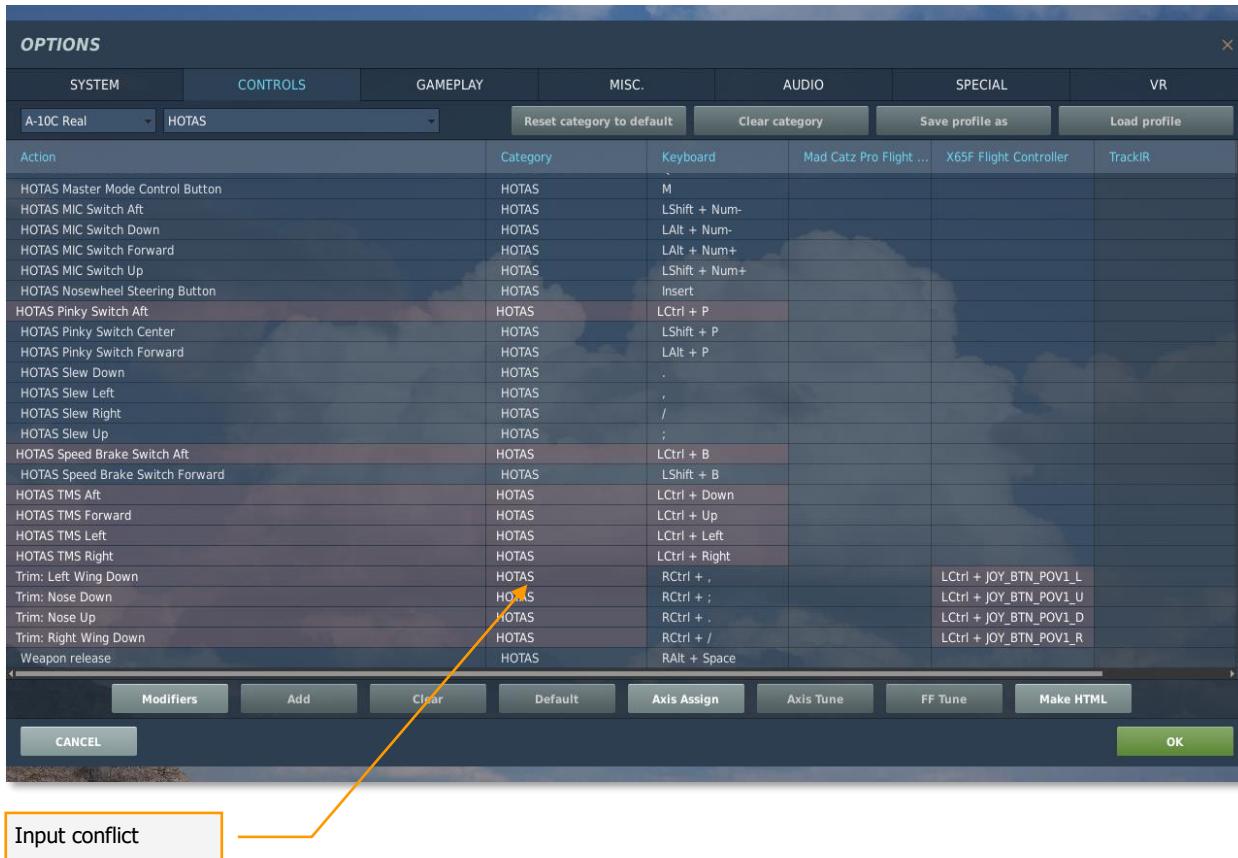
Below is an example on how to assign a new keyboard/button combination or axis in place of the default:

1. Select the cell of the required action in the column of the required device. If you need to assign an axis, first select the AXIS COMMANDS category in the action category drop-down list.
2. Clear the cell of the already-existing combination by clicking on RESET.
3. Assign the new key combination by pressing ADD. This brings up the ADD ASSIGNMENT PANEL window.



- The ACTION field shows the action to which the combination is assigned.
- The KEY, BUTTON, AXIS fields display the assigned (pressed) key, button, or axis. In this field, you can select a key, button or axis manually from the drop-down list.
- The ADD MODIFIER drop-down list allows you to manually select the required modifiers for the combination.
- The ADDED MODIFIERS field shows the combination of assigned modifiers.

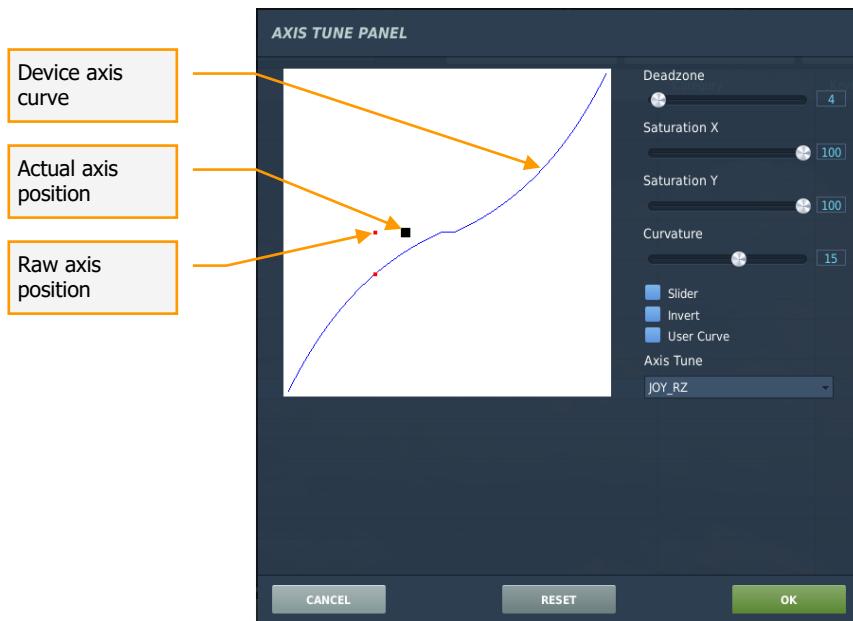
- The CURRENTLY IN USE field shows the name of the action for which the selected keyboard or keyboard combination is already used (conflicts).
- Press the desired combination on the keyboard or joystick and check on the panel that the input is correct.
 - Click OK to confirm the inputted combination.
 - In case of error in combination assignment, press the RESET button and repeat the assignment process.



Red conflict text appears when there are incorrect modifiers. For example, if you delete one of the present modifiers, then all strings with this modifier will be shown in red.

Axis Assign. Brings up the Axis Commands category menu.

Axis Tune. If you have assigned an input axis to an Action, you can then press the AXIS TUNE button to adjust how the axis responds. The resulting Axis Tune Panel window will then allow you fine control over each axis. Functions of the panel include:



Deadzone. Allows you to create a “dead zone” in the center of the curve. Depending on the accuracy of your joystick, you may wish to setup a deadzone value of 5-10. This will help avoid problems when trimming the aircraft due to calibration problems. Move the slider to the right to increase the deadzone and move to the left to decrease it. The actual numeric value is displayed to the right of the slider.

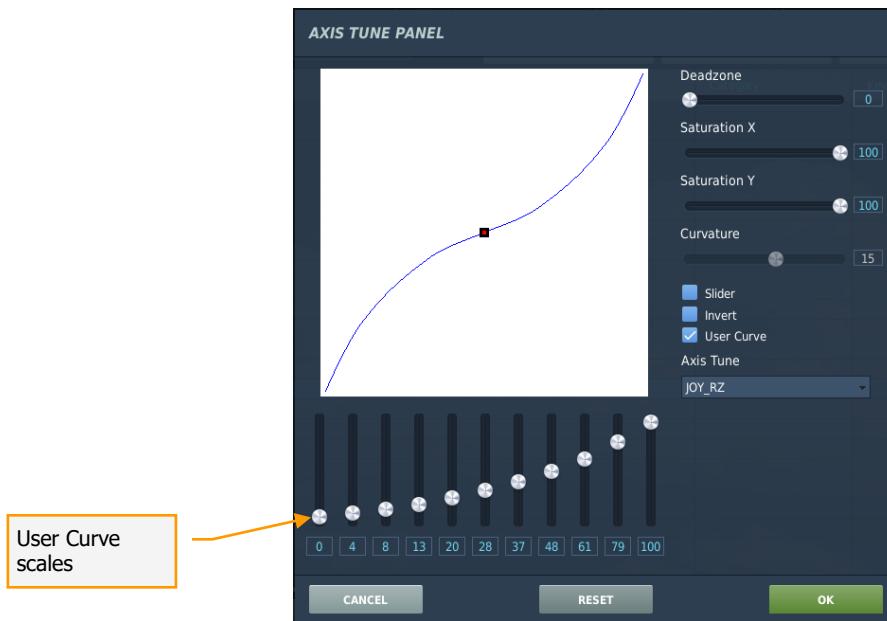
Saturation. These sliders for both X and Y allow you to adjust the total axis travel in X and Y and will be converted to control input. For example, if you want the entire axis throw of a joystick to be used as input, you would set the X and Y limits to the corners of the window (saturation levels of 100). If, however you wanted to reduce the possible input throw of a joystick by 50%, you would set the X and Y saturation levels to 50.

Curvature. Moving this slider to the right and left increases and decreases the non-linearity of the axis curve. You can use this curve to adjust how sensitive (or insensitive) the axis is. It is common to have a shallow curve near the deadzone to increase the accuracy of fine control input. The actual numeric value is displayed to the right of the slider.

Slider. Allows you to set the axis in regards to a slider and not a default curve that will return to center when there is no input being generated from the device. For example, you may wish to use the Slider function for the throttle axis but the standard curve axis for a control stick.

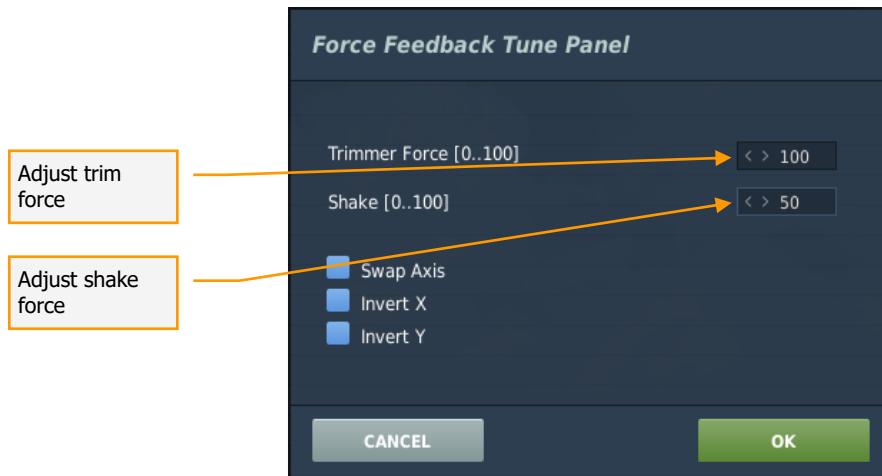
Invert. The Invert radio button will swap the axis of the device.

User Curve. Rather than use the Curvature slider, you may select the User Curve radio button and display 11 vertical scales that allow you to adjust input device responses. These range for 0% input on the left side of the scale to 100% input on the right side of the scale.



Axis Tune. Use this drop-down list to select the axis you wish to tune.

Force Feedback Tune. If you are using a force feedback joystick, you may press the FF TUNE button to display the Force Feedback Tune Panel. This panel allows you to adjust the trimmer force and shake of the stick.



To swap the force feedback axis, check the Swap Axis radio button.

Swap Axis. This checkbox allows the user to swap axes for the selected input device. This may be necessary for certain older models of joysticks.

Invert. The checkbox allows you to invert the curve along the X and Y axis.

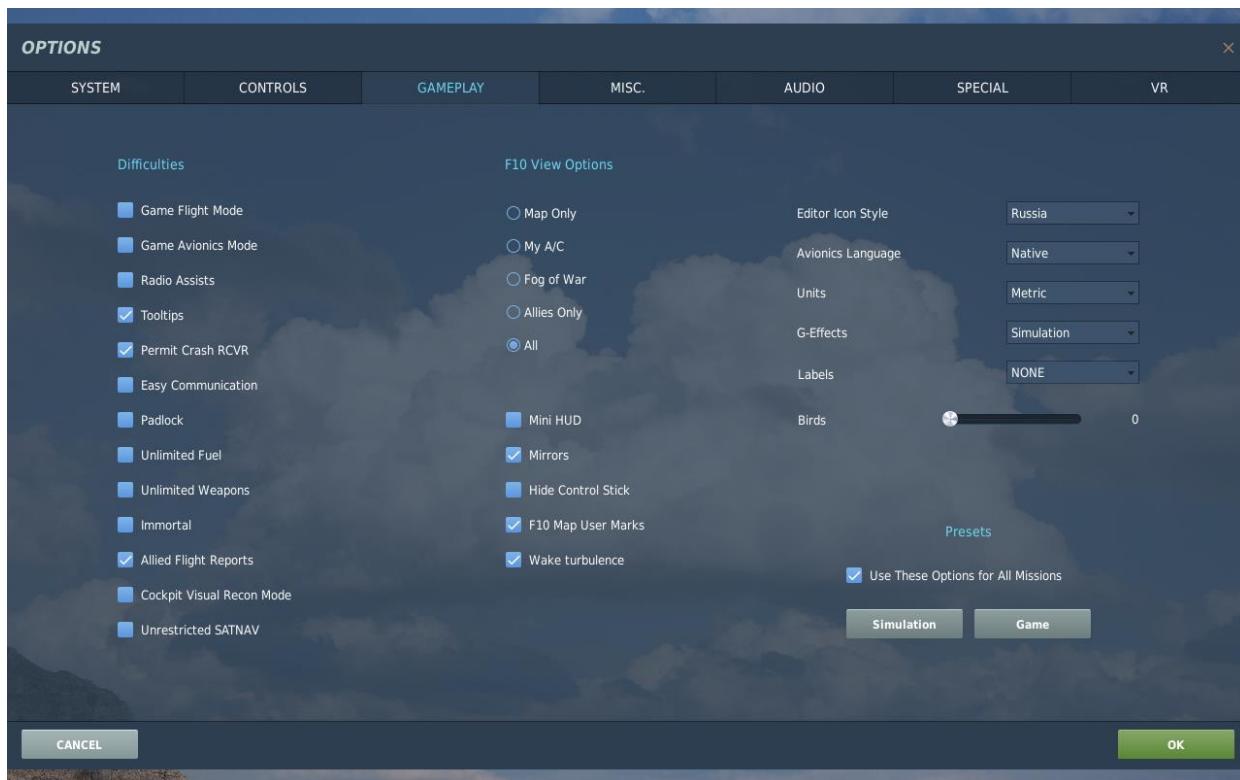
At the bottom of the panel are buttons to CANCEL changes and return to the Controls page, or OK (save) any changes and return to Controls.

Make HTML. You can make an HTML list of commands for selected aircraft. After pressing this button, it will open an explorer window with the HTML files for all your devices.

C:\Users\<User Name>\Saved Games\DCS\InputLayoutsTxt\

Gameplay Settings

The Gameplay settings tab allows you to customize how realistic you want your simulation experience to be. Using these settings, you can have a very realistic and challenging mission experience or a much more relaxed and casual experience with little need for detailed systems knowledge and combat skills.



Difficulties

These difficulty options are selected as radio buttons, and when selected, the stated option is enabled. Difficulty options include:

Game Flight Mode. Game Flight Mode greatly reduces the complexity and challenge of flying an aircraft. When not selected, aircraft will use a more advanced flight model system that is more authentic, but can be a challenge to first-time-fliers. The Game Flight Mode however makes flying the aircraft much easier and care-free.

Game Avionics Mode. Game Avionics Mode helps with flight orientation by displaying 3D markers in space.

Radio Assists. When enabled, you will get audio alerts informing you of incoming missiles, when you are within valid weapon use parameters, and information on the location of enemy units.

Tooltips. When in the cockpit, you may hover your mouse over a control and a brief note indicating the function of the control will be displayed.

Permit Crash RCVR. Crash recovery will allow you to respawn if your aircraft is destroyed or you eject during the mission.

Easy Communication. With Easy Communication on, the radios will automatically tune to the selected recipient's frequency. In addition, the radio menu will only display objects present in the mission and highlight those with whom contact is possible. With Easy Communication off, the player has to tune the correct radio set to the correct frequency for the desired contact and select the correct contact out of the full radio contacts menu.

Padlock. The padlock system allows you to keep your virtual eyes locked (padlocked) to either an air or surface point as long as the target is within visual constraints when viewed from within the cockpit. In addition to units and the ground, you may also padlock incoming missiles.

Unlimited Fuel. When enabled, your fuel is never expended. Note though that with full fuel tanks, your aircraft performance will suffer in several ways due to the increased weight.

Unlimited Weapons. When a weapon is expended, it will automatically be immediately replenished when this option is checked.

Immortal. Enabling immortality will make it impossible to damage or destroy your aircraft.

Allied Flight Reports. Enables the radio chatter of allied flights on the assigned radio frequencies.

Cockpit Visual Recon Mode. Enables a possibility to mark any ground object on terrain and reveal its location on the maps of allies. Use RMB (Right Mouse Button) display a cross and LMB (Left Mouse Button) select object.

Unrestricted SATNAV. Satellite navigation available for all capable aircraft, regardless of country and date/time.

F10 View Options

When in the simulation and having pressed the F10 key, a map of the simulation world will appear that shows both friendly and enemy units. You can use this view to gain an overall view of the battlefield outside of your cockpit. Icons are depicted according to general unit type and Blue Side units have blue icons, Red Side units have red icons, and the player's unit has a white icon.

The F10 View options allow you to set which elements are visible to player when viewing the map.

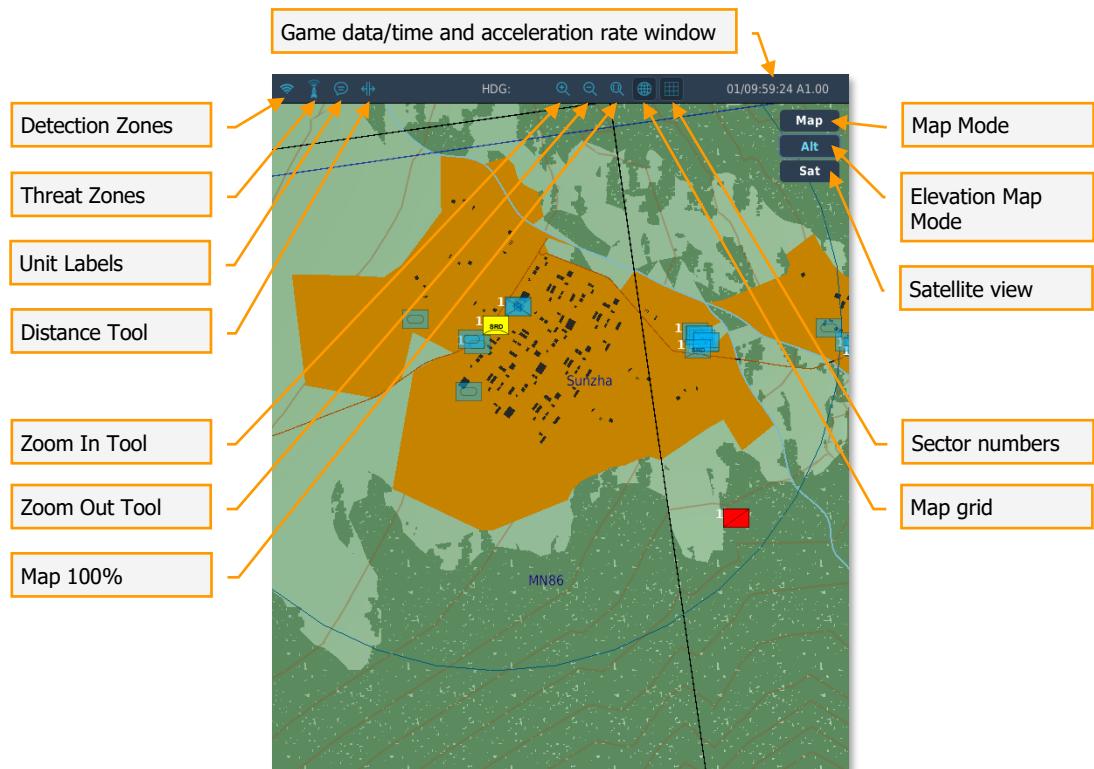
Map Only. No objects icons will be displayed on the map.

My A/C. Only the player's own aircraft icon will be displayed on the map.

Fog of War. Only hostile units detected by friendly units are displayed.

Allies Only. Only units of the player's coalition will be displayed on the map.

All. All units will be displayed on the map. Default selection.



Along the top of the screen is the tool bar with the following functions from left to right:

Unit Data. Clicking on the unit's icon in the lower left corner of the screen will bring up the unit's data window which displays the unit group name, side, callsign, type, and assigned task, as well as the unit's altitude, speed, heading, and coordinates.

Cursor Coordinate and elevation. As you move the mouse across the map, the geographic coordinate of the cursor's location and elevation is displayed in this field.

Game data/time and acceleration rate of window. This field displays the current in-game (mission) time and its acceleration factor. In-game time is displayed as day / hours: minutes: seconds. The acceleration factor is indicated by the letter A. Example: A1.00 indicates normal time flow [LShift+Z] with an acceleration factor of 1.00. The letter P indicates that time is currently paused.

Player Center. To center the map screen on the player, press this button.

To gather more information about a unit displayed on the map, you may left click on it and the Unit Data window will appear. The selected unit's icon will turn yellow. This is an information-only window that can display the following information, depending on the unit type:

- Unit type
- Side
- Unit callsign
- Group task
- Unit altitude
- Unit speed
- Unit heading
- Unit's current coordinates

Show Lifebar. Clicking this button displays a lifebar for ground units.

Add a mark. Clicking this button allows the user to add and sign their own marks on enemy units in the F10 map.

Show marks. Clicking this button on the map displays all custom markers added by the current user and by other players in the session.

Take control. Pressing this button [or the keybind RAlt+J] allows the user to assume direct control of the selected unit or aircraft.

Show pathing. This button toggles display for the assigned waypoints for ground units and aircraft.

Detection Zones. When enabled, the detection zones of air defense units are displayed as circles around the units.

Threat Zones. When enabled, zones around air defense units that indicate the engagement range of the unit are displayed.

Unit Labels. When enabled, a label that indicates unit type is displayed next to each unit on the map.

Distance Tool. By left mouse clicking on the map and then dragging the cursor to a new location, a line will be drawn between the two points. Right of the Distance Tool button will be displayed the distance of the line and next to the HDG (heading) label will be displayed the heading from the start point to the end point of the line.

Zoom In Tool. To zoom in on the map, click this button and the cursor will become a magnifying glass with a (+) symbol in the center. Left click on the map where you want to zoom in to and re-center your map on. **To disable this mode, you must click this button a second time.**

Zoom Out Tool. To zoom out of the map, click this button and the cursor will become a magnifying glass with a (-) symbol in the center. Left click on the map where you want to zoom out from and re-center your map on. To disable this mode, you must click this button a second time.

Map 100%. To quickly zoom the map out to its full, 100% size, press this button.

Map grid. Displays the coordinate grid.

Square numbers. Displays square numbers on the coordinate grid.

Map Type. In the top right portion of the screen are three choices of map type. These include:

- MAP. Displays map view of world without elevation data.
- ALT. Displays map view but with elevation data relief.
- SAT. Displays satellite map view of world.

Additional Settings

On the right side of the screen are several more options that allow you to better customize the gameplay options of the simulation. These include:

- **Editor Icon Style.** When placing units and points on the map using the mission editor, you can either use western-style (NATO) military icons or Russian-style. Select between the two using this drop-down list.



- **Avionics Language.** If the flown aircraft has advisory messages in both English and Native, this option allows you to choose which to hear.
- **Units.** Using the drop-down menu, you may select either Imperial or Metric units of measurement. This selection will determine the units of measurement used in the Mission Editor.
- **G-Effects.** Depending on the amount of G you are loading on the aircraft, the effect of the G-force can have different effects according to the level you select from the drop-down list. Options include: None, Game, and Simulation. Note that the G-model accounts for rapid-G onset which can be much more demanding on the pilot (you). As such, when using the Realistic setting, ease into the G rather than pulling very quickly.
- **Labels.** When enabled, labels appear next to units seen in the simulation world. Labels are designed to allow you to more easily spot units and give important information about them according to their range from you.
 - **NONE** – Map markers disabled.
 - **FULL** – Displays full object names.
 - **ABBREVIATED** – Displays abbreviated object names.
 - **DOT ONLY** – Objects marked by a dot only.

The further they are away from you will result in less information in the label. The range at which label information is provided varies by unit type. The following table summarizes this:

Aircraft	Label
30 km	-
20 km	+ Range to object
10 km	+ Name of object
5 km	+ Callsign of pilot
Ground	Label
20 km	-
10 km	+ Range to object

5 km	+ Name of object
Naval	Label
40 km	
20 km	+ Range to object
10 km	+ Name of object
Weapons	Label
20 km	
10 km	+ Range to object
5 km	+ Name of object

- **Birds.** Use this slider to adjust the likelihood of bird strikes when flying at very low altitudes. A setting of 100% represents a realistic probability of a bird strike. Note, the simulation does not feature visible 3D birds as objects. Only the likely damage effects (primarily engine flameout) are simulated.
- **Mini HUD.** If flying Flaming Cliffs 3 aircraft, this options allows you to enable/disable the Mini HUD that provides basic HUD symbols to always be displayed regardless of where the view is directed.
- **Mirrors.** Check this box to enable rear view mirrors. Note that mirrors can have a significant effect on system performance.
- **Hide Control Stick.** Cockpit Control Stick always hidden to improve the visual availability of instruments and equipment in the lower part of the cockpit.
- **F10 Map User Marks.** Gives opportunity to place and edit names of user marks in mission editor map.
- **Wake turbulence.** Enables calculations of disturbance in the atmosphere that forms behind an aircraft as it passes through the air. Gives new feelings when air-refueling, flying in formations or sitting on a bandit's six.

Presets

At the bottom of this window there is an option to force the use of game settings for all missions, and a button for selecting from two pre-configured presets:

Use These Options for All Missions. When checked, this option will force any mission you fly to use the Options you personally set. If, however, this box is unchecked, the Options used when the mission was created will be used.

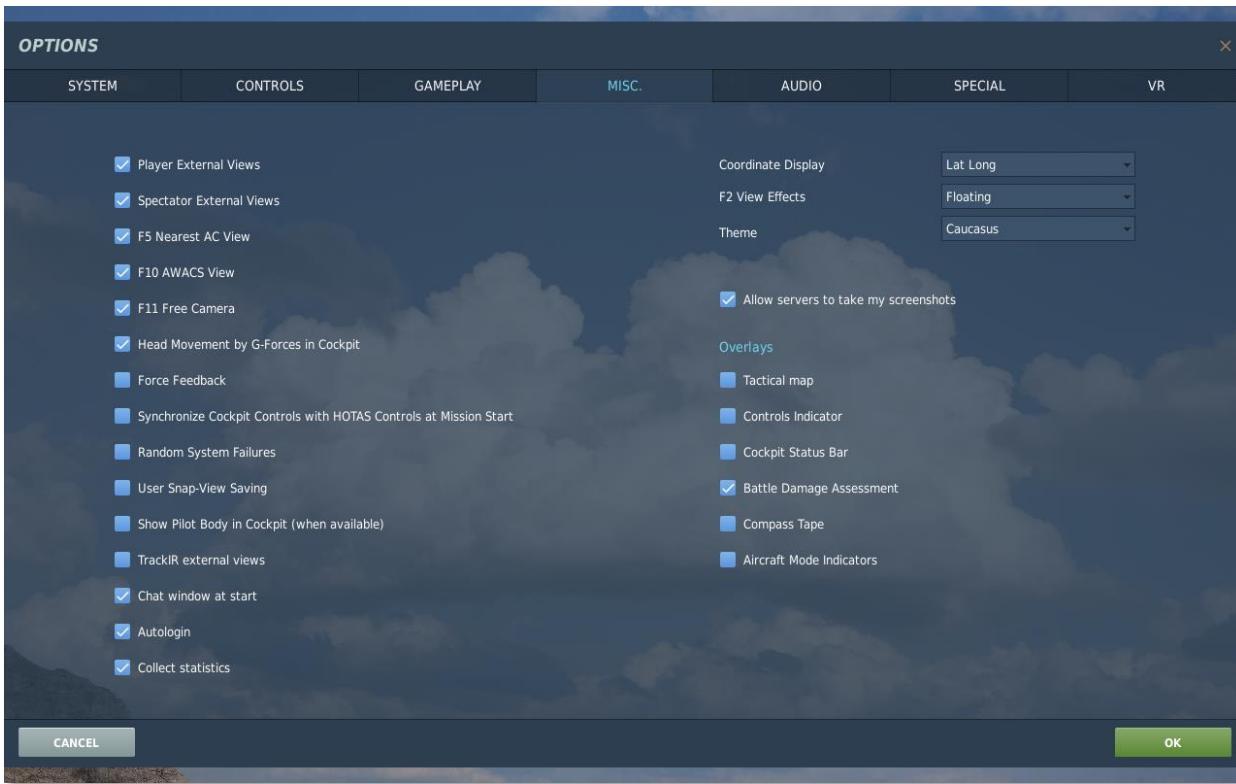
In the lower right portion of the screen are the two Preset buttons. These allow you to quickly set the gameplay options to provide either a realistic SIMULATION experience or a GAME experience. Press either button to quickly configure your options or manually select them to your own personal preferences.

Along the very bottom of the screen are the CANCEL button which will return you to the Main Menu without saving any changes to Options, and the OK button which will return you to the Main Menu page but will save your changes.

You can also exit the OPTIONS page by pressing the yellow X in the top right of the screen.

Miscellaneous

The Miscellaneous tab includes a number of additional game options.



Player External Views. Check this box to allow external views.

Spectators External Views. Check this box to allow external views.

F5 Nearest AC View. Check this box to allow the "F5" external padlock to nearest aircraft view.

F10 AWACS View. Check this box to allow the "F10" Map view.

F11 Free Camera. Check this box to allow the "F11" Free Camera view.

Head Movement by G-Forces in Cockpit. Check this box to enable the simulation of the pilot's slight head motion resulting from aircraft maneuvering in flight.

Force Feedback. Check this box to enable force feedback effects.

Synchronize Cockpit Controls with HOTAS Controls at Mission Start. When enabled, this option will set the mapped switches in the cockpit according to their setting on your input devices.

Random System Failures. Check this box to allow randomized aircraft system failures to occur during the mission. These failures are automatically generated to simulate mean time

between failures of different systems and are not based on the scripted aircraft failures included as part of a mission.

User Snap-View Saving. Allows the user to save custom views in the cockpit to devices, panels, HUD, and MFD displays.

Show Pilot Body in Cockpit (when available). Allows the user to enable or disable pilot body display in the cockpit, as the pilot's arms may occasionally obscure certain cockpit controls from view.

TrackIR external views. Allows the user to manipulate the external camera via TrackIR input.

Chat window at start. Allows the user to display the chat window at takeoff start.

Autologin. Allows the user to automatically log-in to their account on DCS startup using the login and password provided.

Collect statistics. Please do not untick this checkbox – the data we collect from this helps us in making the game better. This does not give us access to your bank cards or to your personal contacts list.

Coordinate Display. Selects between Lat/Long, Lat/Long Decimal, MGRS, Metric and Precise Lat/Long coordinate systems in the coordinate display windows of the ME and in-game panels.

- **Lat Long.** Displays coordinates in degrees – minutes – seconds.
- **Lat Long Decimal.** Displays coordinates in degrees format (decimal fractions of minutes).
- **NATO Standard (MGRS).** The Military Grid Reference System is a coordinate system widely used by NATO to calculate the location of target points. MGRS is based on UTM and divides each zone into squares of 100x100 km. These squares are identified by a two-letter code, where the first letter is the east-west position in the longitude zone, and the second letter is the north-south position.

For example, UTM coordinates of 35 V 414668 6812844 is equivalent to the MGRS coordinates of 35VMJ1466812844. The coordinate accuracy in MGRS is set with a precision level of one meter and is represented using 15 characters, where the last 10 characters represent the easting and northing values in the specified grid.

- **Metric.** Absolute X/Y coordinates.
- **Precise Lat/Long.** Displays coordinates in degrees format – decimal fractions of minutes – accurate to one hundredth of a geographic second.

F2 View Effects. Selects the camera effect for the external aircraft camera (F2).

- **None.** No effect.
- **Floating.** Floating camera effect.
- **Shaking.** Shaking camera effect.

Theme. Select background theme of the Main Menu from the drop-down list.

Allow servers to take my screenshots. The option allows the master server to take a screenshot of the game session.

Overlays

Tactical Map. Displays the minimap with the designated waypoints and heading, as well as markers in the minimap to help with orientation.

Controls Indicator. Displays the current position of the cockpit control devices.

Cockpit Status Bar. Enables/disables a status bar that displays the current flight parameters and coordinates.

Battle Damage Assessment. Shows/hides the damage done to an enemy unit in percentage values when a player scores a hit. Information about damage dealt and target destruction is displayed along the left border of the screen in real time. Destroyed targets are reported in red, while damaged targets are reported in yellow along with a percentage value of damage dealt.

Compass Tape. Displays/hides a compass tape at the top of the screen.

Aircraft Mode Indicators. Enables/Disables an overlay on the left side of the screen that displays information on the aircraft's systems - flightpath, combat modes, selected weaponry, and countermeasure systems (flare/chaff).

Audio Settings



Along the right side of the screen are the settings to control the audio environment in the game. This is done through a combination of six sliders and two radio buttons.

The audio sliders increase volume when moved to the right and decrease when moved to the left. Each slider is dedicated to a specific audio channel:

Volume. This controls the ingame master volume of the audio settings and affects all channels equally.

GUI. The volume of the Graphics User Interface (GUI) devices, like button clicks, is controlled with this slider.

World. The volume of audio sources outside of the cockpit.

In-Cockpit. This slider controls the volume levels of audio sources inside your cockpit. Examples include switches and fans.

Helmet. Use this slider to adjust volume levels that would come through the pilot's headphones such as radio messages and warnings.

Music. The volume of the music that is heard when in the menu screens is adjusted with this slider.

Switches. The volume of the switch sounds in the AC cabin.

Audio Device Setup:

Main audio out. Selection of the main audio output in the game.

Speaker layout. Selecting an audio device for the speaker layout in the game.

Headphones. Selects the headphones in the game.

Voice Chat output. Select an audio device to receive in voice chat.

Voice Chat input. Select a microphone for voice chat.

Microphone at Multiplayer start. Selecting a microphone mode in a multiplayer game.

Below is a group of advanced settings:

Hear like in Helmet. Enabling sound simulation in the pilot's helmet. External sounds will be muted and radio communication will be louder.

G-breath Effect. Activating the pilot's breathing sound during overload.

Loud Cockpit Afterburner Sound. Turn on the loud sound of the afterburner in the cockpit of your aircraft.

Radio Speech. Turn all radio speech on or off.

Subtitles. Turn all text subtitles on or off.

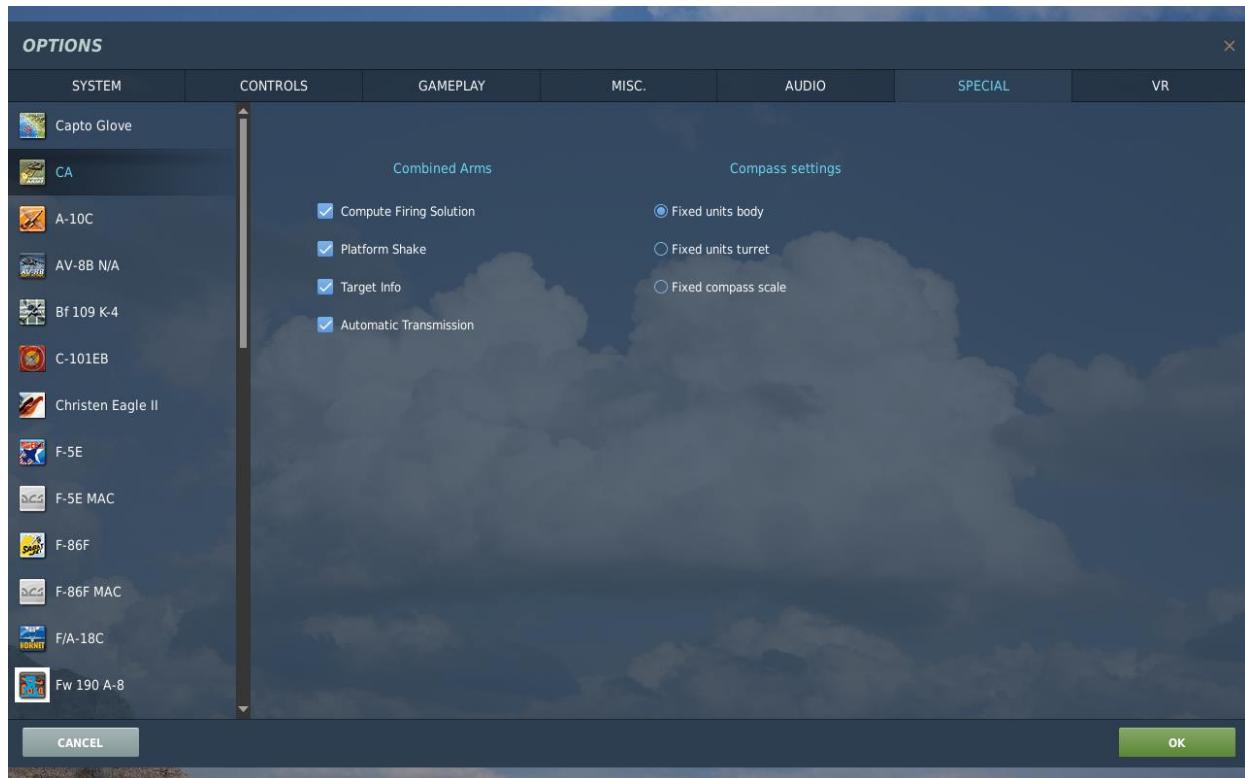
External View Cockpit Sounds and Radio Messages. Enables you to hear sounds and radio from your cockpit when switching to external aircraft/unit views.

Voice Chat. Turn on voice chat when playing online.

Play Audio While in Background. Turn on the game interface music when you minimize the window.

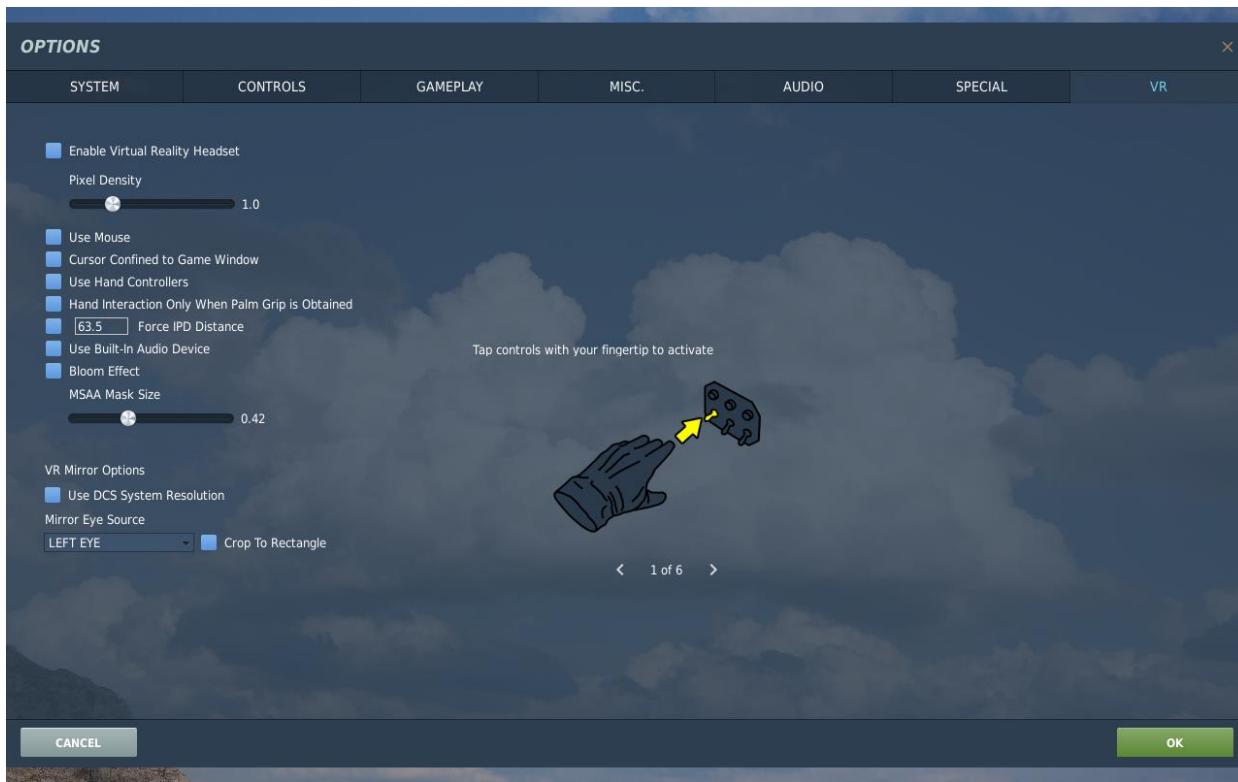
Special

On this page there are groups of settings for each installed module selected in the left column. Turning these settings on/off may simplify or complicate module management for each player.



VR

This page contains the settings for VR devices.



Enable Virtual Reality Headset. Enables the use of VR devices in the simulator.

- **Pixel Density** – Allows you to change the pixel density on the screens of VR-headsets, allowing you to increase the resolution. Increasing this value greatly affects performance.

Use Mouse. Enabling this setting unites the cursor from the current head position and lets it be controlled by mouse input.

Cursor Confined to Game Window. Enabling this option will prevent the mouse cursor from going beyond the game window on the monitor.

Use Hand Controllers. Includes support for hand-held controllers for interacting with environment and interface elements.

Hand Interaction Only When Palm Grip is Obtained. Interaction in the cockpit only when the player grabbed the controllers with his hands.

Force IPD Distance. Allows the user to manually set the interpupillary distance.

Use Built-in Audio Device. Switches on the VR headset's built-in audio device.

Bloom Effect. The effect of scattering bright light on the borders of the contrasting scene; adds a sense of volumetric lighting and rays. It is used to make the image look cinematic.

- **MSAA Mask Size.** Limits the application of MSAA (MultiSample Anti-Aliasing) to a circle from the center of the eye with a specified radius, which is called a mask. By default, MSAA mask is applied to about 2/3 of the image.

VR Mirror Options

Use DCS System Resolution. If DCS resolution is used, the VR mirror will use the same resolution as 2D resolution.

Mirror Eye Source. VR mirror is what shows on the users screen when in VR, they can choose left, right or choose to show both eyes on the screen.

- **Crop To Rectangle.** Crop to a rectangle the screen on the selected VR mirrors.

DCS World



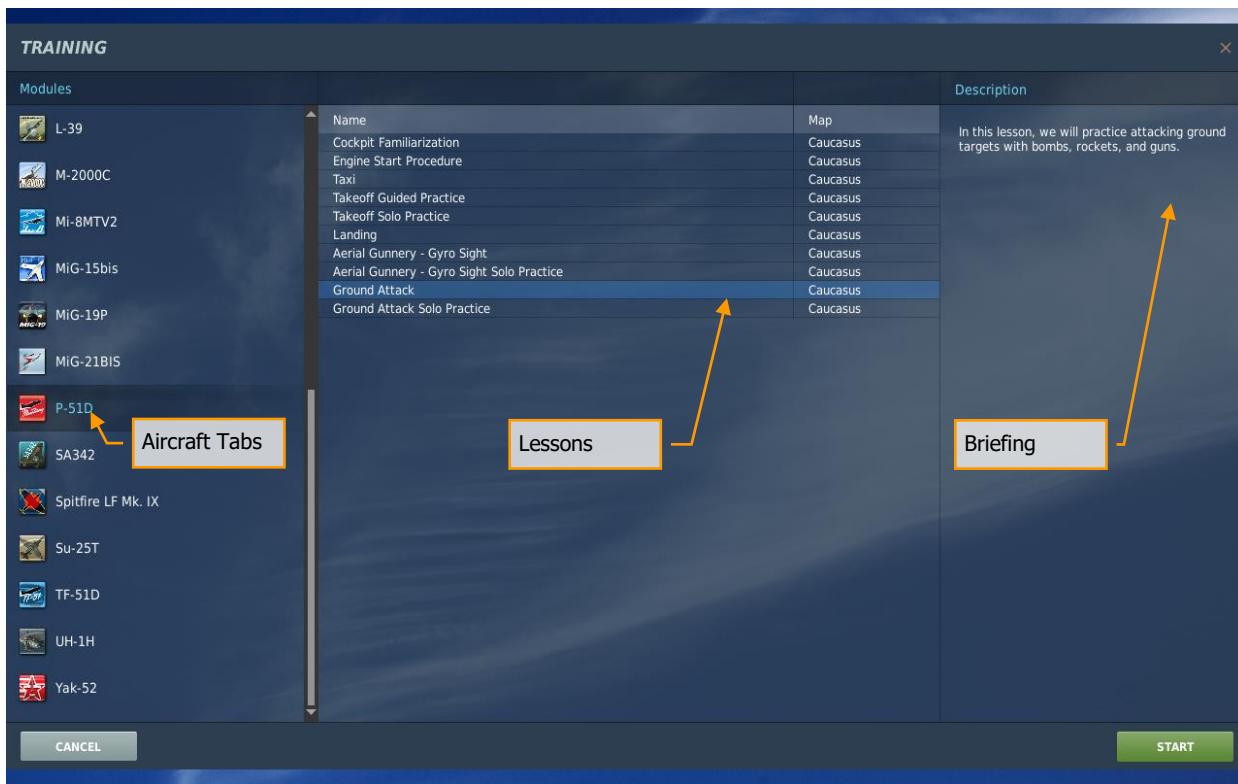
TRAINING

TRAINING

To best help you learn how to fly the aircraft, we have created a Training module consisting of a series of interactive training missions or pre-recorded training videos. To enter the Training menu, select the Training button from the Main Menu screen.



The Training menu is divided into the following three areas:



Aircraft Tabs. Select the aircraft you wish to train in.

Lessons. After selecting a Training Task category by left mouse clicking on it, a list of missions within that category are listed in this window. Each of these lessons is designed to teach a specific aspect of the selected Training Task.

Briefing. Once a Lesson has been selected by left mouse clicking on it, a text briefing is displayed that provides an overview of the Lesson you selected.

Along the very bottom of the screen are the CANCEL button which will return you to the Main Menu and the START button which begins the Lesson.

You can also exit the Training page by pressing the yellow X in the top right of the screen.

DCS World

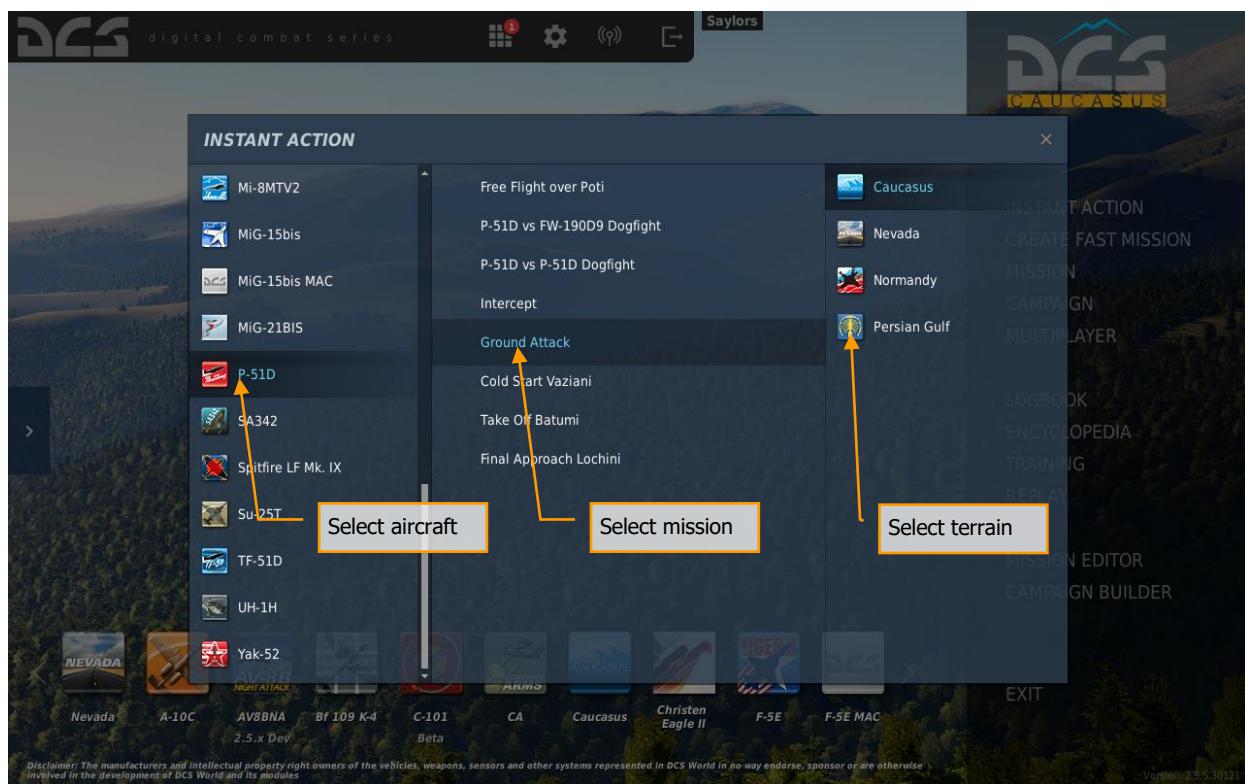


INSTANT ACTION

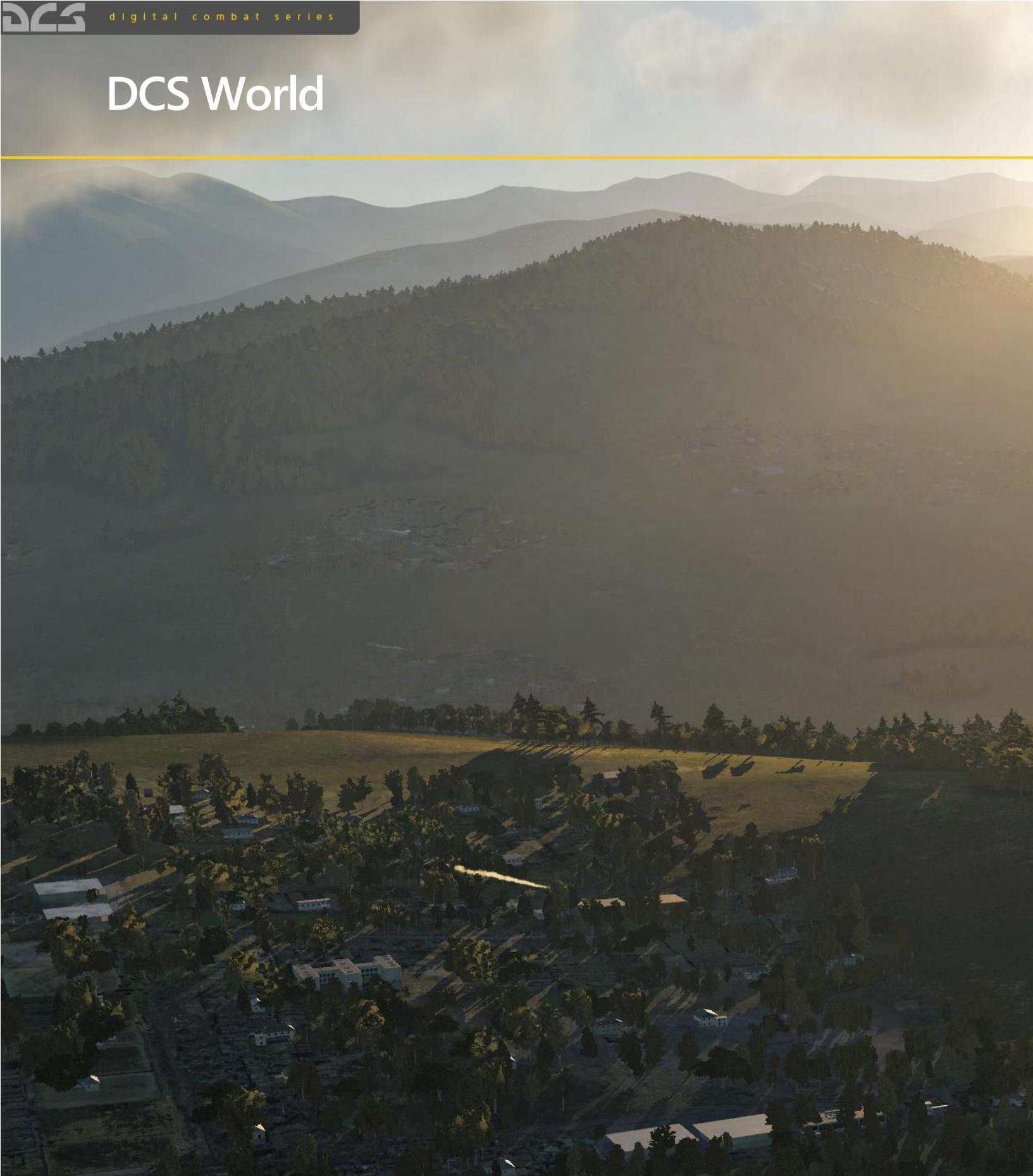
INSTANT ACTION

Pressing this caption opens a pop-up window where you can select aircraft and several missions for each aircraft. Left click on one of the aircraft tabs and then the desired mission to fly pre-generated mission. Instant Action is a handy way to quickly fly a mission.





DCS World



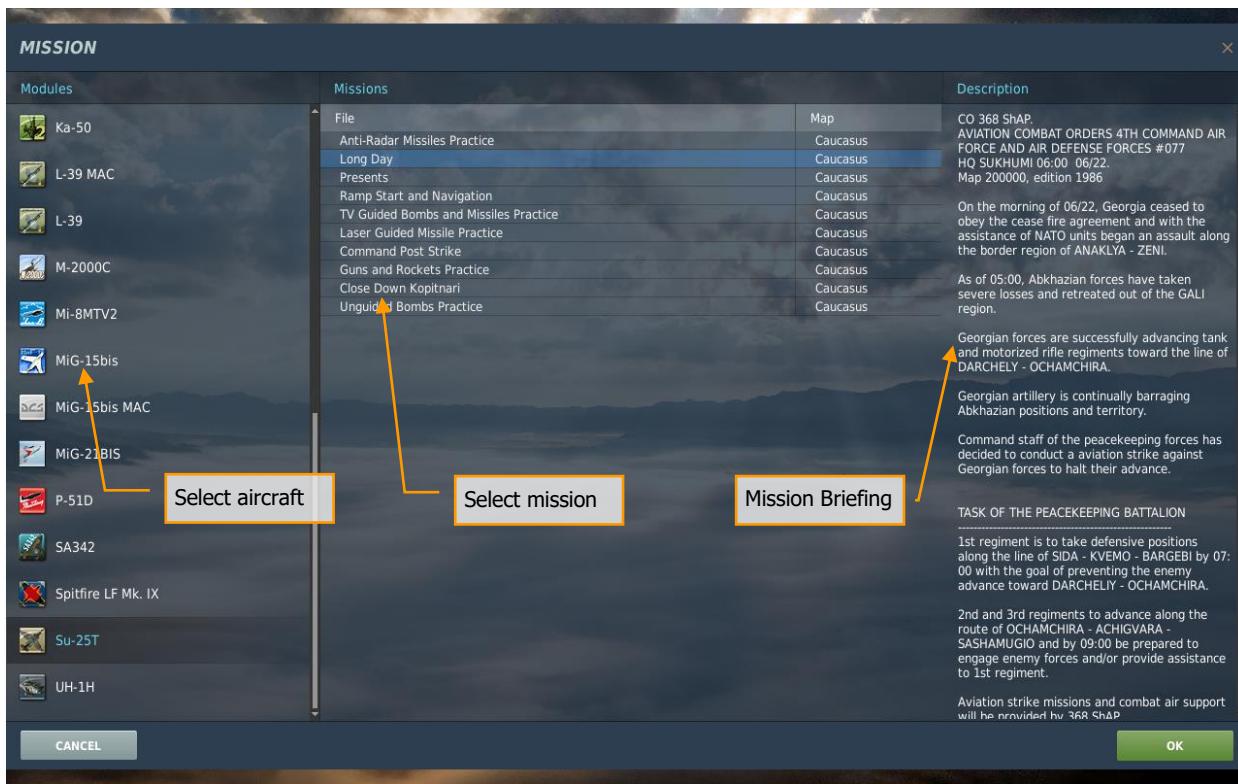
MISSION

MISSION

Using the Mission Editor, missions can be created and then opened to play from the Mission screen. To reach the Mission screen, click on the Mission button on the Main Menu page.



Selecting Mission will display the Select Mission page. This window allows you to browse your local disk(s) and select and load saved missions. Missions are stored in a "*.miz" format.



Select the desired module and mission with the left mouse button. When the mission is selected, any briefing written for the mission will be displayed in the right side Mission Description window.

You may also exit the window without loading a mission by pressing the CANCEL button at the bottom of the window or the X button in the top right corner.

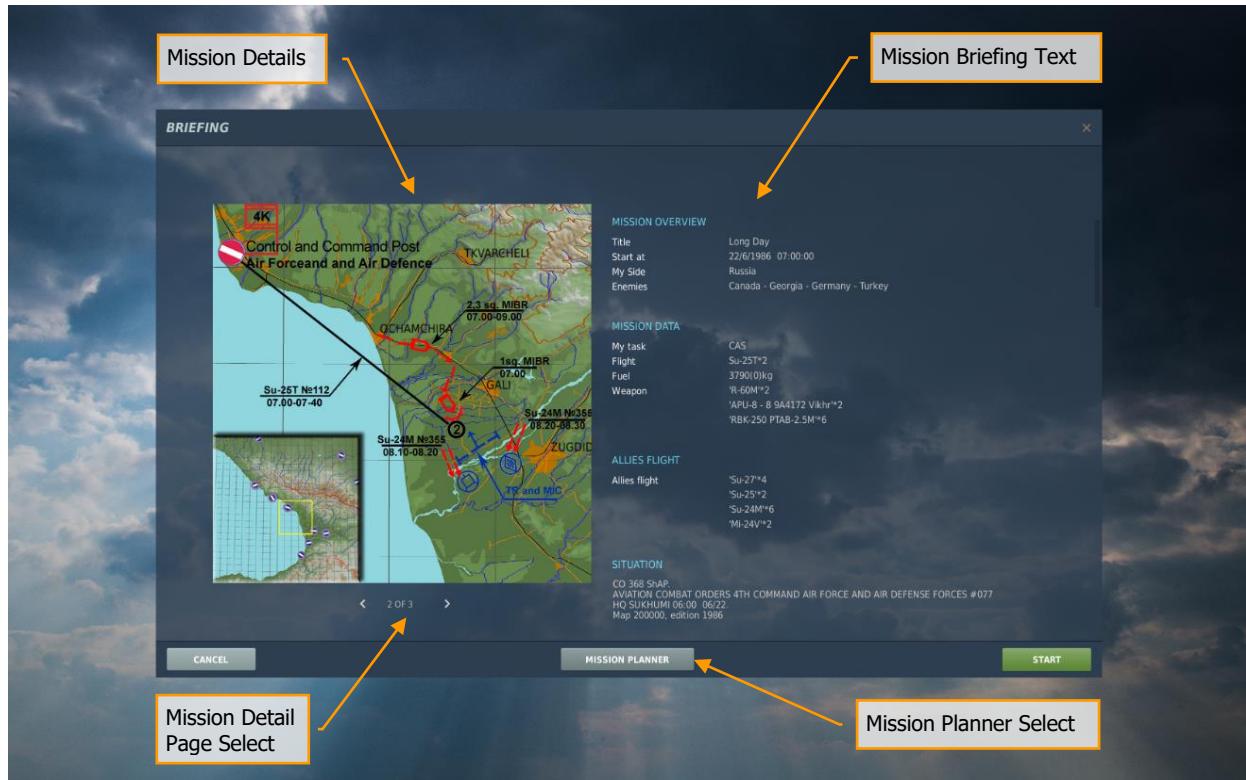
Briefing

Having pressed the OK button, you will be directed to the Mission Briefing screen. On this screen you are presented with one or more briefing images and the data and mission text briefing.

The Mission Briefing screen consists of the following elements:

- Mission Details.** Each mission can consist of one or more briefing images. These images are created by the mission designer and can consist of such content as mission maps, target area photo, target vehicle images, etc.
- Mission Detail Page Select.** Use the left and right arrow buttons to cycle between Mission Detail briefing images.

- **Mission Briefing Text.** The scrollable text block on the right side of the screen consists of automatically generated mission data such as sides, flight information, and mission start times. Additionally, a textual briefing can also be included in the Description portion.



At the bottom of the page are three additional buttons.

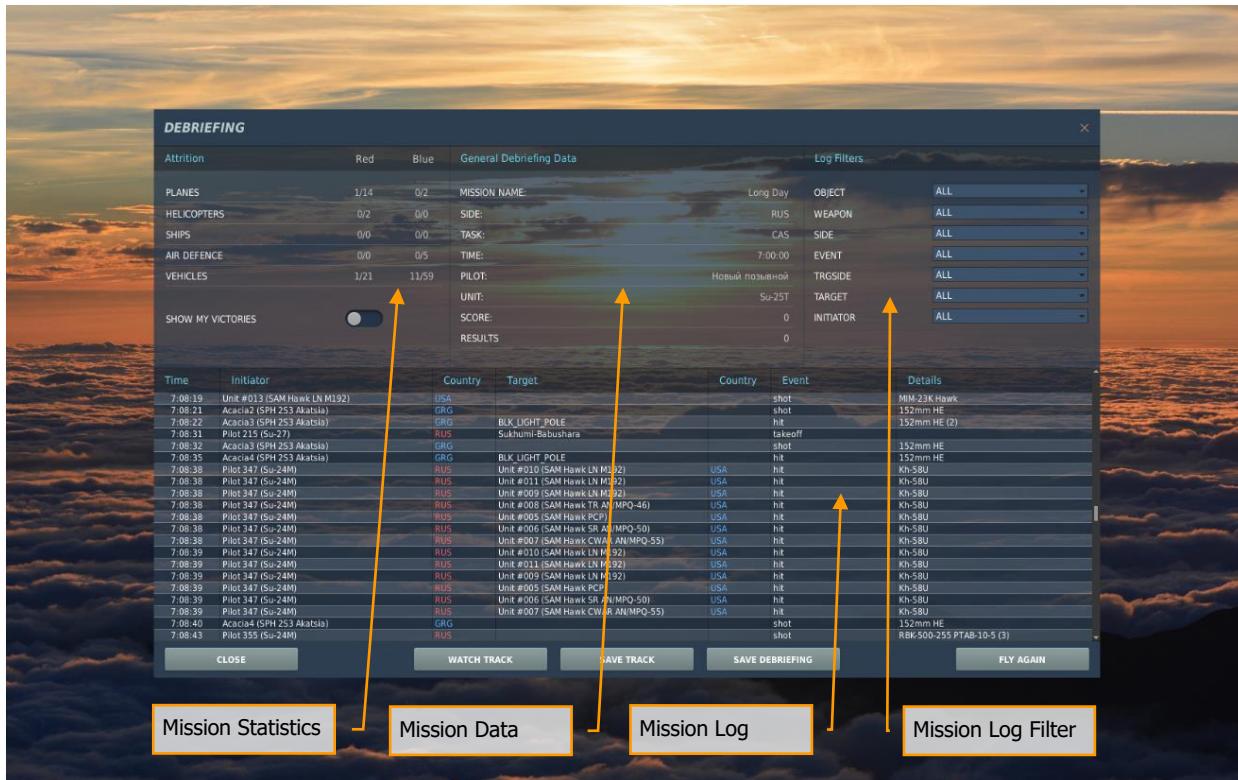
- **CANCEL.** Press the cancel button to return to the Mission page. You can also cancel the mission by pressing the yellow X in the top right corner of the page.

You should be careful when editing the mission in the planner or editor, because by changing an element, you can destroy the author's intention and make the mission incorrect or impassable. You should edit the mission only if you understand what you are doing.

- **MISSION PLANNER.** Pressing the Mission Planner button will open the selected mission in the Mission Planner and allow you to view it in detail, edit route and weapons of your flight.
- **START.** Press the START button to start the mission and enter the simulation.

View Debriefing

After you have flown a mission, the debriefing screen will automatically be shown.



The debriefing screen is divided into four primary areas: mission attrition, mission debriefing data, mission log filters and the chronological log file.

ATTRITION. The mission statistics portion of the screen displays the number of units damaged or destroyed during the mission by type and coalition. Unit indicated include: PLANES, HELICOPTERS, SHIPS, AIR DEFENSE, and VEHICLES. Displayed in X/Y format, where:

X - the number of units destroyed;

Y - total number of units in the mission.

- **SHOW MY VICTORIES.** You can select between displaying attrition caused by all units or only by yourself using the SHOW MY VICTORIES checkbox.

GENERAL DEBRIEFING DATA. This section displays mission data.

- **MISSION NAME.** Mission name as defined in the BRIEFING panel of the mission editor.
- **SIDE.** Red or Blue Coalition Party Player.

- **TASK.** A player's mission statement.
- **TIME.** Mission start time.
- **PILOT.** The pilot's name.
- **UNIT.** Managed by the AC player and units during the mission.
- **SCORE.** Scores earned.
- **RESULTS.** A condition for successful completion of a mission when the coalition reaches the specified number of scores.

LOG FILTERS. The log filter section in the top right portion of the screen allows you to filter what log events are displayed in the mission log list. Each of these has a drop down menu that allows you to define what data is displayed.

- **OBJECT.** List of objects.
- **WEAPON.** Lists all weapons that were used by initiator units in the mission.
- **SIDE.** All, Red, or Blue.
- **EVENT.** All, Dead, Hit, or Shot.
- **TRGSIDE (target side).** All, Red, or Blue.
- **TARGET.** Lists all units and objects that were targeted during the mission.
- **INITIATOR.** Lists all active units in the mission.

MISSION LOG. The large, lower section of the screen lists mission log events chronologically according to the mission log filter settings. The mission log consists of seven columns:

- **TIME.** When the event took place during the mission. Each event has a hour:minute:second time stamp.
- **INITIATOR.** The name of the unit that took the action of the event (i.e. fired a weapon, crashed, landed, etc.).
- **COUNTRY.** Country that the initiator was assigned to.
- **TARGET.** If the initiator was attacking a unit or object, the name of that target is listed here.
- **COUNTRY.** Country that the target was assigned to.
- **EVENT.** The type of event that took place. Types include: shot, hit, dead, etc.
- **DETAILS.** Name of the weapon type that the initiator used to attack the target.

The debriefing screen can be a handy tool to determine who did what, when it happened, and with what weapon. Most often you may use this to determine who attacked you in single and multiplayer missions.

Below the log filter section are five buttons: CLOSE, WATCH TRACK, SAVE TRACK, SAVE DEBRIEFING and FLY AGAIN.

CLOSE. Press this button to exit the debriefing screen and return to the Mission Editor.

WATCH TRACK. Press this button to watch a recording (track) of the mission you have just ended.

SAVE TRACK. By pressing this button, the file save screen is displayed, and in the FILE field you may enter a name for the track file that was automatically recorded during the mission. Note that all missions have a track file recorded. When you re-fly the same mission, the track file is overwritten unless you save it under a new name. The SAVE TRACK button allows you to do this. The game tracks have the extension "*.trk" and are stored in C:\Users\<User Name>\Saved Games\DCS\Tracks\ by default.

SAVE DEBRIEFING. When you press the SAVE DEBRIEFING button, the Save Debriefing File window is displayed, where you need to select the saving path and enter the file name. Game debriefing files have the extension "*.log" and are saved to the C:\Users\<User Name>\Saved Games\DCS\Logs by default.

FLY AGAIN. Press this button to re-fly the mission. Note, unless you save the current track and debriefing, they will be lost once you hit FLY AGAIN or exit the briefing.

DCS World



CREATE FAST MISSION

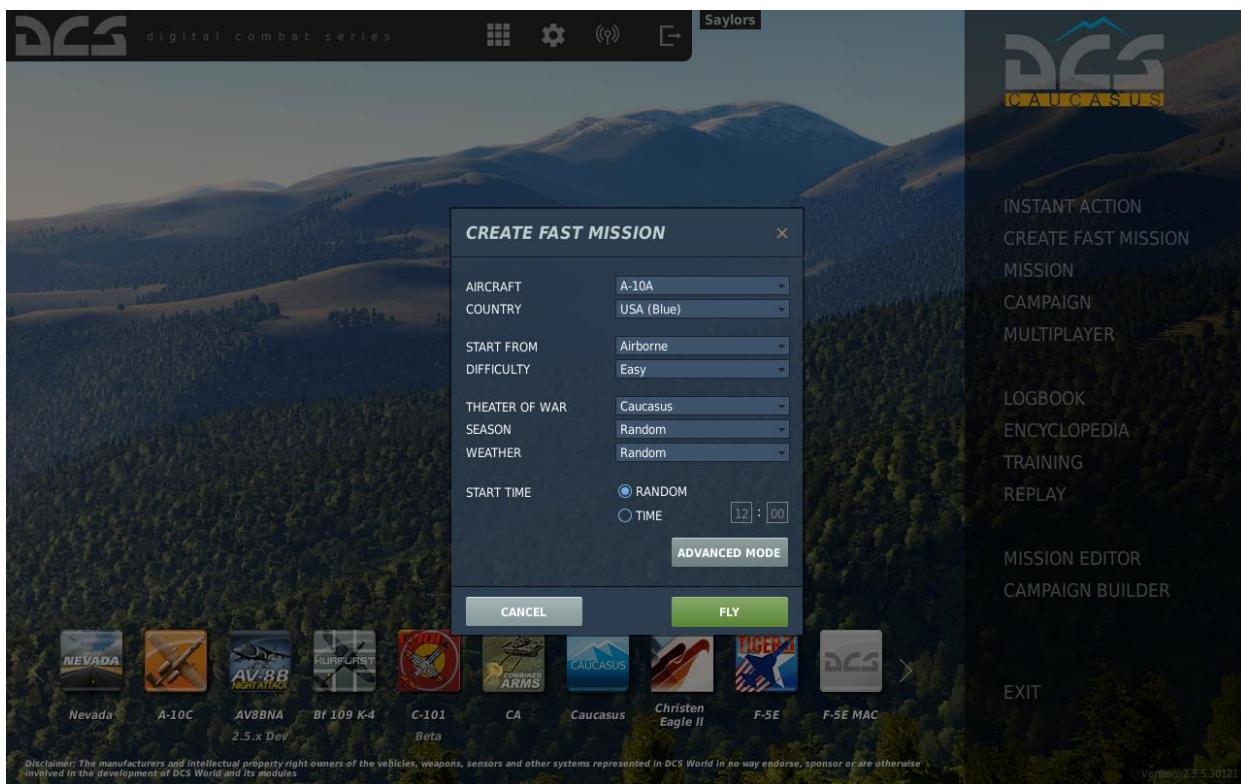
CREATE FAST MISSION

The Create Fast Mission menu allows you to quickly setup mission scenarios to fly. The Create Fast Mission menu is accessed by pressing the Create Fast Mission button on the main menu.



Create Fast Mission has two modes: Simple and Advanced. When first opened from the main menu, Simple mode is selected.

Simple Mode



The Create Fast Mission (Simple mode) panel has the following settings:

AIRCRAFT. Select desired flyable aircraft.

COUNTRY. Specifies the country the player will fly for.

START FROM. Specifies where the player will start from.

- **Airborne.** Player's aircraft will appear in the air.
- **From Runway.** Player's aircraft will be located on the runway closest to the combat area and ready for takeoff.
- **From Ramp.** Player's aircraft will be located in the aircraft parking area of the runway closest to the combat area and require a cold start.
- **Random.** Randomly selects one of the above 3 options.

DIFFICULTY. Specifies mission difficulty level.

- **Easy.** The mission will contain few enemy units with low skills.
- **Medium.** The mission will contain average number of enemy units with average skills.
- **Hard.** The mission will contain high number of enemy units with high skills.

THEATER OF WAR. Specifies the theater of operation.

- **Caucasus.** The mission will take place in Caucasus region (Russia, Georgia, Abkhazia, South Ossetia).

SEASON. Specifies the time of the year.

- **Summer.**
- **Winter.**
- **Fall.**
- **Spring.**
- **Random.** Specifies any one of the above seasons.

WEATHER. Specifies the weather in the mission.

START TIME. Mission start time.

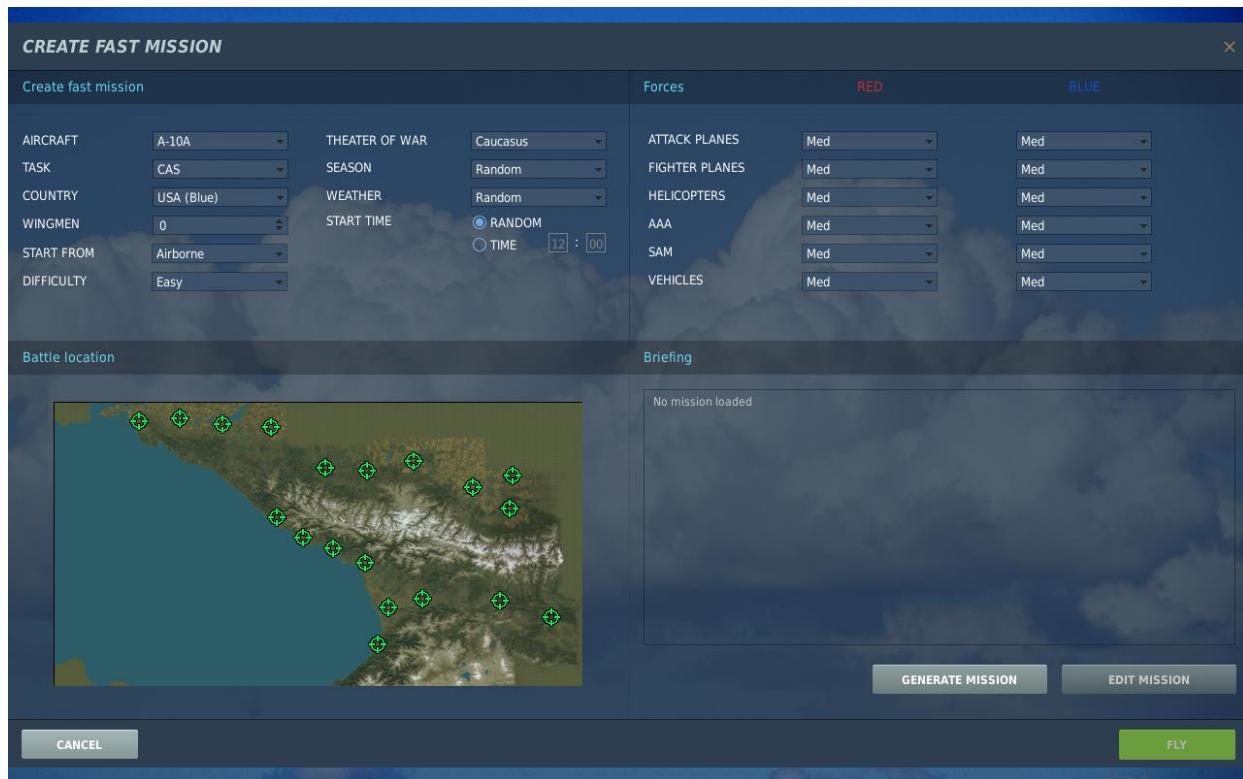
- Random.
- Time. Specifies the time in 24-hour format (HH:MM).

ADVANCED MODE. Switches to the Fast Create Mission (Advanced mode) menu.

FLY. Generates the mission and opens to the mission briefing window.

CANCEL. Exits to the main menu.

Advanced Mode



The Fast Create Mission (Advanced mode) menu consists of four main panels: OPTIONS, FORCES, BATTLE LOCATION and BRIEFING.

Options

This section allows you to set all the settings from the Simple Mode described above.

Forces

This section allows you to set force balance between Blue and Red coalitions.

It contains 6 force types and each can have one of 5 balance settings:

- **No.** The set force type will not be present in the mission.
- **Min.** Minimum level.
- **Med.** Medium level.
- **Max.** Maximum level.
- **Random.** Random selection among Min, Mid or Max.

The number of units in each category is set according to unit type:

- **ATTACK PLANES.** Sets the number of attack planes such as Su-25 or A-10.
- **FIGHTER PLANES.** Sets the number of fighter planes such as Su-27, Mig-29, F-15.
- **HELICOPTERS.** Sets the number of helicopters such as Ka-50, Mi-24, AH-64.
- **AAA.** Sets the number of Anti-Aircraft Artillery units such as ZU-23, ZSU-23, Vulcan.
- **SAM.** Sets the number of SAM units such as M6, Hawk, Stinger, Igla, Osa, Buk, Strela-1.
- **VEHICLES.** Sets number of vehicles such as tanks, BMP's, BTR's, trucks.

The tactical dynamics of combat between Red and Blue forces will depend on the settings in this section.

Battle Location

This panel allows you to choose the general location of combat. To specify the area simply click on it using the mouse.

Briefing

The Briefing windows will display the mission briefing once the mission is generated.

Two buttons are located under the briefing text area:

- **GENERATE MISSION.** Generates the mission.
- **EDIT MISSION.** Opens the full mission editor that allows you to fine-tune the generated mission.

Two buttons are located at the bottom of the screen:

- **CANCEL.** Exits to the main menu.
- **FLY.** Starts the mission.

DCS World



LOGBOOK

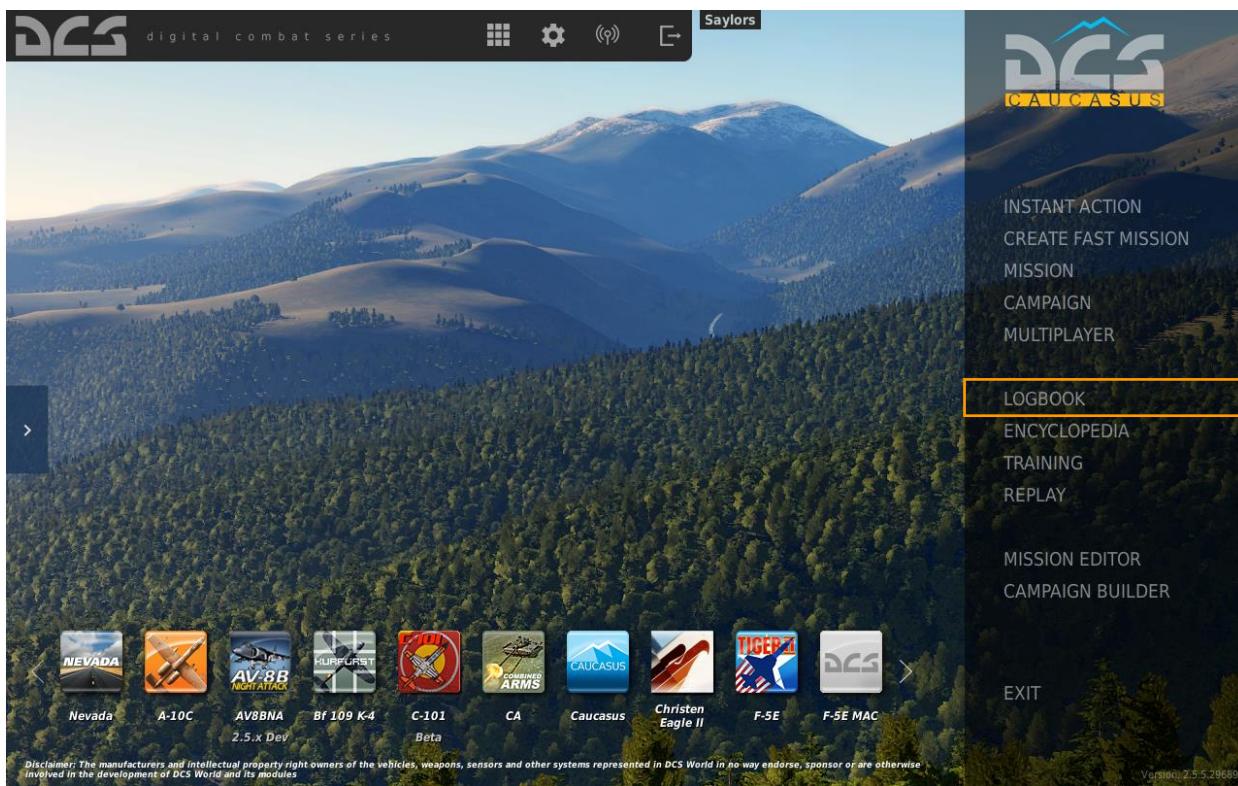
LOGBOOK

From the Logbook you may create as many pilot personas as you wish. By creating a pilot and using it in missions, the pilot will accumulate mission statistics and awards.

Note: For the pilot to log flight statistics and awards, it **MUST** be assigned as the Player aircraft in the mission!

Note: All created pilots must be assigned a country. When creating a player mission, the country of the player flight must match the country of the pilot you wish to use! Otherwise, mission statistics will not be recorded in the logbook.

To select the Logbook, left mouse click on the Logbook caption on the Main Menu.

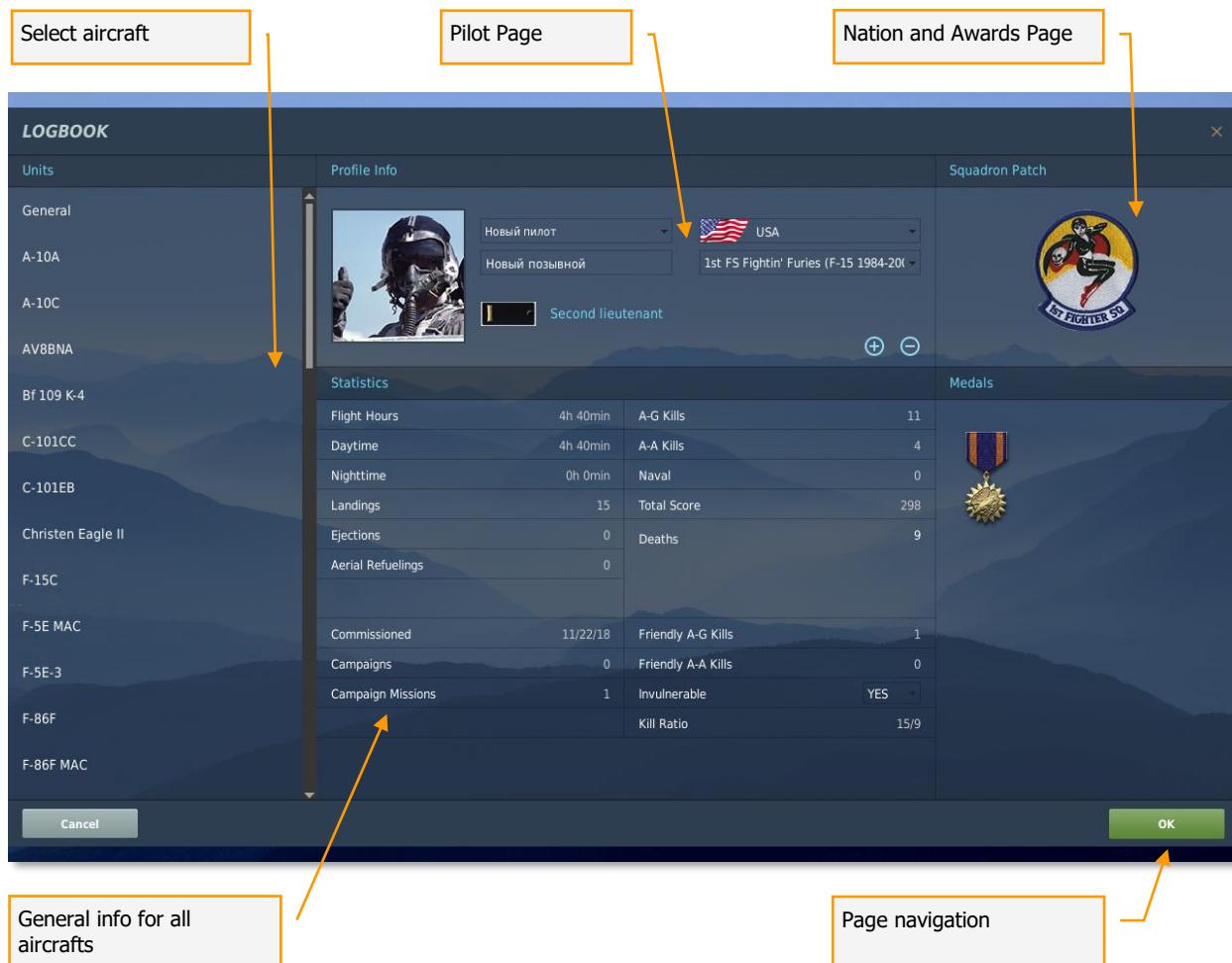


The Logbook is divided into three sections:

1. Units
2. Profile Info
3. Nation and Awards Page

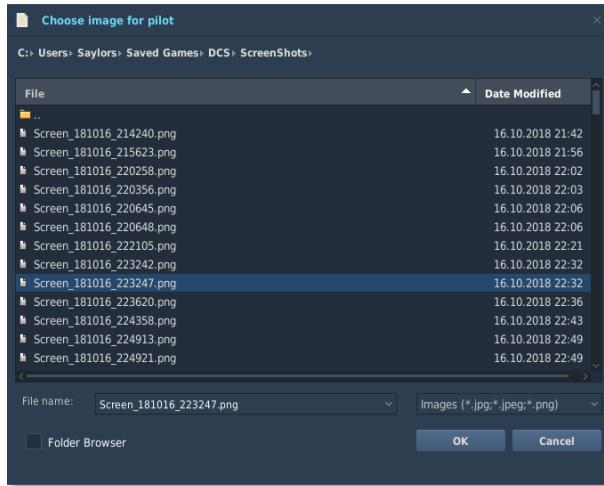
Pilot Page

The pilot's profile is located in the center of the window, where personal data and pilot's statistics are displayed on the General tab, as well as for each aircraft separately. At the top there are two round buttons: New (+) and Delete (-). To create a new pilot, press the New button (+). To remove an existing pilot from the logbook, select the pilot from the Name list and then press the Delete button (-).



Elements of the pilot page include:

- **Pilot Picture.** In the top left corner of the page is a 128x128 pixel space for a pilot photo. To select a new photo, left mouse click on the image and a browser window will appear. Select the desired photo (*.jpg; *.jpeg; *.png) and press the OK button.



- **NAME.** When creating a New pilot, enter the name of the pilot in this field. Using the drop-down menu, you can select other pilots previously created for the selected country on the right Country and Awards page.
- **CALLSIGN.** When creating a New pilot, enter the callsign of the pilot in this field.
- **RANK.** As your pilots gain experience, they will grow in rank. This is done automatically. Rank will be indicated by the name of the rank and the associated shoulder board. Experience is gained through flight hours and accomplishments in battle.

Pilot career statistics, broken down for each aircraft.

- **Flight Hours.** Total number of hours the pilot has been in the cockpit.
- **Daytime.** Total number of daylight flight hours.
- **Nighttime.** Total number of nighttime flight hours.
- **Landings.** Number of landings.
- **Ejections.** Number of times the pilot has ejected.
- **Aerial Refuelings.** Number of successful aerial refuelings.
- **A-G Kills.** Total number of air-to-ground unit kills by pilot.
- **A-A Kills.** Total number of air-to-air kills by pilot.
- **Naval.** Total number of naval unit kills by pilot.
- **Total Score.** Total score of pilot based on mission performance and flight hours.
- **Deaths.** If Invulnerable is set to YES, then each time the pilot would have been killed is kept track of in this field.

Below the basic pilot attributes are mission career statistics that are cumulated over the course of all missions and all aircrafts that the pilot flies. These are:

- **Commissioned.** The date that the pilot was created.
- **Campaigns.** The number of campaigns that the pilot has completed (either won or lost).
- **Campaign Missions.** Total number of missions in campaigns flown.
- **Friendly A-G Kills.** Total number of friendly ground units destroyed by pilot.
- **Friendly A-A Kills.** Total number of friendly air units destroyed by pilot.

The STATUS of the pilot.

- **Invulnerable.** This can either be set to YES or NO and determines if the pilot can be killed in action.
- **Kill Ratio.** This ratio compares the number of times the pilot has died compared to the number of victories (player deaths / enemy kills).

Nation, Squadron, and Awards Page

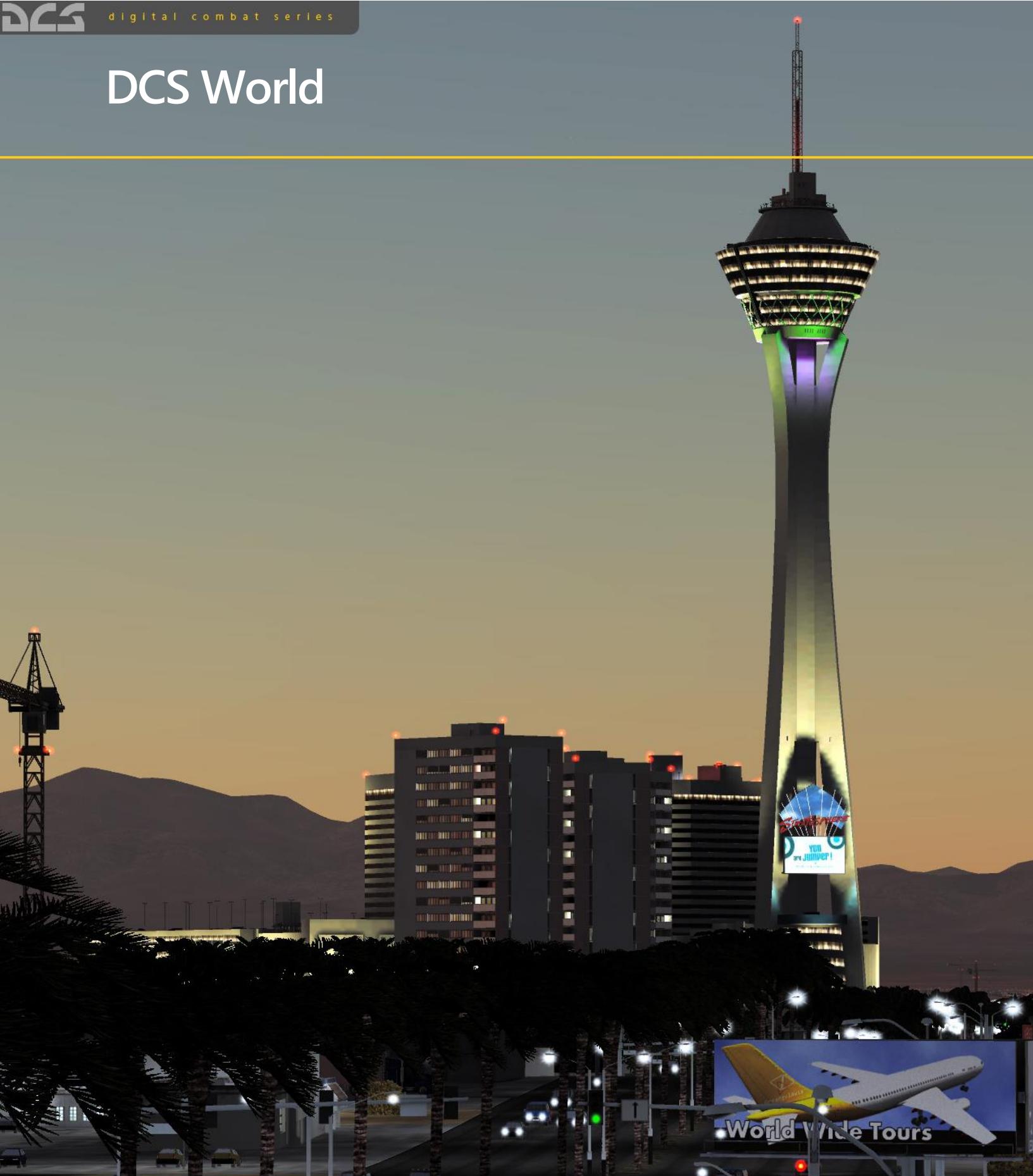
The right-side page indicates the nation, armed forces branch (squadron), and awards of the selected pilot.

- **Nation.** Use the drop-down list to assign the pilot to a country.
- **Squadron.** Use the drop-down list to select the armed forces branch or squadron to assign the pilot. These will be dependent upon the selected nation.
- **Awards.** In this large field will be displayed medals the pilot has earned.

Along the very bottom of the screen are the CANCEL button which will return you to the Main Menu without saving any changes to the Logbook, and the OK button which will return you to the Main Menu page but will save your changes.

You can also exit the Logbook by pressing the yellow X in the top right of the screen.

DCS World



REPLAY

REPLAY

Every time you play a mission, a replay file of the mission is automatically recorded as a .TRK (track) file. When viewing your mission debriefing, you can choose to save the Replay under a different name than the default. However, if you do not and play the same mission again, the original Replay will be overwritten.

To select a Replay file, select Replay from the Main Menu page. Note that you cannot view Replays from the Open mission page or the Mission Editor.

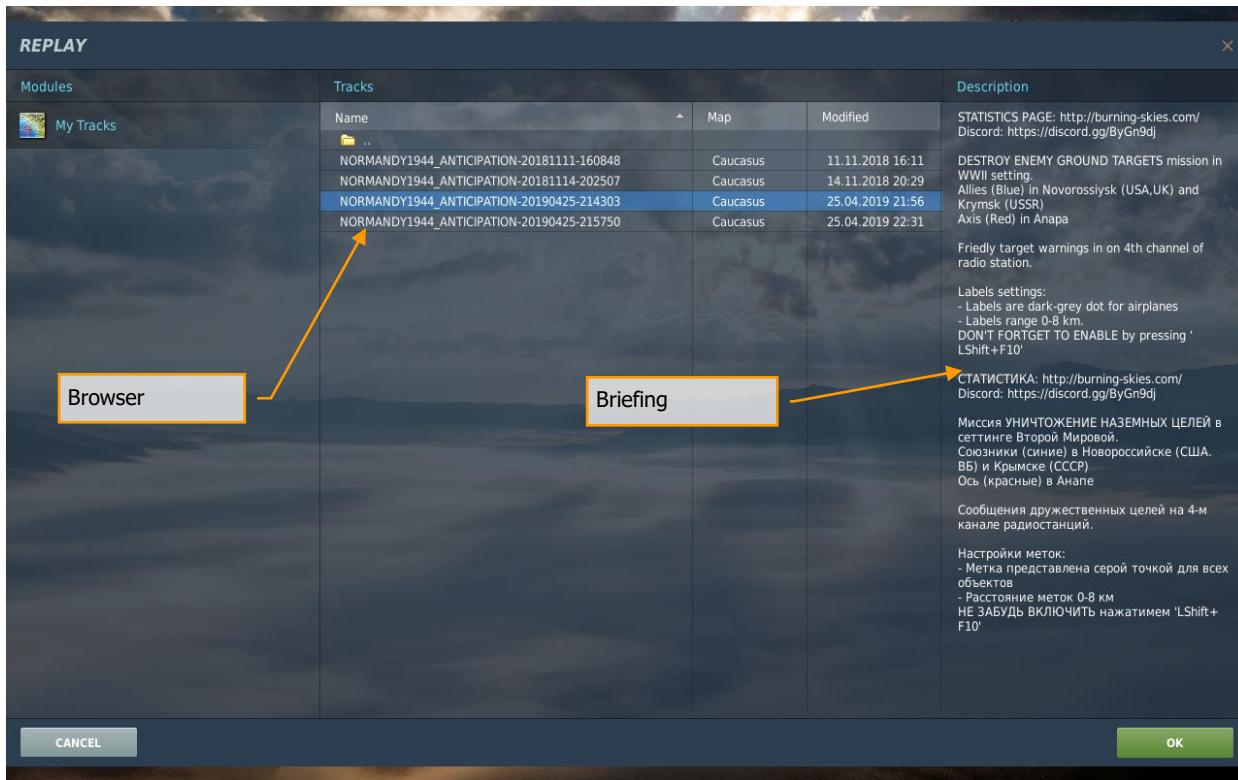


Upon opening the Replay page, you are presented with a page that is very similar to the Open mission page. This page allows you to browse your local disk(s) and select and load saved Replay files (the track file has an extension *.trk).

To do this, select the required drive letter in the upper drop-down list, then go to the folder with tracks. Folders are opened by double-clicking on them, and you can go up to the level by double-clicking on the top line "...". By default, the C:\Users\<User Name>\Saved Games\DCS\Tracks folder opens.

In the right part of the window there is the MISSION DESCRIPTION field, which gives a brief description of the mission on the basis of which the track was made.

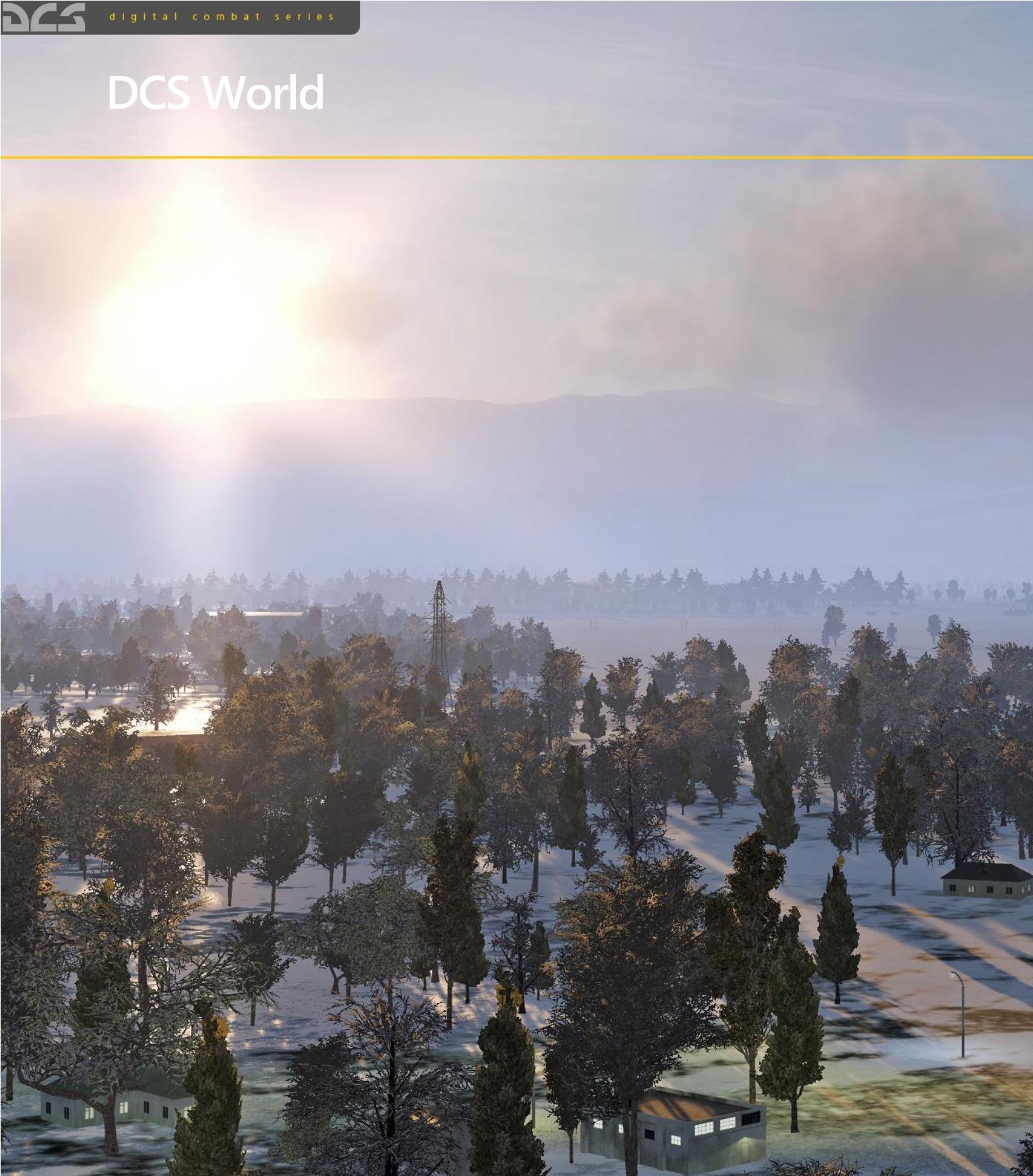
In the lower part of the window there are two buttons: OK to play the selected track and CANCEL to access the main window.



You may also exit the window without loading a mission by pressing the X button in the top right corner.

When saving tracks from the Debriefing menu after flying a mission, the file is saved to the default directory: C:\Users\<User Name>\Saved Games\Tracks.

DCS World



MISSION EDITOR

MISSION EDITOR

The Mission Editor (ME) of allows you to create stand-alone missions, campaign missions, training missions, and multiplayer missions. The ME consists of the following primary elements:

1. Interactive mapping system
2. Unit placement tools
3. Weather editor
4. File management system
5. Goal creation tool
6. Trigger system tool
7. Additional specialized panels

The mission editor is launched by pressing the MISSION EDITOR button in the main window.

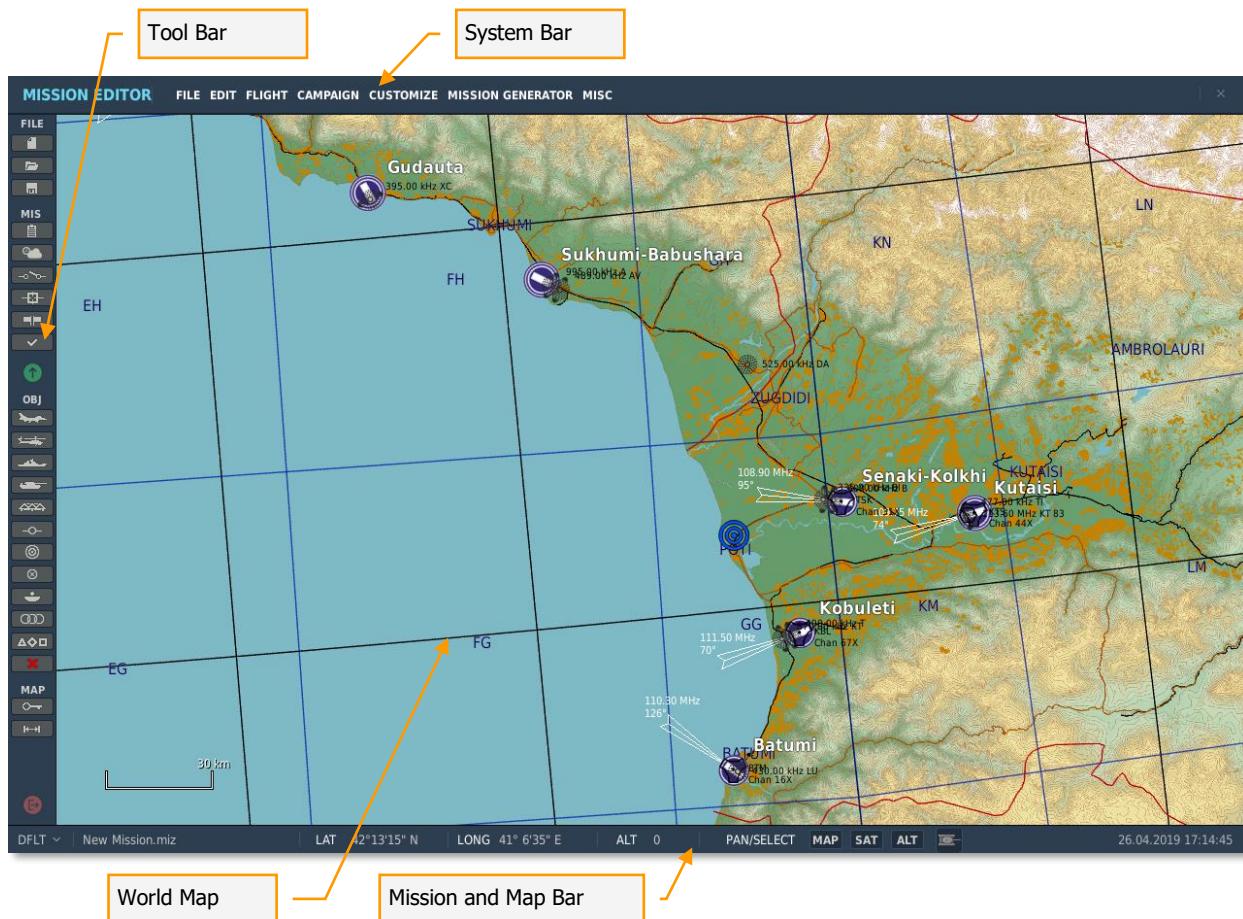


The Mission Editor Map and Navigation

The ME is divided into four primary areas:

- **World Map.** This area of the screen forms the majority of the screen and displays the topographic map, units, routes, and other mission elements.
- **Mission and Map Bar.** Along the bottom of the screen is the Mission and Map Bar and this provides you information on cursor location on the World Map as well as mission name and current time.
- **System Bar.** Along the top of the screen is the System Bar, and from here you control file management, access the campaign editor, the encyclopedia, credits, enable track recording, and duplicate several functions from the Tool Bar.
- **Tool Bar.** The Tool Bar, along the left side of the screen, provides you a large assortment of tools that allow you to create a mission and modify what is displayed on the World Map.

Each of these areas will be discussed in more detail below.



The World Map

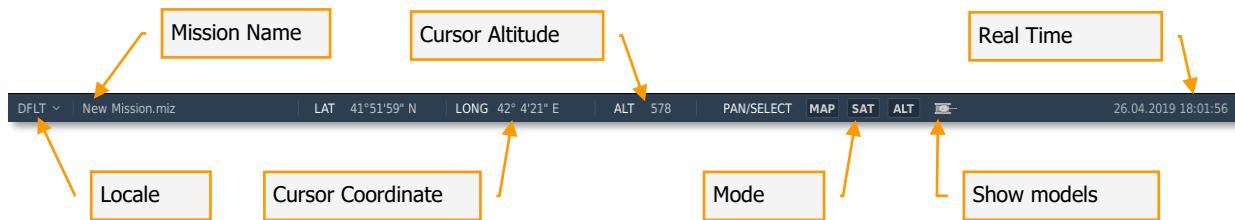
The World Map consists of the Black Sea region with detailed terrain along the eastern edge. While other areas of the map are represented, they are not as fully detailed as the eastern areas. Using the Options menu (described later), you may filter the data that is displayed on the map such as urban areas, rivers, roads, etc.

Navigating the Map

A right mouse button hold while moving the mouse will pan the view and rotating the mouse wheel controls the zoom level. Selecting an object or unit is done by clicking with the left mouse button. To zoom in on a specific location on the map, place the cursor over the desired location and rotate the mouse wheel forward.

The Mission and Map Bar

Located along the bottom of the screen is the Mission and Map Bar. This is an informative bar that tells you the name of the loaded mission, cursor position and altitude within the World Map, map mode, and the current time according to your Windows settings (not mission time).



Note that the coordinates and altitude are controlled according to the position of your mouse on the World Map. These numbers will change dynamically as you move your mouse and correspond to the real-life coordinates and altitude of the topography. This can be a useful tool when trying to determine the coordinates of an objective for a mission briefing. Cursor displayed altitude may be set to either feet or meters, depending on your Options/Gameplay/Units setting. The coordinate display can be toggled between Lat/Long, Lat/Long Decimal and MGRS, depending on your Options/Misc/Coordinate Display setting.

Note that "New Mission" will appear in the Mission Name field until you save a newly created mission.

The System Bar

Located along the top of the screen is the System Bar. The System Bar consists of several pull down menus. These are: FILE, EDIT, FLIGHT, CAMPAIGN, CUSTOMIZE, MISSION GENERATOR and MISC. To select one of these pull down menus, place your mouse over the text and left mouse click.

The System Bar pull down menus provide the following functions:

FILE

The File functions provide you basic file management of missions. These include:

1. NEW.

Selecting New will allow you to exit the current mission loaded and start a new one from scratch. Before proceeding though, a consent message box is provided to you so that you do not accidentally lose a mission you are working on. After creating a new mission, you will be displayed the THEATER OF WAR and COALITIONS window.



This window allows you to define a map and what countries (factions) will be assigned to one of the two sides. Unassigned countries will not take part in the mission. In the left side window all unassigned factions are listed; in the top right window the RED side factions are listed; and in the lower right window all BLUE side factions are listed. To move a faction, left click on the desired faction and then press either the left or right

arrow button to move it between the unassigned window and a side window or press the up and down arrows to move the faction to the other side directly.

At the bottom of the window are three buttons. The CLEAN COALITIONS button allows you to reset the current faction distribution to the default list. The SAVE button allows you to save the current faction distribution and will be set as the default. The OK button will use the current distribution for the mission but will not save it as the default.

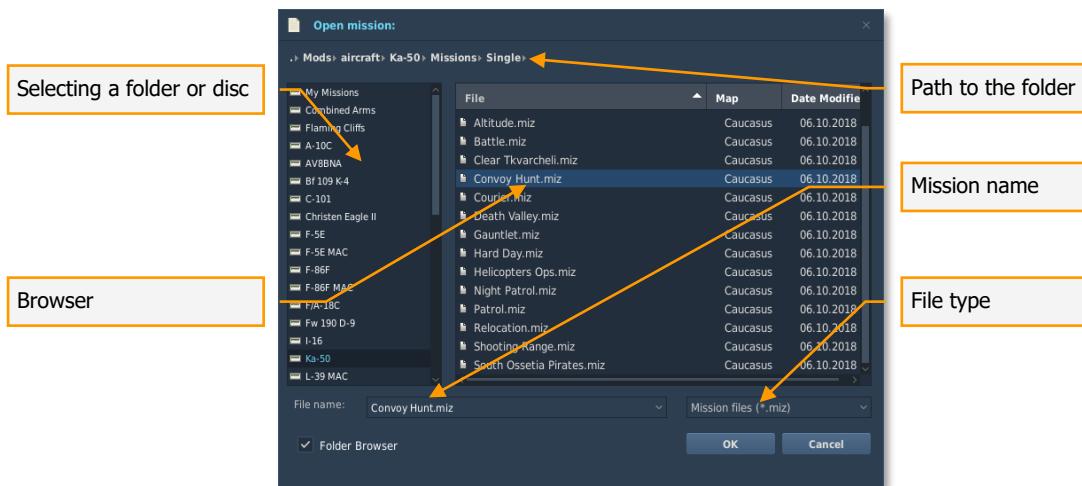
In the COALITION PRESETS field, you can select presets that can be changed at will:

- **Custom** – add countries by coalitions manually.
- **Modern** – based on modern realities.
- **WWII** – based on the layout of forces for the period of WWII.

Note: When creating missions, it is up to you to decide who will be allied with whom. You are free to create realistic alliances or make very fanciful ones. We leave it to you to decide.

2. OPEN.

Selecting Open will display the Open Mission window. This window allows you to browse your dedicated mod folders or local disk(s) and select and load saved missions.



Using standard Windows file browser functionality, you may select the DRIVE you wish to search using the DRIVE field in the top right of the window and then select the desired mission from the folder/file listing. Once you select a mission file, the path to that file is displayed in the PATH field and the name of the mission file is displayed in the FILE field. Note that mission files are assigned a *.miz extension.

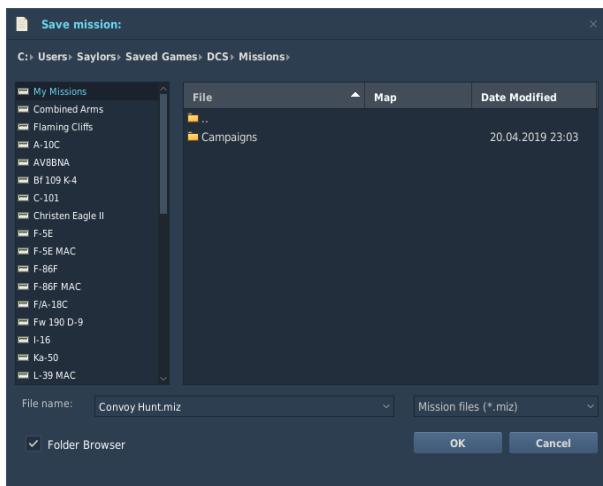
Once you have selected the desired mission file, press the OK button at the bottom of the window to load it. You may also exit the window without loading a mission or track file by pressing the CANCEL button at the bottom of the window or the X button in the top right corner.

3. **SAVE.**

The SAVE button saves the mission file in the current directory while keeping the current filename. This will not allow you to change the filename or its directory.

4. **SAVE AS.**

The Save As function operates much like the Open Mission window but it allows you save a mission file (*.miz or *.trk) and give it a unique name. The primary difference is that you may overwrite the name in the FILE NAME field as you wish and save the file under that name. To do so, erase the current name and type in the name you wish. You may then use the browser functions to determine where you wish to save the file. Once complete, you must press the OK button to complete the save.



5. **EXIT.** Pressing Exit will close the ME and return you to the Main Menu.

EDIT

The EDIT pull down provides you a second means of accessing the most important mission construction tools: ADD AIRPLANE, ADD HELICOPTER, ADD SHIP, ADD VEHICLE, ADD STATIC, ADD TEMPLATE, REMOVE, LOAD STATIC TEMPLATE and SAVE STATIC TEMPLATE. These tools are duplicated on the Tool Bar and we will discuss them there in detail.

FLIGHT

The Flight menu allows you start a loaded mission to play or start the mission to setup the player's aircraft avionics in PREPARE MISSION mode. This menu also allows you to convert a recorded (track) mission into an AVI video file and access the REPLAY menu for track playback.

- 1. FLY MISSION.** Selecting this option will close the ME, load the mission into the simulation, and then start the simulation. The loading time of a mission will vary according to the number of units in the mission, the amount of scripting, and how much RAM your computer has.

2. **PREPARE MISSION.** The PREPARE MISSION mode is used for integrating navigation and environment data into the saved mission file. When near the end of creating a mission, you can start the mission in the PREPARE MISSION mode (it will look much like usual FLY MISSION start) and configure various avionics in the cockpit. Your avionics settings can then be saved and will start in the saved states whenever other players open the mission.

The following avionics settings can be saved using the PREPARE MISSION function:

Ka-50

- Satellites – Mission name\Scripts\World\GPS_GNSS.lua,
- Additional ABRIS data – Mission name\ABRIS\Database\ ADDITIONAL.lua,
- Navigation database – Mission name\ABRIS\Database\NAVIGATION.lua,
- ABRIS routes – Mission name\ABRIS\Database\ROUTES.lua.

To save custom settings for the Satellites, edit the GPS_GNSS.lua file prior to running the Mission Prepare function. The GPS_GNSS.lua file can be found in \Scripts\World\GPS_GNSS.lua.

A-10C

- CDU. All setting except a mission editor flight plan that can't be changed.
- IFFCC. The block of test menu.
- MFCD. Lower OSB buttons functionality.
- SADL. Network user ID, callname etc. (NET page)
- TAD. Profiles.
- TGP. Laser codes, integration, calibration method, gain settings, TAAF altitude.
- DSMS. Mission Control Page settings. Weapon profiles.

Once your avionics are setup as desired for the mission, exit the mission and press the SAVE button in the ME once again to save all of the prepared data in the mission file.

NOTE for mission makers:

If you use prepare mission mode, please indicate in the briefing that the player should not use the mission planner. If he'll change the route or weapons for the mission, the avionics scripts saved in the mission file using prepare mission will conflict with the new settings.

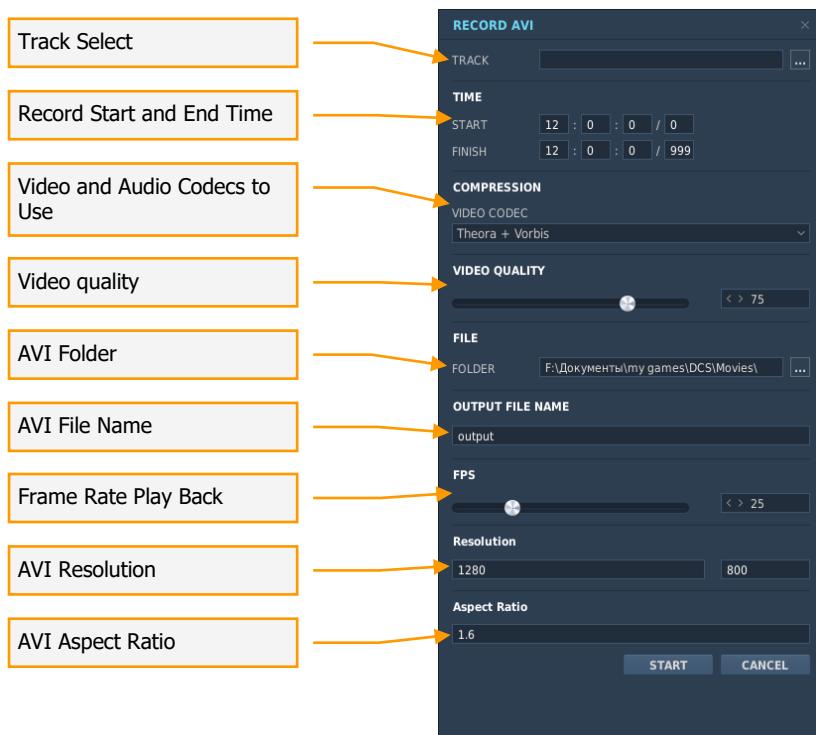
If you want to give the player the freedom of action to the use the mission planner, do not use mission prepare mode.

3. **RECORD AVI.**

This option allows you to convert a Track file (which can only be viewed in the game) to an AVI video file that can be viewed by anyone using video playback software.

Once a Track file has been created, you may load the file into this tool and then set the video quality of the AVI video output. A few notes:

- Because the AVI tools render the Track file frame by frame and NOT in real-time, you can create an AVI with higher or lower frame rates than when the track was originally recorded.
- The higher the video quality and longer the recording, the longer it will take to render the AVI. Setting the FPS slider too high will also lengthen the time it takes. Please note that rendering long, high-quality AVIs can be a very time consuming process.
- Once the AVI is created, you may then play it back outside of the game or convert and compress it with other codecs.
- Track selection. Pressing the button labelled "..." brings up the track selection panel. Select the desired track and click OK.
- Using the START and FINISH fields, you can create an AVI out of just one part of a larger Track file.



- Video and Audio Codecs to Use. From the dropdown menu that appears, select a preset for the video and audio codecs to be used in rendering, as well as the quality (in percentage values).
- AVI Folder. Set the file save path.

- AVI File Name. Sets the file name.
- FPS. Use this slider select the desired number of frames per second for rendering video.
- Resolution. Use these two fields to set the horizontal and vertical resolution of the output video. The size of the video file is highly dependent on these parameters.
- Aspect Ratio. The aspect ratio of the output video is automatically calculated in this field.

To begin rendering click START. To stop rendering click CANCEL.

4. **REPLAY**. This command brings up the window of viewing previously recorded tracks.

CAMPAIGN BUILDER

The Campaign Builder is what we term a Staged Campaign System (SCS). We will describe the functionality of the Campaign Builder in detail in the Campaign Builder chapter.

CUSTOMIZE

The Customize menu allows you to configure a number of map display options and set gameplay options for the mission.

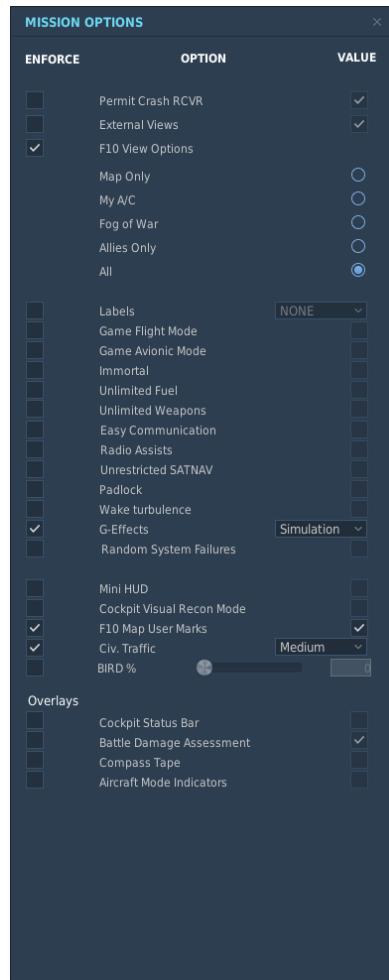
1. MISSION OPTIONS.

The Mission Options menu can be used to lock certain gameplay options for the particular mission loaded. When the "USE THESE OPTIONS FOR ALL MISSIONS" check-box is unchecked in the Options\Gameplay menu, the locked mission options will override the settings in the main Options. However, when the "USE THESE OPTIONS FOR ALL MISSIONS" check-box is checked, the settings in the main Options screen will take priority.

Along the left side of the window are the ENFORCE buttons. Checking an ENFORCE button will force the settings of this option on the player of the mission.

Along the right side of the window are the VALUE buttons. VALUE buttons operate as on/off variables. When checked, the options will be forced ON. When unchecked, the option will be forced OFF.

From the left side of the Mission Options window, you may select the following mission options to enforce:



- **Permit Crash RCVR.** If your aircraft is destroyed during a mission or you eject, you may respawn in an undamaged aircraft.
- **External Views.** When Enabled, external views are allowed.
- **F10 View Options.** When enabled, you may select one of the mutually exclusive radio buttons:
 - **Map Only.** Map only view. No aircraft, vehicles or ships are displayed.
 - **My A/C.** Only your aircraft.
 - **Fog of War.** Fog of War hides all enemy activity in uncharted sections of the map.
 - **Allies Only.** Only your aircraft and allied units.
 - **All.** All units from both sides are displayed.
- **Labels.** When enabled, you can display easy-to-spot labels about friendly and enemy units. Close units will display the unit type name and the range from you.

Units at medium range will only show the range to unit. Units at long range will only be marked with a tic-mark.

- **Game Flight Mode.** Easy flight makes the aircraft much easier to fly when enabled and more analogous to an arcade game.
- **Game Avionic Mode.** Game Avionics Mode helps with flight orientation by displaying 3D markers in space.
- **Immortal.** When enabled your aircraft cannot be destroyed or even damaged.
- **Unlimited Fuel.** When enabled, fuel will not deplete from your aircraft. Note that you will always have 100% fuel when this is selected.
- **Unlimited Weapons.** When enabled, expended weapons will automatically be replenished.
- **Easy Communication.** Enables the simplified communication system for player aircraft.
- **Radio Assists.** When enabled, you are provided voice cues regarding approaching threats, when you fall within valid weapon launch parameters, and launch warnings.
- **Unrestricted SATNAV.** Satellite navigation available for all capable aircraft, regardless of country and date/time.
- **Padlock.** When enabled, you press the padlock enable key to keep your eyes on the vehicle or ground point in the center of your view.
- **Tool Tips.** When enabled and when you hover your mouse over a control in the cockpit (button, switch, dial, or lever), you will be shown a brief tool tip of the function of the control.
- **Wake turbulence.** Enables calculations of disturbance in the atmosphere that forms behind an aircraft as it passes through the air. Gives new feelings when air-refueling, flying in formations or sitting on a bandit's six.
- **G-Effect.** When enabled, you may select the level of G-effect. Possible settings include: NONE, GAME, and SIMULATION.
- **Random System Failures.** Enables random system failures for the player unit/aircraft.

- **Mini HUD.** If flying Flaming Cliffs 3 aircraft, this options allows you to enable/disable the Mini HUD that provides basic HUD symbols to always be displayed regardless of where the view is directed.
- **Cockpit Visual Recon Mode.** Enables a possibility to mark any ground object on terrain and reveal it's location on the maps of allies. Use RMB display a cross and LMB select object.
- **F10 Map User Marks.** Gives opportunity to place and edit names of user marks in mission editor map.

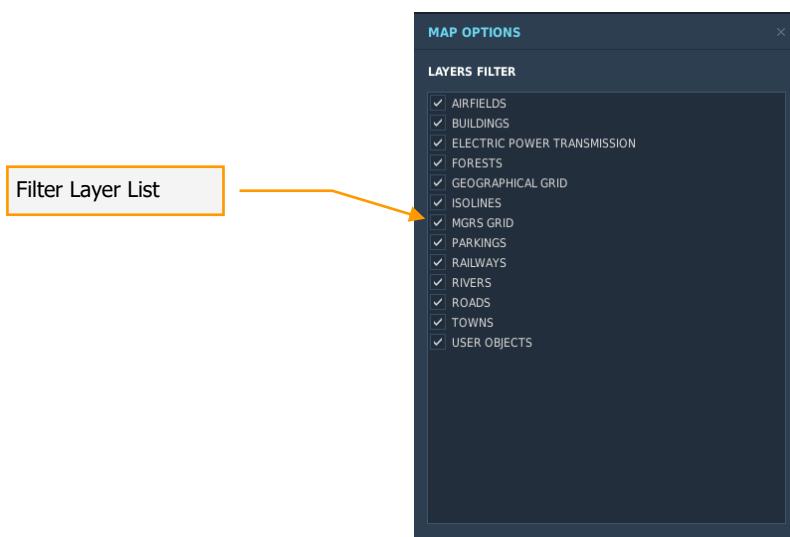
- **Civ Traffic.** When enabled, the world can be populated by moving cars, trucks and trains throughout the detailed world area. If enabled, possible settings include OFF, LOW, MEDIUM, and HIGH.
- **BIRD %.** This adjust the probability of a bird strikes when flying at altitude below 200 meters. 100% is the realistic bird strike probability setting. 0% - no birds. 1000% - the bird strike probability multiplier 10 times.

Overlays

- **Cockpit Status Bar.** Enables/disables a status bar that displays the current flight parameters and coordinates.
- **Battle Damage Assessment.** Shows/hides the damage done to an enemy unit in percentage values when a player scores a hit. Information about damage dealt and target destruction is displayed along the left border of the screen in real time. Destroyed targets are reported in red, while damaged targets are reported in yellow along with a percentage value of damage dealt.
- **Compass Tape.** Displays/hides a compass tape at the top of the screen.
- **Aircraft Mode Indicators.** Enables/Disables an overlay on the left side of the screen that displays information on the aircraft's systems - flightpath, combat modes, selected weaponry, and countermeasure systems (flare/chaff).

2. MAP OPTIONS.

The Map Options selection from Customization allows you to filter the information that is displayed on the World Map as layers.



The majority of this window consists of the map filter window. Each item on the list has a check box, that when checked, displays the map data on the ME World Map. Filter items include:

- **AIRFIELDS.** Airport icons that orient in the correct runway direction.
- **BUILDINGS.** Individual buildings that are visible at low scales. This is OFF by default.
- **ELECTRIC POWER TRANSMISSION.** High tension power line towers and cables.
- **FORESTS.** Large stands of trees. Note the trees in and around urban areas are not indicated.
- **GEOGRAPHICAL GRID.** Latitude and longitude lines.
- **ISOLINES.** Continuous lines around terrain relief to indicate elevation change.
- **MGRS GRID.** Display MGRS coordinate grid over the map.
- **PARKINGS.** Aircraft parking at airfields.
- **RAILWAYS.** Display the railway system.
- **RIVERS.** Small rivers and streams.
- **ROADS.** Small and major road network.
- **TOWNS.** Urban areas are indicated as orange shaded areas and when at small map scales, individual buildings are indicated.
- **USER OBJECTS.** Any objects placed on the map by the user.

Airport Icons

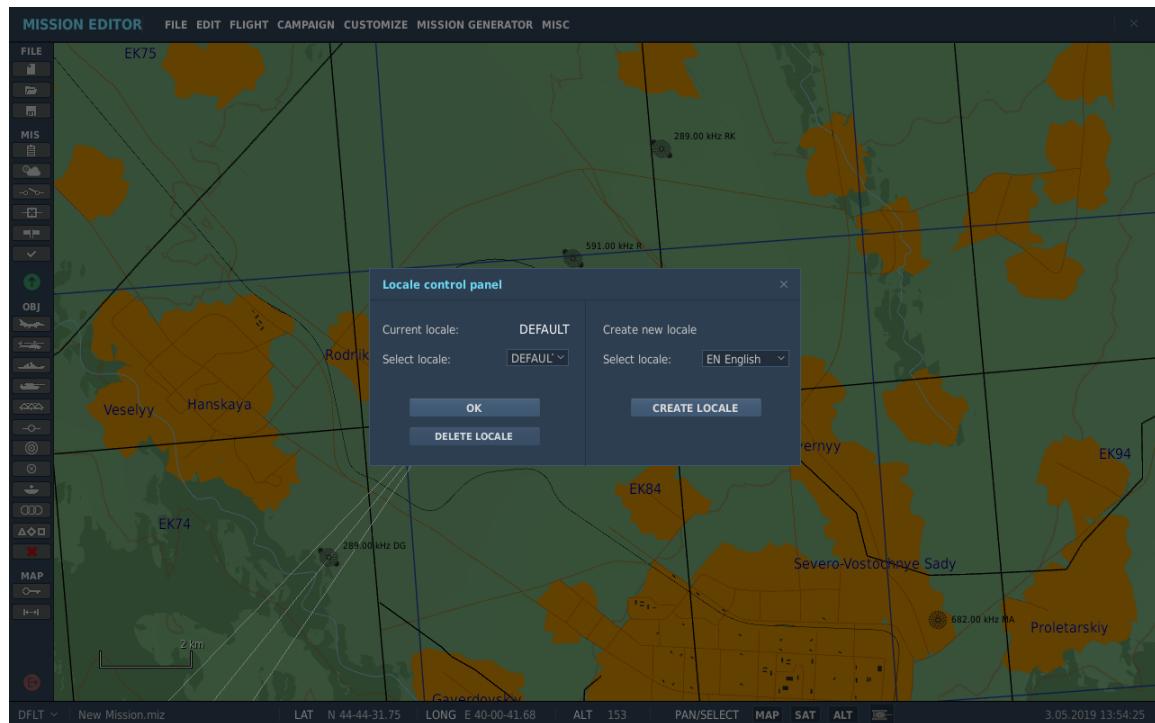
	Helipad. The temporary place of deployment of Army aviation.
	Field airdrome (not present in game)
	General aviation airfield (not present in game)
	Third class airdrome. 1200...1700 meters runway (not present in game)
	Second class airdrome. 1800...2400 meter runway.
	First class airdrome. 2500...3000 meter runway.

To close the window, click the X button in the top right corner of the window.

3. LOCALE PANEL.

The panel allows you manage mission localization. If other localization versions are required, the mission designer can select a new localization from the drop-down list of languages found on the right side of the panel. Clicking the create button will add this

language to the left side of the panel, where it will be available for selection and installation in the mission. The selected language can be changed in the lower left corner of the mission editor window.



4. SET POSITION.

Set the geographical coordinates of the current theater of operations in this panel.

MISSION GENERATOR

The Mission Generator selection opens the Mission Generator menu. The Mission Generator is a powerful tool, which can be used to create battle scenarios throughout the entire map. The Mission Generator creates missions for the Create Fast Mission application. Using the Mission Generator menu of the mission editor, you can edit or create new possible mission generation options for Create Fast Mission. The Mission Generator pull-down menu includes the following four items: GENERATE, NODES, TEMPLATES, and SAVE.

1. **GENERATE... .** Opens the Fast Create Mission (Advanced Mode) menu to generate a mission.

2. **NODES.** Opens the Mission Nodes panel and displays all default node templates on the map. This menu can be used to create new nodes or edit/remove default ones. Nodes define where blue and red forces can be spawned on the map.
3. **TEMPLATES.** Opens the Templates Editor panel. This menu can be used to create new templates or edit/remove default ones. Templates are used to edit the unit types, numbers, and formations used when populating nodes.
4. **SAVE.** Clicking SAVE will save the settings of all nodes and templates.

MISC

The Misc customization consists of two items: the Encyclopedia which is described further in this manual, and the game credits.

Resource Manager

The Resource Manager (RM) is Mission Editor a system that allows you to set a determined quantity of aircraft, fuel and equipment at each airbase warehouse and independent warehouse. Each warehouse (airbase or independent) can resupply other warehouses with defined speed, periodicity and size.

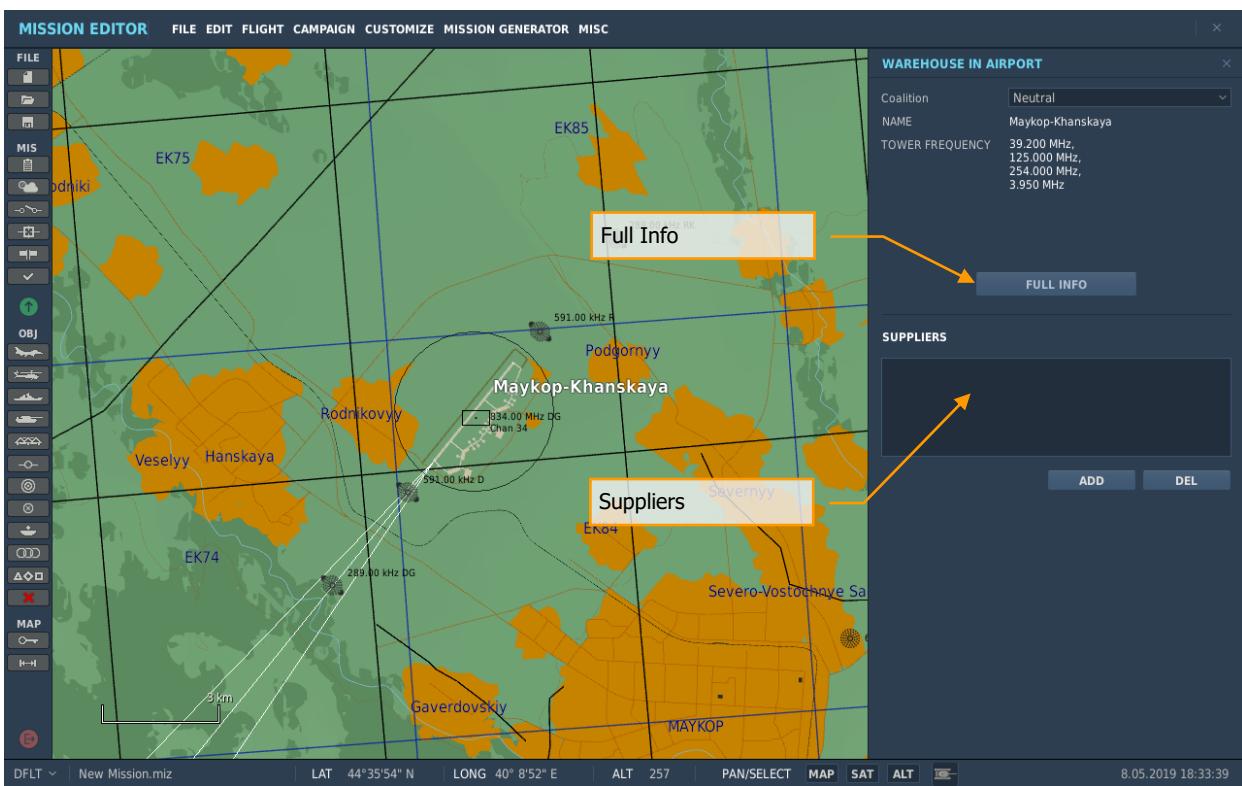
The RM is a very useful tool for single player and multiplayer missions in which the mission designer can limit the available aircraft, fuel and weapons to the player(s). Thereby adding a level of strategic thinking of how to best use limited resources.

Warehouse in Airport

Each airbase consumes resources from its own unique resource stockpile called a warehouse; these resources can be replenished from other airbases and warehouses.

By default, airbases are neutral and have infinite resources, meaning that each airbase can produce an infinite number of all types of aircraft, fuel and weapons.

The airbase settings panel can be opened in the mission editor by left-clicking on the zone of the airbase indicated by a circle.



- **COALITION** – airbase coalition affiliation: Neutral, Blue, Red.
- **NAME** – airbase name.
- **TOWER FREQUENCY** – the radio frequency used by the airbase's flight controller.

When you left mouse click on any airbase, you have two RM related items:

FULL INFO. Clicking this button will display the RM window for that airbase/warehouse.

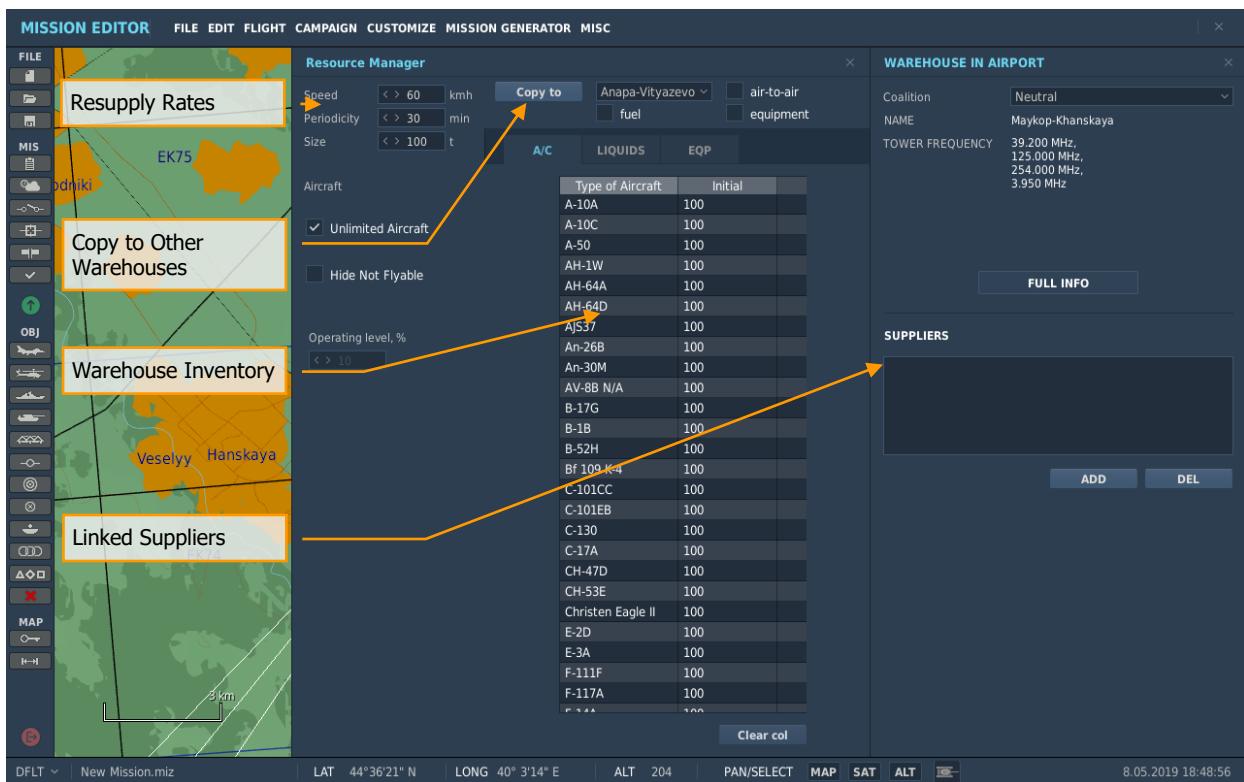
SUPPLIERS. Each warehouse can be linked to other warehouses, thus creating supply chains. This window displays all warehouses that the selected warehouse is supplying.

ADD, DEL – adds or deletes warehouses associated with airbases.

Airbases will only work with aircraft belonging to their own coalition. When planning a mission, the mission creator must first set the coalition allegiance for all airbases involved in the mission.

Resource Manager, Full Info

After clicking the Full Info button, the full display window for managing resources from the selected warehouse is displayed. Let's take a look at some of the options:



Supply Rates

In the top left of the window are three items that allow you to set how fast the warehouse can supply other linked warehouses. These include:

- **Speed** – This value determines the road speed by which virtual supply convoys travel from the selected airbase / warehouse to the warehouse being supplied.
- **Periodicity** – This value, in minutes, determines how often a supply convoy will be sent to the selected airbase / warehouse. This happens only after a supply request has been made. If the linked warehouse is the requester, that warehouse will be supplying with the set periodicity. If linked warehouse is not the requester, it does not supply.
- **Size** – This value, in tons, determines the amount of supplies that will be delivered from the supplier warehouses with each delivery.
- **Copy to** – copies the selected resource manager configuration for the categories marked by checkboxes (AIRCRAFT, FUEL, EQUIPMENT.) to another air base selected from the drop-down list.

- **Operating level, %** – When the resource is reduced to the set level, the nearest supplier will initiate a supply delivery. When the resource is reduced to the set level, the warehouse will send the request to upper-linked warehouse.

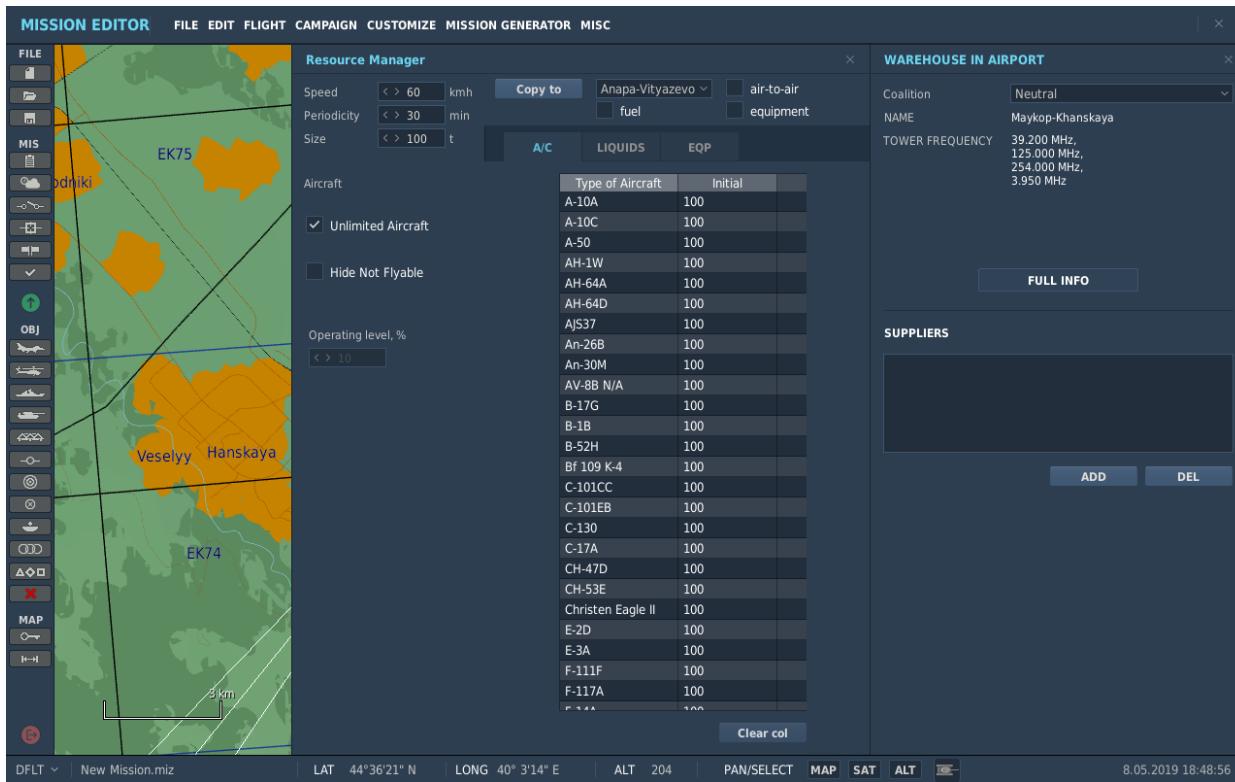
Warehouse Inventory

In the center of the display is a large, vertical column that displays the inventory of the selected warehouse. On the left side of the column is the type of inventory and to the right of each item is the number remaining. Above the column are three tabs: A/C, LIQUIDS and EQP.

To set all values to zero for a category, you can press the Clear Col button at the bottom of the column.

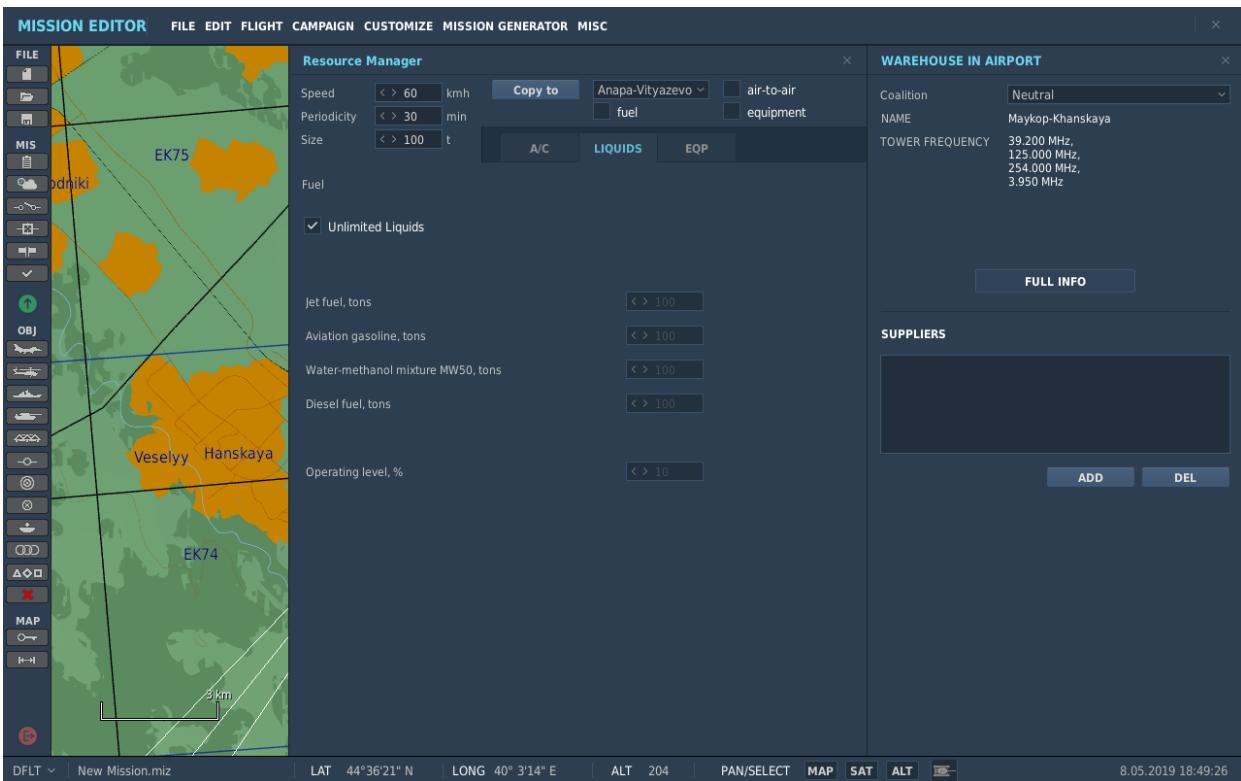
A/C Tab

The A/C tab lists the type and initial number of aircraft assigned to the warehouse. By left mouse clicking on an initial number, you can alter the value. If you wish to always have the airbase at maximum strength (100), check the **Unlimited Aircraft** check box to the left of the column. If you wish to only list aircraft that are player-flyable, check the **Hide Not Flyable** check box.



LIQUIDS Tab

This tab allows you to set the initial amount of fuel assigned to the warehouse. From the Initial Fuel Amount, tons box, you can increase or decrease the amount of fuel. If you wish for the fuel level to always be at 100 tons, check the Unlimited Fuel check box.



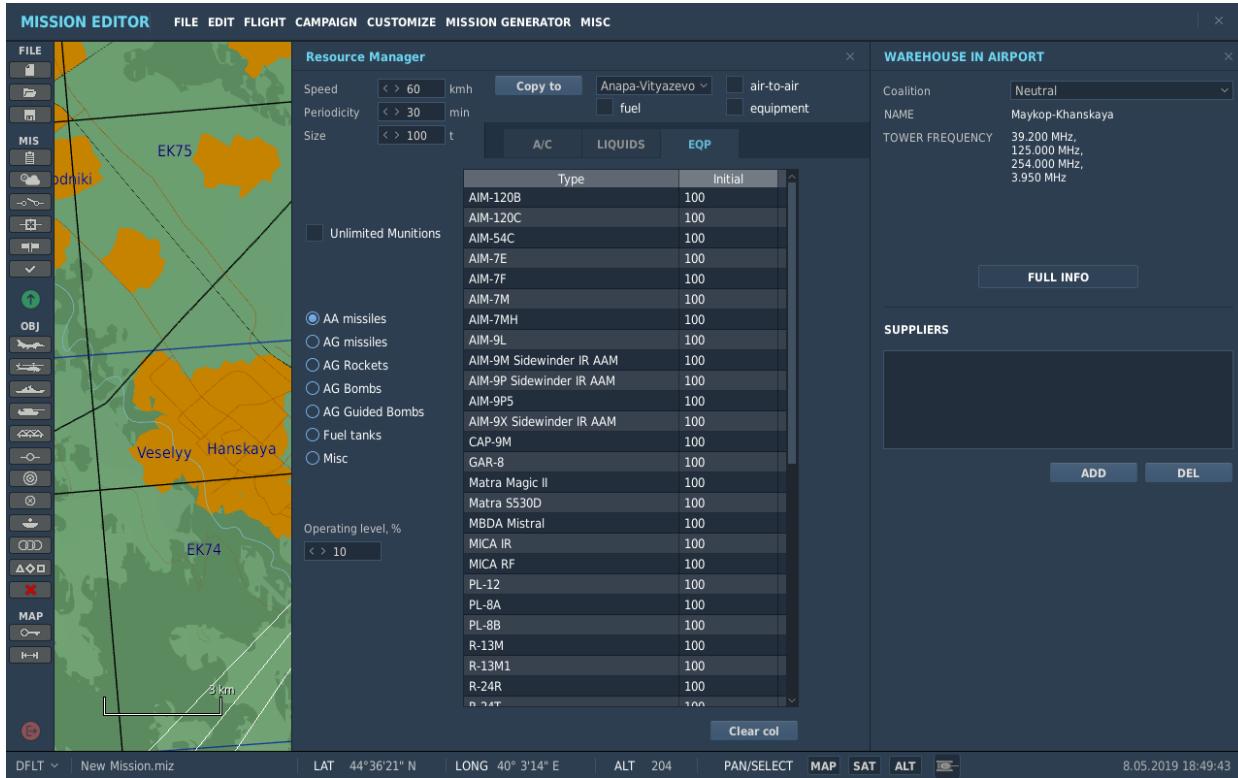
EQP (Equipment) Tab

The equipment tab lists all possible stores that can be loaded on aircraft. This includes weapons, pods, and fuel tanks. Like the aircraft selection, the name of the store is listed on the left side of the column and the initial number of the store is listed to the right. You can click on the initial number to adjust it, if the Unlimited Munitions check box is not checked.

Due to the wide variety and number of stores, seven store category buttons are listed to the left of the column. Use these filter buttons to display the type of store you wish to view / adjust.

1. AA missiles. Air-to-Air missiles
2. AG missiles. Air-to-Ground missiles
3. AG Rockets. Unguided Air-to-Ground rockets
4. AG Bombs. Unguided bombs
5. AG Guided Bombs. Guided bombs (such as laser and GPS)

6. Fuel tanks. External fuel tanks
7. Misc. Other stores such as ECM pods, smoke pods, gun pods, targeting pods, etc.



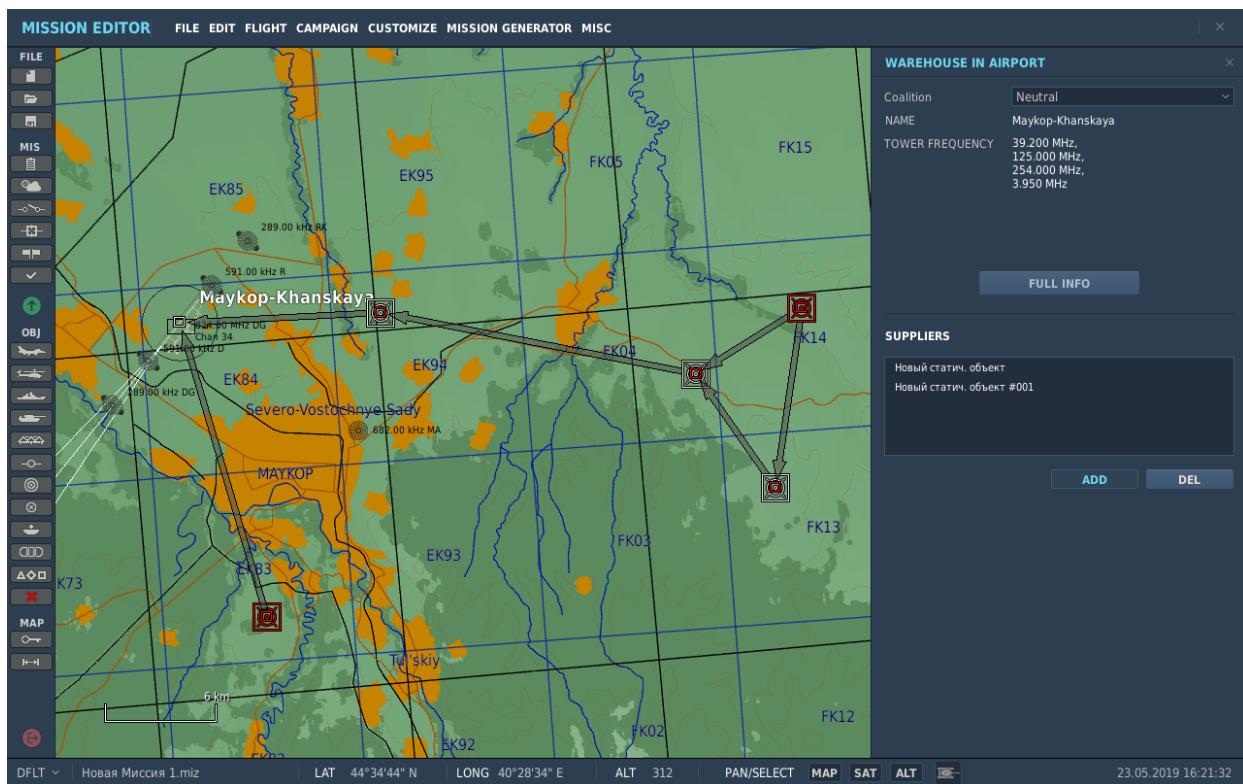
Copy to Other Warehouses

In the top center of the page is the Copy to option that allows you to copy the settings of the warehouse you are editing to another airbase warehouse. This is done by first selecting what resources you wish to copy (A/C, Fuel and Eqp) by selecting the check boxes and then selecting the airbase you wish to copy the settings to by using the drop-down airbase list.

Adding a Warehouse

In addition to the warehouse that is co-located with each airbase, you can also place independent warehouses. To do so, select warehouse from the Add or Modify Static Object menu. Once you place it, you can set its inventory values as you would an airbase warehouse.

Note: When connecting warehouses, they must be assigned to the same side.

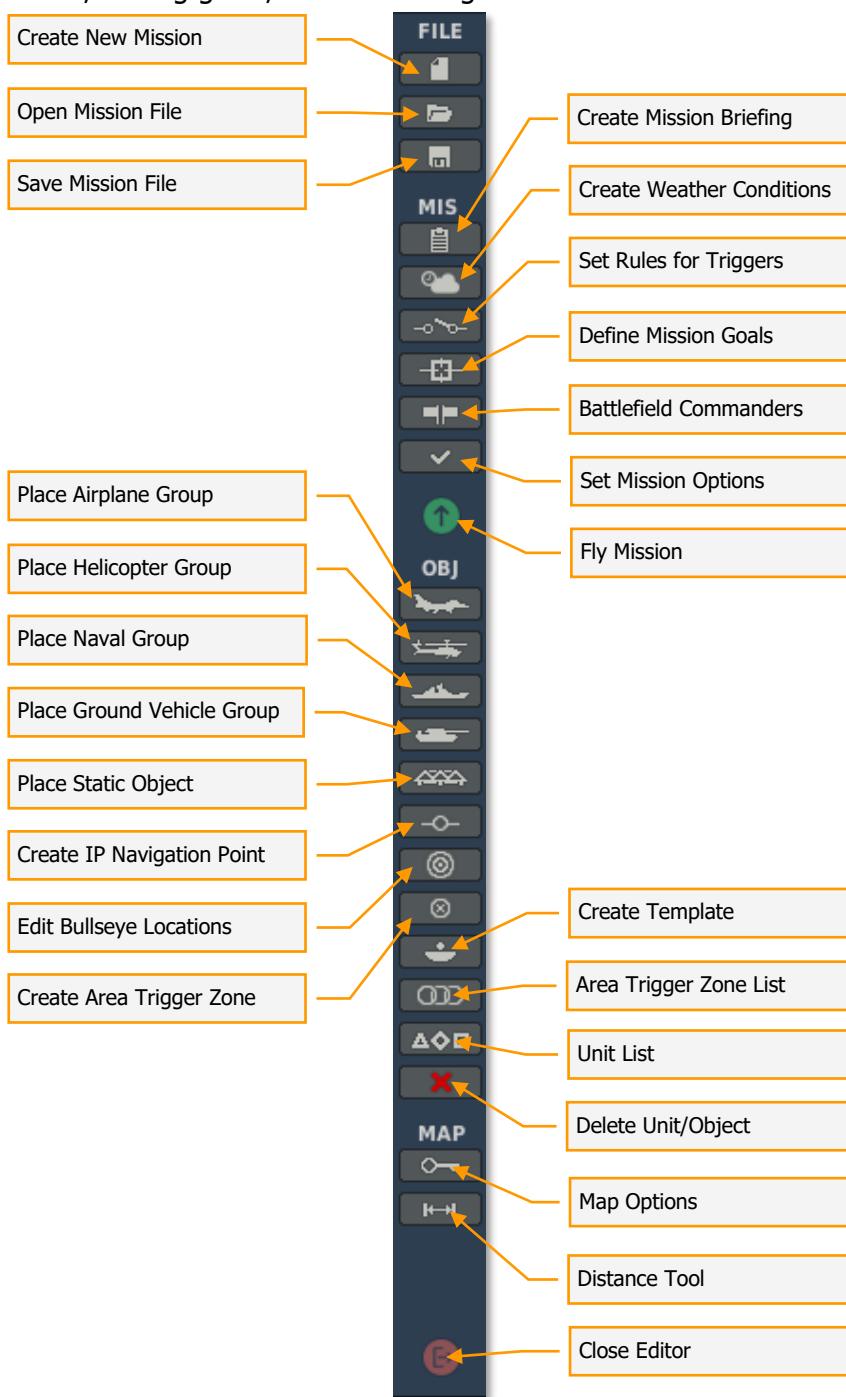


You can consecutive link many warehouses on one chain. Also, multiple suppliers and multiple consumers can be connected to a single warehouse.

If a current warehouse has a multiple suppliers, it is sending the request to the closest supplier at first. If the closest supplier can't provide the full request list, then the current warehouse will send the request to a more distant one, etc.

The Tool Bar

When creating a mission, the Tool Bar will probably be the most important tool you will be using. This bar provides quick access to common actions like unit placement, creating triggers, setting trigger zones, setting goals, and file management.



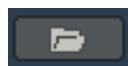
The below sections will review each of these Tool Bar elements in detail.

Create New Mission



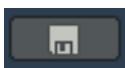
Selecting Create New Mission will allow you to exit the current mission loaded and start a new one from scratch as mentioned in the File part of The System Bar chapter.

Open Mission File



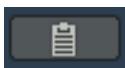
Selecting Open will display the Open Mission window. This window allows you to browse your local disk(s) and select and load saved missions. See description in the File part of The System Bar chapter.

Save Mission File



The Save As function. See description in the File part of The System Bar chapter.

Create Mission Briefing



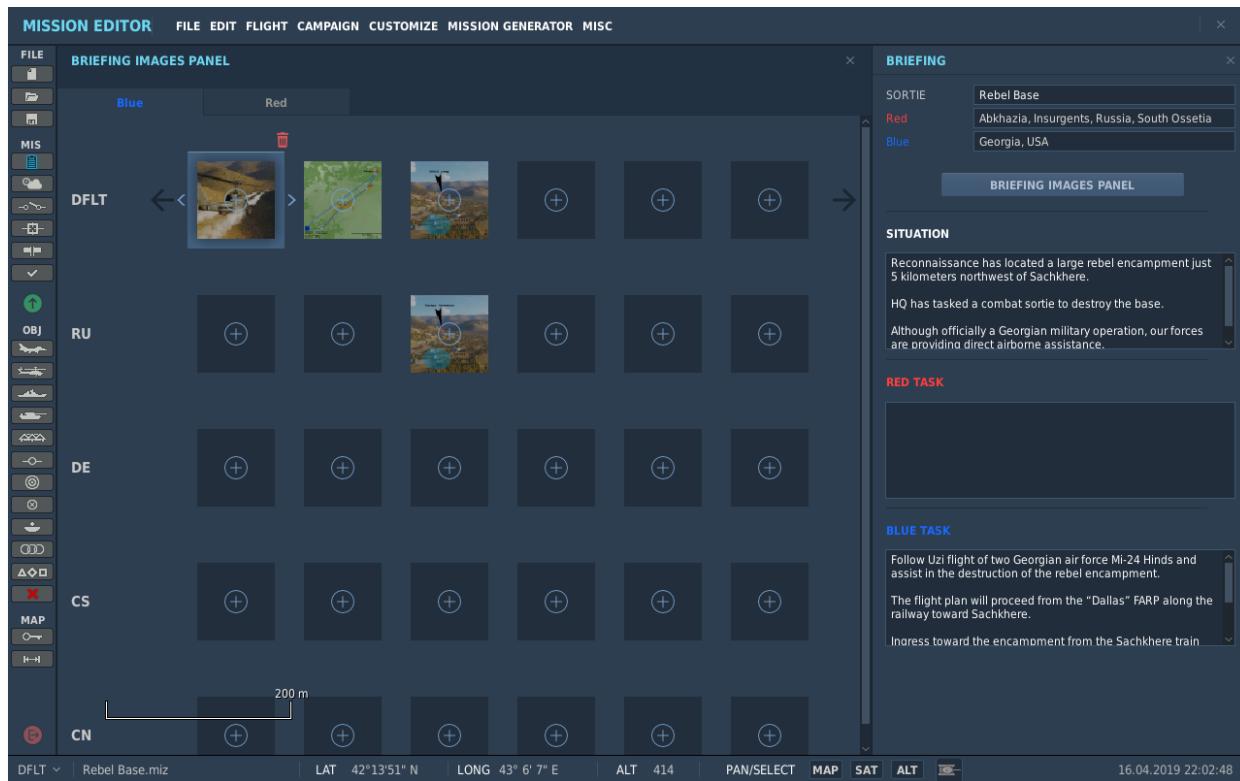
Upon selecting the Create Briefing button, the BRIEFING window will be displayed on the right side of the screen. From this window you can create the general mission briefing, individual briefings for Red and Blue sides, set briefing images for Red and Blue sides.

- At the top of the window is the **SORTIE**. Here you may enter a name/title for the mission. When you open the mission briefing to play it, this text will appear in the Title field.
- Next is the **RED** coalition field and this will automatically list the factions assigned to the red coalition.
- Below that is the **BLUE** coalition field and this will automatically list the factions assigned to the blue coalition.

- Below the data fields is the **BRIEFING IMAGES PANEL**, which consists of two boxes that allow you to assign unique briefing images for Red and Blue sides. To add a briefing image, click on the (+). Upon doing so, a file/folder browser will be displayed (much like the open and save dialogs), and from here you may select an image file. From the TYPE drop down you can select the image format (*.jpg; *.jpeg; *.png). The image should be 512x512 pixels minimum, recommended 1024x1024 pixels and the content can be of your choosing. For example, you may wish to include an image of the flight route, target area, specific target, or a unit type. Note that when in the simulation you can press the Print Screen button to capture an image that will be deposited in your Screen Shots folder. From there you may use an image editor to crop it, resize it, and annotate it. Once you select the image, a small version of it will be displayed in the box on the Briefing tool window. To remove a briefing image, click the red basket icon in the right corner above the cell.

Graphic files are saved in the mission file.

For different language locales, you can add the corresponding graphic files.



You can change a group's starting time using the group properties panels (described in detail further). Also note, the calendar starts with June 1st as day 0. For example, to set the mission date to July 1, set the day value to 30. To set the mission date to November 1, set the day value to 153. The default starting time for all missions is 12:00:00/0 (12:00 pm, June 1st).

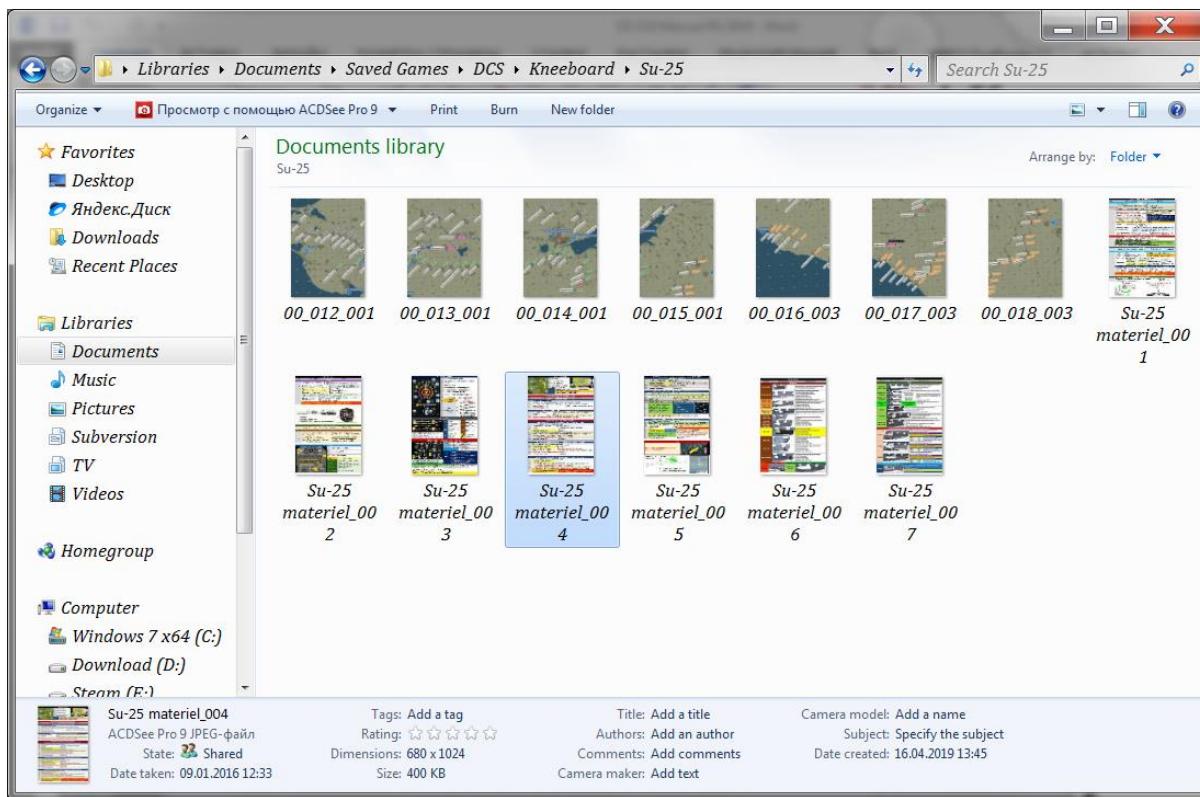
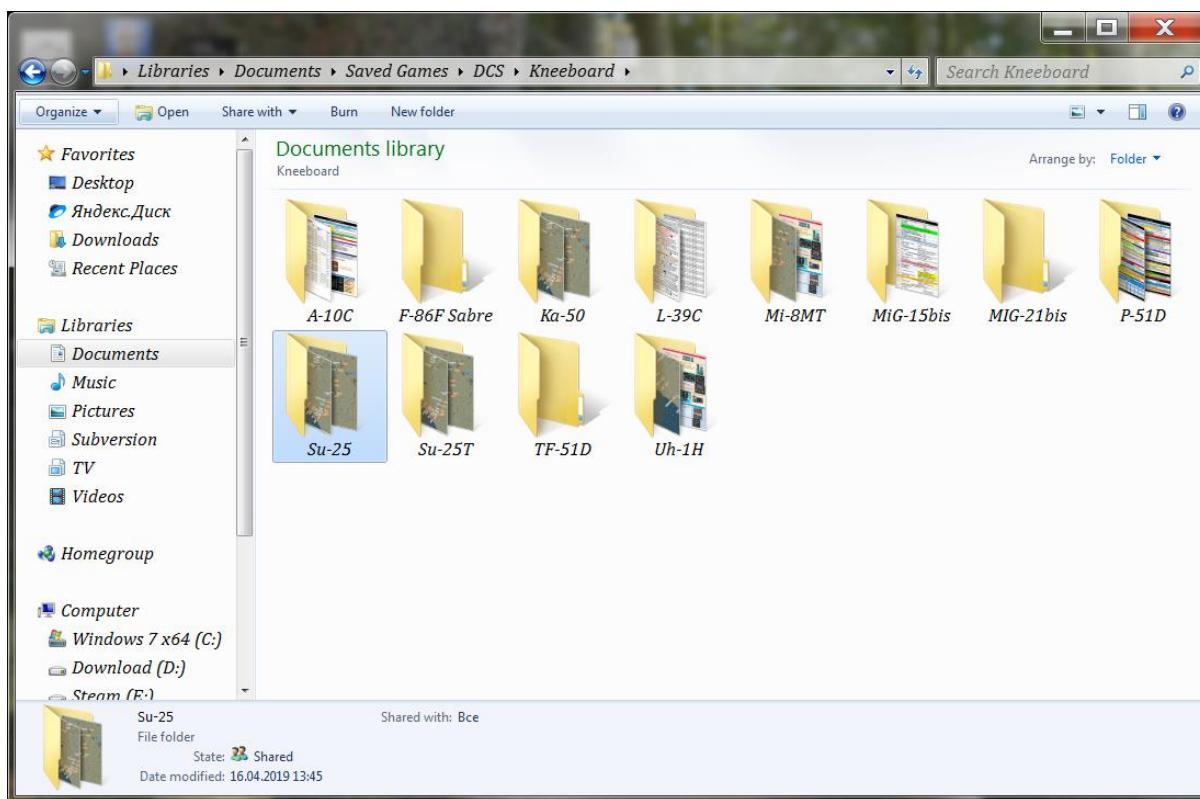
Changing the starting time and date will affect the position and motion of the sun, moon and stars to correspond to the time of day and year set.

Note: If you wish to adjust the darkness of night missions, you can adjust the mission start date to a date when the moon is less visible.

- The three text boxes that comprise the lower portion of the window allow you to enter a general mission briefing and individual briefings for Red and Blue sides (handy for multiplayer missions). Enter or copy [CTRL+C → CTRL+V] text in the **SITUATION** box and this text will appear in the SITUATION field when the mission briefing is displayed.
- Enter or copy [CTRL+C → CTRL+V] text in the **RED TASK** and **BLUE TASK** boxes to have unique text for each side that will be displayed in the OBJECTIVE field of each mission briefing.

Kneeboard

In addition to the standard airfield layouts, you can put graphic files with mission-relevant content, such as briefings, start / stop procedures, take-off / landing, etc., on the [RShift + K] kneeboard. Custom cards will be displayed at the end of the standard list. To access them immediately, cycle backwards through kneeboard cards. To add custom cards to the kneeboard, the mission creator must first create a folder named "Kneeboard" in the directory C:\Users\<User Name>\Saved Games\DCS\Kneeboard. Then, in this folder, create individual folders for each required module. The folder names must match the ones found in C:\Program Files\Eagle Dynamics\DCS World\Mods\aircraft. Afterwards, place the required image files (*.jpg; *.png) into the individual module folders. Filenames must not contain any non-latin script letters and must be 1024x680 or 1024x768 in size. While in the cockpit, bring up the kneeboard by pressing [RShift + K]. Press [or] to move back or forward a page.





Create Weather Conditions



The weather tool panel provides two options for setting the weather for the mission: Static conditions and Dynamic conditions.

1. Static conditions - standard static weather formed by user settings.
2. Dynamic conditions - weather formed by differences in the atmospheric pressure and dynamically changing during the mission.

Static conditions

The weather panel is divided into six functional sections: Season, Clouds and Atmosphere, Wind, Turbulence, Fog, Dust Smoke and Weather Templates.

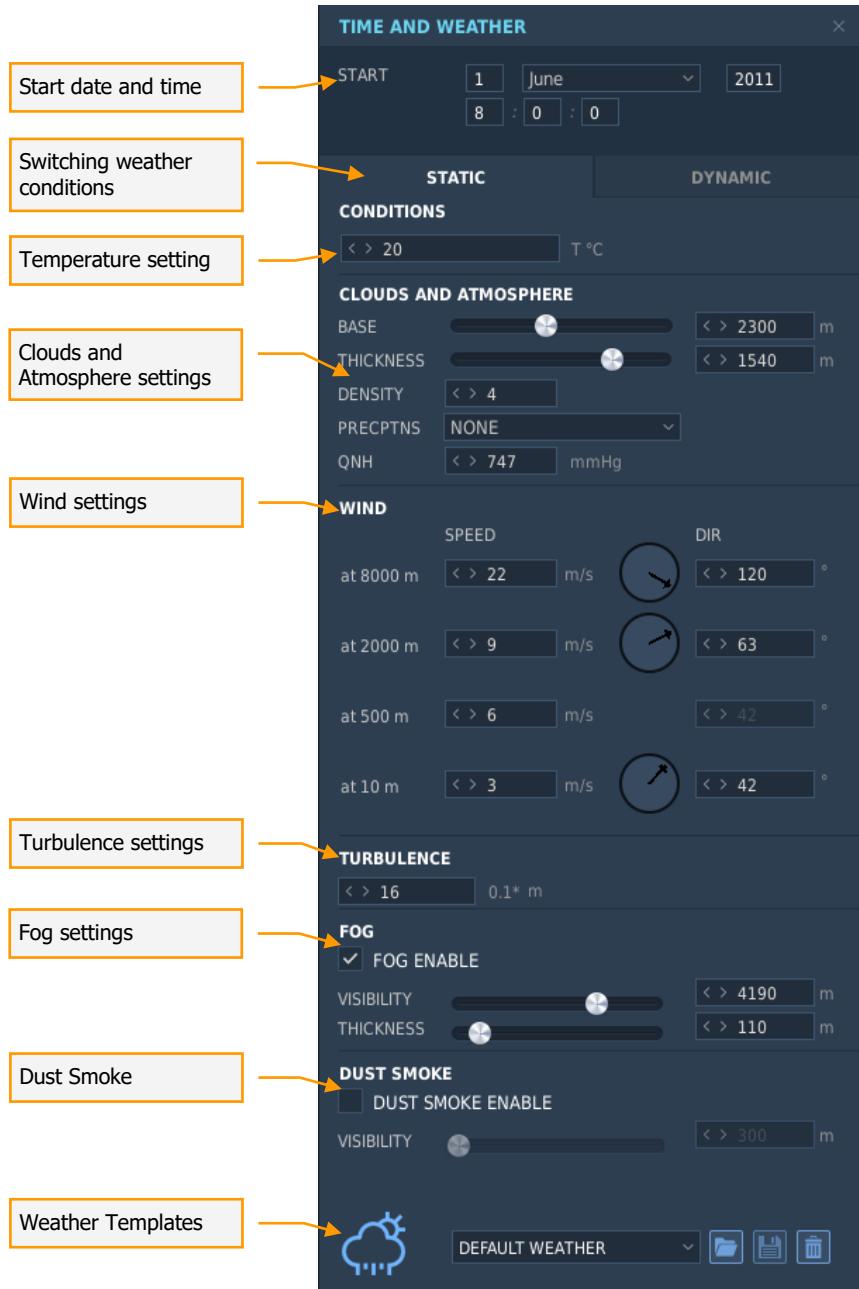
START. The top of the window consist of the Start section and allows you to set the season the mission will take place in, and the sea level air temperature (in Celsius). The left side drop down menu allows you to select from the four seasons: Summer, Winter, Spring, and Fall. The primary effect of changing the season will be to change how the terrain looks in the simulation. Additionally, many ground vehicles will have matching camouflage for the set season.

The right-side field allows you to set the sea level temperature of the mission. The value can be changed by either using the left and right arrows or manually typing the value into the field.
Note that air temperature will affect aircraft performance.

CLOUDS AND ATMOSPHERE. This section allows you to define the cloud environment of the mission. Note that the cloud environment for the mission will be static and does not change during the course of the mission. From top to bottom, the cloud settings consist of the following controls:

- **BASE.** Defines the altitude above sea level that will form the bottom of the cloud layer. This can be set between 300 and 5,000 meters and is indicated in the right-side field. Use the left and right arrows to change the value or drag the slider bar in the left field.
- **THICKNESS.** Defines cloud layer thickness from the base level. For example, if the Base were set at 2,000 meters and the Thickness was set to 1,000 meters, you would have clouds between 2,000 and 3,000 meters above sea level. Note that thickness only applies to a solid cloud deck (Density 9 and 10) and not scattered clouds (Density 1 through 8). The cloud layer thickness can be adjusted using the left and right arrows or the slider bar. The selected thickness is displayed in the right-side field in meters.
- **DENSITY.** The Density defines the population density of clouds in the mission. Note that cloud cover is uniform throughout the simulation world. Density is according to a 0 to 10 scale. 0 defines no clouds; 1 through 8 defines scattered clouds with increasing levels of density; and 9 and 10 define a solid cloud layer deck (overcast). Use the left and right arrows to select the desired density setting.

- **PRECPTNS** (Precipitations). The precipitation drop down menu allows you to set what type, if any, of precipitation will fall during the mission. Choices include: None, Rain, Thunderstorm, Snow, and Snowstorm. The selections will vary according to the selected season, temperature and cloud density.
- **QNH**. Also referred to as "Q Code", this value sets the barometric air pressure in the mission. This is in reference to mmHg (millimeters of mercury) with Russian altimeters.



WIND. Rather than a single wind direction and speed, the wind function allows you to set four distinct wind altitude bands: 10 – 500 – 2,000 – 8,000 meters. These are indicated by the three lines within the Wind section of the Weather Tool. To set the speed in meters per-second (m/s), use the left and right arrows. Note that wind will be as a constant force without gusting. To the right of the wind speed setting is the wind direction setting. This can be set in two ways. The first is to click on the radial dial to denote the direction you want the wind to blow in (North is indicated as the top of the dial). The second option is to input the value using the left and right arrow buttons. The set direction that wind will blow in is indicated in the right field in degrees. For example, when set to 0 degrees (due north), the wind in the mission will blow from the south to the north.

TURBULENCE. You may set air turbulence at 0.1 m/s increments at ground level. Turbulence will then decrease as altitude increases.

FOG. The fog setting controls:

- **FOG ENABLE.** Set fog on or off.
- **VISIBILITY.** Visibility in meters of objects obscured by fog.
- **THICKNESS.** Use the scroll bar or left and right arrows to set how thick the fog layer will be. A 0 (zero) setting denotes sea level. For example, setting a value of 50 would place a uniform fog layer in the simulation world from 0 to 50 meters from sea level.

DUST SMOKE. Dust smoke setting parameters:

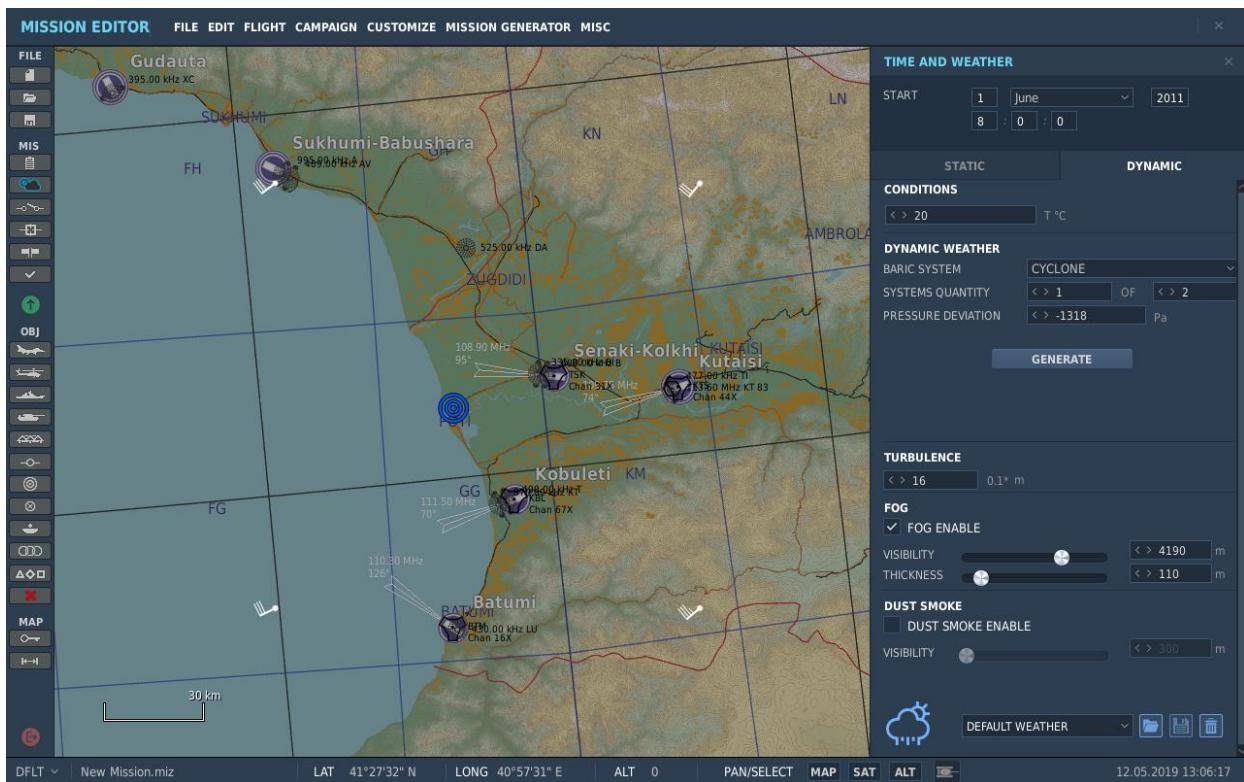
- **DUST SMOKE ENABLE.** Checkbox that enables or disables the dust smoke effect.
- **VISIBILITY.** Sets the visibility range (in meters) of objects during a dust storm.

WEATHER TEMPLATES. Rather than require you to create weather conditions each time you create a mission, the editor provides you the means to load saved weather templates and even modify them. These can be useful tools to save time when creating missions for a campaign. The Weather Template section has the following elements:

- **Template List.** On the left side of the template section is a drop-down list of saved weather templates. To select a template, you must left mouse click on it. Once selected, you will then need to click the LOAD button to load the template into the Weather settings tool.
- **LOAD selected template button.** Once you have selected a weather template from the template list, press this button to LOAD  the template into the Weather settings tool.
- **SAVE button.** If after loading a template you change its settings, you may then click the SAVE button  to save those changes to the template.
- **REMOVE button.** To remove a template from the Template List, select the template and then click the REMOVE button .

Dynamic conditions

The Dynamic Conditions panel is divided into five functional sections: Start, Dynamic Weather, Turbulence, Fog, and Weather Templates.



Using the dynamic weather panel, you can create a weather system (areas of different atmospheric pressures), which will result in dynamic wind and cloud generation in the mission.

START. The top of the window consist of the Start section and allows you to set the season the mission will take place in, and the sea level air temperature (in Celsius). The left side drop down menu allows you to select from the four seasons: Summer, Winter, Spring, and Fall. The primary effect of changing the season will be to change how the terrain looks in the simulation. Additionally, many ground vehicles will have matching camouflage for the set season.

The right-side field allows you to set the sea level temperature of the mission. The value can be changed by either using the left and right arrows or manually typing the value into the field.
Note that air temperature will affect aircraft performance.

DYNAMIC WEATHER. Settings of the dynamic weather system parameters.

- **BARIC SYSTEM.** Selection between cyclone (low pressure systems), anticyclone (high pressure systems) or none.
- **SYSTEMS QUANTITY.** Quantity of baric systems on the map.

- **PRESSURE DEVIATION.** Pressure deviation in the center of the selected pressure system from ISA International Standard Atmosphere, in Pascals.

GENERATE. Generate a randomized weather system using the set parameters.

Clouds and winds are generated on the entire map dynamically in the mission according to the type, locations and pressure deviations of the pressure systems. Wind conditions evolve during the mission according to the changes in the pressures and locations of the pressure systems.

TURBULENCE. You may set air turbulence at 0.1 m/s increments at ground level. Turbulence will then decrease as altitude increases.

FOG. The fog setting controls:

- **FOG ENABLE.** Set fog on or off.
- **VISIBILITY.** Visibility in meters of objects obscured by fog.
- **THICKNESS.** Use the scroll bar or left and right arrows to set how thick the fog layer will be. A 0 (zero) setting denotes sea level. For example, setting a value of 50 would place a uniform fog layer in the simulation world from 0 to 50 meters from sea level.

DUST SMOKE. Dust smoke setting parameters:

- **DUST SMOKE ENABLE.** Checkbox that enables or disables the dust smoke effect.
- **VISIBILITY.** Sets the visibility range (in meters) of objects during a dust storm.

WEATHER TEMPLATES. Rather than require you to create weather conditions each time you create a mission, the editor provides you the means to load saved weather templates and even modify them. These can be useful tools to save time when creating missions for a campaign. The Weather Template section has the following elements:

- **Template List.** On the left side of the template section is a drop-down list of saved weather templates. To select a template, you must left mouse click on it. Once selected, you will then need to click the LOAD button to load the template into the Weather settings tool.
- **LOAD selected template button.** Once you have selected a weather template from the template list, press this button to LOAD  the template into the Weather settings tool.
- **SAVE button.** If after loading a template you change its settings, you may then click  the SAVE button to save those changes to the template.
- **REMOVE button.** To remove a template from the Template List, select the template and then click the REMOVE button .

You can also cancel the window by pressing the yellow X in the top right corner of the window.

Set Rules for Triggers



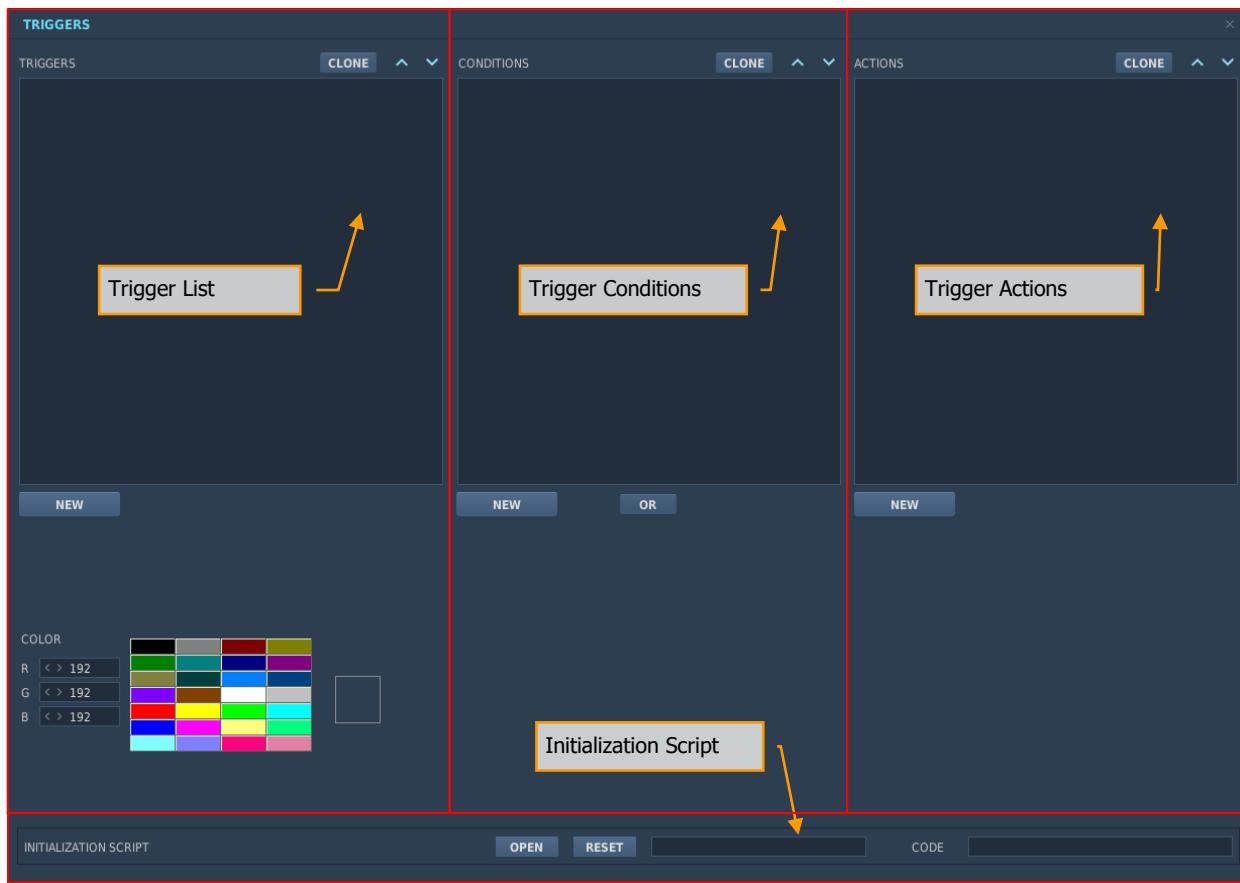
An important part of making a good mission is the ability to script actions during the mission that lead to a more immersive experience for the player. By setting actions that respond to the player and other AI units in an intelligent manner, the simulated battlefield can have a much more interactive and interesting environment. Such actions could be the activation of units, text, and voice messages, or setting a flag state. The conditions that are used to trigger such actions can range from units going in and out of defined areas of the map, units being destroyed or damaged, specified times, flag states, and even random states. Using these tools and an active imagination, you can create your own engaging missions that no automatic mission generator can match. The missions and campaigns use the same scripting system.

The trigger system is not an "event" type system, but rather a "condition" type system; this means that a trigger does not occur when something occurs, but rather when a condition becomes TRUE.

Setting a trigger condition is a three step process:

1. Create a NEW trigger
2. Create the condition(s) for the trigger
3. Create the action(s) that will result from the trigger when the condition(s) are true.

Upon selecting the set Triggers button, the TRIGGERS window will appear. There are four primary elements to creating a mission trigger and each has its own pane in the window: Trigger List, Trigger Conditions, Trigger Actions and Initialization Script. For convenience, individual triggers may be assigned a color from the color palette provided below.



The CREATE button found under each list is used for the creation of new elements.

Initialization Script

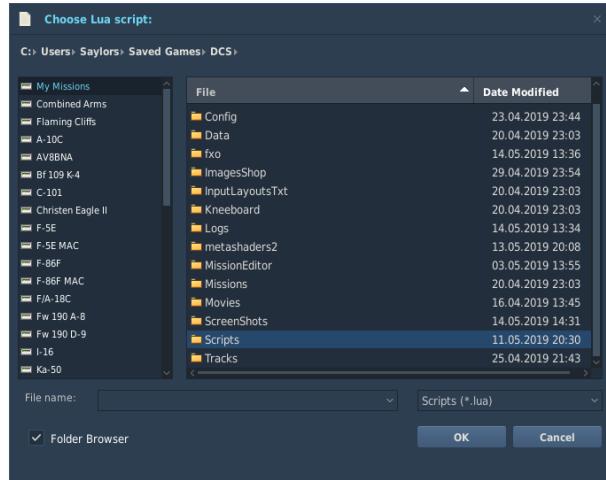
The INITIALIZATION SCRIPT column is located on the lower block (of the mission editor.) This is used to load and reset the LUA script file in the mission to set the conditions for random spawning of unit groups. In the [CONDITION](#) field in the aircraft / helicopter / sea / ground group panel, the expression is written to the LUA using SSE tools.



OPEN. Opens a selection panel for LUA script files.

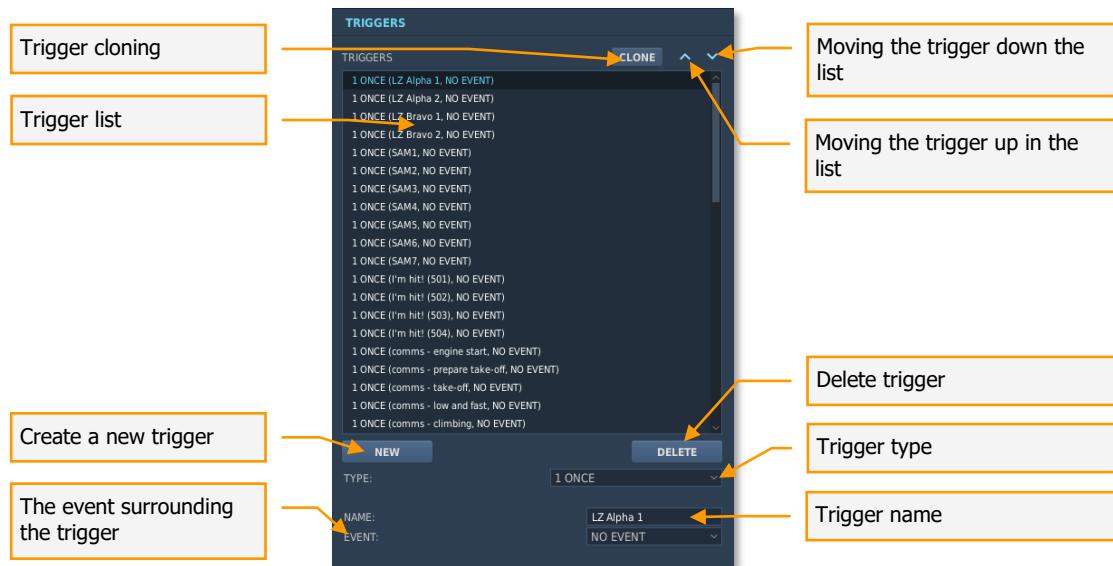
RESET. Resets the installed script file.

The LUA script selection panel is shown below:



Trigger List

This left-most pane is used to create new triggers and list existing ones. In the triggers listing pane, each trigger will be listed as a Type of trigger and then the name of the trigger in parenthesis. For example: "ONCE (Set Area 01)".



At the bottom and top of the trigger list panel there are four controls that allow you to control triggers:

NEW button. Press the NEW button to create a new trigger. When you create a new trigger, you will need to set the TYPE and give it a unique name that briefly describes its function. Be careful in naming your triggers so that there is not mass-confusion when you have a long list of triggers!

DELETE button. Press the DELETE button to remove a trigger from the list. You will first need to click on the trigger you wish to remove before pressing the DELETE button.

CLONE button. Used to create an identical copy of the selected trigger in the list.

Up and **Down** arrows. Used to move the selected trigger up or down in the list.

TYPE drop down field. Using this drop down, you can set when and how the trigger event will be cued. For example, you may want the trigger to only happen once, or you may want it to happen each time defined conditions are met. You have four options:

1. **ONCE.** The trigger will be executed only once after the condition is evaluated as true. Once set as true, the condition is removed from memory. For example, if you want a

message to show only the first time an aircraft enters an area, you would use the ONCE option.

Trigger Behavior:

Condition: Evaluated Continuously, until it is evaluated as "True". Then removed from the list of evaluations.

Action: Activated Once, when condition is "true".

Example:

You want to spawn a AAA backup-group when another Armor-group is dead.

- Add a "ONCE" Trigger.
- Add a "Group Dead" condition and select the Armored-group that must be dead.
- Add a "Activate Group" and select the AAA-group you want to activate.

The group being activated will be activated once when the first group is dead.

Hint: Remember to set the AAA-group to 23-hours of delay, so it stays inactive until activated.

2. **REPETITIVE ACTION.** The Repetitive Action trigger checks the trigger's conditions each second. Each second the conditions return true, the actions are performed; each second the conditions are false, no action is not performed.

Trigger-Behavior:

Condition: Evaluated Continuously.

Action: Repeated every time as long as the conditions stays "True".

Example:

You want to set up a (short) alarm-sound after a group of units have entered a Zone.

- Add a "REPETITIVE ACTION" trigger.
- Add a "Unit in Zone" condition, select the appropriate unit and zone to enter.
- Add a "Sound" action, select the <nnn-sound> in the sound browser.

The sound will now replay every 1 second after the unit has entered the Zone.

3. **SWITCHED CONDITION.** The trigger will perform the set action(s) every time the trigger's condition is checked and evaluated as true and its previous state was false. For example, such a trigger can be used to show a text message whenever a particular unit enters a trigger zone. The first time the unit enters the zone, the trigger action will be activated, because the previous check of the trigger conditions was evaluated as false (unit was not in zone). The trigger will not activate any longer as long as the unit is inside the zone, because the previous check of the trigger conditions will be evaluated as true (unit remains inside zone). However, if the unit exists the zone and then re-enters it again, the conditions will have once again switched from false to true and the trigger action will be activated.

Trigger Behavior:

Condition: Evaluated Continuously.

Action: Repeatable, Once per condition-set changes from "False" -> "True". Actions will be performed again on the next "Switched state-change".

Example:

You want to perform a action each time a unit enters a zone. This differs from them "being in a zone".

- Add a "SWITCHED CONDITION" trigger.
- Add a "Unit in Zone" condition, select a unit and zone to check.
- Add a "Message" of "A unit is trespassing our Zone!"

Now each time the unit enters the Zone you will get the message Once. The unit needs to leave and reenter the Zone again to show the message again.

4. **MISSION START.** The trigger will only be checked at mission start. For example, if you wanted to set multiple units to a random activation, you would use this option to evaluate this condition and determine which units are included in the mission according to the set percentage.

Trigger Behavior:

Condition: Evaluated Once, at mission startup.

Action: Performed Once, at mission startup.

Example:

You want to activate a random group at startup of the mission.

- Add a "MISSION START" Trigger.
- Add a "RANDOM" condition, set it to 10%
- Add a "Activate group" action, select the group you want to give 10% chance.

NAME field. Manually enter the name of the trigger in this field.

EVENT field. Setting an event for a trigger limits the trigger's conditions to being evaluated only when the set events occur. With no event set, trigger conditions are evaluated once per second throughout the duration of the mission, unless already expired and removed from memory. In a trigger-heavy mission, this can cost considerable CPU cycles and affect gameplay performance. Setting triggers to events can reduce the CPU workload and also provide some unique trigger mechanisms. The following events are available:

- NO EVENT. There's no event.
- ON DESTROY. Trigger's conditions are evaluated whenever any unit is destroyed.
- ON SHOT. Trigger's conditions are evaluated whenever any weapon is fired.
- ON CRASH. Trigger's conditions are evaluated whenever the player crashes.

- ON EJECT. Trigger's conditions are evaluated whenever the player ejects.
- ON REFUEL. Trigger's conditions are evaluated whenever the player begins to air refuel.
- ON PILOT DEAD. Trigger's conditions are evaluated whenever the player is killed.
- ON BASE CAPTURED. Trigger's conditions are evaluated whenever an airbase or FARP is captured.
- ON TAKE CONTROL. Trigger's conditions are evaluated whenever the player takes control of an aircraft.
- ON REFUEL STOP. Trigger's conditions are evaluated whenever the player stops to air refuel.
- ON FAILURE. Trigger's conditions are evaluated whenever the player's aircraft suffers a system failure.
- ON MISSION START. Trigger conditions are evaluated whenever a mission starts.
- ON MISSION ENDS. Trigger conditions are evaluated whenever the mission ends.

Trigger Conditions

The central unit of the trigger panel contains a list of trigger conditions.



Once you have created a trigger, you will then need to set the conditions that govern when the trigger will be set to true or false. To do so, you first need to click on the trigger you want to set conditions for by clicking on it from the trigger list. Upon doing so, press the NEW button below the CONDITIONS pane.

NEW button. Press the NEW button to create a new condition for the selected trigger. Please note that you can create multiple conditions for a single trigger! When you create a new condition, you will need to set the TYPE and define additional data that varies according to the TYPE. Each new condition you create will be listed in the condition pane list.

When multiple trigger conditions are set, they operate with an "AND" operator. In other words, all of the conditions must be true for the trigger to be activated. To separate conditions with an "OR" operator, press the **OR** button in the conditions pane. In this case, the condition(s) either above or below the "OR" operator will activate the trigger.

DELETE button. Press the DELETE button to remove a condition from the list. You will first need to click on the condition you wish to remove before pressing the DELETE button.

CLONE button. Used to create an identical copy of the selected condition in the conditions list.

Up and **Down** arrows. Used to move the selected condition up or down in the condition list.

Below is a list of available rules in the drop-down list of TYPES:

- **ALL OF COALITION IN ZONE.** When creating a Trigger Zone, you can set a trigger to true when all of the set coalition units (aircrafts, vehicles, ships) are inside a defined trigger zone. Upon selecting this condition, two new fields will be displayed. The COALITION drop down menu allows you to select the coalition that when inside the selected trigger zone will set the condition to true. The ZONE drop down will list all the trigger zones you have created according to the names you created for them.



- **ALL OF COALITION OUT OF ZONE.** This condition works the same as the ALL OF COALITION IN ZONE, but the condition will be set to true when the all coalition's units are outside the defined zone.



- **ALL OF GROUP IN ZONE.** When creating a Trigger Zone, you can set a trigger to true when all units of the set group are inside a defined trigger zone. The GROUP drop down menu allows you to select the group that when inside the selected trigger zone will set the condition to true. The ZONE drop down will list all the trigger zones you have created according to the names you created for them.



- **ALL OF GROUP OUT OF ZONE.** This condition works the same as the ALL OF GROUP IN ZONE, but the condition will be set to true when the all group's units are outside the defined zone.



- **BOMB IN ZONE.** Checks to see if a bomb has been dropped and is currently in a trigger zone. When choosing this condition, the mission creator must also specify the type and quantity of the bomb to be checked, as well as the trigger zone.



- **CARGO UNHOOKED IN ZONE.** Checks to see if a cargo object has been unhooked within a trigger zone. The cargo object and trigger zone must be specified when choosing this condition.



- **COALITION HAS AIRFIELD.** If the set coalition has captured set airfield, the action(s) will be activated.



All airfields with no aircraft assigned for take-off or landing and with no ground units of either coalition within a 2,000 m. radius are neutral. Any ground unit present within a 2,000 m. radius of an airfield will capture the airfield for the coalition of the ground unit. If ground units of both coalitions are present within a 2,000 m. radius of an airfield, the airfield is contested and not assigned to either coalition. In cases when armed ground units of one coalition are present within a 2,000 m. radius of an airfield at the same time as unarmed ground units of the other coalition, the coalition of the armed units will capture the airfield.

- **COALITION HAS HELIPAD.** If the set coalition has captured set FARP, the action(s) will be activated.



Note, FARP capture rules are identical to airfield capture rules (see above).

- **DEAD ZONE.** Trigger rule for the condition of the specified zone. When choosing this condition, you must specify the name of the trigger zone.



- **FLAG EQUALS.** This condition checks whether the value of a set flag is equal to the set value.

TYPE: FLAG EQUALS

FLAG: < > 1

FLAG: < > 10

- **FLAG EQUALS FLAG.** This condition checks whether the value of one set flag is equal to the value of another set flag.

TYPE: FLAG EQUALS FLAG

FLAG: < > 1

FLAG: < > 5

- **FLAG IS FALSE.** When selected, a FLAG field is displayed below. By either using the left and right arrows or typing in the field, set the flag number that when set to false will set the condition to false.

TYPE: FLAG IS FALSE

FLAG: < > 1

- **FLAG IS LESS.** When selected, FLAG and VALUE fields are displayed below. By either using the left and right arrows or typing in the field, set the flag number to check the value for and the flag value, below which the trigger condition will be true.

TYPE: FLAG IS LESS

FLAG: < > 3

VALUE: < > 10

- **FLAG IS LESS THAN FLAG.** This condition checks whether one set flag has a smaller value than another set flag.

TYPE: FLAG IS LESS THAN FLAG

FLAG: < > 3

FLAG: < > 1

- **FLAG IS MORE.** When selected, FLAG and VALUE fields are displayed below. By either using the left and right arrows or typing in the field, set the flag number to check the value for and the flag value, above which the trigger condition will be true.



- **FLAG IS TRUE.** When selected, a FLAG field is displayed below. By either using the left and right arrows or typing in the field, set the flag number that when set to true will set the condition to true.



- **GROUP ALIVE.** When selected, a GROUP drop down menu will be displayed below. From this list, select the group that will activate the trigger as long as at least one unit of the group is alive. Groups are listed according to their "NAME" from the unit placement windows.



- **GROUP ALIVE LESS THAN.** When selected, a GROUP drop down list and "%" field will be displayed below. From the GROUP list, select the group that will activate the trigger when the number of live units in the group corresponds to the per cent value set in the "%" field.



For example, if the group has 10 units and you entered 40%, the trigger will activate when 3 units remain alive.

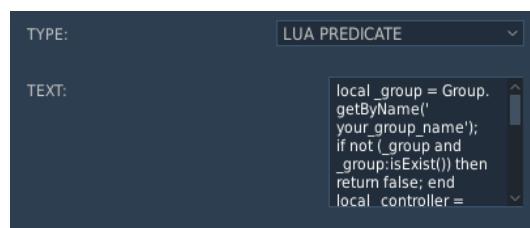
- **GROUP DEAD.** When selected, a GROUP drop down menu will be displayed below. From this list, select the group that will activate the trigger when all units of the group are destroyed (dead). Groups are listed according to their "NAME" from the unit placement windows.



- **LUA PREDICATE.** When selected, you can write the code in the LUA script syntax.

Example code:

```
local _group = Group.getByName('your_group_name');
if not (_group and _group:isExist()) then return false; end
local _controller = _group:getController();
local _targets = _controller:getDetectedTargets();
for _index, _target in ipairs(_targets) do
    if _target.visible then return true; end -- I see the enemy!!!
end
return false; -- I don't see the enemy...
```



- If you type this text into the condition, the trigger will be triggered each time the specified group sees an adversary.

- **MAP OBJECT IS DEAD.** This trigger condition checks if the map object (building, construction, bridge, etc.) is destroyed. When selecting this condition, you must specify the name of the trigger zone, which has been assigned to the map object via RMB click on it.



- **MISSILE IN ZONE.** Checks to see if a missile has been launched and is currently in a trigger zone. When choosing this condition, the mission creator must also specify the type and quantity of the missile to be checked, as well as the trigger zone.



- **MISSION SCORE HIGHER THAN.** If the set coalition has a score higher than the set amount, the action(s) will be activated.

TYPE:	MISSION SCORE HIGHER THAN
COALITION:	Red
SCORE:	< > 50

- **MISSION SCORE LOWER THAN.** If the set coalition has a score lower than the set amount, the action(s) will be activated.

TYPE:	MISSION SCORE LOWER THAN
COALITION:	Blue
SCORE:	< > 50

- **PART OF COALITION IN ZONE.** The trigger will be set to true if any of coalition's unit will appear inside the selected trigger zone. The COALITION drop down menu allows you to select the coalition. The ZONE drop down will list all the trigger zones you have created according to the names you created for them.

TYPE:	PART OF COALITION IN ZONE
COALITION:	Red
ZONE:	LZ Alpha

- **PART OF COALITION OUT OF ZONE.** This condition works the same as the PART OF COALITION IN ZONE, but the condition will be set to true when the any of coalition's unit are outside the defined zone.

TYPE:	PART OF COALITION OUT OF
COALITION:	Red
ZONE:	LZ Alpha

- **PART OF GROUP IN ZONE.** The trigger will be set to true if any of group's unit will appear inside the selected trigger zone. The GROUP drop down menu allows you to select the group. The ZONE drop down will list all the trigger zones you have created according to the names you created for them.

TYPE:	PART OF GROUP IN ZONE
GROUP:	Roadblock
ZONE:	LZ Bravo

- **PART OF GROUP OUT OF ZONE.** This condition works the same as the PART OF GROUP IN ZONE, but the condition will be set to true when the any of group's unit are outside the defined zone.

TYPE:	PART OF GROUP OUT OF ZOI
GROUP:	Roadblock
ZONE:	LZ Bravo

- **PLAYER SCORES LESS.** When selected, a SCORES field is displayed below. By either using the left and right arrows or typing in the field, enter the score, below which the condition will become true.

TYPE:	PLAYER SCORES LESS
SCORES:	< > 50

- **PLAYER SCORES MORE.** When selected, a SCORES field is displayed below. By either using the left and right arrows or typing in the field, enter the score, above which the condition will become true.

TYPE:	PLAYER SCORES MORE
SCORES:	< > 50

- **PLAYER'S UNIT ARGUMENT IN RANGE.** Trigger rule for using the argument player 3D model's animation within the specified range. When choosing this condition, enter the argument number and its minimum / maximum response values in the additional fields.

TYPE:	PLAYER'S UNIT ARGUMENT IN
ARGUMENT:	< > 3
MIN:	< > 0.4
MAX:	< > 0.8

- **RANDOM.** The Random condition allows you to set a percentage chance of action(s) assigned to the trigger from happening. Use the left and right arrows or type directly into the field to adjust the value. Values can range from 0 (no chance) to 100 (certain) as a percentage. The most common action you will use this condition with is Activate Group. This will allow you to set a random appearance of units in a mission.

TYPE:	RANDOM
%	< > 40

- **TIME LESS.** When selected, a SECONDS field is displayed below. By either using the left and right arrows or typing in the field, enter the time in seconds when the condition will become false. For example, if you set a value of 120, the condition will become false two minutes into the mission.



- **TIME MORE.** When selected, a SECONDS field is displayed below. By either using the left and right arrows or typing in the field, enter the time in seconds when the condition will become true. For example, if you set a value of 120, the condition will become true two minutes into the mission.



- **TIME SINCE FLAG.** When selected, FLAG and SECONDS fields are displayed below. By either using the left and right arrows or typing in the field, set the flag number that when set to true will set the condition to true in the FLAG field. In the SECONDS field, enter the delay in seconds that the condition will be set to true after the flag is set to true.



- **UNIT ALIVE.** When selected, a UNIT drop down menu will be displayed below. From this list, select the unit that will activate the trigger as long as the unit is alive. Units are listed according to their "UNIT NAME" from the unit placement windows.



- **UNIT DAMAGED.** When selected, a UNIT drop down menu will be displayed below. From this list, select the unit that will activate the trigger when the unit is damaged. Units are listed according to their "UNIT NAME" from the unit placement windows.



- **UNIT DEAD.** When selected, a UNIT drop down menu will be displayed below. From this list, select the unit that will activate the trigger when the unit is destroyed (dead). Units are listed according to their "UNIT NAME" from the unit placement windows.



- **UNIT HITS.** Checks to see if the player unit has achieved successful hits on an object. The target object and number of hits required must be specified.



- **UNIT INSIDE MOVING ZONE.** This trigger allows you to attach a trigger area zone to a unit and the zone will move along with the assigned unit. Note, the trigger zone can be placed anywhere on the map, but will in fact be always attached to the center of the assigned unit in-game. When selected, you should first select the unit that the area trigger will be attached to by selecting it from the ZONE UNIT drop down list. Next, select the area trigger zone that will be attached to the unit from the ZONE drop down list. Lastly, you need to set the unit that will set the trigger to true when it enters the zone unit's zone. Do this by selecting a unit from the UNIT drop down list.



- **UNIT INSIDE ZONE.** When creating a Trigger Zone (discussed later in this document), you can set a trigger to true when a defined unit enters a defined trigger zone. Upon selecting this condition, two new fields will be displayed. The UNIT drop down menu allows you to select the unit that when inside the selected trigger zone will set the condition to true. The ZONE drop down will list all the trigger zones you have created according to the names you created for them.



- **UNIT OUTSIDE MOVING ZONE.** This trigger allows you to attach a trigger area zone to a unit and the zone will move along with the assigned unit. Note, the trigger zone can be placed anywhere on the map, but will in fact be always attached to the center of the assigned unit in-game. When selected, you should first select the unit that the area trigger will be attached to by selecting it from the ZONE UNIT drop down list. Next, select the area trigger zone that will be attached to the unit from the ZONE drop down list. Lastly, you need to set the unit that will set the trigger to true when it is outside the zone unit's zone. Do this by selecting a unit from the UNIT drop down list.

TYPE:	UNIT OUTSIDE MOVING ZONE
UNIT:	Alpha_UAZ
ZONE:	Alpha - Approach
ZONE UNIT:	005

- **UNIT OUTSIDE ZONE.** This condition works the same as the UNIT INSIDE ZONE, but the condition will be set to true when the unit is outside the defined zone.

TYPE:	UNIT OUTSIDE ZONE
UNIT:	Bravo_VAZ
ZONE:	Alpha - Rebels

- **UNIT'S AGL ALTITUDE HIGHER THAN.** Checks to see if a unit (aircraft or ground unit) has achieved an altitude higher than a certain value. The checked unit and target altitude must be specified.

TYPE:	UNIT'S AGL ALTITUDE HIGHE
UNIT:	Su-24M 017
ALTITUDE:	2500

- **UNIT'S AGL ALTITUDE LOWER THAN.** Checks to see if a unit (aircraft or ground unit) has achieved an altitude lower than a certain value. The checked unit and target altitude must be specified.

TYPE:	UNIT'S AGL ALTITUDE LOWE
UNIT:	Su-24M 017
ALTITUDE:	2500

- **UNIT'S ALTITUDE HIGHER THAN.** This condition allows you to set a unit and altitude in meters (MSL). If the set unit flies above the set altitude, the trigger will be set to true.

TYPE:	UNIT'S ALTITUDE HIGHER TH.
UNIT:	Su-24M 017
ALTITUDE:	2500

- **UNIT'S ALTITUDE LOWER THAN.** This condition allows you to set a unit and altitude in meters. If the set unit flies below the set altitude, the trigger will be set to true.

TYPE:	UNIT'S ALTITUDE LOWER TH/
UNIT:	Su-24M 017
ALTITUDE:	2500

- **UNIT'S ARGUMENT IN RANGE.** Trigger rule for using the argument of the unit 3D model's animation within the specified range. For example, you can determine that the cargo doors on a helicopter are open by changing the animation argument of the cargo doors. When choosing this condition, you must enter the object, the argument number and its minimum / maximum trigger values.

TYPE:	UNIT'S ARGUMENT IN RANGE
UNIT:	Random SAM #1
ARGUMENT:	< > 2
MIN:	< > 0.5
MAX:	< > 0.9

- **UNIT'S BANK IN LIMITS.** When selected, a UNIT drop down list, MIN and MAX fields will be displayed below. From UNIT list, select the unit that will activate the trigger when the bank angle is within the MIN and MAX values set in the corresponding fields. Note, negative angles denote left bank and positive angles denote right bank.

TYPE:	UNIT'S BANK IN LIMITS
UNIT:	Su-24M 018
MIN:	-5
MAX:	5

- **UNIT'S HEADING IN LIMITS.** When selected, a UNIT drop down list, MIN and MAX fields will be displayed below. From UNIT list, select the unit that will activate the trigger when the unit's heading is within the MIN and MAX values set in the corresponding fields.

TYPE:	UNIT'S HEADING IN LIMITS
UNIT:	Su-24M 018
MIN:	270
MAX:	275

- **UNIT'S LIFE LESS THAN.** When selected, a UNIT drop down list and "%" of life will be displayed below. From the UNIT list, select the unit that will activate the trigger when the per cent of "life" of the unit corresponds to the value set in the "%" field.

TYPE:	UNIT'S LIFE LESS THAN
UNIT:	Bravo_KAMAZ
MIN:	< > 10
MAX:	%

- **UNIT'S PITCH IN LIMITS.** When selected, a UNIT drop down list, MIN and MAX fields will be displayed below. From UNIT list, select the unit that will activate the trigger when the pitch angle is within the MIN and MAX values set in the corresponding fields. Note, negative angles denote negative pitch (nose down) and positive angles denote positive pitch (nose up).

TYPE:	UNIT'S PITCH IN LIMITS
UNIT:	Su-24M 018
MIN:	5
MAX:	10

- **UNIT'S SPEED HIGHER THAN.** This condition allows you to set a unit and speed in indicated meters per second. If the set unit flies faster than set speed, the trigger will be set to true.

TYPE:	UNIT'S SPEED HIGHER THAN
UNIT:	Su-24M 018
SPEED:	< > 360 kmh

- **UNIT'S SPEED LOWER THAN.** This condition allows you to set a unit and speed in indicated meters per second. If the set unit flies under than set speed, the trigger will be set to true.

TYPE:	UNIT'S SPEED LOWER THAN
UNIT:	Su-24M 018
SPEED:	< > 360 kmh

- **UNIT'S VERTICAL SPEED IN LIMITS.** When selected, a UNIT drop down list, MIN and MAX fields will be displayed below. From UNIT list, select the unit that will activate the trigger when the vertical velocity in meters per second is within the MIN and MAX values set in the corresponding fields.

TYPE:	UNIT'S VERTICAL SPEED IN LI
UNIT:	Su-24M 018
MIN:	-10
MAX:	-5

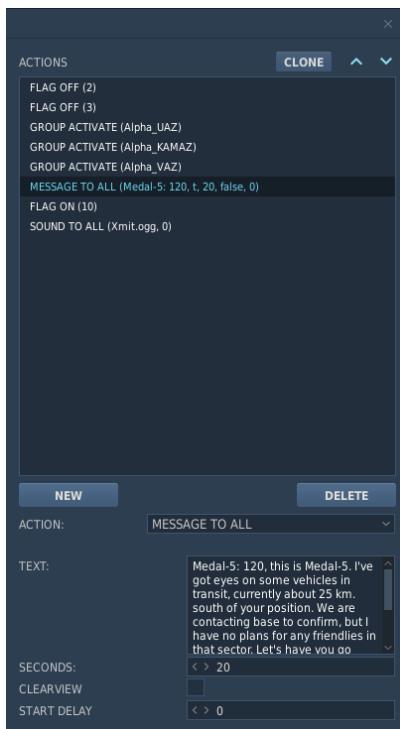
All conditions with the "X" prefix are designed for use in creating cockpit triggers and intended for training missions. See description next.

Trigger Actions

Once you have defined the condition(s) that will determine when a trigger will be true or false, you now define the actions that will result.

To create one or more actions for a trigger, click the NEW button at the bottom of the pane.

With a new action created, new functions will be displayed at the bottom on the actions pane:



NEW button. Press the NEW button to create a new action for the selected trigger. Please note that you can create multiple actions for a single trigger! When you create a new action, you will need to set the ACTION and define additional data that varies according to the action. Each new action you create will be listed in the actions pane list.

DELETE button. Press the DELETE button to remove an action from the list. You will first need to click on the action you wish to remove before pressing the DELETE button.

ACTION drop down field. Using this drop down, you can set an action for the trigger.

Actions include:

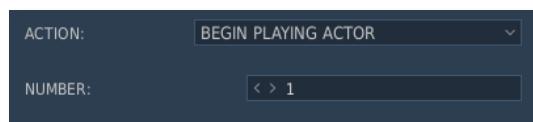
- **AI TASK PUSH.** Performs the action set in the TRIGGER ACTIONS panel while planning tasks for an AI unit group. When creating this condition, the mission creator must set the task to be fulfilled by the AI unit group.



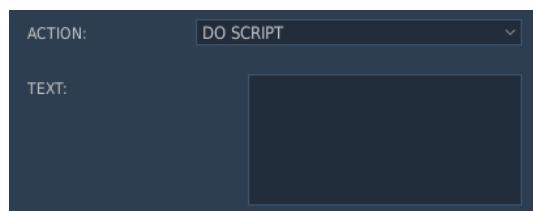
- **AI TASK SET.** An AI action set in the TRIGGERED ACTIONS panel of the AI Group Properties Advanced Actions menu will be executed. The desired AI action identified by its name should be selected from drop down list.



- **BEGIN PLAYING ACTOR.** This action generates an action from the player. When selecting this action, a player number must be set.



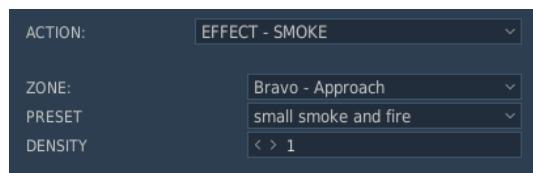
- **DO SCRIPT.** Runs a LUA script as entered in the TEXT filed.



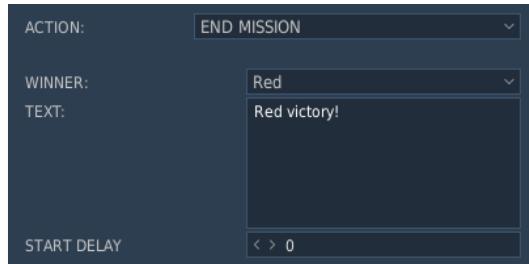
- **DO SCRIPT FILE.** Runs a LUA script file that is linked to in the TEXT field.



- **EFFECT – SMOKE.** Generates a smoke effect within the trigger zone. A trigger zone, smoke effect preset, and density value must be set when selecting this action.



- **END MISSION.** If you wish to have the mission end according one or more specified conditions being set to true, you can use this action. This can be a handy action to end a mission after all mission objectives have been met. In the text box, you can also enter text that will appear when one side has won the mission.



- **EXPLODE UNIT.** From this action, select a unit that you wish to explode as a result of this action. You can use the volume setting to determine the size of the explosion.



- **EXPLOSION.** To have an explosion appear in the mission based on a resulting action, you can use this action. The three values you need to set include the name of the zone that the explosion will occur in, the altitude the explosion will occur, and the size (volume) of the explosion.



- **FLAG DECREASE.** This action allows you to set a defined flag to decrease in value. Use the FLAG field left and right arrows to set the flag number or manually enter it in the field. Use the VALUE field left and right arrow keys to set the value by which to decrease or manually enter it in the field.



Example. Flag 5 is indicated (with a current value of 10) and given value 4. When the action is triggered, the current value of 10 will be reduced by the given value, 4, and as a result, the resulting value of the flag will be 6.

The flag value may have negative numbers. If, as a result of subtraction, the flag value becomes equal to 0, the flag will be removed.

- **FLAG INCREASE.** This action allows you to set a defined flag to increase in value. Use the FLAG field left and right arrows to set the flag number or manually enter it in the field. Use the VALUE field left and right arrow keys to set the value by which to increase or manually enter it in the field.

ACTION:	FLAG INCREASE
FLAG:	<input type="text" value="5"/>
VALUE:	<input type="text" value="10"/>

Example. Flag 5 is indicated (with current value 1) and given value 10. When the action is triggered, the given value of 10 will be added to the current value of 1, and as a result, the flag value will then be 11.

- **FLAG OFF.** This action allows you to clear a defined flag number to false. Use the FLAG field left and right arrows to set the flag number or manually enter it in the field. The value of the removed flag is 0.

ACTION:	FLAG OFF
FLAG:	<input type="text" value="1"/>

- **FLAG ON.** This action allows you to set a defined flag number to be true. Use the FLAG field left and right arrows to set the flag number or manually enter it in the field.

In the current implementation, flags have two attributes: the flag name (natural number) and the flag value (natural number). When a flag is created, the name is set in the field labelled FLAG, and the default assigned value is 1.

ACTION:	FLAG ON
FLAG:	<input type="text" value="5"/>

Example. Flag 5 has a value of 1.

You can increase or decrease the value of the flag with the corresponding actions.

- **FLAG SET RANDOM VALUE.** This action allows you to set a defined flag to a random value. Use the FLAG field left and right arrows to set the flag number or manually enter it in the field. Use the VALUE LIM MIN and VALUE LIM MAX fields left and right arrow keys to set the range of possible values for the flag or manually enter them in the fields.

ACTION:	FLAG SET RANDOM VALUE
FLAG:	<input type="text" value="1"/>
VAL LIM MIN:	<input type="text" value="10"/>
VAL LIM MAX:	<input type="text" value="20"/>

Example. Flag 1 is specified with the minimum value of 10 and maximum value of 20. When the action is triggered, flag 1 will be assigned a random value from 10 to 20, for example 12.

- **GROUP ACTIVATE.** By default, units appear automatically in a mission once the mission starts. However, using the Activate group action, you can set unit groups to

only appear in the mission according to the set conditions. Common rules to govern the appearance of an Activated group are TIME MORE, FLAG IS TRUE, UNIT IN ZONE and RANDOM. **IMPORTANT: FOR A GROUP TO BE ACTIVATED VIA A CONDITION YOU MUST SET THE GROUP'S START TIME BEYOND ANY ANTICIPATED PLAY TIME IN THE MISSION, SUCH AS AT LEAST 1 DAY AFTER THE MISSION STARTS!** For example, if the mission starting time is 12:00:00/1 (default mission start time), you can set the group to start at 12:00:11/2.



- **GROUP AI OFF.** Disable the artificial intelligence of all units in the selected group. The group will stop all movement, sensor operations and will not engage in combat.



- **GROUP AI ON.** Activate the artificial intelligence of all units in the selected group. Only possible after use of the GROUP AI OFF action on the group.



- **GROUP DEACTIVATE.** To have a group removed from a mission while in progress, you can use this action tied to a condition. When enabled, the specified group will disappear from the mission.



- **GROUP RESUME.** This action orders to group to resume movement along its planned route.



- **GROUP STOP.** This action sends the ground unit group an order to halt movement. A target group must be specified when selecting this action.

ACTION: GROUP STOP
GROUP: Charlie_Rus_Troops

- **ILLUMINATING BOMB.** For night missions, you can use this action to have an illumination bomb appear in a specified zone at a specified altitude. You can use this to simulate artillery fired illumination rounds. The flash bomb provides illumination for a period of 2 minutes, during which it descends to the ground by parachute for a distance of approximately 1000 meters.

ACTION: ILLUMINATING BOMB
ZONE: Bravo - Approach
ALTITUDE: < > 600

- **LOAD MISSION.** This is a very useful action that allows you to load a new mission in multiplayer, as a result of the rule conditions. As such, you could have different missions loaded depending on what is happening in the mission. In this way, you can use this action to create multiplayer campaigns. Working in the multiplayer only.

ACTION: LOAD MISSION
FILE: OPEN

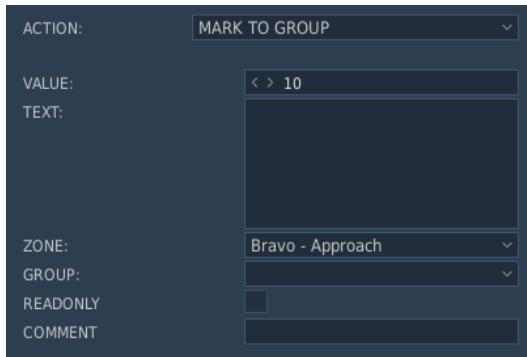
- **MARK TO ALL.** This action generates visual markers on the F10 map for all players in the session. When selecting this option, a value, text message, zone, read-only value, and comment must be set.

ACTION: MARK TO ALL
VALUE: < > 10
TEXT:
ZONE: Bravo - Approach
READONLY
COMMENT

- **MARK TO COALITION.** This action generates visual markers on the F10 map for all players of the selected coalition. When selecting this option, a value, text message, zone, coalition, read-only value, and comment must be set.



- **MARK TO GROUP.** This action generates visual markers on the F10 map for all players of the selected unit group. When selecting this option, a value, text message, zone, group, read-only value, and comment must be set.



- **MESSAGE TO ALL.** To have a trigger display a text message on the screen, you will use this action. Upon selecting this action, a TEXT entry box will appear. Type the message you wish to be displayed here. Below the text box you can set how long you wish the message to be displayed in seconds. Checkbox CLEARVIEW erases a previous message from the screen. Increases convenience in some cases by allowing mission developer not to worry about the exact time the previous message was displayed, leaving it on the screen deliberately long as user wants, until new message comes. The START DELAY field is responsible for the delay in seconds before the text appears.

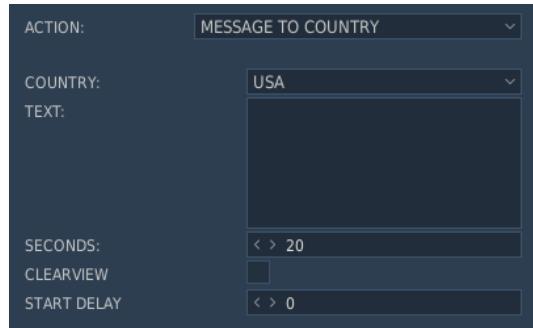


- **MESSAGE TO COALITION.** This action allows a text message to just be sent to the defined coalition. As with the Message action, you can enter text and message duration.

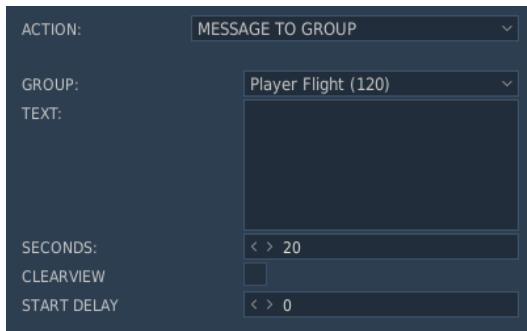
Checkbox CLEARVIEW erases a previous message from the screen. Increases convenience in some cases by allowing mission developer not to worry about the exact time the previous message was displayed, leaving it on the screen deliberately long as user wants, until new message comes. The START DELAY field is responsible for the delay in seconds before the text appears.



- **MESSAGE TO COUNTRY.** This action allows a text message to just be sent to the defined country. As with the Message action, you can enter text and message duration. Checkbox CLEARVIEW erases a previous message from the screen. Increases convenience in some cases by allowing mission developer not to worry about the exact time the previous message was displayed, leaving it on the screen deliberately long as user wants, until new message comes. The START DELAY field is responsible for the delay in seconds before the text appears.



- **MESSAGE TO GROUP.** Display a custom text message only to a set unit group (useful for multiplayer). Checkbox CLEARVIEW erases a previous message from the screen. Increases convenience in some cases by allowing mission developer not to worry about the exact time the previous message was displayed, leaving it on the screen deliberately long as user wants, until new message comes. The START DELAY field is responsible for the delay in seconds before the text appears.



- **PLAY ARGUMENT.** Turn on a graphics animation argument (such as turning of a radar antenna) of the selected static object.



- **RADIO ITEM ADD.** This action allows you to add a custom radio message to the player's radio communications menu in-game. Enter the desired radio message in the RADIO TEXT field. In the FLAG field, set the flag number that will be set to ON when the player selects this radio message.



Note, this trigger does not work in multiplayer.

- **RADIO ITEM ADD FOR COALITION.** This action adds a radio item (command) in the F10 OTHER radio menu for players of the chosen coalition. When creating this action, a coalition and item name must be set, as well as the flag the value of which will be raised when the command is issued.



- **RADIO ITEM ADD FOR GROUP.** This action adds a radio item (command) in the F10 OTHER radio menu for players of the chosen unit group. When creating this action, a

unit group and item name must be set, as well as the flag the value of which will be raised when the command is issued.

ACTION:	RADIO ITEM ADD FOR GROUP
GROUP:	Player Flight (120)
NAME:	<input type="text"/>
FLAG:	< > 1
VALUE:	<input type="text"/>

- **RADIO ITEM REMOVE.** Delete a custom radio message from the player's radio communications menu created earlier using the RADIO ITEM ADD action.

ACTION:	RADIO ITEM REMOVE
NAME:	<input type="text"/>

- **RADIO ITEM REMOVE FOR COALITION.** This action removes a radio item from the radio menu for the selected coalition. When creating this action, a coalition must be selected, and radio item to be removed must be specified.

ACTION:	RADIO ITEM REMOVE FOR COALITION
COALITION:	Blue
NAME:	<input type="text"/>

- **RADIO ITEM REMOVE FOR GROUP.** This action removes a radio item from the radio menu for the selected unit group. When creating this action, a unit group must be selected, and radio item to be removed must be specified.

ACTION:	RADIO ITEM REMOVE FOR GROUP
GROUP:	Mi-8_3
NAME:	<input type="text"/>

- **RADIO TRANSMISSION.** Allows the user to define a sound file to play and the transmitter's location, emission power, frequency and modulation.



ZONE: From the drop-down menu, select the zone in which the transmission will be broadcast.

MODULATION: From the drop-down menu, select a modulation value for the FM or AM radio station.

LOOP: Select the playback mode of the file: single (OFF) or multiple (ON).

FREQ, MHz: Specify the frequency of the radio station. To listen in on this frequency, it must be included in the operating range of the player aircraft's radio station.

POWER, W: specify the power of the radio station. The more powerful the radio station, the further it can be heard. The typical power of military radio stations is tens of watts.

NAME: sets the name of the radio transmitter.

START DELAY: sets the delay in seconds before turning on the radio.

- **REMOVE MARK.** Removes a marker from the F10 map. A value must be specified when selecting this action.



- **SCENERY DESTRUCTION ZONE.** This action reproduces the destruction of zone objects, for example, after an artillery barrage. When selecting this action, it is necessary to select a target zone and the level of destruction (in %) of the objects within this zone.



- **SCENERY REMOVE OBJECTS ZONE.** This action despawns objects from the map, for example, in order to lessen the system load caused by rendering these objects after an artillery barrage or aerial bombardment. When selecting this action, the following values must be set: target zone (area in which objects will be despawned) and target object type (ALL, TREES ONLY, OBJECTS ONLY).

ACTION:	SCENERY REMOVE OBJECTS ZONE
ZONE:	Action Start
OBJECTS MASK:	OBJECTS ONLY

- SET ACTIVE HELPER GATE TO POINT.** This action generates arcade-style flight gates to the selected object's waypoint. These are green squares through which the player needs to fly, typically present in training and certain quick missions. When choosing this action, you must specify the target object (unit) and the waypoint number.

ACTION:	SET ACTIVE HELPER GATE TO POINT
UNIT:	125
NUMBER:	< > 1

- SET BRIEFING.** This action displays a briefing message in the game window for the selected coalition players (RED or BLUE). When creating this action, you must select a coalition in the appropriate fields, enter the briefing text to be displayed and if necessary, select one image file to be displayed. (*.jpg; *.jpeg; *.png).

ACTION:	SET BRIEFING
COALITION:	Blue
FILE:	<input type="button" value="OPEN"/>
TEXT:	(Large text area)

- SET FAILURE.** This action is used to setup system failures for the player's aircraft. Select the system to fail in the FAILURE drop down menu. Set the probability of failure in per cent in the PROBABILITY % field. Set the desired time span after the trigger conditions are true for the failure to occur in the WITHIN field.

ACTION:	SET FAILURE
FAILURE:	HYDRO MAIN
Probability (%)	< > 100
Within (mm)	< > 1

- SET FLAG VALUE.** This action sets the selected flag to a specified value. The flag number and the target value must be specified when selecting this action.

ACTION:	SET FLAG VALUE
FLAG:	< > 5
VALUE:	< > 1

- **SET INTERNAL CARGO.** This action adds the mass of the virtual cargo to the mass of the helicopter simulating the loading of the cargo compartment. When creating this action, you must specify the mass of the cargo in kilograms.

ACTION: SET INTERNAL CARGO

Mass kg: < > 250

- **SHELLING ZONE.** This action creates an artillery bombardment event inside a specified zone. When creating this action, the following must be specified in the additional fields: bombardment zone, amount of TNT released during the explosion of one shell, and the number of shells that will strike the target zone.

ACTION: SHELLING ZONE

ZONE: Landing

TNT Eq: < > 0.5

SHELLS COUNT: < > 100

- **SHOW HELPER GATES.** This action generates arcade-style flight gates - green squares through which the pilot must fly. These elements are in some training missions and quick mission presets. When creating this action, you must specify the location coordinates and the course direction of the gates.

ACTION: SHOW HELPER GATES

X: 0

Z: 0

Y: 0

COURSE: 0

- **SHOW HELPER GATES FOR UNIT.** This action generates arcade-style flight gates for the selected unit. When choosing this action, you must select the unit (object) and the flag number.

ACTION: SHOW HELPER GATES FOR UNIT

UNIT: 125

FLAG: < > 5

- **SIGNAL FLARE.** Use this action to have signal flares (flare gun) fired from a specified zone. You can also select the color of the flare. This can be a useful action to allow friendly units to mark their location to avoid friendly fire.

ACTION:	SIGNAL FLARE
ZONE:	Charlie - Approach
ALTITUDE:	< > 600
COLOR:	GREEN
BEARING:	< > 0

- **SIGNAL FLARE ON UNIT.** This works the same as the previous action, but the signal flare is fired from the location of a specified unit. This should be used when the unit is moving.

ACTION:	SIGNAL FLARE ON UNIT
UNIT:	070
COLOR:	GREEN
BEARING:	< > 0

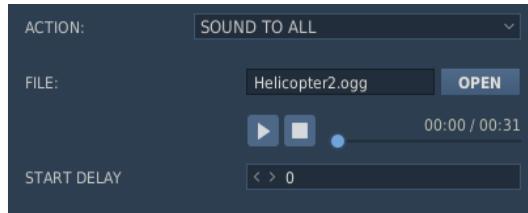
- **SMOKE MARKER.** To have a white phosphorous (WP) marker appear in the mission, you can use this action. When activated, a white WP marker will appear in the specified zone and at the specified altitude. This can be a useful tool when creating Forward Air Controller (FAC) missions.

ACTION:	SMOKE MARKER
ZONE:	Charlie - Start
ALTITUDE:	< > 600
COLOR:	ORANGE

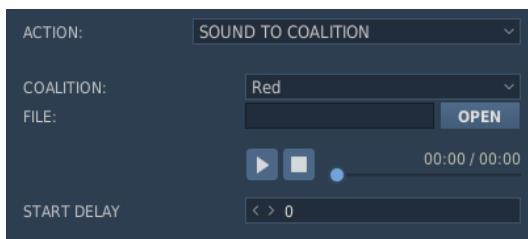
- **SMOKE MARKER ON UNIT.** This acts the same as the previous action, but instead of occurring within a specified zone, it will appear on a specified unit.

ACTION:	SMOKE MARKER ON UNIT
UNIT:	070
COLOR:	BLUE

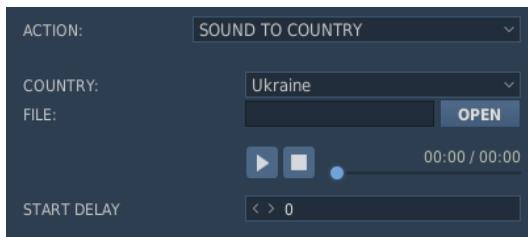
- **SOUND TO ALL.** The Sound action enables you to add an audio file to play as a trigger function. This is often used in conjunction with a Message action to add voice messages with subtitles to the mission. Once selected, a FILE field will be displayed along with an OPEN button. Press the open button and then use the file/folder browser to select the desired file ("*.ogg" or "*.wav" formats). The name of the audio file will then be displayed in the FILE field. The START DELAY field is responsible for the delay in seconds before playing an audio file.



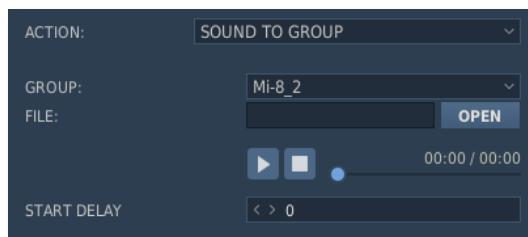
- **SOUND TO COALITION.** This action allows an audio file to just be played to the defined coalition. Once selected, a FILE field will be displayed along with an OPEN button. Press the open button and then use the file/folder browser to select the desired file ("*.ogg" or "*.wav" formats). The name of the audio file will then be displayed in the FILE field. The START DELAY field is responsible for the delay in seconds before playing an audio file.



- **SOUND TO COUNTRY.** This action allows an audio file to just be played to the defined country. The START DELAY field is responsible for the delay in seconds before playing an audio file.



- **SOUND TO GROUP.** Play a custom sound ("*.ogg" or "*.wav" formats) only to a set group (useful for multiplayer). The START DELAY field is responsible for the delay in seconds before playing an audio file.



- **START PLAYER SEAT LOCK.** Used for multi-seat aircraft, this action forces the player to the spot corresponding to the specified number and binds them to it. When creating this action, you must enter the pilot's cockpit seat number.

ACTION:	START PLAYER SEAT LOCK
NUMBER:	< > 1

- **STATIC ACTIVATE.** This action generates the delayed activation of static objects that are present in the mission file but will not spawn in the mission until the moment of activation. When creating this action, you must specify the group of static objects.

ACTION:	STATIC ACTIVATE
GROUP:	RU FARP (Otkrytka)

- **STOP AND DEPLOY TO TEMPLATE.** Using this action, an AI group can be made to stop movement along its route and take up a position as defined by a formation template (for example, an artillery battle position). To create a custom template, see the Templates panel in the Tool Bar of the mission editor.

ACTION:	STOP AND DEPLOY TO TEMPLATE
GROUP:	Alpha - Rebel #4 SAM
TEMPLATE:	Hawk SAM Battery

- **STOP LAST SOUND.** This action forcibly stops the audio played by the previous trigger.

ACTION:	STOP LAST SOUND
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- **STOP PLAYER SEAT LOCK.** This action removes the bind previously set by the START PLAYER SEAT LOCK command, giving the chosen player the opportunity to transfer to another seat in a multi-seat aircraft.

ACTION:	STOP PLAYER SEAT LOCK
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- **STOP PLAYING ACTOR.** The action automatically ends on behalf of the player.

ACTION:	STOP PLAYING ACTOR
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- **STOP RADIO TRANSMISSION.** This action turns off the virtual radio station playing sound files to any unit (air, ground, sea). When creating this action, you must specify the name of the radio transmitter.



- **UNIT AI OFF.** Disable the artificial intelligence of the selected unit. The unit will stop all movement, sensor operations and will not engage in combat.



- **UNIT AI ON.** Activate the artificial intelligence of the selected unit. Only possible after use of the UNIT AI OFF action on the unit.



- **UNIT EMISSION OFF.** This action switches on radar emission from the specified unit or aircraft, for example, when the unit is approaching an enemy unit or entering a combat zone. When choosing this action, you must select a unit.



- **UNIT EMISSION ON.** This action switches off radar emission from the specified unit or aircraft, for example, when the unit is distancing from enemy units or exiting the combat zone. When choosing this action, you must select a unit.



All actions with the "X" prefix are designed for use in creating cockpit triggers and intended for training missions. See description next.

Cockpit Triggers Guide

The cockpit triggers utilized in ED Simulators allow a mission designer to create a wide variety of triggers that evaluate the state of cockpit switches and instruments. This data can be used to provide feedback and instruction to the player using text and voice prompts, as well as 3D graphical highlights of cockpit elements.

Although cockpit triggers are considered a developer's tool, most of their functionality is open to the player. There are some examples, however, which require the use of the in-game console, which is disabled in public builds.

Cockpit triggers are utilized similarly for all DCS flyable aircraft. A number of aircraft script files (.LUA) are used to obtain data used by the triggers. Each DCS aircraft includes a collection of script files in its own dedicated folder, found in X:\DCS\Mods\aircrafts\Aircraft Name\Cockpit\Scripts. The specific .LUA files used by cockpit triggers will be referenced below. To ease the workload of a mission designer working with cockpit triggers, a cockpit arguments guide has been prepared for the A-10C cockpit and can be found here: [A-10C Cockpit arguments](#).

.LUA files should only be opened with a proper code editor, such as Notepad++. When working with the scripts, the Search function [Ctrl +F] can be very helpful in locating the desired sections of code.

CONDITIONS

The conditions and actions of the triggers use the command numbers, which can be found in the corresponding Scripts folder of each aircraft along the path DCS\Mods\aircraft\Aircraft Name\Cockpit\Scripts:

\Mods\aircraft\Aircraft Name\Cockpit\Scripts\command_defs.lua – command numbers;
\Mods\aircraft\Aircraft Name\Cockpit\Scripts\clickabledata.lua – button command numbers;
\Mods\aircraft\Aircraft Name\Cockpit\Scripts\devices.lua – device ID numbers in the cockpit.

X: COCKPIT ARGUMENT IN RANGE. The position of every cockpit control and instrument is defined by a custom argument ID and valid value range. This trigger checks for a set cockpit argument to be within a set value range. This is most often used to evaluate switch and button states with discrete argument values (such as '0' for *off* and '1' for *on* or in decimal values between 0 and 1 for multi-position switches). However, it can also be used to evaluate the position of needle instruments, such as airspeed or vertical velocity, etc.



- **ARGUMENT** – sets the ID number of the cockpit argument to check. Clickable cockpit functions (switches, buttons, knobs, etc.) are described in *DCS\Mods\aircrafts\Aircraft Name\Cockpit\Scripts\clickabledata.lua*. Non-clickable cockpit arguments, such as instruments are described in *DCS\Mods\aircrafts\Aircraft Name\Cockpit\Scripts\mainpanel_init.lua*. The variable “*arg*” describes the argument ID. The variable “*arg_value*” describes the increment of each movement of the argument. The variable “*arg_limit*” describes the limits of the argument’s range of movement.
- **MIN** – sets the minimum value of the set argument, which will satisfy the condition to execute the trigger. Valid value range is -1 to 1.
- **MAX** – sets the maximum value of the set argument, which will satisfy the condition to execute the trigger. Valid value range is -1 to 1.

Note, to successfully evaluate an argument, you may need to enter a MIN and MAX range that is inclusive of the desired value. For example, when evaluating an argument to equal to “0.5”, enter “0.49” for MIN and “0.51” for MAX.

X: COCKPIT HIGHLIGHT IS VISIBLE. Checks for a set cockpit highlight to be displayed. Each cockpit highlight is assigned an ID by the mission designer. This trigger evaluates whether a specific highlight is displayed in the cockpit.

- **ID** – sets the ID value of the cockpit highlight to check (as set by X: COCKPIT HIGHLIGHT ELEMENT/INDICATION/POINT trigger actions).



X: COCKPIT INDICATION TEXT IS EQUAL TO (requires console) – checks the contents of a set cockpit digital indication string. Digital indicators in the cockpit are individually identified by an ID number in the .LUA files. Each indicator displays a collection of display elements. This trigger evaluates whether a specific display element of a set indicator matches the desired string of characters. This is a very useful method of evaluating whether the correct avionics parameters are set-up on the digital displays.

- **INDICATOR ID** – sets the ID value of the cockpit indicator containing the desired element. Indicator ID’s are described in *DCS\Mods\aircrafts\Aircraft Name\Cockpit\Scripts\device_init.lua*. To quickly locate the indicator ID’s in the .LUA file, perform a search function for “indicators”. Indicator ID’s begin with ‘0’ at the top of the table and are increased by 1 with each subsequent indicator in the table. For example, the HUD ID for A-10C is ‘5’.

- **ELEM NAME** (element name) – sets the name of the display element containing the desired string. To obtain an element name, run a mission with the desired element string displayed in the cockpit, open the game console and execute the `"console.out(list_indication(n))"` command (where '*n*' is the desired indicator's ID). The game console can be accessed by pressing the `` command in-game. The `console.out(list_indication(n))` console command will list all currently displayed elements with their associated strings for the set indicator. Note, the element name entry must match the element name exactly, including capitals and spaces (spaces may be present as initial characters).
- **VALUE** – sets the character string, which will satisfy the condition to execute the trigger. Note, the string entry must match the element string exactly, including capitals and spaces (spaces may be present as initial characters).



EXAMPLE: To setup a trigger in A-10C that checks for the TAD map range to be set to 40 miles, enter "1" for indicator ID to set this to the left MFCD, enter "TAD_scale" as the element name and enter "40" as the desired string.

X: COCKPIT PARAM EQUAL TO (requires console) – checks for the desired setting of a set cockpit parameter. This trigger evaluates a number of specially-designed cockpit parameter trackers for the A-10C (such as TGP zoom level, steerpoint name, etc.).



- **PARAM** (parameter) – sets the name of the parameter to check. To obtain a parameter name, run a mission with the desired parameter active, open the game console and execute the `"console.out(list_cockpit_params())"` command. The game console can be accessed by pressing the `` command in-game. The `console.out(list_cockpit_params())` console command will display the current states of all cockpit parameters.
- **VALUE** – sets the parameter setting, which will satisfy the condition to execute the trigger. Note, depending on the parameter, the value may be a numerical or alphabetical string.

X: COCKPIT PARAM IN RANGE (requires console) – checks for the set cockpit parameter to be within the set value range. This trigger evaluates a number of specially-designed cockpit parameter trackers (such as TGP zoom level, steerpoint name, etc.).

- **PARAM** (parameter) – sets the name of the parameter to check. To obtain a parameter name, run a mission with the desired parameter in effect, open the game console and execute the `"console.out(list_cockpit_params())"` command. The game console can be

accessed by pressing the `` command in-game. The `console.out(list_cockpit_params())` console command will display the current states of all cockpit parameters.

- **MIN** – sets the minimum value of the set parameter, which will satisfy the condition to execute the trigger. Valid value range is -1^9 to 1^9.
- **MAX** – sets the maximum value of the set parameter, which will satisfy the condition to execute the trigger. Valid value range is -1^9 to 1^9.



X: COCKPIT PARAM IS EQUAL TO ANOTHER – checks for the set parameter value to be identical to another parameter's value. This trigger can be used in conjunction with the X: COCKPIT PARAM SAVE AS action in order to compare parameter values at different points in the mission.



- **PARAM** (parameter) – sets the name of the first parameters to evaluate. To obtain a parameter name, run a mission with the desired parameter in effect, open the game console and execute the “`console.out(list_cockpit_params())`” command. The game console can be accessed by pressing the `` command in-game. The `console.out(list_cockpit_params())` console command will display the current states of all cockpit parameters.
- **PARAM** (parameter) – sets the name of the second parameter to evaluate.

Note, one of the two parameter variables may be a custom parameter name saved using the X: COCKPIT PARAM SAVE AS action.

ACTIONS

The conditions and actions of the triggers use the command numbers, which can be found in the corresponding Scripts folder of each aircraft along the path DCS\Mods\aircraft\Aircraft Name\Cockpit\Scripts:

\Mods\aircraft\Aircraft Name\Cockpit\Scripts\command_defs.lua – command numbers;
\Mods\aircraft\Aircraft Name\Cockpit\Scripts\clickabledata.lua – button command numbers;
\Mods\aircraft\Aircraft Name\Cockpit\Scripts\devices.lua – device ID numbers in the cockpit.

X: COCKPIT HIGHLIGHT ELEMENT – enables a cockpit highlight of the specified cockpit control (switch, button, knob, etc.).

- **ID** – sets the ID of the highlight. The ID can be referenced by other triggers to evaluate the status of or remove the highlight.
- **ELEM NAME** (element name) – sets the name of the cockpit control to highlight. Clickable cockpit functions (switches, buttons, knobs, etc.) are described in *Scripts\Aircrafts\Aircraft Name\Cockpit\clickabledata.lua*.
- **SIZE OF BOX** – sets the span of the highlight in meters. A setting of '0' will automatically conform the highlight to the 3D shape of the cockpit control.



X: COCKPIT HIGHLIGHT INDICATION (required console) – enables a cockpit highlight of the specified digital indication element (such as HUD display elements).

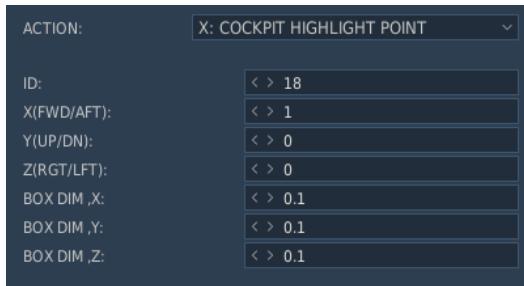
- **ID** – sets the ID of the highlight. The ID can be referenced by other triggers to evaluate the status of or remove the highlight.
- **INDICATOR ID** – sets the ID value of the cockpit indicator containing the desired indication. Indicator ID's are described in *DCS\Mods\aircrafts\Aircraft Name\Cockpit\Scripts\device_init.lua*. To quickly locate the indicator ID's in the lua file, perform a search function for "indicators". Indicator ID's begin with '0' at the top of the table and are increased by 1 with each subsequent indicator in the table. For example, the HUD ID for A-10C is '5'.
- **ELEM NAME** (element name) – sets the name of the display element to highlight. To obtain an element name, run a mission with the desired element string displayed in the cockpit, open the game console and execute the "*console.out(list_indication(n))*" command (where '*n*' is the desired indicator's ID). The game console can be accessed by pressing the `` command in-game. The *console.out(list_indication(n))* console command will list all current element strings of the set indicator.
- **SIZE OF BOX** – sets the span of the highlight in meters.



X: COCKPIT HIGHLIGHT POINT – enables a cockpit highlight centered at the specified 3D cockpit coordinates. This action allows you to specify the 3D dimensions of the highlight, which

can be useful for creating “flat” 2D highlights of panel instruments in either horizontal or vertical planes.

- **ID** – sets the ID of the highlight. The ID can be referenced by other triggers to evaluate the status of or remove the highlight.
- **X (FWD/AFT)** – sets the highlight position on the X (forward/aft) axis of the cockpit in meters.
- **Y (UP/DN)** – sets the highlight position on the Y (up/down) axis of the cockpit in meters.
- **Z (RGT/LFT)** – sets the highlight position on the Z (right/left) axis of the cockpit in meters.
- **BOX DIM, X** – sets the span of the highlight’s X axis in meters.
- **BOX DIM, Y** – sets the span of the highlight’s Y axis in meters.
- **BOX DIM, Z** – sets the span of the highlight’s Z axis in meters.



X: COCKPIT PARAM SAVE AS (requires console) – save the current value of the specified cockpit parameter as a new parameter. This trigger allows you to save the state of a parameter for later evaluation during the mission.

- **SOURCE** – sets the name of the parameter for which the value will be saved. To obtain a parameter name, run a mission with the desired parameter in effect, open the game console and execute the `"console.out(list_cockpit_params())"` command. The game console can be accessed by pressing the `` command in-game. The `console.out(list_cockpit_params())` console command will display the current states of all cockpit parameters.
- **DESTINATION** – sets the name of the new parameter, under which the value of the saved parameter will be stored while the mission is running.



X: COCKPIT PERFORM CLICKABLE ACTION – sets the specified cockpit control to the specified position. This trigger can be used to force-set a required cockpit control (for example to engage autopilot mode).

- **COCKPIT DEVICE** – sets the ID value of the cockpit device manipulated by the required control. Device ID's are described in *DCS|Mods|aircrafts|Aircraft Name|Cockpit|Scripts|devices.lua*. Device ID's begin with '1' at the top of the table and are increased by 1 with each subsequent device in the table. For example, the ID for *autopilot* is '38'.
- **COMMAND** – sets the command value for the required control, starting with a base value of 3000. Command values are described in *DCS|Mods|aircrafts|Aircraft Name|Cockpit|Scripts|clickabledata.lua*, using the argument "device_commands.Button_n" (where 'n' is the command value of interest). To quickly locate a desired command in the .LUA file, perform a search for relevant terms (such as "autopilot" or "MFCD"). For example, the command to engage the autopilot in A-10C is scripted as "device_commands.Button_2". As such, it would be entered in the Command field as "3002".
- **VALUE** – sets the argument value (control position in the cockpit). Control arguments are described in *DCS|Mods|aircrafts|Aircraft Name|Cockpit|Scripts|clickabledata.lua*. The variable "arg" describes the argument ID (not necessary for this trigger). The variable "arg_value" describes the increment of each movement of the argument. The variable "arg_limit" describes the limits of the argument's range of movement.



X: COCKPIT REMOVE HIGHLIGHT – removes the specified cockpit highlight.

- **ID** – sets the ID of the cockpit highlight to remove.



X: PREVENT CONTROLS SYNCHRONIZATION – This trigger can be used at the start of the mission to disable synchronization of cockpit controls with the actual controls on the player's input hardware. When enabled in the player's *Options > Miscellaneous* tab, control synchronization may negatively affect missions with cockpit triggers by automatically setting cockpit controls to positions other than default.



X: SET COMMAND – inputs the specified game command.

- **COMMAND** – sets the ID value of the command to input. The command ID can be obtained in the *OPTIONS>CONTROLS* screen by hovering the mouse over the command description (left side of the screen). This functionality can be enabled in *Mission Editor/Mission Editor.lua* by changing the "*OPTIONS_ADD_COMMAND_CODES_TO_TOOLTIP*" line from "false" to "true".



X: SET COMMAND WITH VALUE – inputs the specified game command with the specified value.

- **COMMAND** - sets the value of the command to input. The command value can be obtained in the *Game Options>Controls* screen by hovering the mouse over the command description (left side of the screen). This functionality can be enabled in *Mission Editor/Mission Editor.lua* by changing the "*OPTIONS_ADD_COMMAND_CODES_TO_TOOLTIP*" line from "false" to "true".
- **VALUE** – sets the value with which to enter the command.



X: START LISTEN COCKPIT EVENT – start listening for the specified cockpit event to set the specified flag to *on*. Cockpit events are limited to the Ka-50.

- **EVENT** – sets the event name to listen to. The following events are currently scripted in the engine.
 - "setup_HMS"
 - "setup_NVG"
 - "DisableTurboGear"
 - "GroundPowerOff"
 - "EnableTurboGear"
 - "GroundPowerOn"
 - "OnNewNetHelicopter"
 - "initChaffFlarePayload"
 - "switch_datalink"
 - "OnNewNetPlane"
 - "WeaponRearmFirstStep"
 - "WeaponRearmComplete"

- "initChaffFlarePayload"
- "repair"
- "LinkNOPtoNet"
- "UnlinkNOPfromNet"
- **FLAG** – sets the flag number to set to *on* when the specified event occurs.



X: START LISTEN COMMAND – start listening for the specified input command to set the specified flag to *on*.

- **COMMAND** – sets the value of the command to listen to. The command value can be obtained in the *Game Options>Controls* screen by hovering the mouse over the command description (left side of the screen). This functionality can be enabled in *Mission Editor/Mission Editor.lua* by changing the "*OPTIONS_ADD_COMMAND_CODES_TO_TOOLTIP*" line from "*false*" to "*true*".
- **FLAG** - sets the flag number to set to *on* when the specified event occurs.
- **HIT COUNT** – sets the number of times the command must be entered before the specified flag is set to *on*.
- **VAL LIM MIN** – sets the minimum value of the command input.
- **VAL LIM MAX** – sets the maximum value of the command input.
- **COCKPIT DEVICE** – cockpit system ID number.



X: START WAIT USER RESPONSE – start listening for input of the SPACE BAR key to set the specified flag to *on*. This can be a convenient way to progress a training mission based on the player's signal. Using this trigger will prevent an input command normally mapped to the Space Bar key (usually fire gun).

- **FLAG** – sets the flag number to set to *on* when the SPACE BAR key is pressed while the action is in effect.



X: STOP WAIT USER RESPONSE – stop listening for input of the SPACE BAR key. This trigger disables the START WAIT USER RESPONSE action.



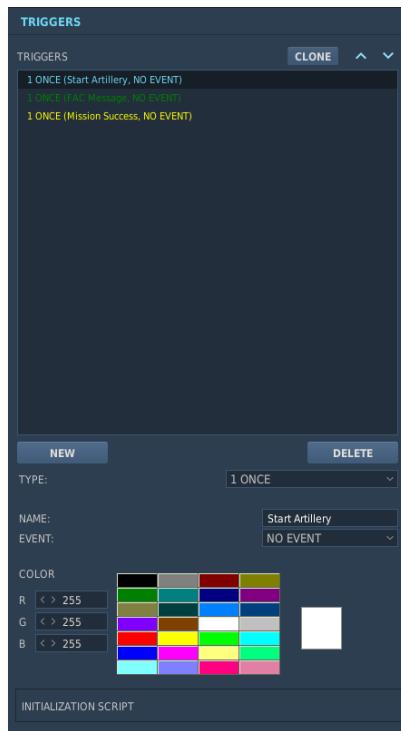
This action can be useful when creating mission scenarios where the player is to command AI groups to perform various actions, such as advance forward or hold position, by binding the desired AI actions to the flag number of the corresponding custom radio message.

Trigger Practical Exercise

Now that we have reviewed the mechanics of the Trigger system, we will create a basic mission using trigger scripting. In this mission, we will do the following:

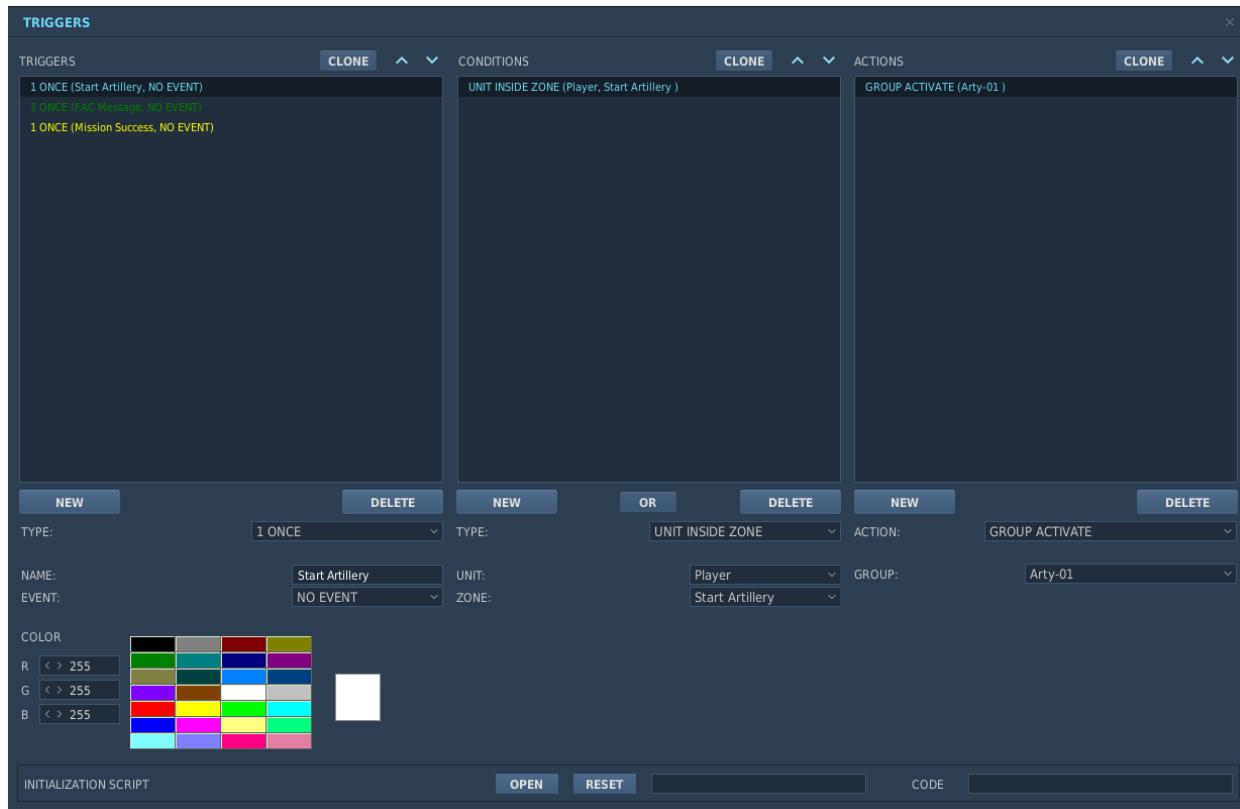
1. Player will fly to battle area, and when nearing this area, friendly artillery will bombard an enemy position.
2. As the player flies closer, they will receive a Forward Air Controller message about tasked targeting.
3. When the player destroys enemy armor in the target area, friendly ground forces will advance.
4. When friendly forces reach their objective, they will radio the player of a successful mission.

The first thing we will do is set up the Zone triggers. So, I will create three different trigger zones, and I will call these Start Artillery, FAC Message, and Mission Success. I will set the TYPE as ONCE for each of them.



I will now set up the conditions and actions for each of these triggers.

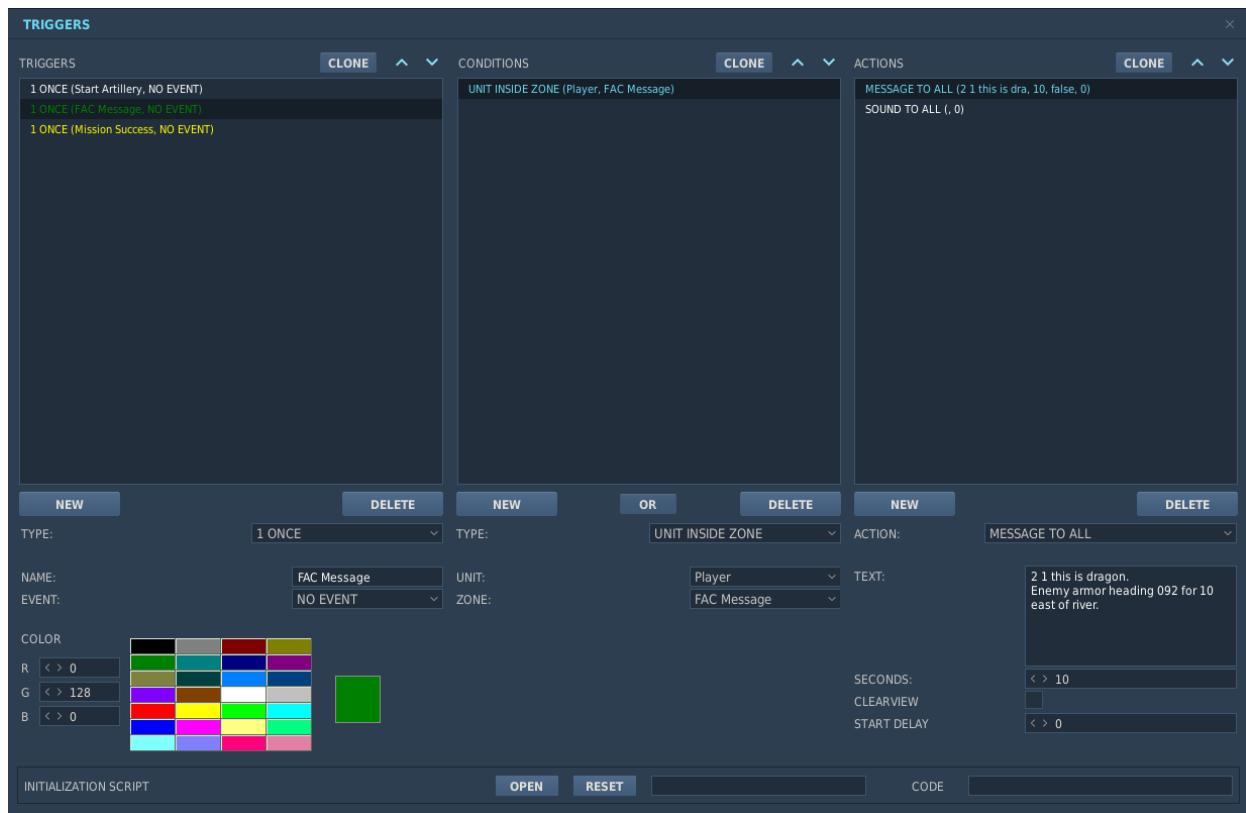
For the Start Artillery trigger, I will create a NEW condition and set the TYPE to UNIT INSIDE ZONE. In the UNIT field I will select the player's aircraft (Player) and in the ZONE I will select Start Artillery. The Start Artillery zone is one I created with the trigger zone creation tool that we'll discuss later.



To set the action, I will press NEW and then select GROUP ACTIVATE as the ACTION. With that selected, I will set the Arty-01 as the Group. Because this is to be an activated group, I set its START TIME in the Group Properties to a time past the anticipated mission start time.

The next trigger zone we will script is the FAC Message. To do so I will select the FAC Message from the triggers list and then click the NEW button in the Conditions pane. Again, I will select UNIT IN ZONE as the TYPE and the UNIT as PLAYER. However, for this trigger I will set the ZONE as FAC Message.

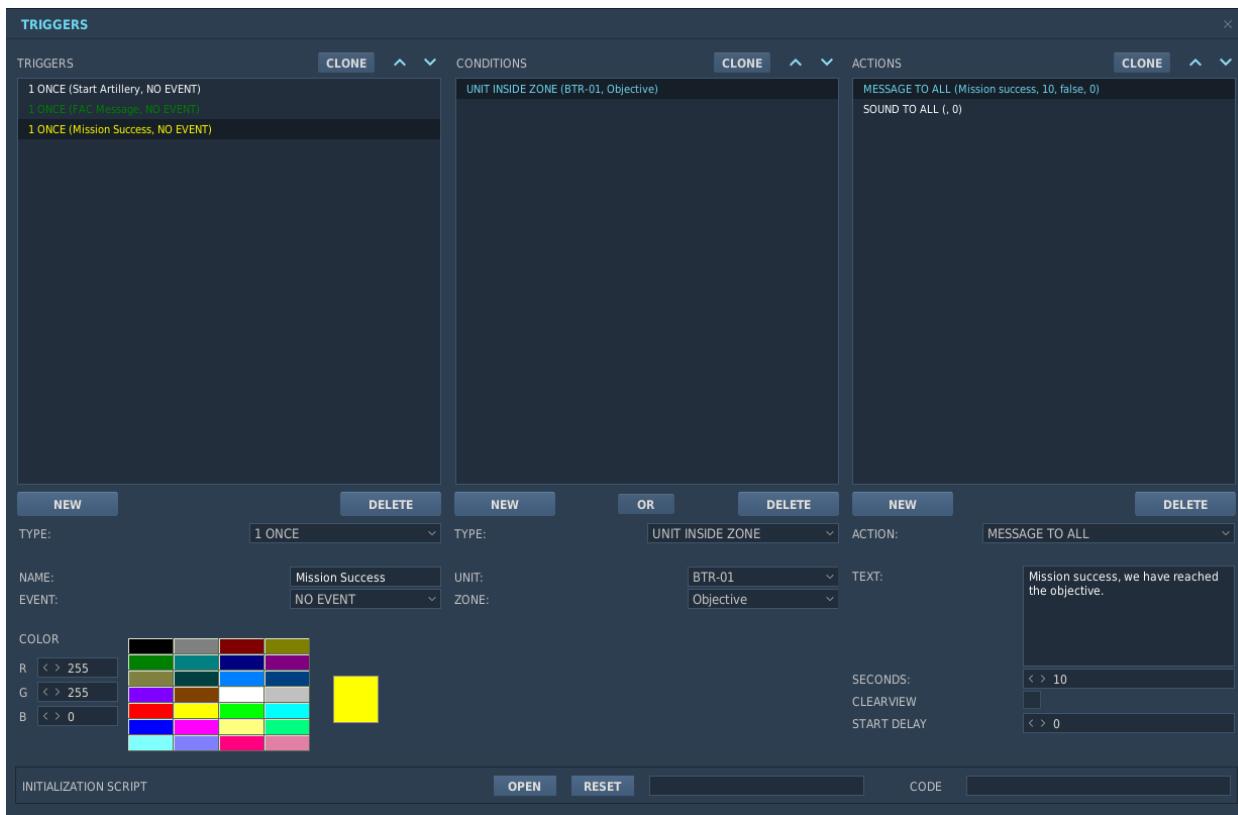
For the action, I want both a text message and audio message to play. So, I will first press the NEW button in the Actions pane and check that the MESSAGE TO ALL action is selected. I will then enter a text message in the TEXT box.



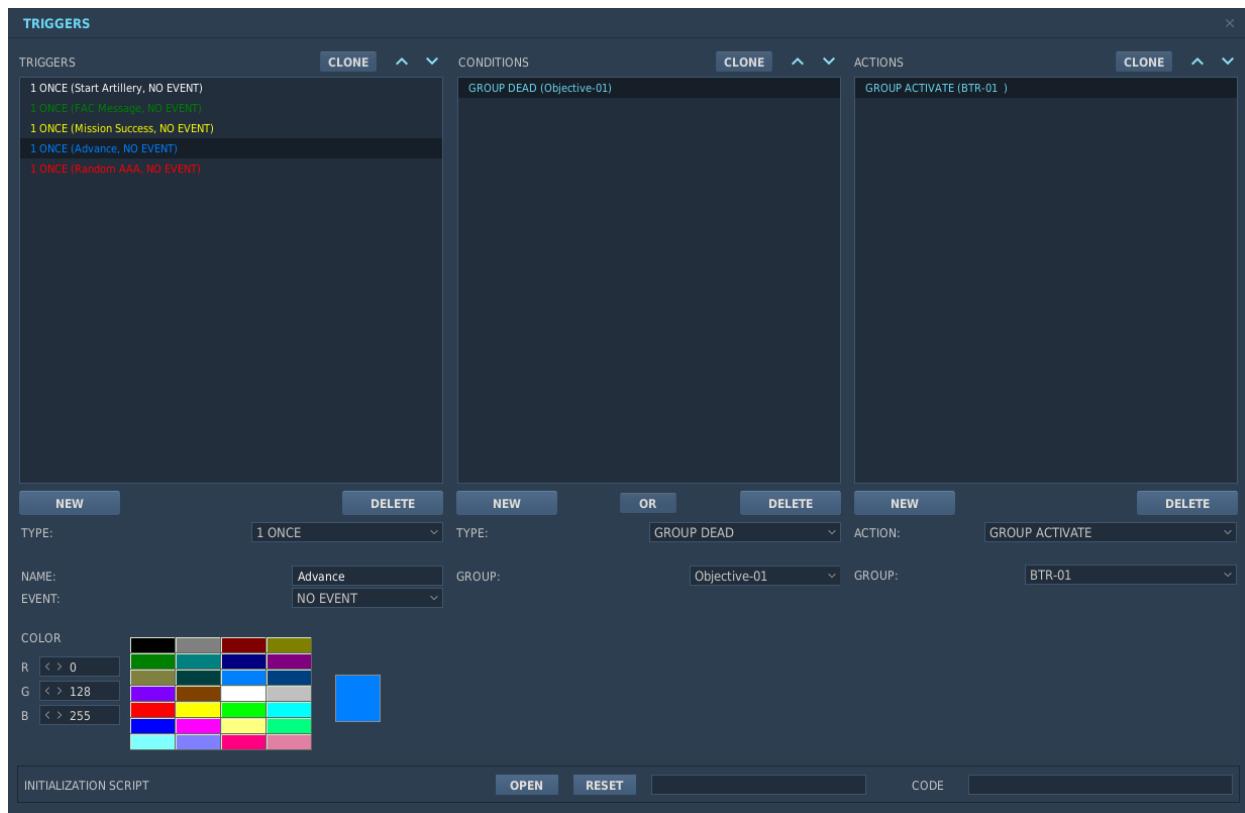
I now need to set the second (audio) action for this trigger by pressing the NEW button again but this time selecting the SOUND TO ALL option as my ACTION. I will then press the OPEN button and use the browser to select the audio file I wish to play.

The third trigger zone condition action we will create will be for the Mission Success message. This will trigger when the friendly ground forces reach the objective. The objective will be defined as one of the trigger zones I had created.

I will create a NEW condition and set the TYPE to UNIT IN ZONE. In the UNIT field, I will select one of the friendly armor units (BTR-01) and in the ZONE field, I will select Objective.

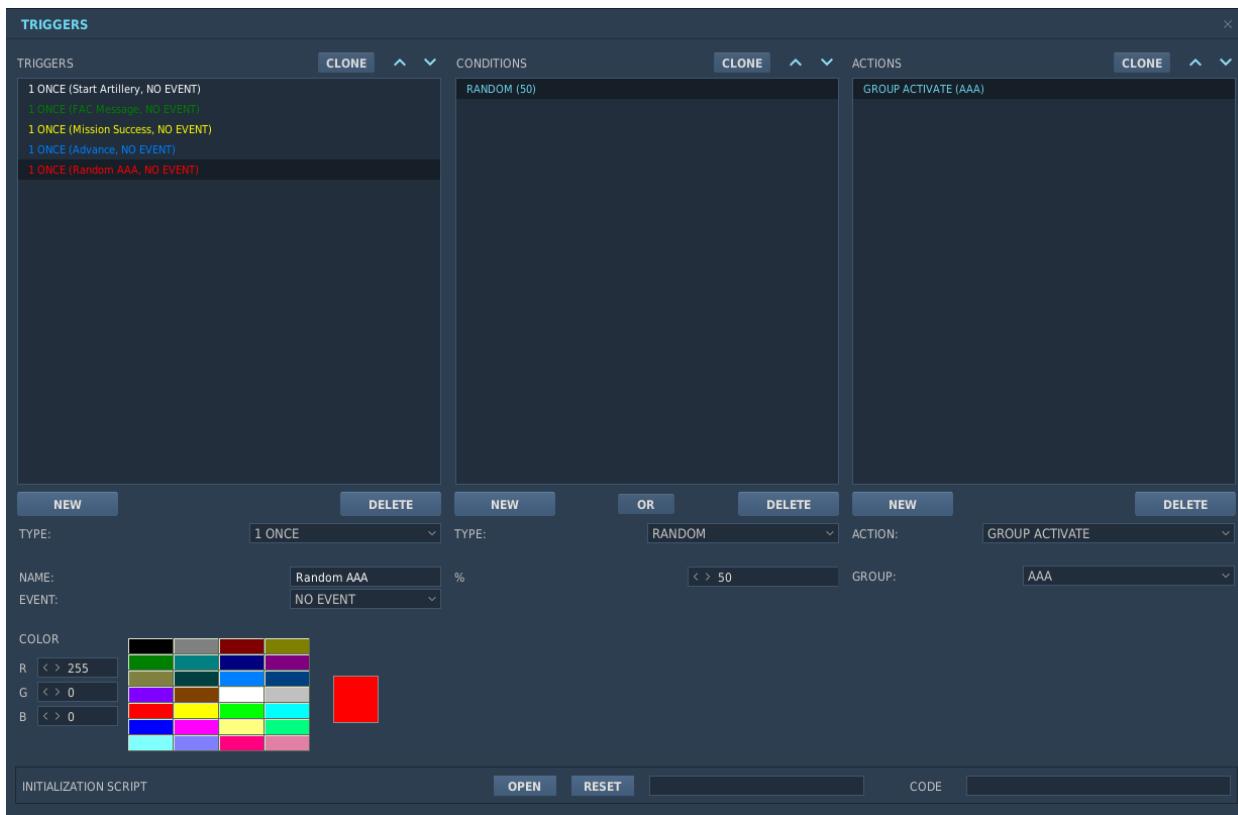


For the action, I want both a text message and audio message to play. So, I will first press the NEW button in the Actions pane and check that the MESSAGE TO ALL action is selected. I will then enter a text message in the TEXT box. I now need to set the second (audio) action for this trigger by pressing the NEW button again but this time selecting the SOUND TO ALL option as my ACTION. I will then press the OPEN button and use the browser to select the audio file I wish to play.



The next trigger we will create is one that allows the friendly ground units to advance from their starting location once the blocking enemy force is destroyed. To do so, we will first create a new trigger as a ONCE TYPE and call it Advance. Now we will create a NEW condition and set the TYPE to GROUP DEAD. From there, we will set the UNIT to the enemy armor units that are blocking our path (Objective-01). For the Action, we will create a new one by clicking the NEW button and then setting the ACTION to GROUP ACTIVATE. From the GROUP drop down list I will select our friendly ground force platoon that will activate and advance when the blocking force is destroyed. Remember that I needed to set the START TIME value of the friendly ground forces (BTR-01) to a time past the mission play time.

The final trigger we will place in this example is an enemy air defense that is assigned a random chance of appearing in the mission. We will create a new ONCE trigger and call it Random AAA. Next, we will create a NEW condition and set the TYPE to RANDOM. In the % field, we will choose 50 (as in 50%).



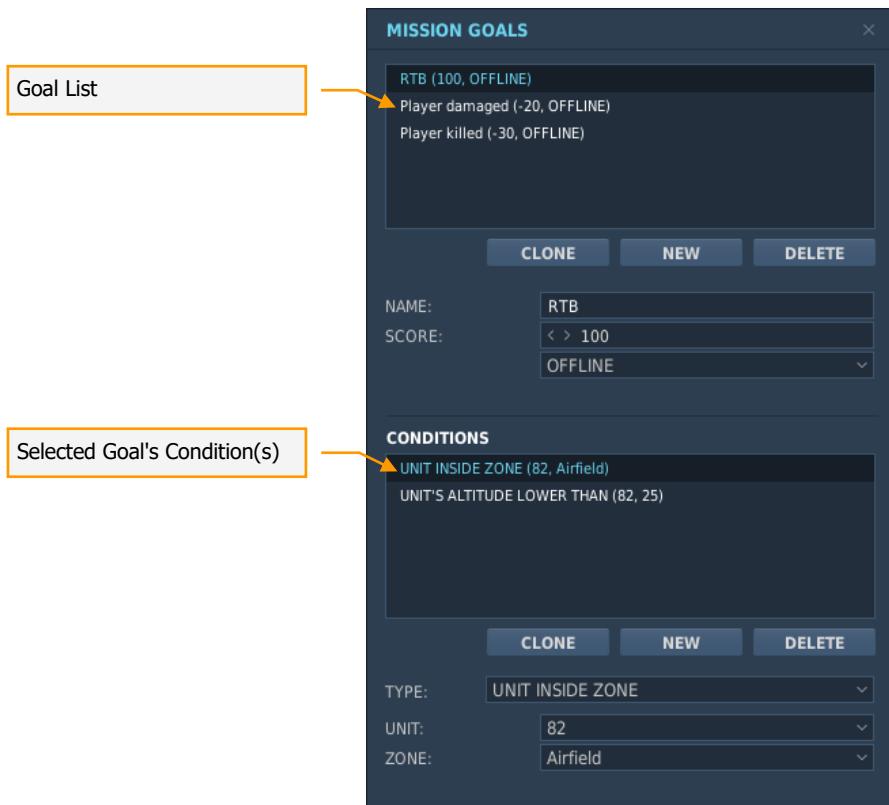
To set the action, we will create a NEW action and set the ACTION to GROUP ACTIVATE. From the GROUP drop down we will select the enemy air defense vehicle I placed in the mission called AAA. In the unit placement window, there is also the option to have activated unit visible or invisible before it is active in the world.

Define Mission Goals



When evaluating a mission for success, draw, or failure, the simulation uses point totals that are assigned by the mission builder. If total points at the end of a mission are 49 or less, the mission is a failure; if total points equal 50, the mission is a draw. If total points are 51 or higher, the mission is deemed a success. This point total is also used to define which stage and mission may be chosen next in a campaign.

The same set of conditions used in the Trigger system is also used to define mission goals. In the Goal window, the list of all created goals is displayed in the top pane. Once a goal is selected by clicking on it, the conditions of the goal are listed in the bottom pane.



To create a New goal, press the NEW button under the MISSION GOALS pane. Upon doing so, functions are displayed beneath the pane:

- **NEW** button. Press this button to create/add a new Goal to the Goal List.
- **DELETE** button. To remove a Goal from the list, click on it from the list and then click on the DELETE button.

- **CLONE** button. Press this button to clone the selected Goal into the Goal list.
- **NAME**. Type in the name you wish to assign to the Goal. This name, along with its score and assignment, will be displayed in the Goal List.
- **SCORE**. Each goal may be assigned a point score by either using the left and right buttons or manually entering it into the field.

The bottom drop down field allows you to assign who the points will be awarded to. There are three options:

- **OFFLINE**. This setting is used for single player missions; points are only in regards to the Player.
- **RED**. A Goal assigned to RED will result in the assigned points awarded to the RED side.
- **BLUE**. A Goal assigned to BLUE will result in the assigned points awarded to the BLUE side.

Once a Goal has been created, you must click the NEW button under the CONDITIONS pane to determine the conditions by which the Goal is based. The creation of Goal conditions is the same as that used to create Trigger conditions.

NEW button. Press the NEW button to create a new Goal condition. When you create a new Goal you will need to set the TYPE. You may create multiple conditions for a single Goal.

DELETE button. Press the DELETE button to remove a condition from the Goal. You will first need to click on the condition you wish to remove before pressing the DELETE button.

CLONE button. Press the CLONE button to clone the selected Goal condition.

TYPE drop down field. Using this drop down, you can set the condition by which the Goal is accomplished.

Enter or select additional parameters depending on the type of condition.

The mission is considered completed when all its specified conditions are met. If even one of these conditions is not yet satisfied, the mission will not be completed.

Battlefield Commanders



The Battlefield Commanders button opens the BATTLEFIELD COMMANDERS panel of the Mission Editor. This panel allows you to set the various roles for single and multiplayer missions.



PILOT CAN CONTROL VEHICLES. This checkbox enables/disables the ability of a player assigned to an aircraft to assign movement and targeting commands to AI ground units via the F10 map view during the mission. If you are creating a single player mission, you will probably want to enable this.

MISSION/MULTIPLAYER ROLES (Red, Blue). This table sets the number of slots open in a multiplayer mission for each side:

- **GAME MASTER.** This allows the player to observe and play as JTAC and control ground units for both sides. The Game Master can view all units. As a Game Master, you can dynamically alter the ground war during the mission.

Note 1: Although there are both Red and Blue side Game Master roles, both sides act the exact same and both control units from both sides.

Note 2: For Head-to-Head multiplayer matches, it is best not to enable any Game Master roles.

- **TACTICAL CMDR (COMMANDER).** This allows players to strategically control ground units from the F10 Command Map. This includes indirect fire systems like artillery and multiple rocket launcher systems. This also allows first person vehicle control, including JTAC capability.
- **JTAC/ Operator.** This allows first person vehicle control, including JTAC capability, but does not have strategic control over ground units.
- **OBSERVER.** Players cannot play as JTAC or control ground units, but it has unlimited camera access to observe the action.

Once a mission has been started, each player will choose which command role to play from the Choose Role window. Once you select the desired role, press the Start button.

Aircraft that are set to human control will also be listed.



Set Mission Options



The Mission Options panel has been described in detail previously in the [System Bar chapter of the manual](#).

Fly Mission



Press the green flight button to exit the Mission Editor and open the mission Briefing menu in preparation for the flight.

Task Planning for Unit Groups

Fundamental Concepts

Mission building involves creating unit groups, planning of group routes and combat tasks, and developing a dynamic battlefield atmosphere using triggered events, mission weather and time of day settings.

When designing a mission, you can choose one of two basic approaches to creating battle scenarios:

1. Simple: Place and route groups with minimal adjustments of default route and task settings (actions to determine behavior will be created automatically).
2. Advanced: Use the Advanced Actions Panel of the Group Properties Menu for precise manual control over group actions.

The first method requires minimum use of the interface to create simple missions with the idea that AI groups will act generally as envisioned by the designer, but using automatic behavior actions programmed into the AI based on factors such as presence of enemy units, contact range, etc. In this approach, the AI will generally move along its route and engage enemy units as soon as they are within engagement range, which can vary based on the unit type and task (in case of aircraft groups).

However, the automated AI actions created by default may not always produce the desired results. In particular, if the mission calls for complex AI actions, for example attacking only certain types of ground units in different target areas or restrictions on the use of particular weapons, the desired behavior may be achieved more effectively by using the Advanced Actions Panel to create and configure group actions in detail. Although more time consuming and complex, this allows for much greater flexibility and control in scripting AI behavior in the mission.

Actions refer to the various behaviors a mission designer can script for the AI to perform in the mission. Before we describe all of the advanced actions in detail, you should understand the following terms: *Group Artificial Intelligence*, *Task*, *Enroute Task*, *Command* and *Option*.

Tasks and Enroute Tasks are the primary combat actions and include a number of different targeting and engagement options for air, ground and naval groups. For example, a task to attack an enemy group or to act as a Forward Air Controller (FAC) in providing targeting commands to other friendly units. All Tasks and Enroute Tasks are actions performed over a period of time. Commands are instantaneous actions, such as setting a radio frequency for the group. Options are rules or limitations imposed on the group in executing an action.

All actions include a number of conditions the mission designer can set to control the starting and ending of the action. These include setting a mission time for starting and/or ending the action, action duration time, flag states (on/off), action activation probability, and custom scripting in LUA code language.

Group Artificial Intelligence (AI)

Group Artificial Intelligence is a virtual object (represented by the lead unit of a group) that controls game units or a group of units. The AI executes the actions set for the group in the mission editor. In doing so, the object follows behavior rules programmed into the simulation by the developers, however its behavior can also be adjusted by the mission designer using the tasking options available in the Advanced Actions Panel. Note, actions are set for entire groups only and not for individual units within a group.

When creating a group route, the mission designer can add or edit the actions for the group to perform at each waypoint (WP) of the route. Actions of a given waypoint are activated once the group leader reaches the waypoint. The actions are performed sequentially based on their order and/or priority setting. Priority is set as a whole number, starting with 0 as the highest priority value. Actions can also be set in the Trigger Menu of the mission editor to be activated independently of the route waypoints.

Perform Task

Task actions involve combat engagement, targeting and maneuvering. By setting a Perform Task, the mission designer commands the AI to perform a specific combat function at a specific point in the mission. For example: orbit on station, engage an enemy group, provide targeting to other groups as a FAC. Tasks have the highest execution priority for the AI and are generally used to set the primary group action for a waypoint. The AI will perform multiple Tasks one at a time according to their order or priority setting.

Task execution can be ended either by the AI automatically in-game or according to the action stop conditions set by the mission designer. For example, the AI will cease to attack a designated group of enemy vehicles when all of the vehicles in the group are destroyed or the AI group has exhausted its supply of usable weapons. Alternatively, the AI can be forced to cease the attack by setting an action stop condition, such as an action duration time limit.

Start Enroute Task

Like Perform Tasks, Start Enroute Tasks are combat actions that involve targeting or engagement actions. However, Start Enroute Tasks are designed to be active for the length of the group's route and can be executed multiple times and in multiple locations as long as the conditions for executing the Start Enroute Task are in effect and the AI is able to execute the action. As such, Start Enroute Tasks assume periodic interruptions of route navigation to perform the action, such as attacking "pop-up" enemy units detected along the route.

Whereas Tasks involve definitely known and pre-set targets, Start Enroute Tasks allow for some uncertainty in target type or location. The key phrase to keep in mind when using Start Enroute Tasks is "*Search For...*". This means the AI will actively search for the target and perform an attack only when the target is detected.

Start Enroute Tasks can only be ended by action stop conditions set by the mission designer. Otherwise, an Start Enroute Task will be active for the duration of the AI's "life" in the mission.

Numerous Start Enroute Tasks can be active simultaneously, however only one Start Enroute Task can be executed at a time. If conditions for multiple Start Enroute Tasks are true (for

example, enemy groups designated in two different Start Enroute Tasks are detected simultaneously), one Start Enroute Task will be selected by the AI to perform based on its order or priority setting.

Note, any Task will always have a higher priority over any concurrent Start Enroute Task (unless set otherwise manually by the mission designer). As such, an Start Enroute Task can be interrupted by a Task and resumed after its completion.

Perform Command

A Command is an instantaneous group action that is executed immediately upon activation. For example, a *Set Frequency* command action will change the group's radio communications frequency. Like Tasks and Enroute Tasks, the conditions for executing Commands can be customized by the mission designer and include mission time, flags state, command activation probability, and custom scripting in LUA code language.

Set Option

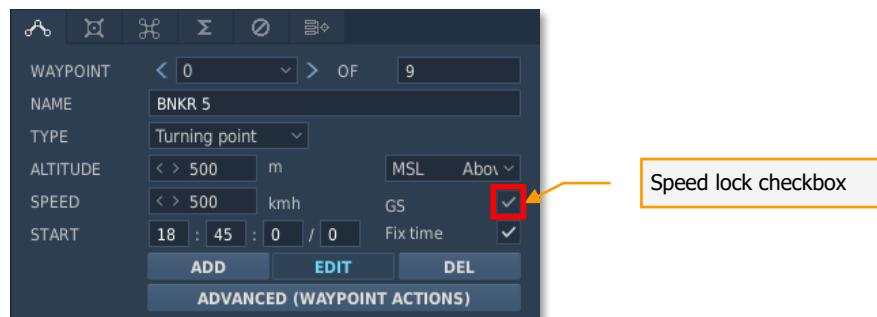
Options set rules for the group for the duration of the mission, unless started and ended at specific waypoints. Options are set using the format: *<variable>=<value>*, such as *Formation=Trail*. Using such options, the mission designer can control the AI's use of sensors and weapons when performing actions. For example, the *<Radar Use>* option setting to *<Never>* can be used to script a radar-silent intercept.

All actions can be tied to route waypoints or set independently of the route using the AI Task action of the Trigger Menu of the mission editor. In the latter case, the action will be executed when the rules of the trigger are in effect, as opposed to passing a waypoint.

A more thorough overview of all AI actions will be provided below.

Panel Flags

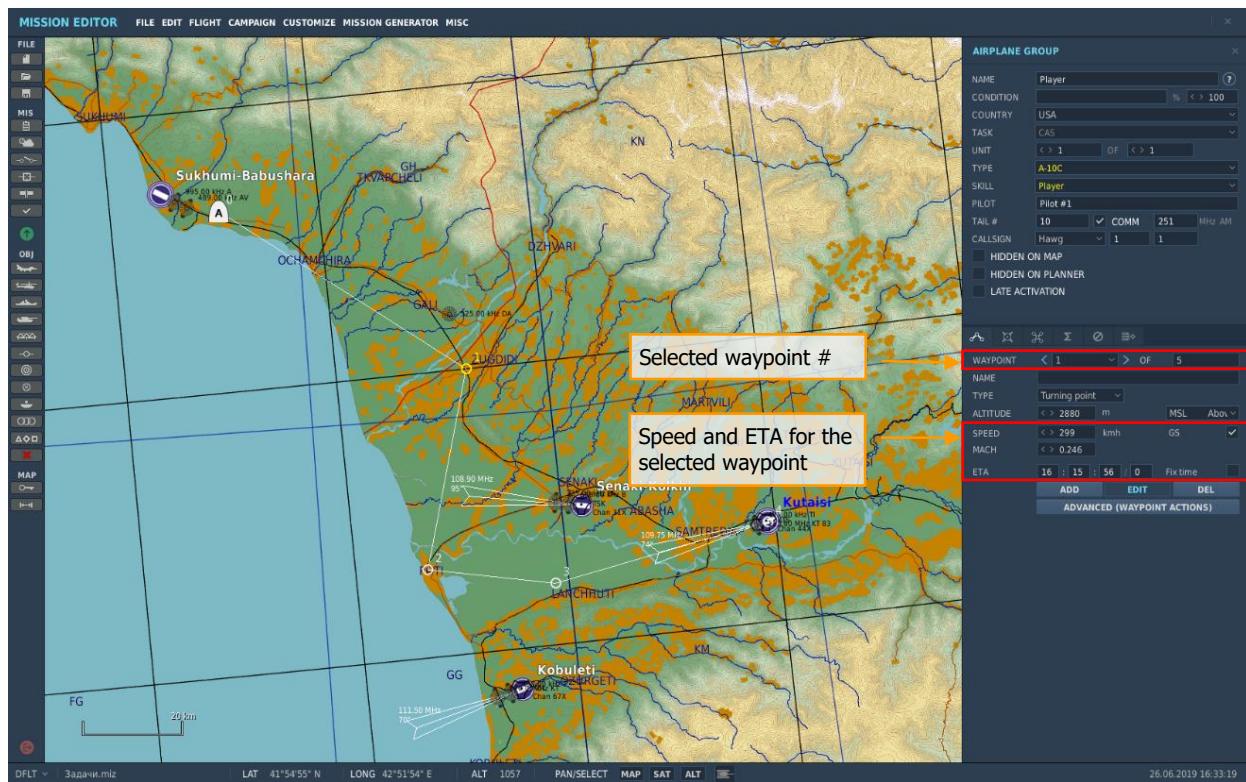
"Flag" variables in the form of a checkbox are used extensively to enable/disable various options in the panels of the Group Properties Menu. Do not confuse this with the FLAG ON/FLAG OFF trigger rule and action in the Trigger Menu of the mission editor. You can think of panel flags as "locks".



In conclusion, some of the main steps in creating a mission include: creating unit groups, placing the group routes on the map, setting up group main tasks (for aircraft groups), configuring the group actions using the Advanced Actions Panel (Tasks, Enroute Tasks, Commands, Options), creating triggers to script certain group actions in addition to those set with route waypoints.

Group Route Planning

When placing group routes, one of the basic functions to set will be the desired speed ("SPEED") and estimated time of arrival ("ETA") for each waypoint.



Depending on the plans of the mission designer, one, both or neither of these values can be "locked" at each waypoint using the panel flags. When either value is locked by the user, the mission editor automatically calculates the other value based on the known range between consecutive waypoints.

Locking speed and ETA values requires a logical consistency between waypoint lock settings as not every combination of speed and ETA lock is always possible. The route waypoint locks must be arranged such that the AI always retains a reference time value somewhere along the route. Using an example of a relatively simple route consisting of 4 waypoints, the following 6 combinations of lock settings are valid.

The Red Coalition has the following three designations for WP:

1. *SP – Starting Point,*
2. *WP ... – Waypoint Route Number,*
3. *DP – Destination Point.*

The Blue Coalition has all its WP set to zero by default.

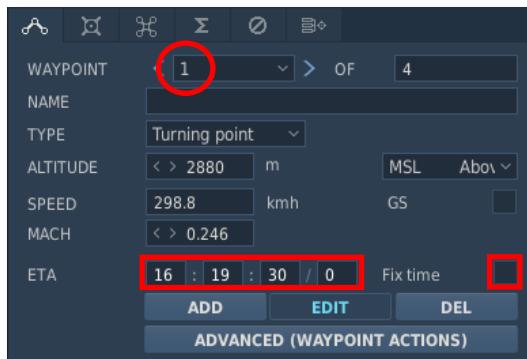
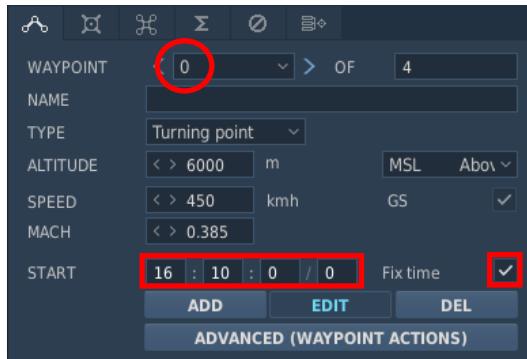
Example 1

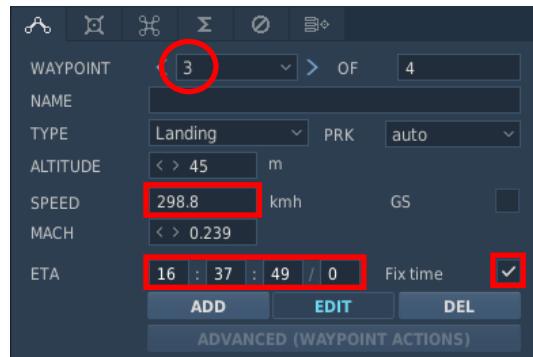
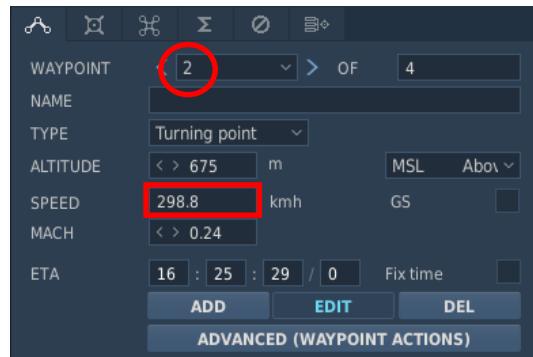
User locks:

- Group start time (T_0), i.e. ETA for WP0;
- ETA for the final waypoint (T_3);

In this case, the user doesn't control the speed and ETAs for waypoints 1 and 2 or the speed for WP3. These values are calculated by the mission editor automatically. The mission editor calculates the average speed for the route to reach WP3 at the designated ETA. Note that the desired speed refers to the speed *to* the waypoint, i.e. the speed the AI group will assume once it passes the preceding waypoint.

The AI group will attempt to adjust its speed for WP1, WP2 and WP3 as necessary to arrive at WP3 at the locked ETA.





If the user unlocks the ETA for either WP0 or WP3, the route will no longer be valid, because the mission editor will not have a time reference for calculating the desired speeds for WP1 and WP2. When a route is invalid, the speed and ETA checkboxes become framed in red to indicate an error and a corresponding message appears when the user attempts to close the Group Properties Menu or save the mission.

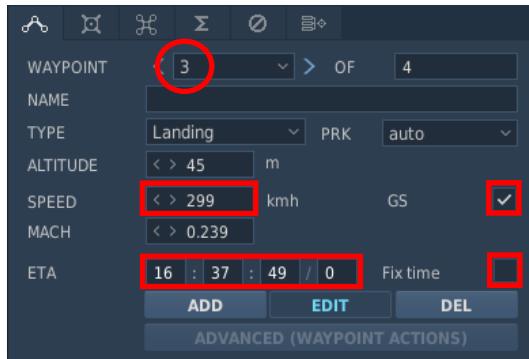
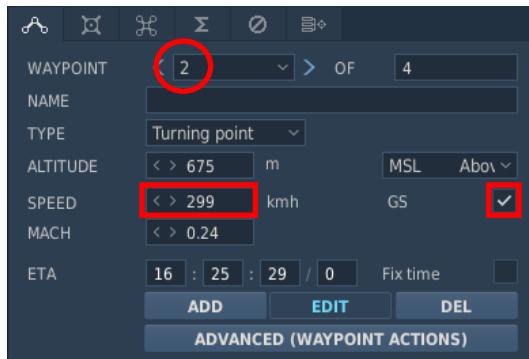
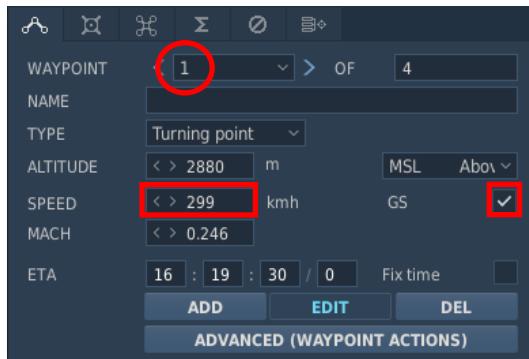
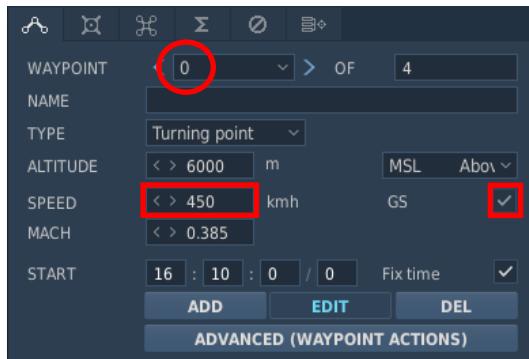
In order to unlock both the speed and ETA of a waypoint, at least one preceding and subsequent waypoint must have a locked ETA!

Example 2

User locks:

- Group start time (T_0), i.e. ETA for WP0;
- Speed ($V_0 - V_3$) for each waypoint;

In this case, the user doesn't control the ETAs for any waypoints after the initial waypoint, but wants to ensure the group maintains a desired speed along the route. The mission editor automatically calculates the ETAs for WP1, WP2, WP3 based on the known range and locked desired speed of the waypoints:



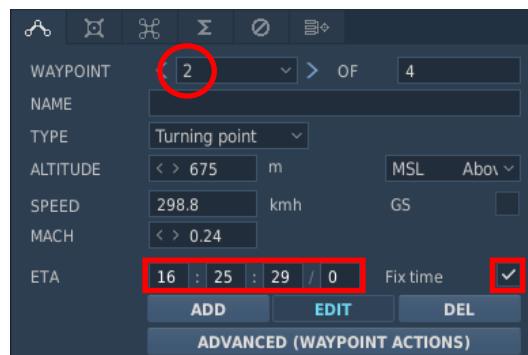
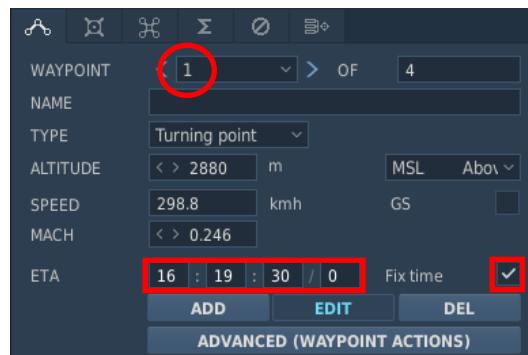
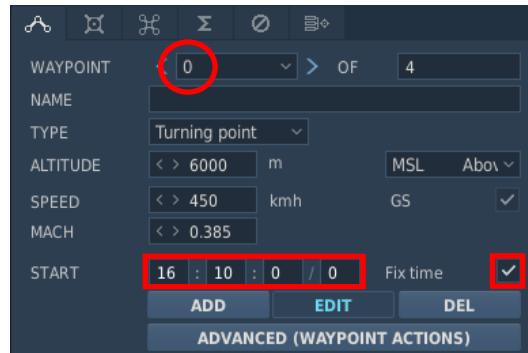
Example 3

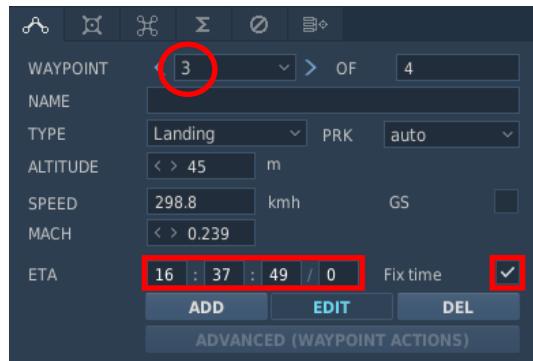
User locks:

- Group start time (T_0), i.e. ETA for WP0;
- ETA for all other waypoints (T_1, T_2, T_3);

In this case, the user wants to ensure the waypoints are reached at the designated ETAs. The AI group will attempt to maintain speed for each waypoint such that it arrives at each waypoint at the designated ETA.

The mission editor calculates the desired speed for each waypoint based on the known range and ETA between consecutive waypoints:





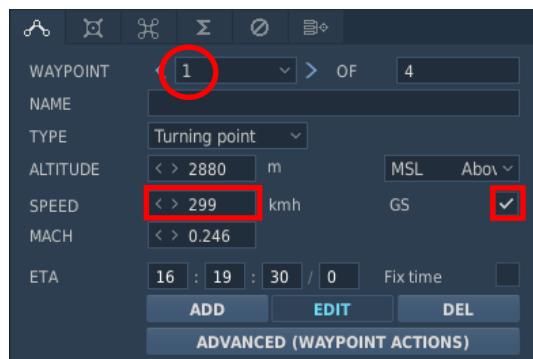
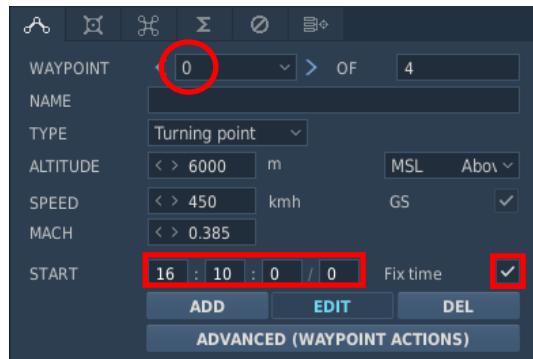
Example 4

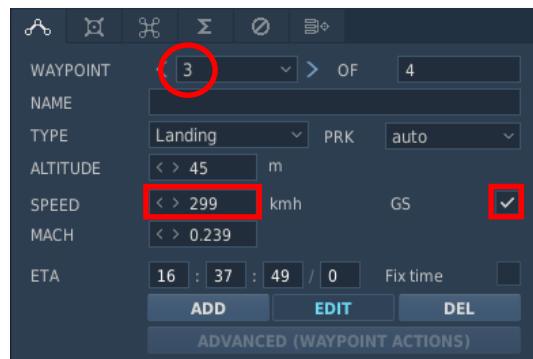
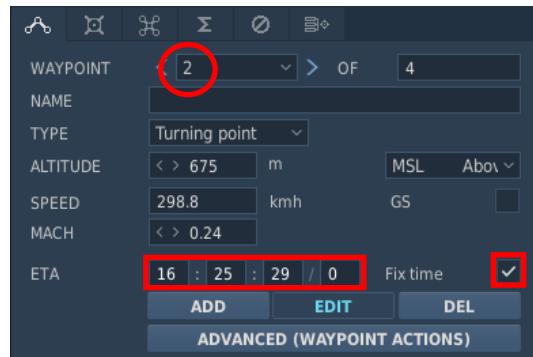
User locks:

- Group Start time (T_0), i.e. ETA for WP0;
- Desired speed for WP1 and WP3 (V_1, V_3);
- ETA for WP2 (T_2);

In this case, the user controls the ETA for WP2 and the travel speed for WP1 and WP3.

The mission editor automatically calculates the ETAs for WP1 and WP3, as well as the speed for WP2:





Example 5

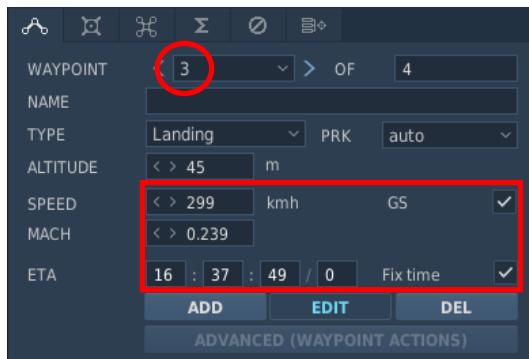
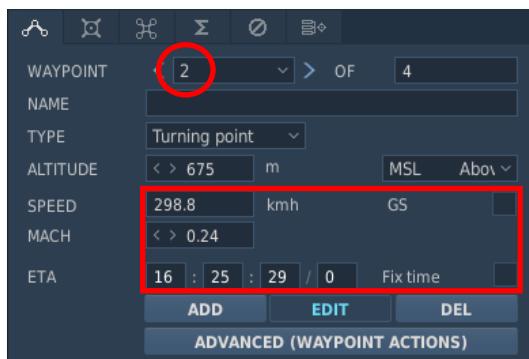
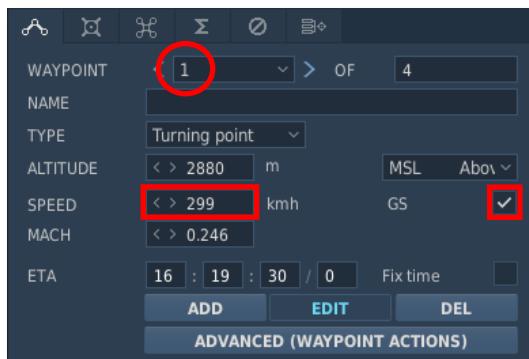
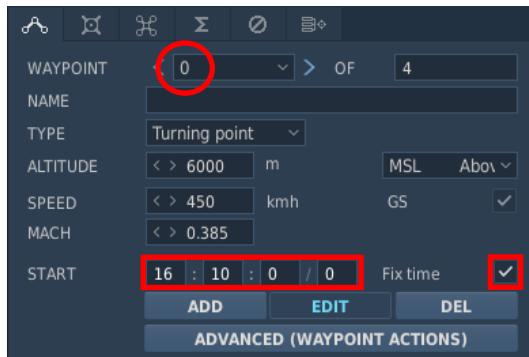
User locks:

- Group start time (T_0), i.e. ETA for WP0;
- ETA for the final waypoint (T_3);
- Desired speed for WP1 and WP3 (V_1, V_3);

In this case, the user controls the ETA for WP3 and also the travel speed for WP1 and WP3. Such a route is valid, because there is at least one waypoint (in this case WP2) between the starting and ending waypoints, which has both the speed and ETA unlocked, allowing the mission editor to automatically calculate both values as needed to meet the desired settings for WP0, WP1 and WP3.

The AI group will attempt to adjust its speed for WP2 such that it will arrive at WP3 at the designated ETA and desired speed.

The mission editor automatically calculates the ETA for WP1 and WP2, as well as the desired speed for WP2:



Example 6

User locks:

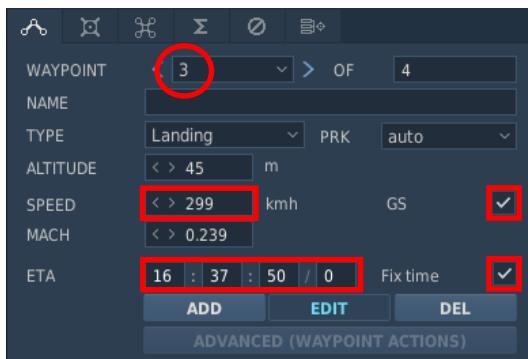
- ETA for the final waypoint (T_3);
- Desired speed for WP1 – WP3 ($V_1 - V_3$);

In this case, the mission editor automatically calculates the starting time (ETA for WP0):

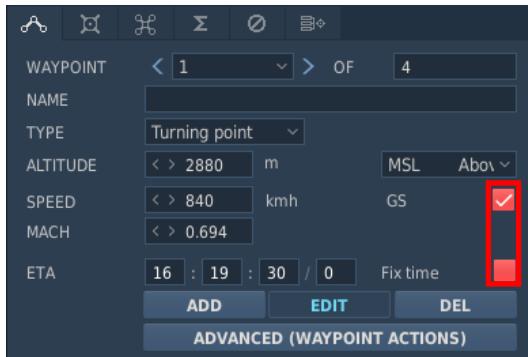
WAYPOINT	0	> OF	4
NAME			
TYPE	Turning point		
ALTITUDE	< > 6000	m	MSL Above
SPEED	< > 450	kmh	GS <input checked="" type="checkbox"/>
MACH	< > 0.385		
START	16 : 10 : 0	/ 0	Fix time <input type="checkbox"/>

WAYPOINT	1	> OF	4
NAME			
TYPE	Turning point		
ALTITUDE	< > 2880	m	MSL Above
SPEED	< > 299	kmh	GS <input checked="" type="checkbox"/>
MACH	< > 0.246		
ETA	16 : 19 : 30	/ 0	Fix time <input type="checkbox"/>

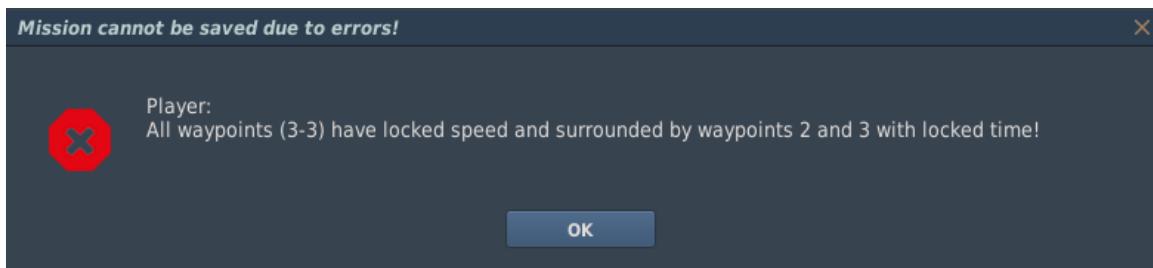
WAYPOINT	2	> OF	4
NAME			
TYPE	Turning point		
ALTITUDE	< > 675	m	MSL Above
SPEED	< > 299	kmh	GS <input checked="" type="checkbox"/>
MACH	< > 0.24		
ETA	16 : 25 : 29	/ 0	Fix time <input type="checkbox"/>



If the SPEED or ETA value is outside of the valid range for the particular unit (such as desired speed below the minimum flying speed), the SPEED and ETA checkboxes become framed in red to indicate an invalid value warning and a corresponding message appears when the user attempts to close the Group Properties Menu or save the mission. To correct such an error, enter a valid value in the locked field.



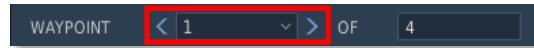
If the user attempts to set an invalid route, for example lock the speed for all waypoints and at the same time lock the ETA for the starting and final waypoints, the SPEED and ETA checkboxes become framed in red to indicate a flag error warning and a corresponding message appears when the user attempts to close the group properties panel or save the mission:



To correct such an error, set waypoint locks to a valid route combination.

Hints

- To avoid repetitive error messages when closing the group properties panel, use the waypoint edit panel to cycle between waypoints rather than selecting waypoints on the map:



- To correct invalid SPEED or ETA value warnings (red font), enter a valid value.
- To correct invalid flag warnings (red checkboxes), set the SPEED and ETA locks to a valid route combination.
- Every route must have at least one waypoint with a locked ETA! This can be the initial waypoint to set the group starting time or any subsequent waypoint.
- The Mission Editor does not prevent you from setting any combination of speed and ETA locks, however it informs you when an invalid combination is set with either an invalid value warning or invalid flag warning. A warning window will pop-up if attempt to save the group properties or the mission whenever an invalid route is present.

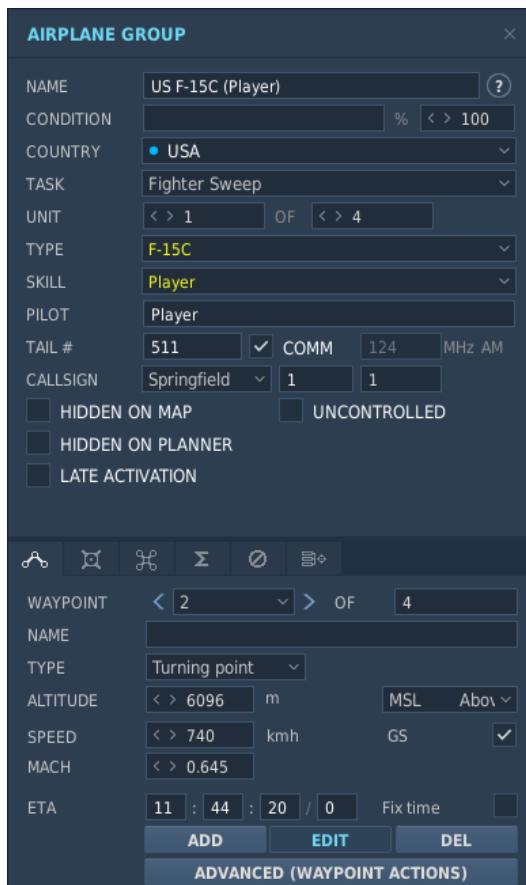
Place Airplane and Helicopter Group



At the top of the Object (OBJ) Tool Bar are the Place Airplane and Place Helicopter buttons. You will use these buttons to place aircraft groups in the mission, set their routes, and the actions they will take. When placing an aircraft group, it is important to remember that the groups can consist of one to four units (aircraft). Because the placement functions of fixed wing and rotary wing (helicopters) are very similar, we will discuss them jointly.

Note, the mission editor supports group copy/paste functionality. To copy a group, select it and press **[CTRL+C]**. To paste the group with identical properties, position the mouse over the desired point on the map and press **[CTRL+V]**.

The aircraft Group Properties Mode consist of numerous functions, which are described below. We will discuss them from top to bottom.



NAME. In the Name field, you may enter in a unique name for the aircraft group. If you do not enter one, a default name will be generated. The Name you create will be used when assigning some types of Triggers such as a Group Dead condition. Always be careful not to assign more than one group with the same Name.

CONDITION. The condition for the random spawning of a group in a mission. For this, LUA expressions used in the [Simulator Scripting Engine Documentation](#) are entered into the field. First, the [initialization script](#) should be loaded in the trigger panel. The script is executed before the mission is loaded and its result is used to set the conditions for the random group spawn.

COUNTRY. The Country drop down list will display all the countries that have been assigned to either the RED or BLUE sides when the mission was initially created by use of the CREATE NEW MISSION button. The Country selected will filter the TYPE of aircraft available.

TASK. The Task drop down menu allows you to select the group task. This setting will be in effect for the group for the duration of the mission. Note, the group task serves as a filter of available and automatically generated actions in the Advanced Actions Panel as well as the default payloads available.



- **Nothing.** This mission task assumes a non-combat flight along a route. Such an aircraft does not take part in any active actions against enemy forces and just follows its route. Under the threat of an enemy attack the aircraft will try to evade it.
- **AFAC.** The Airborne Forward Air Controller (AFAC) mission task will set the assigned aircraft to mark targets with smoke rockets or illumination flares. For night missions, this can be a useful task to assign an airplane to support a player flying a Close Air Support (CAS) mission.

- **Anti-ship Strike.** A mission task to attack enemy marine vessels using anti-ship missiles.
- **AWACS.** (Airborne Warning and Control System). The AWACS aircraft flies according to a planned straight or circular route using looped waypoints, and it 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. Note that AWACS detection can be limited by range, very low target altitudes, and terrain masking.
- **CAP** (Combat Air Patrol). The CAP mission task implies flying a large race-track pattern using looped waypoints around a defined route to defend an area from enemy aircraft incursion. 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 a high-altitude CAP will make life for low level interdiction easier for your aircraft. A combination of a 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 the CAP. Unless manually disabled by the mission designer in the Advanced Actions Panel, all AI aircraft will 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 (Bingo fuel state).
- **CAS** (Close Air Support). CAS involves actively searching for enemy ground targets on the battlefield and destroying them in support of friendly ground units under fire. This task is most suitable for dedicated attack aircraft and helicopters.
- **Escort.** This mission task is allocated to fighters and attack helicopters and involves escorting allied aircraft (transport aircraft, bombers, or attack aircraft) and defending them along the route from possible attacks of enemy aircraft and air defense systems. In doing so, the escorts should not engage in fights with the enemy if they do not pose a threat or are significantly off the course line.
- **Fighter Sweep.** The fighter sweep mission task 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.
- **Ground Attack.** This mission task is used to attack enemy ground targets using a variety of air to surface weapons. This type of mission usually involves unguided bombs weighing from 500 to 20000 lbs. and unguided rockets. Unless otherwise set in the advanced tasking options, the AI will generally prioritize use of longer-range weapons, such as guided air-to-surface missiles, over shorter-range weapons, such as unguided rockets and cannon.
- **Intercept.** This is a defensive mission task 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.

While chasing the enemy, the interceptor may deviate far from its planned route and the area that is to be defended will be left undefended.

- **Pinpoint Strike.** The Pinpoint strike mission task involves detecting and attacking surface targets using precision-guided weapons.
- **Reconnaissance.** The aircraft will fly directly over the assigned Reconnaissance Task waypoint to best acquire intelligence.
- **Refueling.** This mission task is reserved for aerial tankers. An aircraft assigned this mission will refuel any thirsty allied aircraft during its flight.
- **Runway Attack.** This is a specialized form of ground attack that will allow the aircraft to automatically align the axis of its attack along the length of the targeted runway. This is most useful when deploying runway denial weapons. To do so, set the Targeting area over the airfield to attack and select Airfields from the Target Categories.
- **SEAD** (Suppression of Enemy Air Defenses). Similar to the CAS Task, this mission task allows you to use attack aircraft in a more specialized role to attack enemy air defense sites with anti-radar missiles or other weapon types.
- **Transport.** An aircraft assigned to a Transport mission task does not take part in any active actions against enemy forces and just follows its route. Under the threat of an enemy attack the aircraft will try to evade it.

UNIT. The Unit selection is composed of two fields and they allow you to select how many aircraft units will be part of the flight group (1 to 4). The right field is used to set the total number of airplanes in the group; to do so, use the left and right arrow buttons. The left field is used to select an airplane within the group; to do so, use the left and right arrow keys.

TYPE. Depending on the Country and Task selections, a list of appropriate aircraft is listed in this pull-down list.

SKILL. The Skill level allows you to select how competent the aircraft pilot is when flown by the artificial intelligence. This setting can control such factors on how much G the pilot can pull, at what range it will attack, and how accurate its weapon delivery skills are. There are five Skill options for AI aircraft:

- **Average** – an AI pilot with average training.
- **Good** – an AI pilot with good training.
- **High** – an AI pilot with high training.
- **Excellent** – an AI pilot with excellent training.
- **Random** – This option will randomly select from one of the four options above.

For non-AI groups, you have two selections:

- **Client** – If you wish the aircraft to be flown by a human in a multiplayer game, set it as Client. Do not set aircraft to Player in a multiplayer game.
- **Player** – Set the aircraft to Player when you want it to be flown by a human player in a single-player mission/campaign.

Note that a unit's skill level will affect its detection ranges, reaction times and targeting errors.

PILOT. Enter a unique name for each unit within the aircraft Group. If you do not, a default name will be created automatically. This name is important because it will be used to set Trigger Conditions. For example, if you create a condition based on the destruction of a unit, the unit will be selected from a list using its PILOT name.

TAIL #. Enter in this field either a three- or two-digit number you wish to have displayed on the aircraft.

COMM. Frequency for radio communications in MHz. The AI group will conduct radio communications at the specified frequency. Example: 124 MHz AM means a frequency of 124 MHz in the AM (amplitude modulation) band.

CALLSIGN. Type in the callsign of the aircraft you wish it to use. For Russian aircraft, a three-digit number is used. This callsign will be used in communications with the flight, AWACS, and ground controllers.

HIDDEN ON MAP. check box. After creating a mission, you may wish to hide certain units so that people playing your mission cannot see them. For example, you may want to hide mobile enemy units from being seen by the player on the briefing and F10 maps. Press this check box to hide the selected aircraft group from the ME World Map and F10 view. You can view all hidden groups using the Units List window (discussed later in this manual).

UNCONTROLLED. When setting an AI group to a "Takeoff from Ramp" (cold start) waypoint, the Uncontrolled check box can be used to have the AI group appear at their starting location on the ramp, but not begin the spool up sequence until initiated by an AI TASK trigger as set by the START Command in the Triggered Actions of the group. In this case, the group aircraft will appear in the mission in parked configuration and remain as such until triggered to "come alive".

HIDDEN ON PLANNER. This option hides aircraft from the mission map in the mission planner. This option can be useful if you need to hide an object from the player.

LATE ACTIVATION. This option spawns a group of aircraft in the mission after a certain time after reaching any condition or event.

Modal Buttons

The following modal buttons are displayed on the lower half of the Group Properties Panel:

For AI groups:



- route,
- payload,
- triggered actions,
- route summary.

For player-controlled aircraft:



- route,
- payload,
- triggered actions,
- route summary,
- INU fix point,
- navigation target points,
- failures,
- waypoint properties,
- radio presets.

Route Mode



When in Route mode, the data in the lower half of the Group Properties Menu is in regards to waypoint management. Waypoints are arbitrary points on the map (Lat, Long, and altitude) that can be chained together to create a flight route. During the course of a mission, the group will fly from one waypoint to the next along the route line and at each waypoint you can assign unique characteristics.

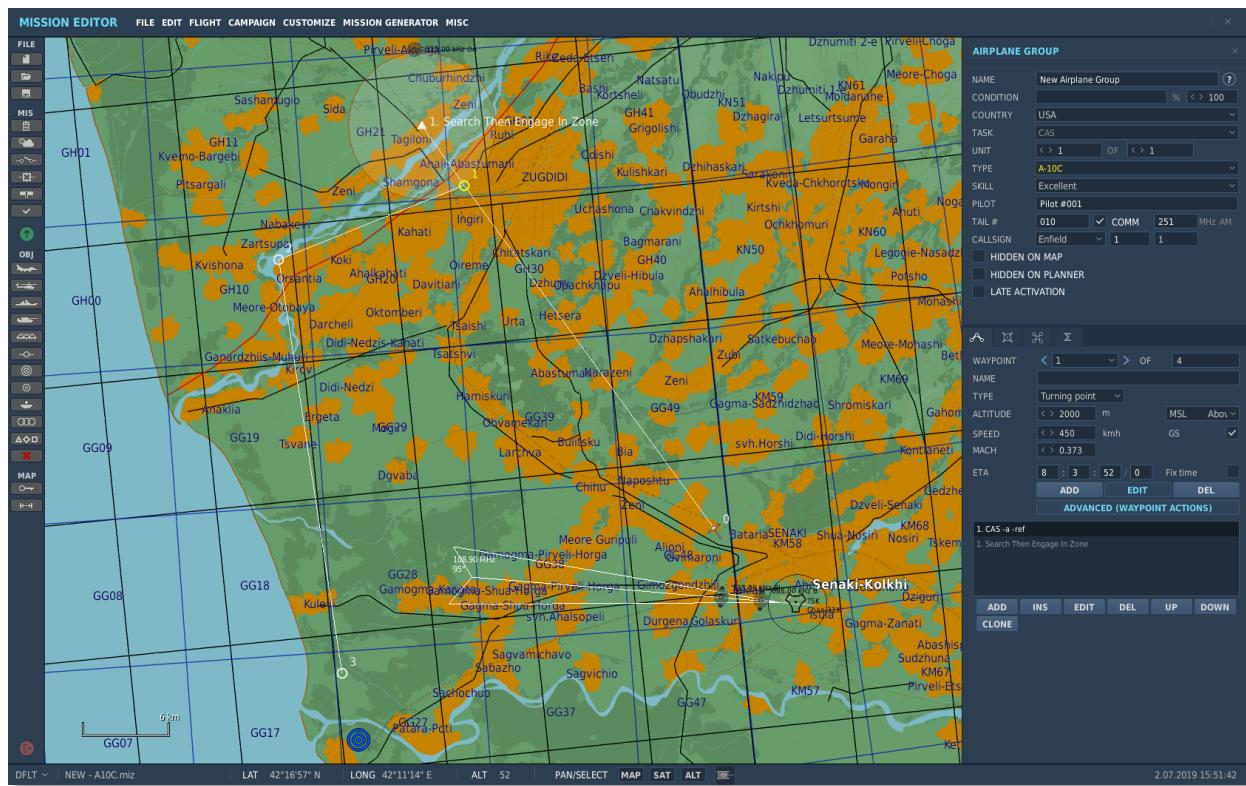
To place a new aircraft group, you will need to be in the Route mode and have an aircraft selected. You may then left click on the map to place the groups starting point, which will also be waypoint 1. When you place a group, its waypoint marker (circle with its waypoint number next to it) and route line will be colored appropriately:

- **White** - Selected unit.
- **Red** - A Red side unit that is not selected.
- **Blue** - A Blue side unit that is not selected.

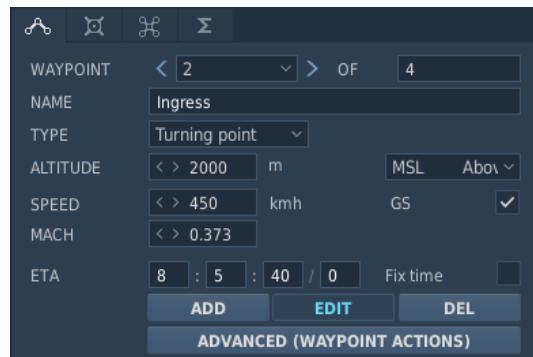
At the starting waypoint, there will be a unit icon instead of a standard waypoint circle. Different icons denote different types of units:

Aircraft Editor Icons (Russian/Western)

Russia	NATO	Unit Type
	U	Utility helicopter
	A	Attack helicopter
	R	Reconnaissance helicopter
	S	Anti-ship/Anti-submarine helicopter
	F	Fighter aircraft
	A	Attack aircraft
	R	Reconnaissance aircraft
	B	Bomber aircraft
	C	Transport aircraft
	W	AWACS (Airborne Early Warning and Control)
	B	Anti-ship/Anti-submarine aircraft
	K	Tanker
		UAV (Unmanned Aerial Vehicle)



For each waypoint of the route, the following options can be set in the waypoint control panel [as described above](#).

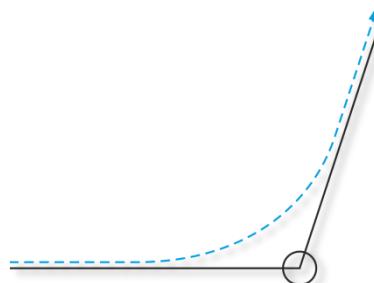


WAYPOINT. The WAYPOINT fields allow you to cycle between waypoints you have created, and by left clicking on the World Map you will add a waypoint. The left field displays the currently selected waypoint and you can cycle it by pressing the left and right arrow buttons. The field on the right displays the total number of waypoints in the route. The circle and waypoint number of the selected waypoint will be colored yellow on the map.

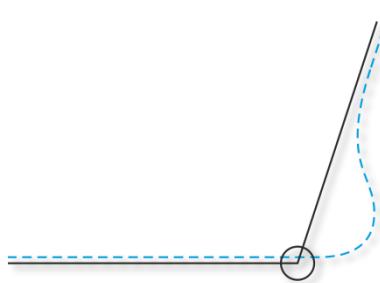
NAME. For each waypoint you can assign a unique name. Type the name of the waypoint in this field and this name will then appear next to the waypoint on the map.

TYPE. Each waypoint can be assigned a type of action that the aircraft will perform when it is at that waypoint. These include:

- **Turning point.** This is the most common and basic waypoint and will result in the aircraft performing a lead turn ahead of the actual waypoint location to complete the turn on course for the following waypoint.



- **Fly over point.** Much like a Turning Point, a Fly Over Point will sequence the aircraft from the preceding waypoint to the next, but only after passing directly over the waypoint location. This will result in a course correction required to come on course for the following waypoint.



- **Takeoff from runway.** This type is only available when waypoint 1 is selected and it allows the aircraft to start on the runway threshold with all systems up and running. When set to Takeoff, the waypoint will snap to the nearest airfield or FARP.
- **Takeoff from ramp.** This type is only available when waypoint 1 is selected and it allows the aircraft to start on the parking apron (ramp) with all systems shut down. When set to Takeoff, the waypoint will snap to the nearest airfield or FARP.
- **Takeoff from parking hot.** This type is only available when waypoint 1 is selected and it allows the aircraft to start on the parking apron (ramp) with all systems up and running. When set to Takeoff, the waypoint will snap to the nearest parking apron (ramp).
- **LandingReFuAr.** This type is available when selecting any waypoint other than 1. When set to LandingReFuAr, the waypoint will snap to the nearest airfield or FARP.
- **Landing.** This type is only available when the last waypoint in the route is selected; the waypoint will automatically snap to the nearest airfield or FARP.
- **Takeoff from ground.** This type is only available when waypoint 1 is selected and it allows the aircraft to start from the ground with all systems shut down. In this case, it takes some time to prepare for takeoff.
- **Takeoff from ground hot.** This type is only available when waypoint 1 is selected and it allows the aircraft to start from the ground with all systems up and running.

ALTITUDE. The altitude setting will set the altitude in meters that the aircraft will be at when it reaches the waypoint. To set this, you can either use the left and right arrow buttons or type it into the field.

- **Altitude type.** Altitude can be set in meters above Mean Sea Level (MSL) - altitude measured relative to sea level (constant) or in meters Above Ground Level (AGL) - altitude measured directly over the ground below. Because terrain elevations vary throughout the theater, setting an AGL altitude will result in the aircraft following the terrain contours along the route leg for the waypoint. On the other hand, setting an MSL altitude will result in level flight at the set altitude, unless obstructed by terrain (such as when attempting to maintain a low-level MSL altitude in mountainous terrain).

SPEED. Indicates the desired ground speed for the waypoint as set by the user when the speed is locked or as automatically calculated by the mission editor when the speed is unlocked. Note, at high altitudes the ground speed is significantly different (higher) than indicated airspeed, which is displayed in the aircraft cockpit.

GS (GROUND SPEED LOCK CHECKBOX). Selects between manual and automatic entry of the desired speed for the waypoint. Not applicable to a starting waypoint.

If the speed is locked, the group will attempt to maintain the desired speed on the route leg from the preceding waypoint to the current one.

MACH. The Mach number shows the ratio of the speed of the aircraft relative to the speed of sound. Depends on the height, temperature and pressure specified in the editor. It is shown only in the aircraft group panel.

START/ETA (Estimated Time of Arrival). Indicates the desired arrival time for the waypoint (or group start time in the case of the initial waypoint). This is set by the user if the ETA is locked or calculated automatically by the mission editor if the ETA is unlocked.

Fix Time (ETA LOCK CHECKBOX). Selects between manual and automatic entry of the desired ETA for the waypoint. The ETA is locked for the initial waypoint (group start time) by default.

When locked, the ETA field can be used to set a delayed group activation in the mission by setting an ETA for the initial waypoint at a time past the mission starting time. For example, if the mission is set to start at 12:00:00/1 and the user wishes to have the group appear in the mission 15 minutes after the mission starts, he can lock the ETA for waypoint-1 at 12:15:00/1. Furthermore, if the user wishes for the group to appear in the mission based on a triggered event of unknown time, he can set the ETA for the starting time past any likely mission time, such as 100 days later (12:00:00/100). In such a scenario, the group will not appear until triggered by the scripted event or the starting ETA is reached.

If the ETA for the waypoint results in calculated speeds that are too slow or too fast for the aircraft type, the font will become red to indicate an invalid entry and a corresponding error message will appear when the user attempts to close the properties panel or save the mission. [See above for more information.](#)

Waypoint Mode Buttons

These three buttons allow you to add, edit and delete route waypoints.

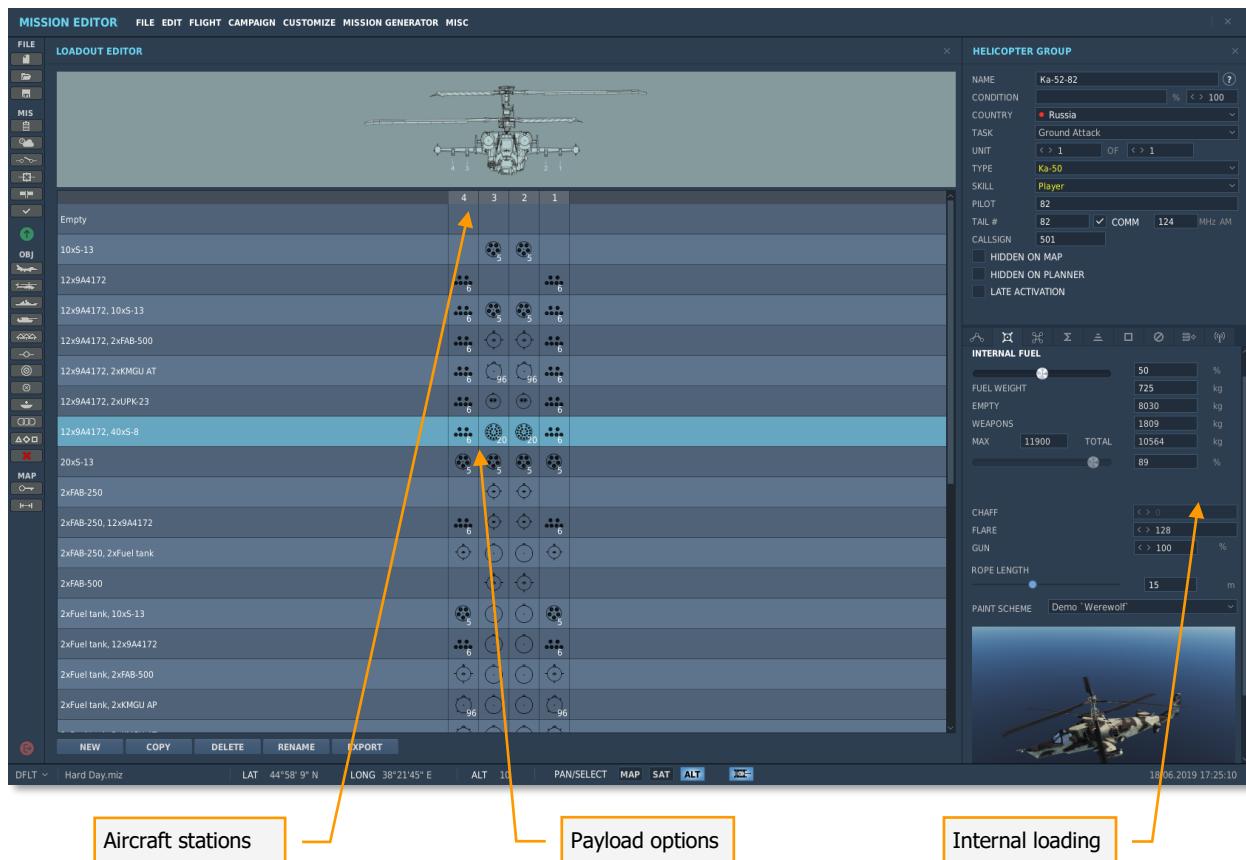


- **ADD** – In ADD mode, each press of the left mouse button over the map adds a new waypoint. This mode is selected on by default when a Group Properties Mode is open.
- **EDIT** – In EDIT mode, existing waypoints can be selected on the map for editing in the waypoint properties panel.
- **DEL** – Pressing this buttons deletes the selected waypoint.

Payload Mode



The Payload screen allows you to set the aircraft's external stores (weapons, fuel tanks, and pods), internal fuel, quantities of chaff, flares and gun rounds, and the paint scheme.



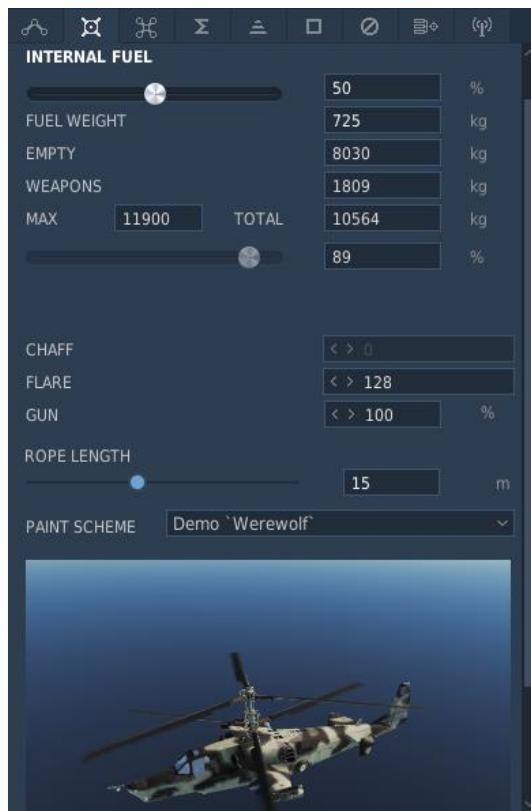
At the top of the Payload page is a drawing of the aircraft (head-on) that illustrates the station number assigned to each station. Stations can load weapons, fuel tanks, and pods according to the aircraft and station.

Below the illustration is the Loading Chart and this lists each loading payload package as a separate line. To the left of each line is the name of the payload package, and each column to the right represents a different station and what is loaded on it. To select a payload package, click on it and it will be highlighted. If you right click your mouse on a station box in the chart, a pop-up window lists the possible types of payloads that can be hung on that station and by then moving your mouse to the right you can select the specific payload to load on that station. At the bottom of the pop-up window is the Remove option that allows you to clear the station.

Below the Loading Chart is a group of five buttons that allow you to manage the chart. These include:

- **NEW.** In addition to the existing payload packages, you may press the NEW button at the bottom of the Loading Chart to create your own. Upon doing so, a pop-up window will prompt you to create a name for the new package. After you create a name and press the OK button to accept it, a new line on the loading chart with the name you entered will be displayed. You may then load each station using the right-mouse click function on each station.
- **COPY.** You may also create new payload packages by making a copy of an existing one and then modifying it. To do so, select the package you want to use as a base and then press the COPY button. When you do so, you will be prompted to create a new name for the package. Once you do so, a new payload package line will be created with the new name but using the package assignment of the base-payload you selected.
- **DELETE.** To remove a payload package from the chart, select the package you want to remove and then press the DEL (delete) button.
- **RENAME.** If you are not satisfied with the name of a payload package, you may select the package and then press the Rename button. You will then be prompted to enter a new name for the package. Once you press OK, the package will be renamed.
- **EXPORT.** When you create an aircraft group and set its TASK, a group of payload packages will be automatically associated with that task. The Export button allows you to associate a payload package with another Task. For example, if you have an all-ATGM package in the CAS Task that you also want to use as a Ground Attack Task package, you could select the package in CAS and then Export it to Ground Attack. The next time you create a Ground Attack Tasked group, the package would then appear as one of the payload options.

To the right of the Payload screen is a set of controls that allow you to adjust the internal loading of the aircraft and the paint it will wear.



- **INTERNAL FUEL** (slider). The INTERNAL FUEL slider can be dragged left/right to set the amount of fuel loaded on the aircraft in percent of maximum.
- **FUEL WEIGHT**. Loaded internal fuel as a kilogram (kg) value.
- **EMPTY**. Empty weight of the aircraft without fuel and payload package in kilograms.
- **WEAPONS**. Total weight of all loaded stores on stations in kilograms.
- **MAX**. This field displays the maximum, safe total weight of the aircraft in kilograms.
- **TOTAL**. Total weight of aircraft to include empty weight, fuel weight, and payload package weight in kilograms.

The non-interactive slider bar below the MAX and TOTAL fields provides a visual indication of the maximum percent of loading on the aircraft as a percentage.

Non-fuel internal loading of the aircraft is listed next:

- **CHAFF**. Number of chaff bundles loaded. This can be decreased/increased using the "<" - ">" arrow buttons.
- **FLARE**. Number of flares loaded. This can be decreased/increased using the "<" - ">" arrow buttons.

Note, the total number of chaff and flares is limited by the number of countermeasure cartridges on the aircraft, so increasing one will decrease the other.

- **GUN.** Percent of maximum number of cannon rounds that can be loaded.
- **AMMO TYPE.** Selection of the ammunition type loaded for the gun.
- **ROPE LENGTH.** Adjuster of the length of the rope of the cargo transported on the external suspension of the helicopter.
- **PAINT SCHEME.** Selection of the aircraft paint scheme ("skin"). The number of choices depends on the aircraft.

Triggered Actions Mode



The Triggered Actions button opens the Triggered Actions Panel. This panel can be used to add or edit group actions analogous to the Advanced Actions Panel, but activated based on trigger rules as scripted in the Triggers Menu using the AI TASK trigger action.

Route Summary Mode



The Summary panel provides information on the entire flight route of the selected air group.

⟳	⟲	☒	Σ	☰	□	∅	☰	(P)	☰
START TIME					5:30:0/1				
ROUTE TIME					0:38:51/1				
ROUTE LENGTH					97 km				
AVERAGE SPEED					150 kmh				

START TIME. The mission start time for the group in Hour:Minute:Second/Day.

ROUTE TIME. How long it will take the aircraft to fly the route, assuming no departures from the planned route. This is indicated in Hour:Minute:Second/Day format.

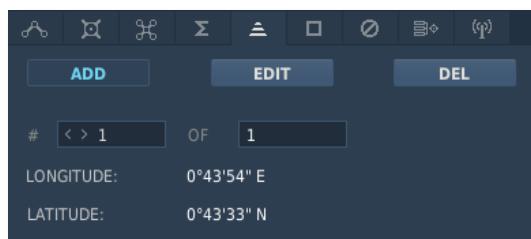
ROUTE LENGTH. Total distance of the route in meters.

AVERAGE SPEED. The average indicated airspeed of the route by totaling the assigned airspeed of each route leg and then dividing by the number of legs.

INU Fix Point Mode



The INU Fix Point button opens the INU FIX POINT panel. This panel is used to place reference points with known earth coordinates for the Inertial Navigation Unit (INU) of the player aircraft. These points can be used to update the INU when flying over or designating them using the targeting system. Usually visible landmarks are used as update locations, such as bridges or other easily identified landmarks.



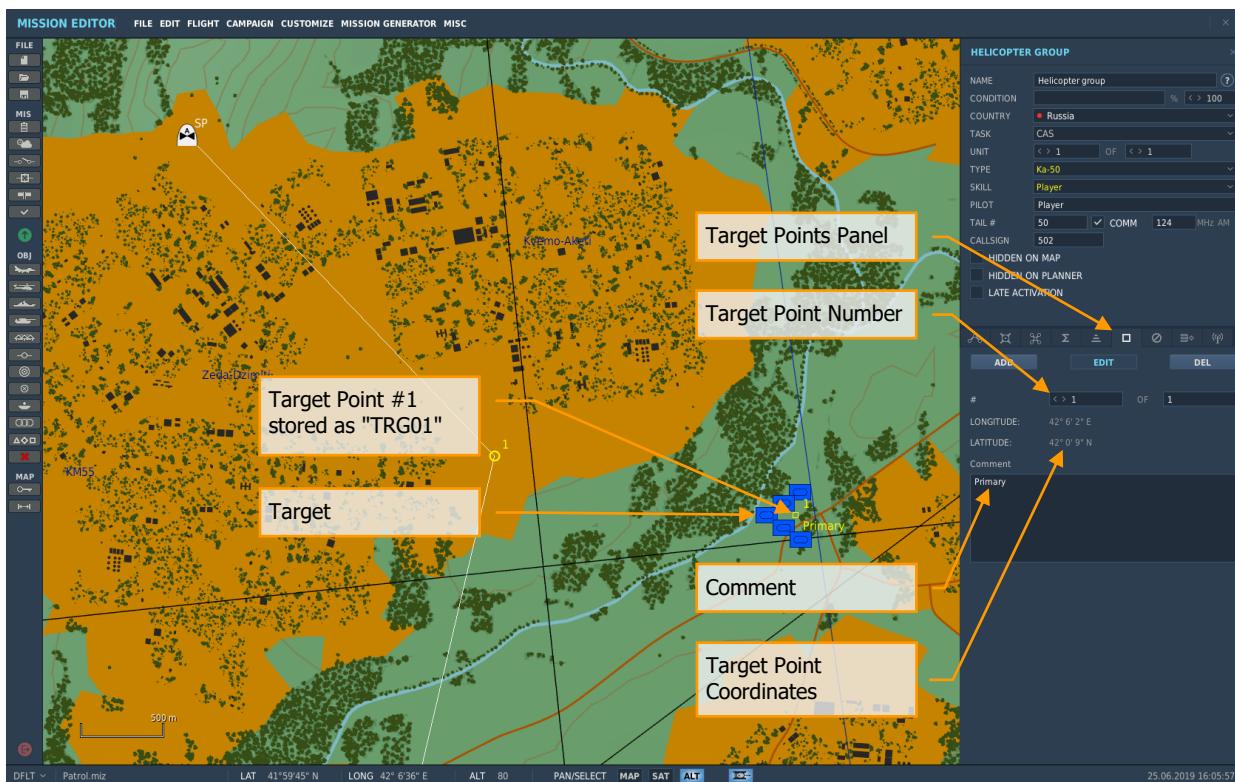
The coordinates of the point will appear in the INU FIX POINT panel. Fix Points can be placed directly on the map using the mouse in ADD mode or moved over the map in EDIT mode. Pressing the DEL button will delete the fix point.

Target Point Mode



The Target Point mode allows you to set target points for the navigation system.

Target Points can be used by the mission designer to designate coordinate points on the ground as targets. These points can be selected by the pilot in flight using the "OT" button on the navigation system and are indicated on the PVI-800 and ABRIS displays.



ADD. Add a new Target Point.

EDIT. In EDIT mode, the Target Point can be moved over the map by clicking and dragging the point.

DEL. Delete the selected Target Point.

The Target Point panel indicates the latitude/longitude coordinates of the selected Target Point.

The Comment field allows you to add a custom comment for the selected Target Point.

Note, the navigation system of the Ka-50 can store up to 10 Target Points.

In flight, Target Points 0 - 9 can be selected on the PVI control panel.



A detailed description of operations using the operational points panel is given in the pilot's manual of the aircraft equipped with the operational points function.

Failures Mode



The FAILURES Panel allows you to set the aircraft's failures. The list of failures depends of aircraft type.

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, this tool allows you to simulate such failures. Select the Failures button and specify in the failures panel the device you want to fail. Specify the exact failure time for the device or a Time Between Failure (TBF) if you wish to simulate failures without an exact failure time, but will occur within that specified time frame. For example: if you specify 30 in the Within field for the left engine, this means that your left engine will fail within the next 30 minutes. If you were to specify 0:15 in the After field, the failure will occur with set probability within the next 30 minutes after 15 minutes after takeoff.

Additionally, you can adjust the probability of failures by adjusting the Probability (%) field using the arrow buttons. The Probability ranges between 0% (no chance) to 100% (certain failure). Note that failure(s) only apply to the Player aircraft.

DEVICE	After (hh:mm)	Within (mm)	Probability (%)
HYDRO MAIN	0 : 0	1	< > 100
HYDRO COMMON	0 : 0	1	< > 100
✓ L-ENGINE	1 : 0	15	< > 50
R-ENGINE	0 : 0	1	< > 100
ASC PITCH	0 : 0	1	< > 100
ASC ROLL	0 : 0	1	< > 100
ASC YAW	0 : 0	1	< > 100
ASC ALT	0 : 0	1	< > 100
ABRIS SOFTWARE	0 : 0	1	< > 100
ABRIS HARDWARE	0 : 0	1	< > 100
LASER FAILURE	0 : 0	1	< > 100
RALT FAILURE	0 : 0	1	< > 100

RAND CLEAR

Along the left side of the window is the DEVICE list that can be used to set an in-mission failure.

To the right of each device line is a set of fields that allow you to set a time frame from mission start that the failure will occur and the probability that the failure will occur.

- **AFTER** (hh:mm). Input the hour and minutes from mission start that the failure will occur.
- **WITHIN** (mm). Use the third field to determine the time that the failure may happen.
- The **PROBABILITY** (%) field allows you to enter the probability as a percentage (0 – 100) that the failure will occur in the mission.

The steps needed to set aircraft failures include:

1. Check the checkbox of the desired failure.
2. Set the time at or after which the failure is to take place (hh:mm).
3. Set the time within which the failure is to take place (mm).
4. Set the probability for the failure to occur (%).

For example, to set a left engine failure an hour into the flight within a 15-minute time span and a 50% probability, check the L-ENGINE Device box, enter 01:00 in the After field, enter 15 in the Within field, and enter 50 in the Probability field.

At the bottom of the window are two additional controls:

- **RAND**. Pressing the random button will randomly select devices to fail and set random time windows and probabilities.
- **CLEAR**. The clear button will disable all failures and set all time windows and probabilities to zero.

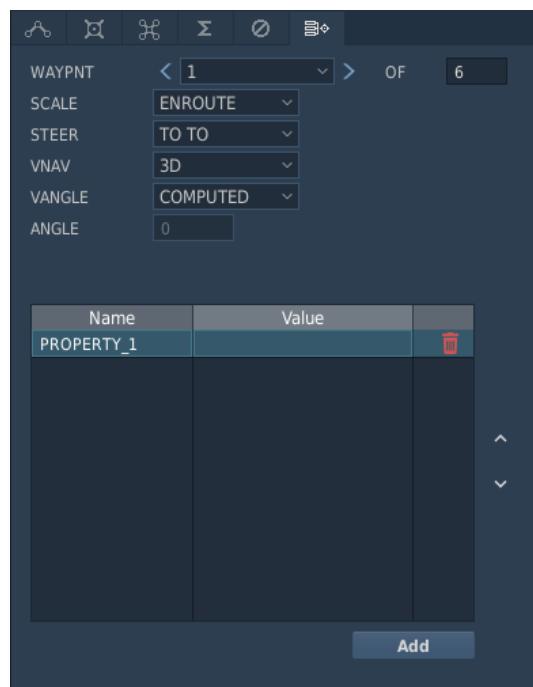
Note, the mission editor supports group copy/paste functionality. To copy a group, select it and press [CTRL+C]. To paste the group with identical properties, position the mouse over the desired point on the map and press [CTRL+V].

Waypoint Properties Mode



A detailed description of the operations for using the waypoint parameters panel is given in the manual for the NS 430 navigator and the pilot's manual of the aircraft equipped with the waypoint function.

Example for A-10C. Attributes define the steering modes selected for the desired steerpoint. These steering modes are; scale, steer, vertical navigation (2D/3D), vertical angle (when in 3D mode only), and selected vertical angle (when in 3D mode only).



Radio Presets Mode



The panel is used to preset frequencies on the channels of the radio stations on this type of aircraft. User-set frequencies are saved to the mission file.

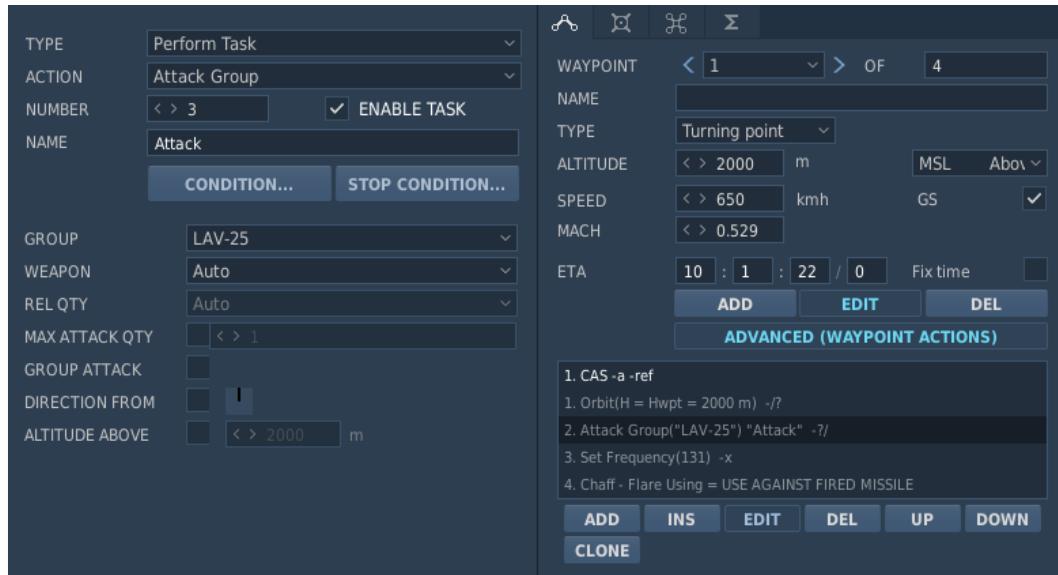
R-828			
Channel 1	< >	21.5	MHz
Channel 2	< >	25.7	MHz
Channel 3	< >	27	MHz
Channel 4	< >	28	MHz
Channel 5	< >	30	MHz
Channel 6	< >	32	MHz
Channel 7	< >	40	MHz
Channel 8	< >	50	MHz
Channel 9	< >	55.5	MHz
Channel 10	< >	59.9	MHz

ARK-22			
Channel 1, Outer	< >	625	kHz
Channel 1, Inner	< >	303	kHz
Channel 2, Outer	< >	289	kHz
Channel 2, Inner	< >	591	kHz
Channel 3, Outer	< >	408	kHz
Channel 3, Inner	< >	803	kHz
Channel 4, Outer	< >	443	kHz
Channel 4, Inner	< >	215	kHz
Channel 5, Outer	< >	525	kHz
Channel 5, Inner	< >	1065	kHz
Channel 6, Outer	< >	718	kHz
Channel 6, Inner	< >	350	kHz
Channel 7, Outer	< >	583	kHz
Channel 7, Inner	< >	283	kHz
Channel 8, Outer	< >	995	kHz

Advanced Actions Mode (aircraft groups)

ADVANCED (WAYPOINT ACTIONS)

Pressing the Advanced tab open the Advanced Actions Panel, which lists the actions associated with the selected waypoint:



This panel is used to set (add/edit/delete) group actions ([Perform Task](#), [Start Enroute Task](#), [Perform Command](#), [Set Option](#)), which are tasked to the AI at this waypoint by the user or generated automatically by the Mission Editor.

Panel Interface Controls

The following buttons are located at the bottom of the Advanced Actions Mode:

- **ADD** – Adds a new action to the list. When pressed, a default No Task action is created, which can be edited in the Action Settings pop-up panel to the left.
- **INS** – Inserts a new action above the currently selected one.
- **EDIT** – Opens the Action Settings pop-up panel to display and edit the settings of the action. The same functionality is duplicated when clicking on any route waypoint on the map.
- **DEL** – Deletes the selected action.
- **UP** – Moves the selected action up the list.
- **DOWN** – Moves the selected action down the list.
- **CLONE** – Clones the selected action down the list.

Actions List

The Actions list includes all Perform Tasks, Start Enroute Tasks, Perform Commands, and Set Options associated with the currently selected waypoint (to be more precise, associated with arrival at the currently selected waypoint by lead AI unit of the group). The actions are executed sequentially or as prioritized once the group leader reaches the waypoint.

As discussed previously, Perform Tasks and Start Enroute Tasks are executed as processes, i.e. require time to complete. Perform Commands are executed instantaneously. Options set rules and limitations for the group.

Only one Task can be performed at a time. Some additional priority rules apply when triggered actions are present in addition to standard waypoint actions, which we will discuss below.

Multiple Start Enroute Tasks can be active at the same time, but only one can be executed at a time. All Start Enroute Tasks are stopped if a Task needs to be performed. If an Start Enroute Tasks is stopped to perform a Task, the Start Enroute Task is reactivated upon completion of the Task.

Commands and Options are executed instantaneously according to the order in the actions list or priority setting.

All actions listed in the actions list are displayed using a standard format of Action Number, Action Type with parameter(s), Action Name, Action Attribute:

<number>.<type>(<parameter #1>, <parameter #2>, ... <parameter #n>)"<name>" -<attribute #1> -<attribute #2> ...-<attribute #n>

The Action Name is an optional custom name for the action for easier identification in the actions list. This field can be left blank (empty).

The Action Attributes are used to reference one or more of the following possible attributes:

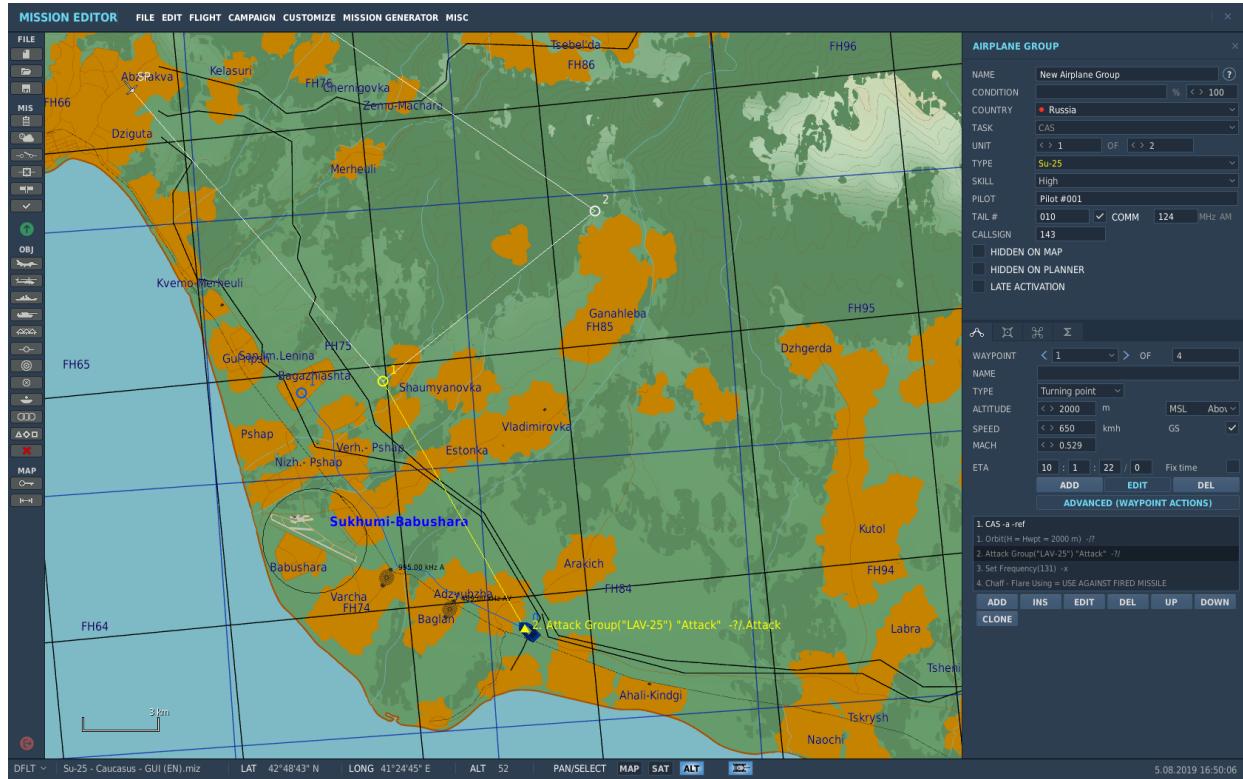
- “-x” – disabled action;
- “-a” – automatically generated action;
- “-!” – invalid action. This attribute indicates an incorrect action, usually resulting from the action being incompatible with the group's mission task as set in the Group Properties Panel. This may be due to the mission designer changing the group's mission task after creating the action;
- “-?/” – action includes a start condition;
- “-/?” – action includes a stop condition;
- “-?/?” – action includes both a start and stop condition;
- “-ref” – action was started at a previous waypoint.

Additionally, black, grey and red font colors are used to denote:

grey – automatically generated action;

white – valid action;

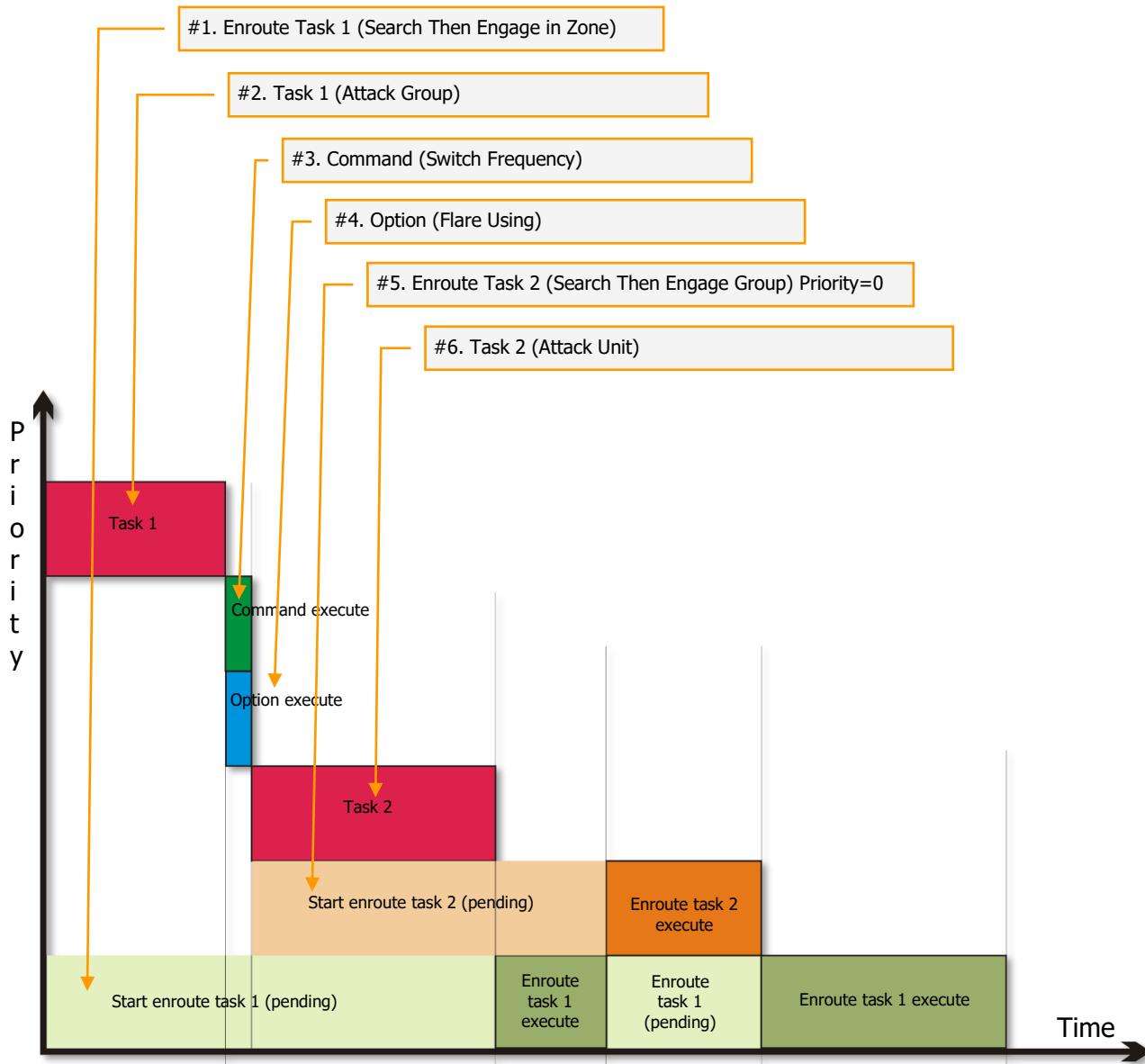
red – invalid action.



Example of actions for an Su-25 attack group at WP1.



Let's examine a sample scenario of 6 actions to better understand the execution sequencing based on the action type, list order, and priority setting:



At mission start, the AI has two concurrent actions: action #1 (Enroute Task 1 <Search Then Engage in Zone>) and action #2 (Task 1 <Attack Group>). Unless set otherwise by the mission designer, any Task has a higher priority over any Enroute Task, so the AI begins to execute action #2, while storing action #1 in memory. Once action #2 is completed (or is no longer executable), the AI proceeds to execute action #3 (Command <Set Frequency>), action #4 (Option <Flare Using>), action #6 (Task <Attack Unit>), while also starting #5 (Enroute Task 2

<Search Then Engage Group>) and storing it in memory. Although both action #1 and action #5 (enroute tasks) are now running in the background, they cannot be executed while action #6 (a task) is underway. Once action #6 is completed (or is no longer executable), the AI can return its attention to actions #1 and #5. The conditions for action #1 become true first, so the AI begin to execute this action. However, action #5 has the higher priority setting of <0>, so when the conditions for both action #1 and action #5 are in effect, action #1 is stopped and action #5 is executed. Once action #5 is completed, the AI can return to executing action #1.

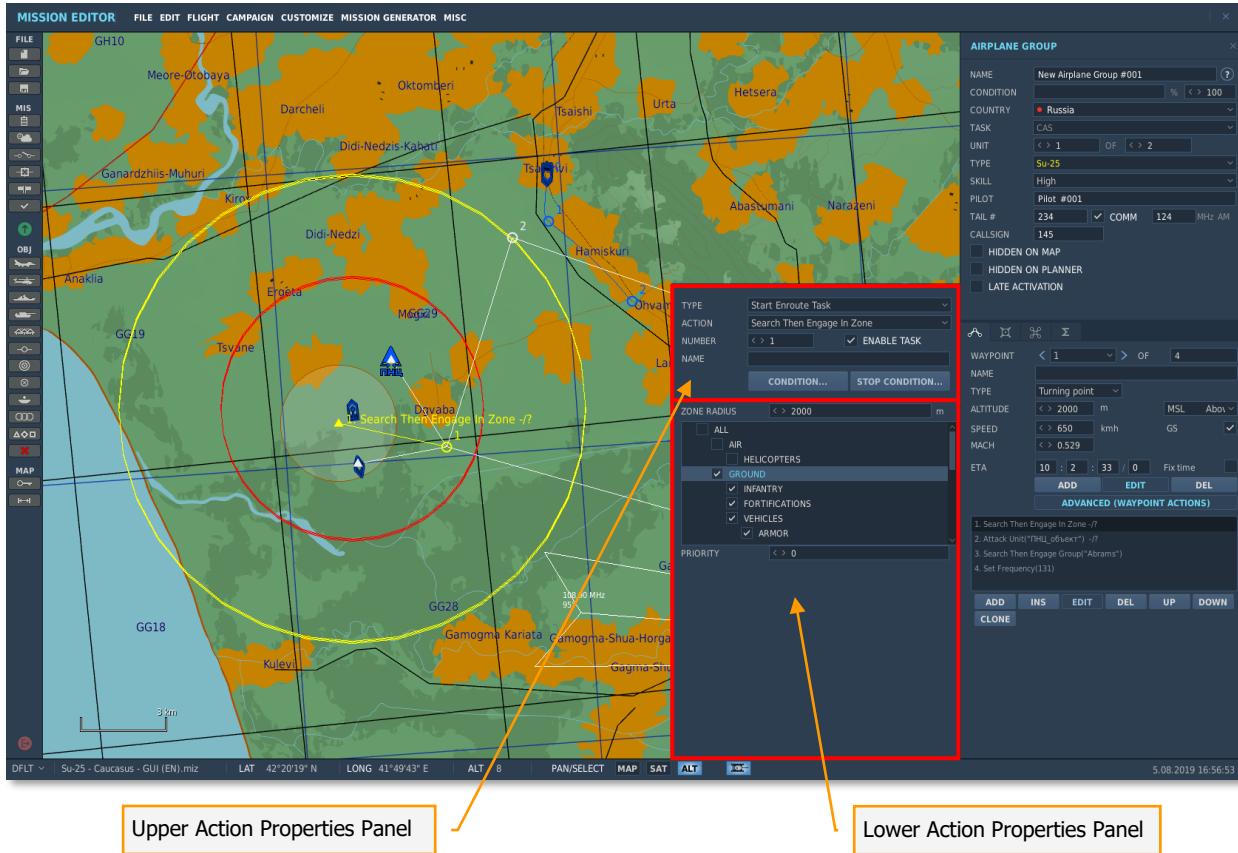
Triggered Tasks

Tasks activated by a trigger will have a higher execution priority over waypoint Tasks. For example, if a triggered Task is activated while a waypoint Task is underway, the waypoint Task will be stopped and stacked in memory while the AI switches to the triggered Task. Once the triggered Task is completed (or skipped due to not being possible), the previously running waypoint Task will be resumed.

Triggered Enroute Tasks

Enroute Tasks activated by a trigger will be added to the list of currently active Enroute Tasks. As with waypoint Enroute Tasks, triggered Enroute Tasks remain active until stopped by a stop condition.

Action Properties Panel

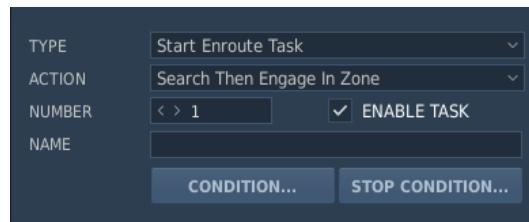


The Action Properties Panel is used to configure the properties of the action selected in the actions list. The panel can be opened by pressing the ADD, INS or EDIT buttons in the action list, or by double-clicking an action. By default, pressing the ADD button adds a "No Task" action and opens a black Action Properties Panel. In the Action Properties Panel, the actions in the actions list can be cycled using the NUMBER </> buttons in the properties panel.

Upper Action Properties Panel

The Upper Action Properties Panel is used to set the main action properties, including the action type, as well as access the start and stop condition panels of the action:

TYPE – action type drop-down menu.



- [Perform Task](#) – set a Task action;
- [Start Enroute Task](#) – start an Enroute Task action;
- [Perform Command](#) – set a Command action;
- [Set Option](#) – set an Option action.

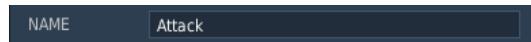
ACTION – action drop down menu to select the specific action of the action type chosen in the TYPE menu (specific actions discussed below).

NUMBER – indicates the selected action's sequence number in the actions list panel.

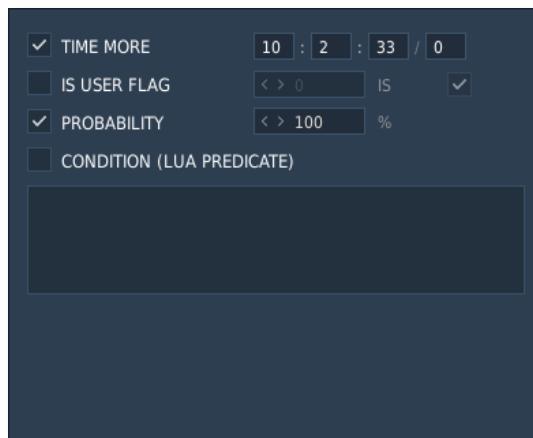


ENABLE TASK (check-box) – removing the check disables the selected action and adds an "-x" attribute in the actions list panel. This function allows you to test AI behavior with and without the selected action without having to delete and re-create it in the actions list.

NAME (input string) – input in this field is optional and can be used to enter a custom action ID to ease navigation and identification of the action for the mission designer or other potential users.



CONDITION – this button opens and closes the Start Conditions Panel. Start conditions can be used to set rules for the selected action to begin and can include: mission time, logical variable (flag state), probability, and custom scripting in LUA code language.



All of the start condition operate using a "OR" rule. When multiple conditions are set, any one being true will activate the action.

TIME MORE – sets the in-game mission time after which this condition is in effect.

IS USER FLAG – sets a flag number and status (on/true or off/false) as a start condition. The flag number can be entered manually or cycled using the left/right arrow keys. The flag state is set using the checkbox to the right of the flag number. If the box is checked, the flag needs to be on/true for the condition to be in effect. If the box is unchecked, the flag needs to be

off/true for the condition to be in effect. Flags can be set on and off using the trigger functions in the Trigger Menu.



If flag 2 is ON/TRUE



If flag 2 is OFF/FALSE

PROBABILITY – sets the probability in per cent of the action being started.

CONDITION (LUA PREDICATE) – this window can be used to enter a custom expression for the action using Lua code language. The code entered will be generated as a function:

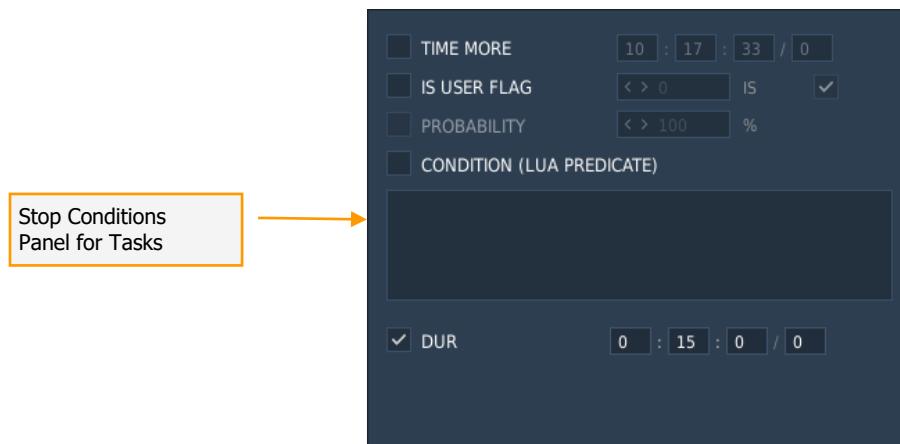
```
function <generated_name>()
return <lua code>
end,
```

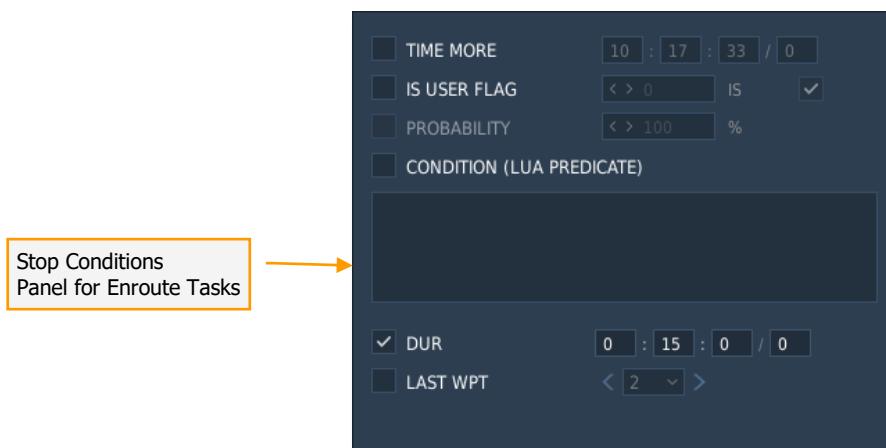
This function will be run periodically by the simulation and used as a start condition for the action.

STOP CONDITION – this button opens and closes the Stop Conditions Panel. Stop conditions can be used to set rules for the selected action to end and can include: mission time, logical variable (flag state), custom scripting in Lua code language, duration in time since the action was started, and a route waypoint (for Enroute Tasks only).

While Tasks can be stopped either by a stop condition or by the AI in-game when the task is completed (or skipped), Enroute Tasks are designed to be in effect for the duration of the route, so can only be stopped using a stop condition.

The Stop Conditions Panel varies slightly between Tasks and Enroute Tasks:





The TIME MORE, IS USER FLAG, PROBABILITY and CONDITION (LUA PREDICATE) functions are identical to the Start Conditions Panel.

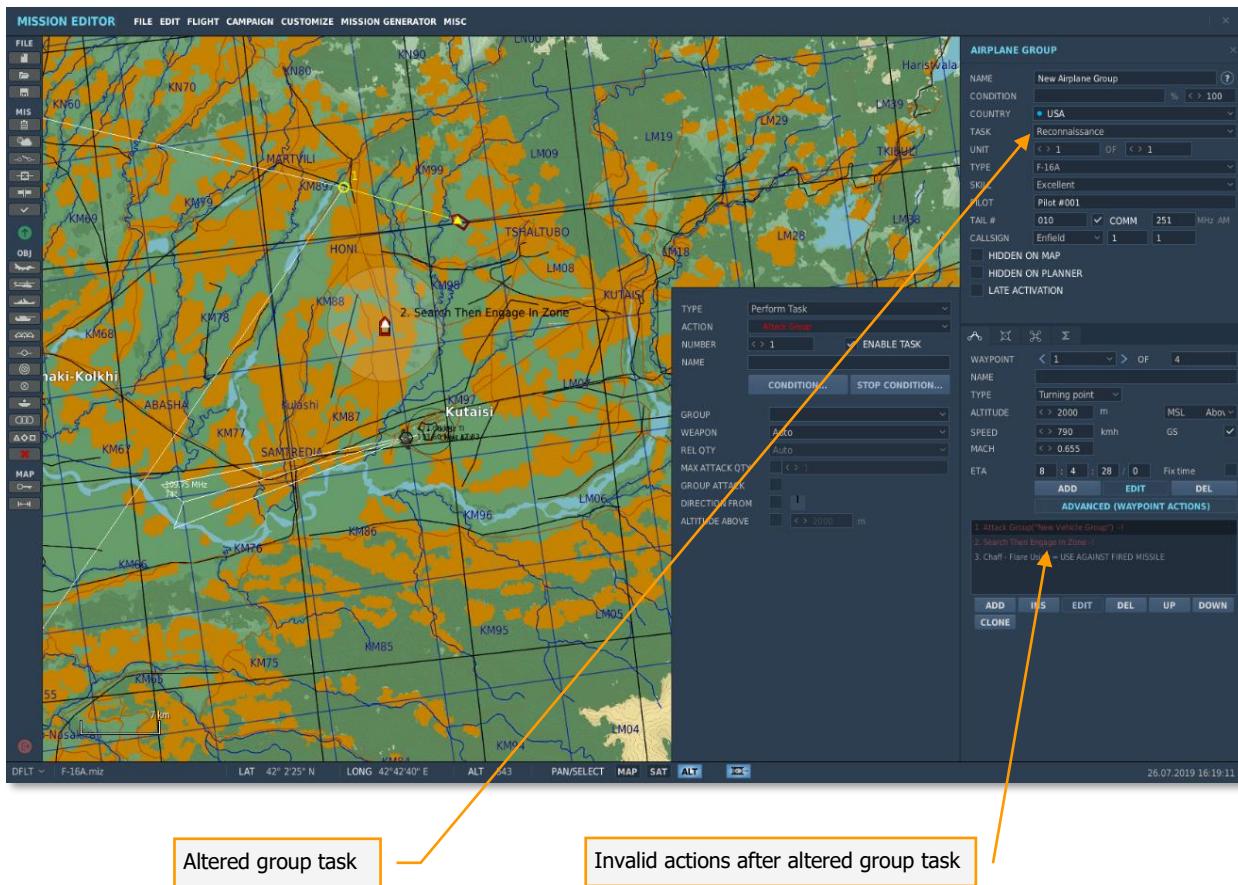
The **DURATION** function sets the maximum duration in time for the action to be active. The action will be stopped once the set duration time is exceeded. This can be a useful condition for Orbit tasks to limit the AI's time on station.

The **LAST WPT** function sets the waypoint at which the action will be stopped.

Configuring Advanced Actions

Once an action is selected in the ACTION drop down menu of the Upper Action Properties Panel, the action properties appear in the Lower Action Properties Panel and can be customized by the mission designer.

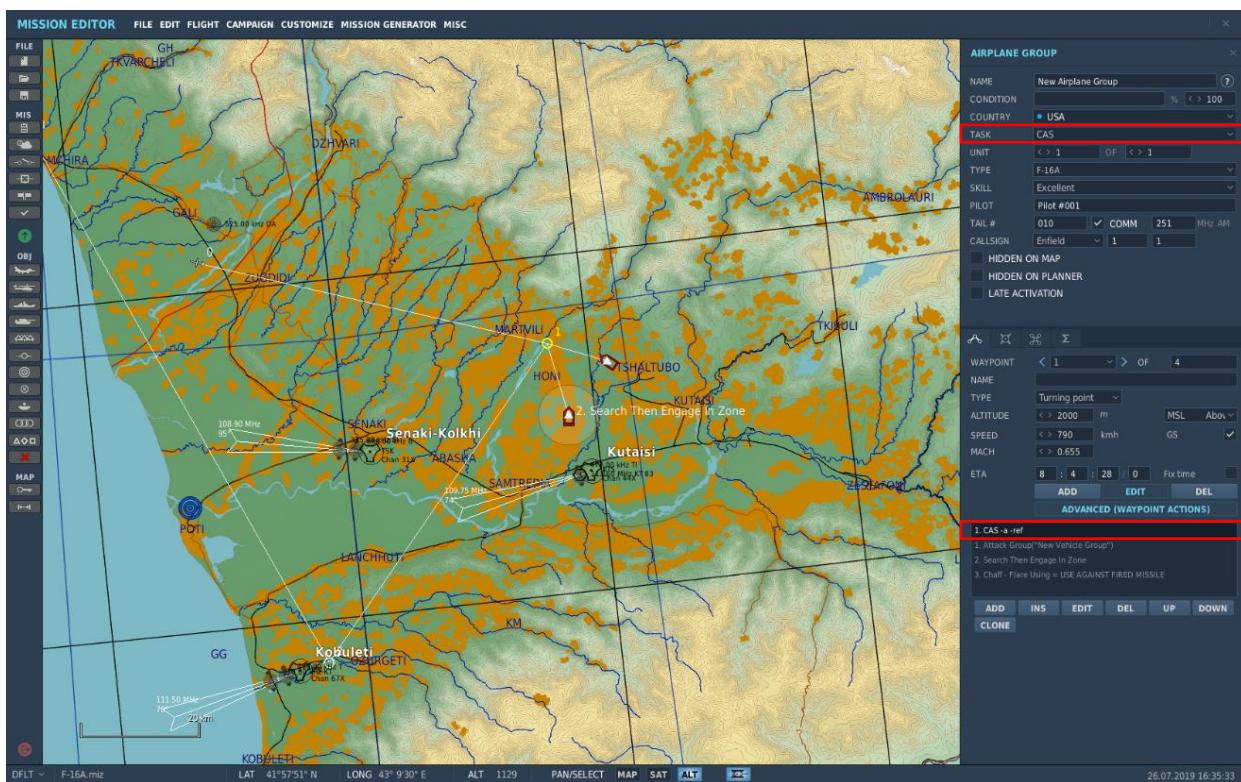
The specific actions available for selection depend on the type of group being edited and the group task (CAS, Intercept, etc.). If the group task is changed after initial group creation, it may conflict with the actions already set in the actions list. In such cases, the invalid action(s) will be presented in red font and a "**-!**" attribute will be added to indicate an invalid action. An error window will also pop up if the user attempts to close the group Properties Panel or save the mission.



Automatic Actions

An air group's task setting (CAS, Intercept, etc.) does not affect its behavior in-game, but only serves to filter the available actions in the Advanced Actions Panel.

To allow users to build missions without involving themselves with the Advanced Actions Panel, an initial action is automatically generated for the air group at the initial waypoint. This action appears as a repeater of the group task, however in this case it *does* determine the groups behavior in-game. Any automatic action includes the "-a" attribute in the actions list. This action is automatically repeated as a reference with a "-ref" attribute at all other route waypoints.



If the group task is changed after creation, the automatic actions are automatically changed accordingly. The group task actions can also be added manually using the Advanced Actions Panel.

The following group tasks generate automatic actions of the same type: "AWACS", "Refueling", "CAS", "CAP", "Fighter Sweep", "SEAD" and "Anti-ship". In all cases other than "AWACS" and "Refueling", the automatic actions are in fact Enroute Tasks to search for then engage targets appropriate to the task. Because these actions are automatic, the properties of these actions are pre-determined and cannot be edited.

Perform Task

As mentioned above, the Perform Tasks available for a group depend on the group type and the group task.

The following Perform Tasks may be available, depending on the group task:

- No Task
- Aerobatics
- Attack Group
- Attack Map Object
- Attack Unit
- Bombing
- Bombing Runway
- Cargo Transportation
- Embarking
- Disembarking
- Escort
- Follow
- Ground Escort
- FAC – Assign Group
- Orbit
- Land
- Refueling
- WW2: Big Formation
- WW2: Carpet Bombing

No Task

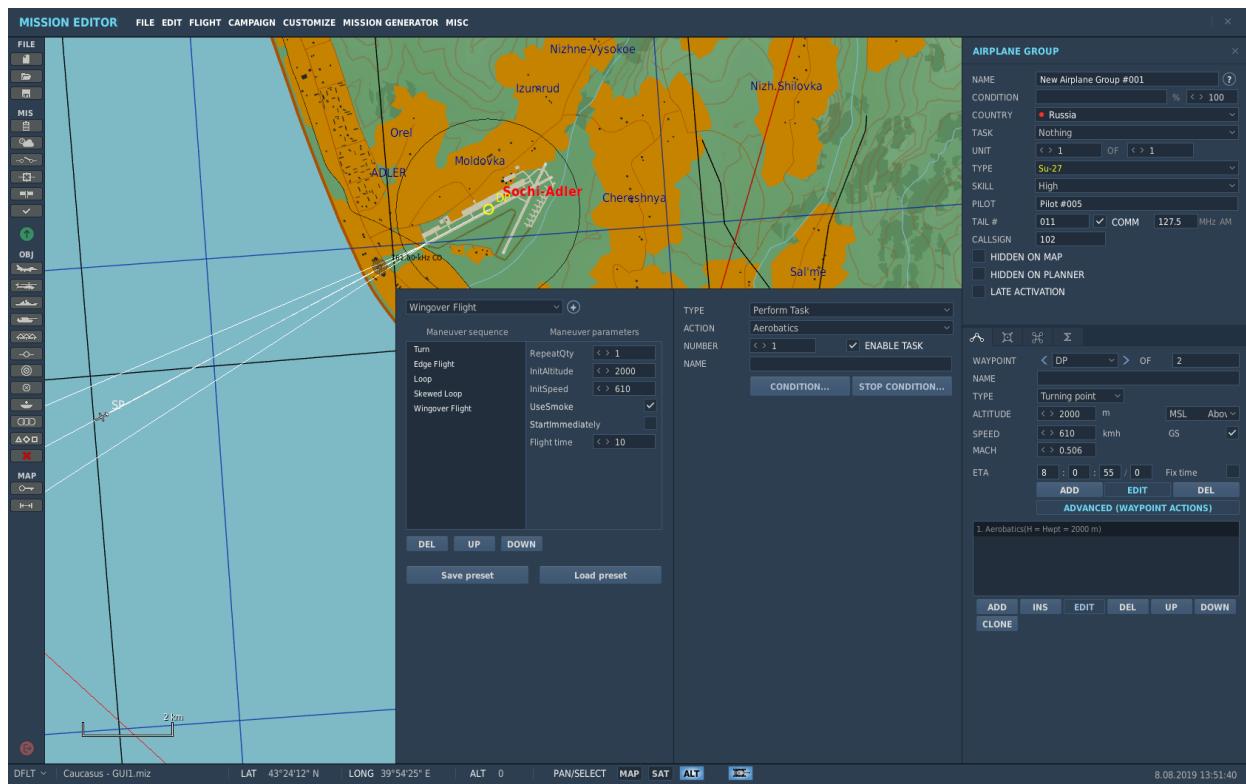
Available for all group types and all mission tasks. A No Task action does not set any action for the group to perform.

Aerobatics

The action is designed to perform maneuvers and aerobatic figures. Applicable to:

Group type(s): fixed-wing groups;

Group Task(s): "Nothing", "CAP", "CAS", "Fighter Sweep", "Ground Attack", "Intercept", "Reconnaissance", "Transport".



During aerobatic task selection, a panel opens, showing a list where you can select the necessary maneuver and add (+) them to the Maneuver sequence column. The buttons below: DEL, UP, DOWN – are used to set the required sequence of maneuvers. The SAVE PRESET and LOAD PRESET buttons save and load preset series of aerobatic figures and maneuvers, respectively.

Maneuver parameters:

RepeatQty. Number of repetitions.

InitAltitude. Initial altitude for maneuver execution.

InitSpeed. Initial speed for maneuver execution.

UseSmoke. Enables smoke.

StartImmediately. Executes the maneuver immediately after mission start.

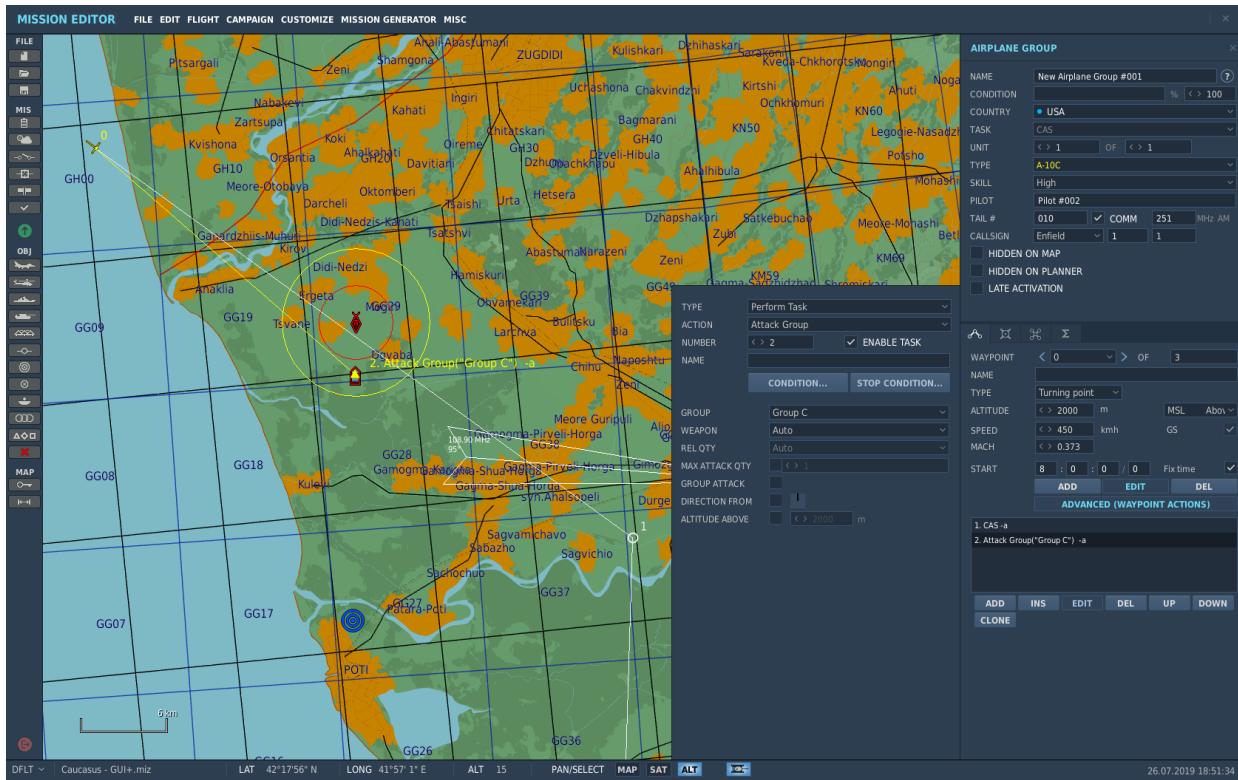
Flight time. Sets the time for maneuver execution.

Attack Group

Attack a specific enemy air, ground or naval group as designated by the mission designer.
Applicable to:

Group type(s): fixed-wing and helicopter groups;

Group Task(s): "SEAD", "CAS", "AFAC" (can only designate ground groups as targets), "Anti-ship" (can only designate naval groups as targets), "Intercept" (can only designate air groups as targets).



The target group can be designated by selecting it from the GROUP drop-down menu in the Lower Action Properties Panel or by left-clicking over the target group on the map.

When designated as the target, a red triangle appears over the target group and a dashed line connects the target triangle to the waypoint of the action.

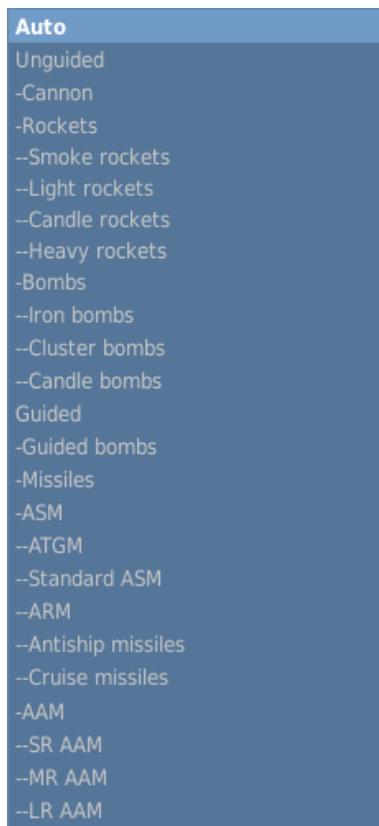
The Lower Action Properties Panel also allows you to set the specific weapon type for the attacking group to employ against this target or, alternatively, leave this choice up to the AI using the default "Auto" setting. If a specific weapon type is set, but the attack is not possible using this weapon type (for example, if the weapon type is missing from the payload or has been exhausted), the attack will not be performed.

Target Panel:

GROUP. Drop down menu to select the target group from all applicable enemy groups available in the mission.

WEAPON. Drop down menu to select the weapon types cleared to use for this action.

Depending on the task to be performed for the AC AI, the list of weapons in the menu may differ. Below is a complete list of available weapons for AI in the game and its description. Each menu item assigns a specific category/type of weapon to use.



- **Auto.** Automatic selection of weapons by the AI.
- **Unguided.** Unguided bombs, rockets, cannon.
 - **Cannon.** Cannon only.
 - **Rockets.** Unguided rockets only.
 - **Smoke rockets.** Smoke rockets only.
 - **Light rockets.** Low-caliber unguided rockets.
 - **Candle rockets.** Illumination rockets only.
 - **Heavy rockets.** High-caliber unguided rockets.
 - **Bombs.** Unguided bombs only.
 - **Iron bombs.** General-purpose free-fall bombs.
 - **Cluster bombs.** Cluster bombs only.
 - **Candle bombs.** Illumination bombs only.
- **Guided.** Guided munitions (bombs, missiles).
 - **Guided bombs.** Guided bombs only.

- **Missiles.** The use of all air-to-surface and air-to-air guided missiles aboard an aircraft.
- **ASM.** Application of tactical guided missiles of air-surface class of all types on board the aircraft. The surface can be water and land.
 - **ATGM.** Anti-tank guided missiles only.
 - **Standard ASM.** Guided missiles on ground targets only.
 - **ARM.** Anti-radiation missile only.
 - **Antiship missiles.** Antiship missiles only.
 - **Cruise missiles.** Cruise missiles only.
- **AAM.** Use of air-to-air guided missiles of all types on board aircraft.
 - **SR AAM.** Guided short-range missiles only.
 - **MR AAM.** Guided medium-range missiles only.
 - **LR AAM.** Guided long-range missiles only.

Note, by limiting the AI on the types of weapons cleared for use in the action, you may prevent the AI from successfully executing it (for example, when the weapon type has been exhausted).

REL QTY. The amount of payload cleared to expend in executing this action.

MAX ATTACK QTY. The maximum number of attack runs cleared for this action.

GROUP ATTACK. When checked, the entire flight group will participate in the attack of the target. By default, each aircraft in a flight group is assigned one target.

DIRECTION FROM. Allows you to set the course (azimuth) of the aircraft group for reaching the target for an attack.

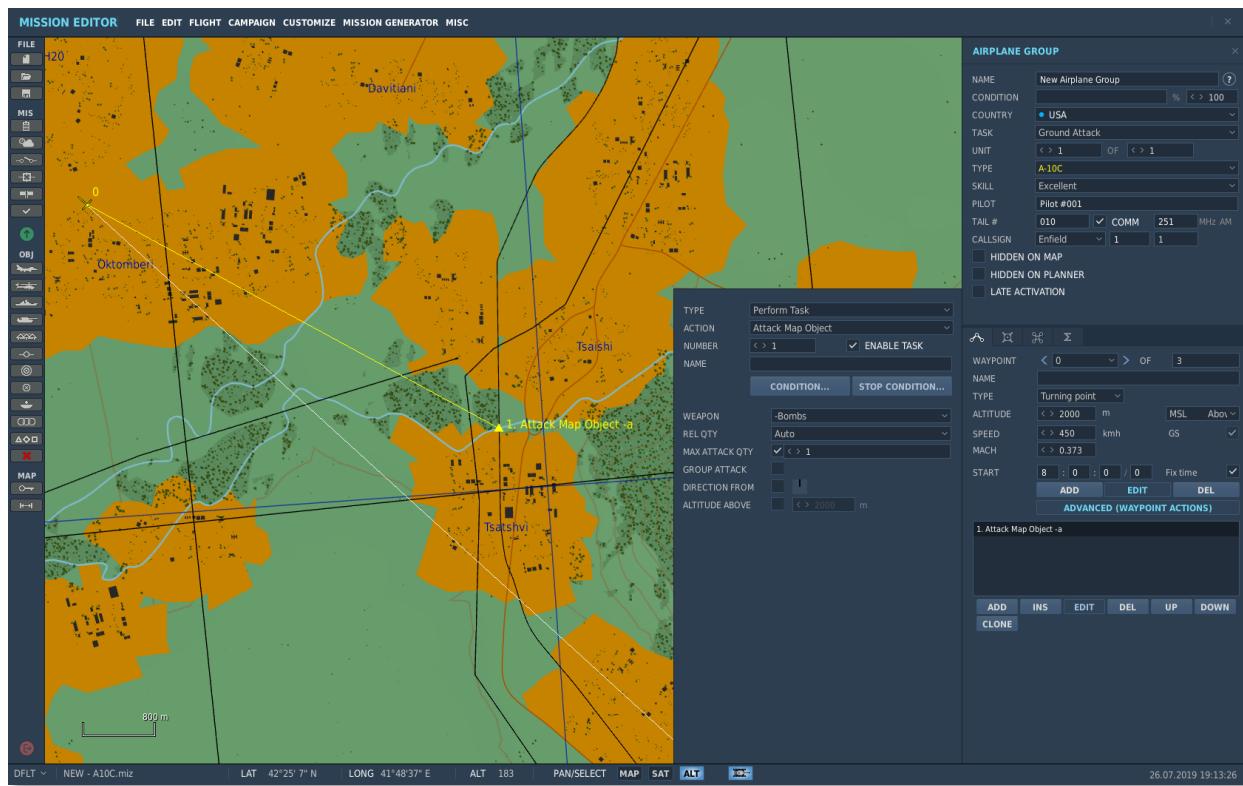
ALTITUDE ABOVE. Sets the altitude of the aircraft group on approach to target.

Attack Map Object

Attack a specific structure or object on the map, such as a bridge, bunker, etc., based on a map coordinate position. Applicable to:

Group Type(s): fixed-wing and helicopter groups;

Group Task(s): "Pinpoint Strike", "Ground Attack", "Runway Attack".



Because world structures are not individually selectable on the map, this Task designates a target point on the map with a red triangle and dashed line connecting the target point to the Task waypoint. You can drag the target point using the mouse to position it over the desired target on the map. Once the Task is initiated, the AI will attempt to find the closest structure or object to the target point and attack it using the [weapons](#) set in the task properties.

Target Panel:

WEAPON. Drop down menu to select the weapon types cleared to use for this action.

REL QTY. The amount of payload cleared to expend in executing this action.

MAX ATTACK QTY. The maximum number of attack runs cleared for this action.

GROUP ATTACK. When checked, the entire flight group will participate in the attack of the target. By default, each aircraft in a flight group is assigned one target.

DIRECTION FROM. Allows you to set the course (azimuth) of the aircraft group for reaching the target for an attack.

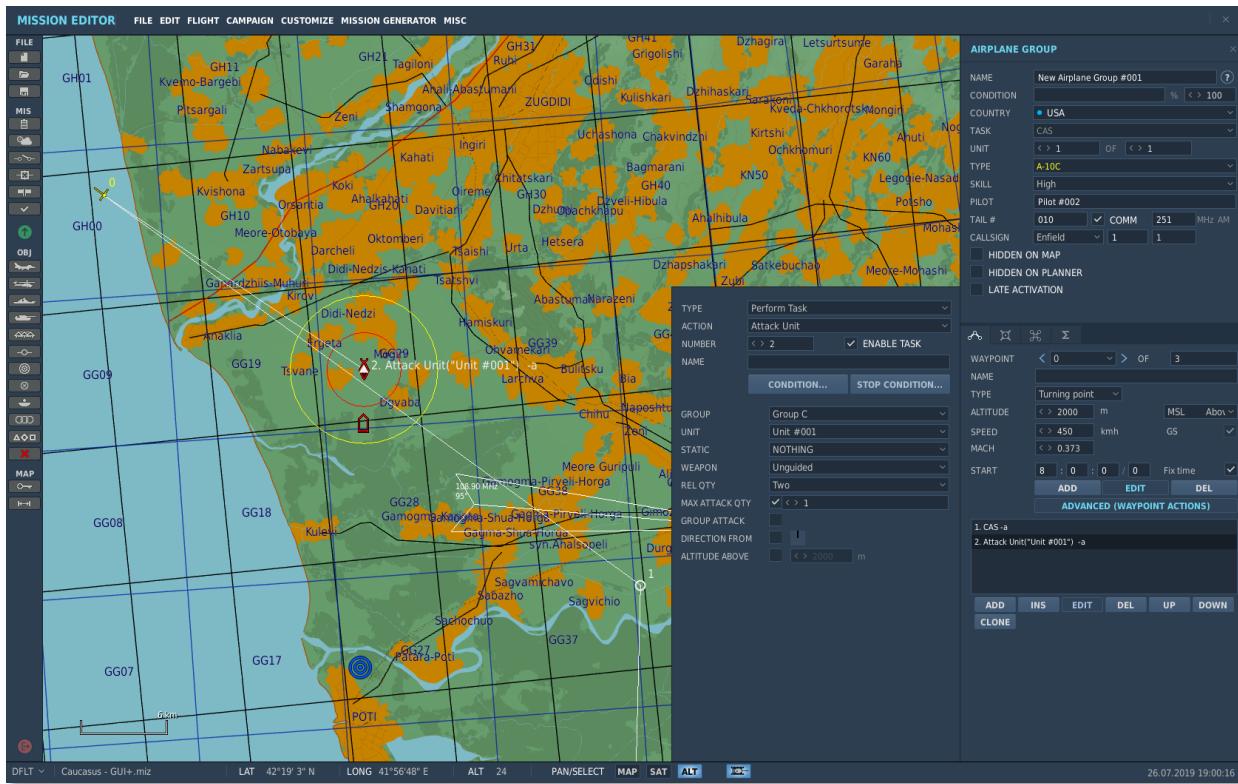
ALTITUDE ABOVE. Sets the altitude of the aircraft group on approach to target.

Attack Unit

Similar to the Attack Group Task, but allows the mission designer to designate a specific unit within the target group to attack. Applicable to:

Group Type(s): fixed-wing and helicopter groups;

Group Task(s): "Pinpoint Strike", "Ground Attack", "Runway Attack".



In addition to selecting a specific group unit as a target, the Attack Unit Task can be used to designate a static object as a target using the STATIC drop-down menu or by left-clicking a static object on the map. This task also allows the mission designer to set the amount of munitions to expend and number of attacks runs.

Target Panel:

GROUP. Drop down menu to select the target group from all applicable enemy groups available in the mission.

UNIT. Drop down menu to select the specific unit of the target group to attack.

STATIC. Drop down menu to select a static object as the target (bunker, FARP, etc.)

WEAPON. Drop down menu to select the weapon types cleared to use for this action.

REL QTY. The amount of payload cleared to expend in executing this action.

MAX ATTACK QTY. The maximum number of attack runs cleared for this action.

GROUP ATTACK. When checked, the entire flight group will participate in the attack of the target. By default, each aircraft in a flight group is assigned one target.

DIRECTION FROM. Allows you to set the course (azimuth) of the aircraft group for reaching the target for an attack.

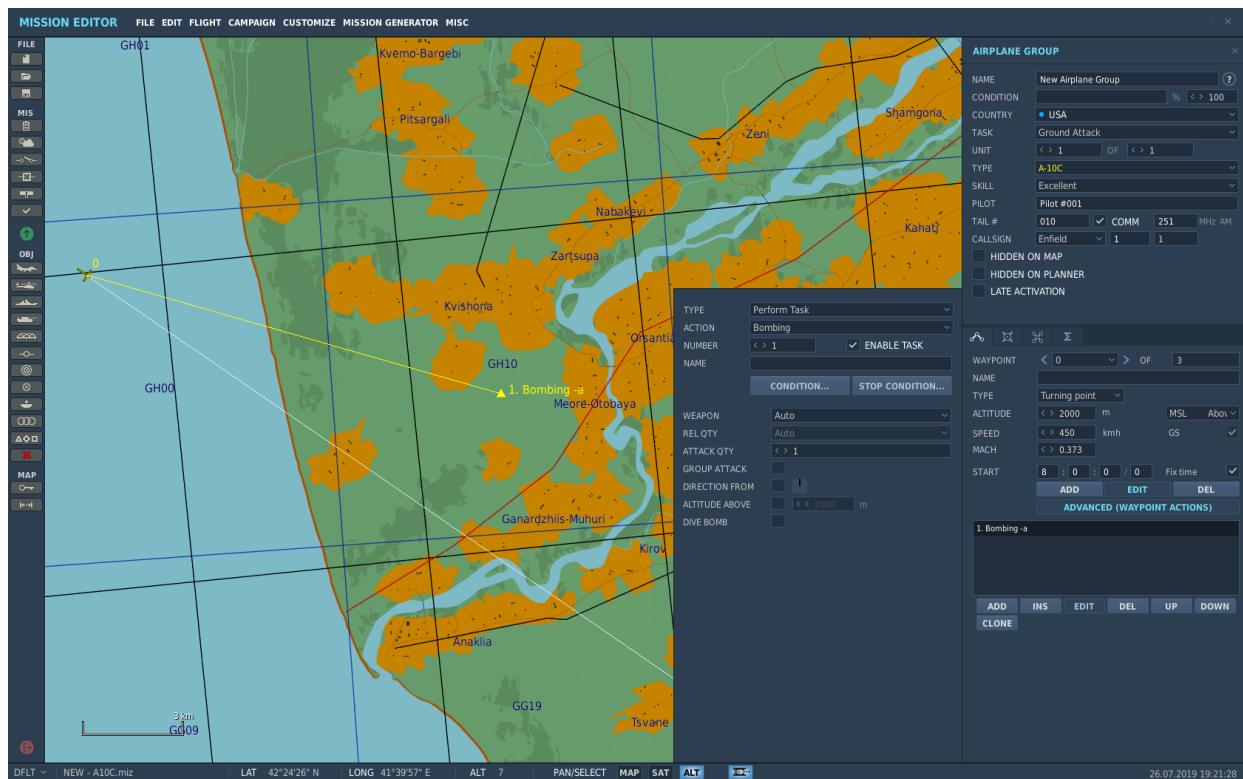
ALTITUDE ABOVE. Sets the altitude of the aircraft group on approach to target.

Bombing

Deliver air-to-ground ordnance onto the map coordinate as designated by the mission designer.
Applicable to:

Group Type(s): fixed-wing and helicopter groups;

Group Task(s): "Pinpoint Strike", "Ground Attack", "Runway Attack".



Unlike the Attack Map Object Task, the Attack Coordinate Task will set the AI to attack the specific point on the map and not the closest map object in the vicinity. In other words, if you place the target point over an empty piece of dirt, the AI will attempt to deliver weapons onto this particular point.

As with other attack Tasks, you can configure the Task properties, including the [weapons](#) to be employed.

Target Panel:

WEAPON. Drop down menu to select the weapon types cleared to use for this action.

REL QTY. The amount of payload cleared to expend in executing this action.

MAX ATTACK QTY. The maximum number of attack runs cleared for this action.

GROUP ATTACK. When checked, the entire flight group will participate in the attack of the target. By default, each aircraft in a flight group is assigned one target.

DIRECTION FROM. Allows you to set the course (azimuth) of the aircraft group for reaching the target for an attack.

ALTITUDE ABOVE. Sets the altitude of the aircraft group on approach to target.

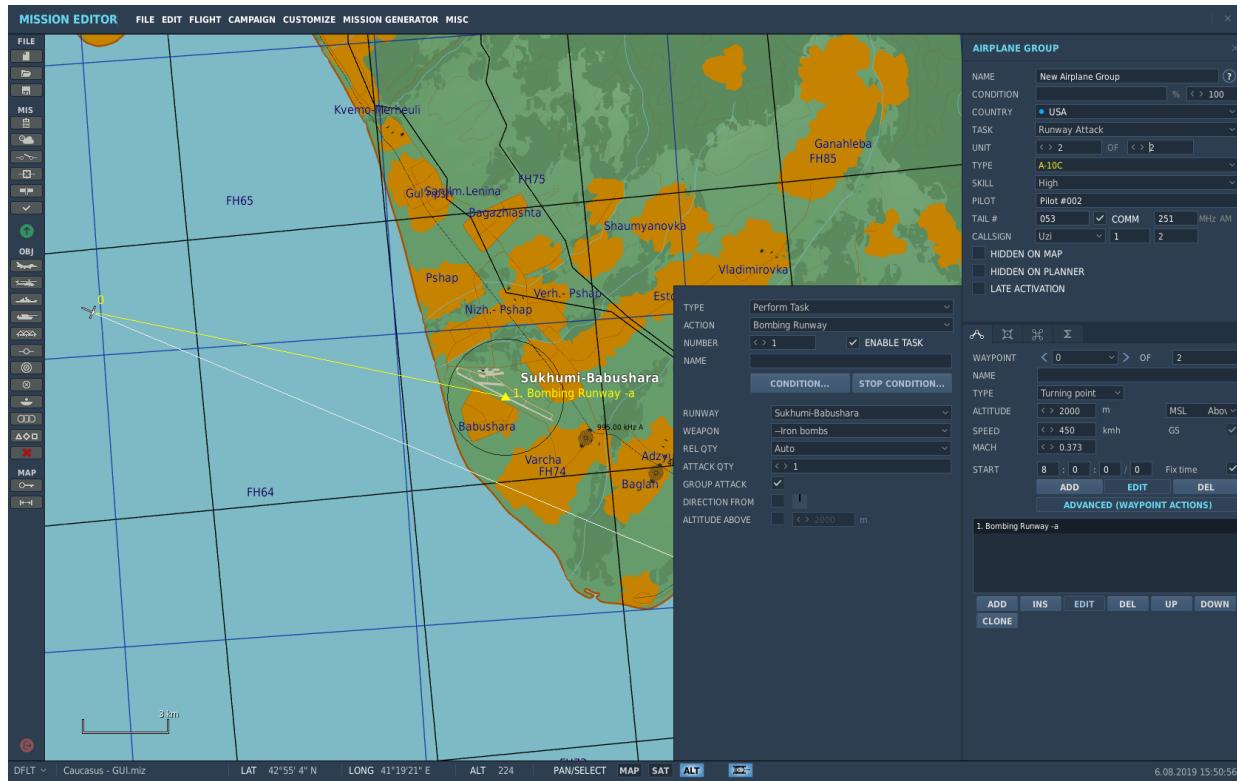
DIVE BOMB. May be used against targets against which it is impossible to perform low-altitude attacks due to the following factors: terrain, target type, lack of necessary ammunition.

Bombing Runway

Attack enemy airbase runways. Applicable to:

Group Type(s): fixed-wing groups;

Group Task(s): "Runway Attack".



The target airbase can be selected from the RUNWAY drop-down menu or by selecting the target airbase on the map using the mouse.

Target Panel:

RUNWAY. Drop down menu to select the target airbase.

WEAPON. Drop down menu to select the weapon types cleared to use for this action.

REL QTY. The amount of payload cleared to expend in executing this action.

MAX ATTACK QTY. The maximum number of attack runs cleared for this action.

GROUP ATTACK. When checked, the entire flight group will participate in the attack of the target. By default, each aircraft in a flight group is assigned one target.

DIRECTION FROM. Allows you to set the course (azimuth) of the aircraft group for reaching the target for an attack.

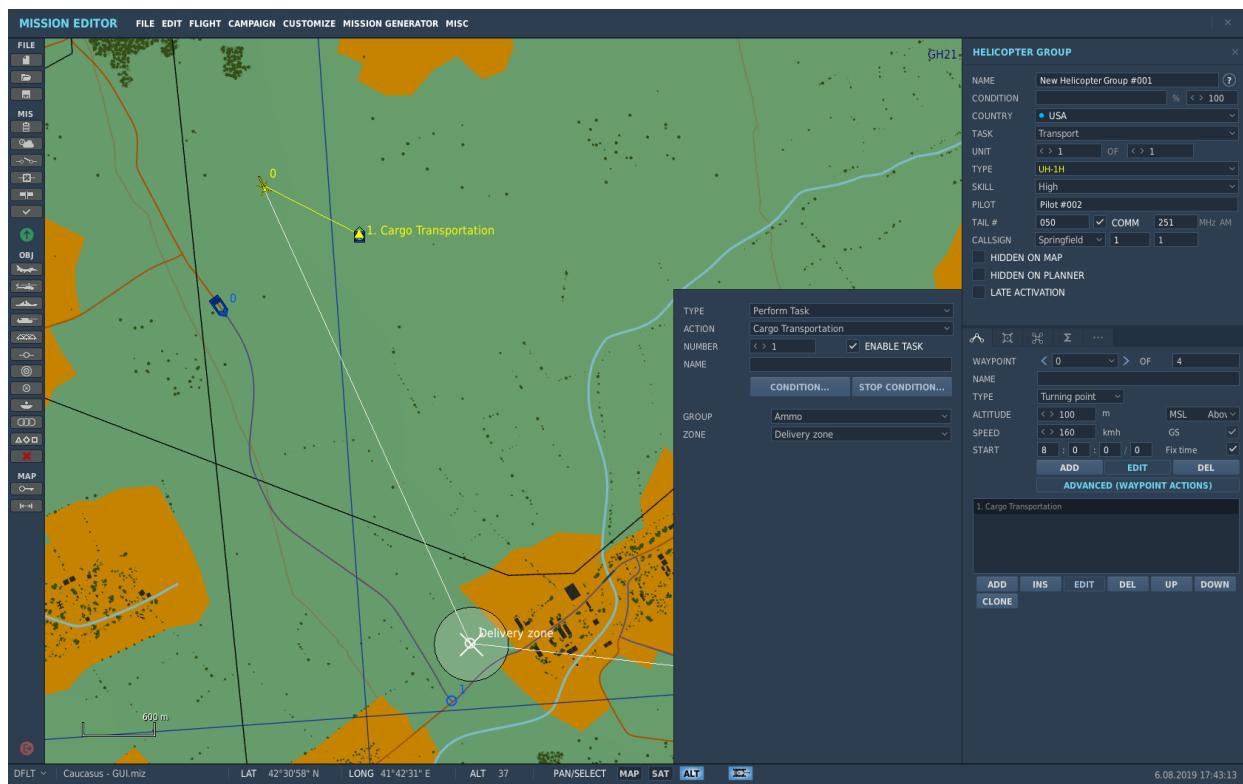
ALTITUDE ABOVE. Sets the altitude of the aircraft group on approach to target.

Cargo Transportation

The action is used to organize the transportation of cargo by a helicopter group to the specified zone. Applicable to:

Group Type(s): helicopter groups;

Group Task(s): "Anti-ship Strike", "CAS", "Transport", "Escort".



GROUP. Selection of cargo to be transported by the helicopter group.

ZONE. Delivery trigger zone.

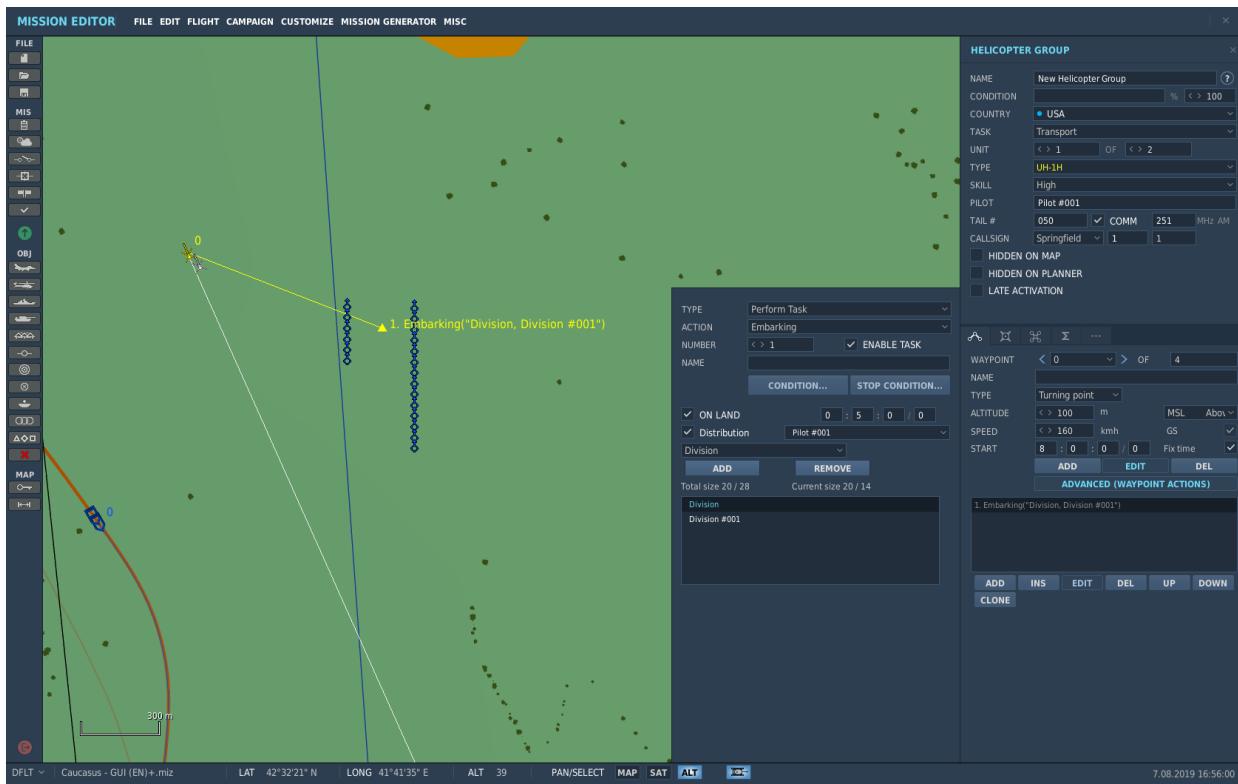
When this action is selected, the triangular marker will be automatically set to the selected cargo group. The helicopter will then fly up to the cargo, carry out its pick-up and then deliver it to the specified delivery area.

Embarking

The action is for organizing the embarkation of assault personnel. Applicable to:

Group Type(s): helicopter groups;

Group Task(s): "Ground Attack", "CAS", "Transport".



ON LAND. This flag activates the helicopter group's set waiting time on the ground for personnel embarkation, in the format (hours: minutes: seconds / day). The helicopter group will remain grounded for the entirety of the specified duration even when personnel embarkation has already been completed successfully. If the flag is unchecked, the helicopters will take off immediately after finishing embarkation.

Distribution. Selects the helicopter pilot for the embarkation task.

List of divisions. List of infantry squads for embarkation. In order to be able to add a ground group to the list of squads, each infantry squad must be set to "Perform Task – Embark to transport", and must have the flag – "TRANSPORTABLE" activated in the vehicle group panel.

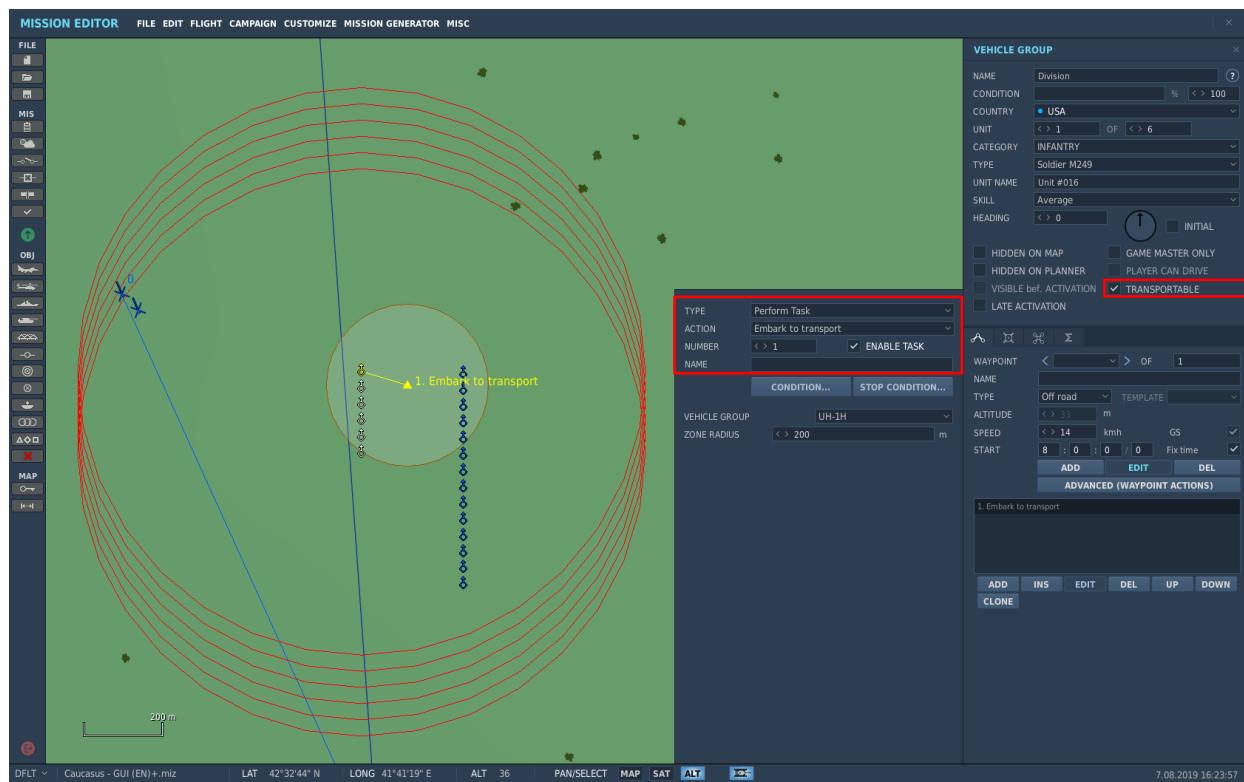
ADD. The button adds the infantry unit (selected from the list above) into the embarkation list below.

REMOVE. Removes the selected infantry unit from the embarkation list.

Total size .../... . The total number of infantrymen in the squads and the total possible number of loading places in the helicopter group.

Current size .../... . The number of infantrymen in the added (selected) infantry unit, and the possible number of loading places in one helicopter from the group.

When you select this action, a triangular marker will automatically appear near the waypoint, connected to it by a line. This marker must be dragged with the mouse to the map point chosen for the personnel embarkation.



VEHICLE GROUP. Selects the vehicle group for the embarkation task.

ZONE RADIUS. The radius of the embarkation area of the infantry squads, in meters.

After the helicopter group lands at the indicated point (in the radius of the zone), the landing will begin its loading:



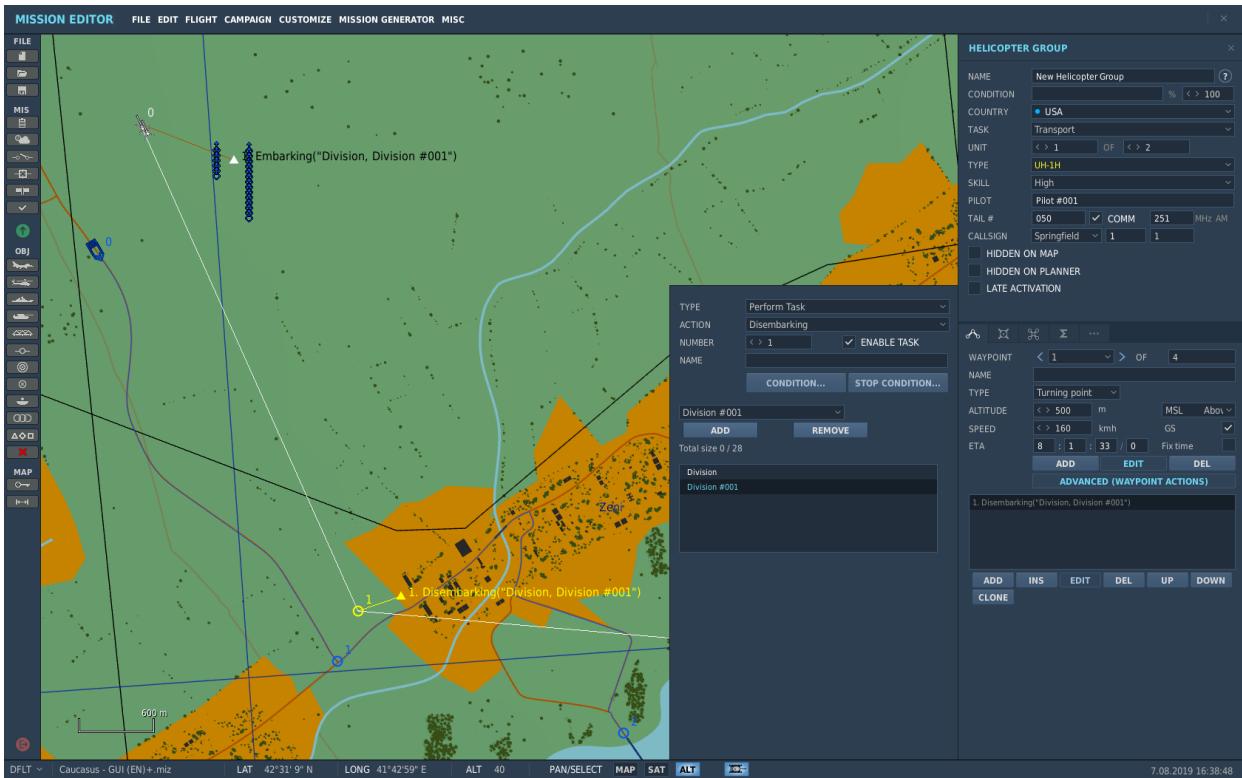
There are currently no in-game models for infantrymen in-transit (located inside the helicopter cabin).

Disembarking

This action is for organizing the disembarkation of assault personnel. Applicable to:

Group Type(s): helicopter groups;

Group Task(s): "Ground Attack", "CAS", "Transport".



List of divisions. Shows a list of infantry squads available for unloading. In order to be able to add an infantry group this list, the infantry group must have the main task "Embarking".

ADD. The button adds the infantry unit (selected from the list above) into the disembarkation list below.

REMOVE. Removes the selected infantry unit from the disembarkation list.

When you select this action, a triangular marker will automatically appear near the waypoint, connected to it by a line. This marker must be dragged with the mouse to the map point chosen for the personnel disembarkation.

The helicopter group will drop off the infantry groups in the specified zone, after which it will take off and continue to follow its route and assigned tasks.

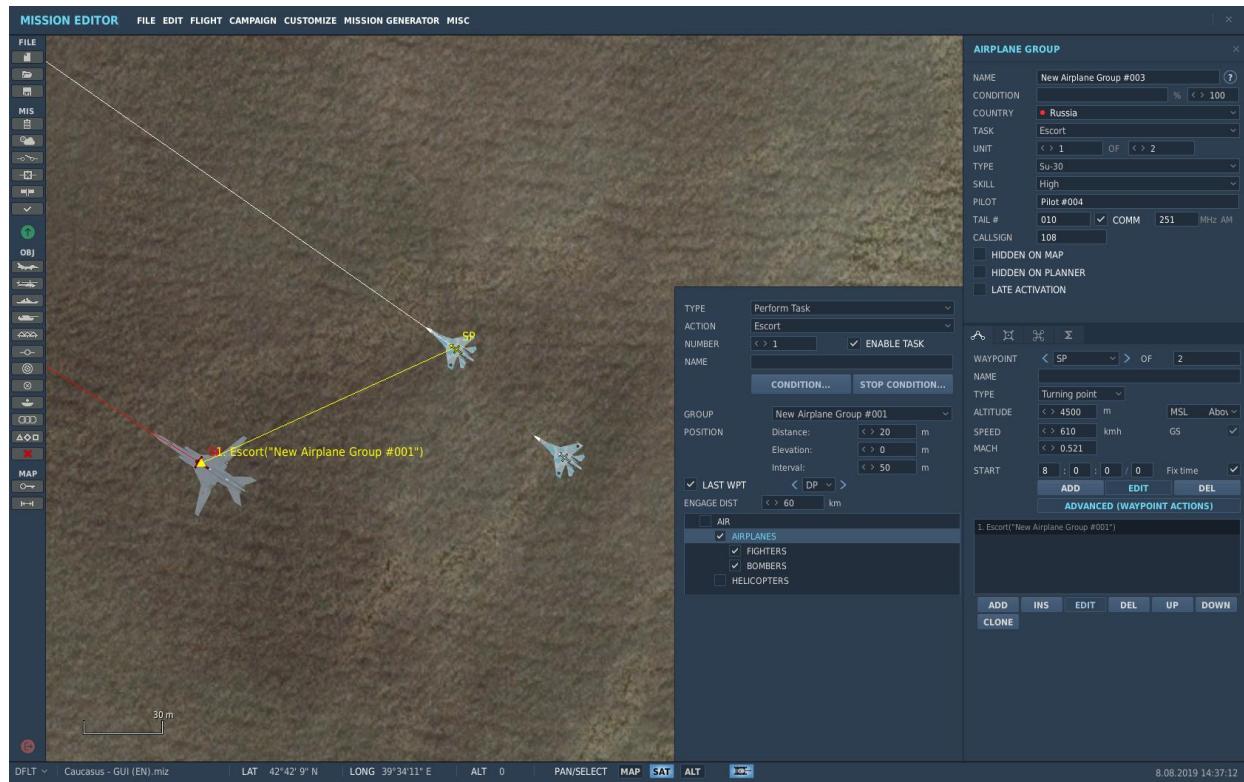


Escort

Air group to escort other air group. Escort group will engage threats to escorted air group.
Applicable to:

Group Type(s): fixed-wing groups.

Group Task(s): "Escort", "SEAD",



The target air group can be selected from the GROUP drop-down menu or by selecting the air group to escort on the map using the mouse.

Target Panel:

GROUP. Drop down menu to select the air group.

- **Distance** - Formation forward and back location of group to group being followed.
- **Elevation** - Formation altitude difference of group to group being followed.
- **Interval** - Formation side-to-side location of group to group being followed.

LAST WPT. Waypoint at which Follow action ends.

ENGAGE DIST. Distance between threat and escorted flight that will cause the escort flight to engage the threat.

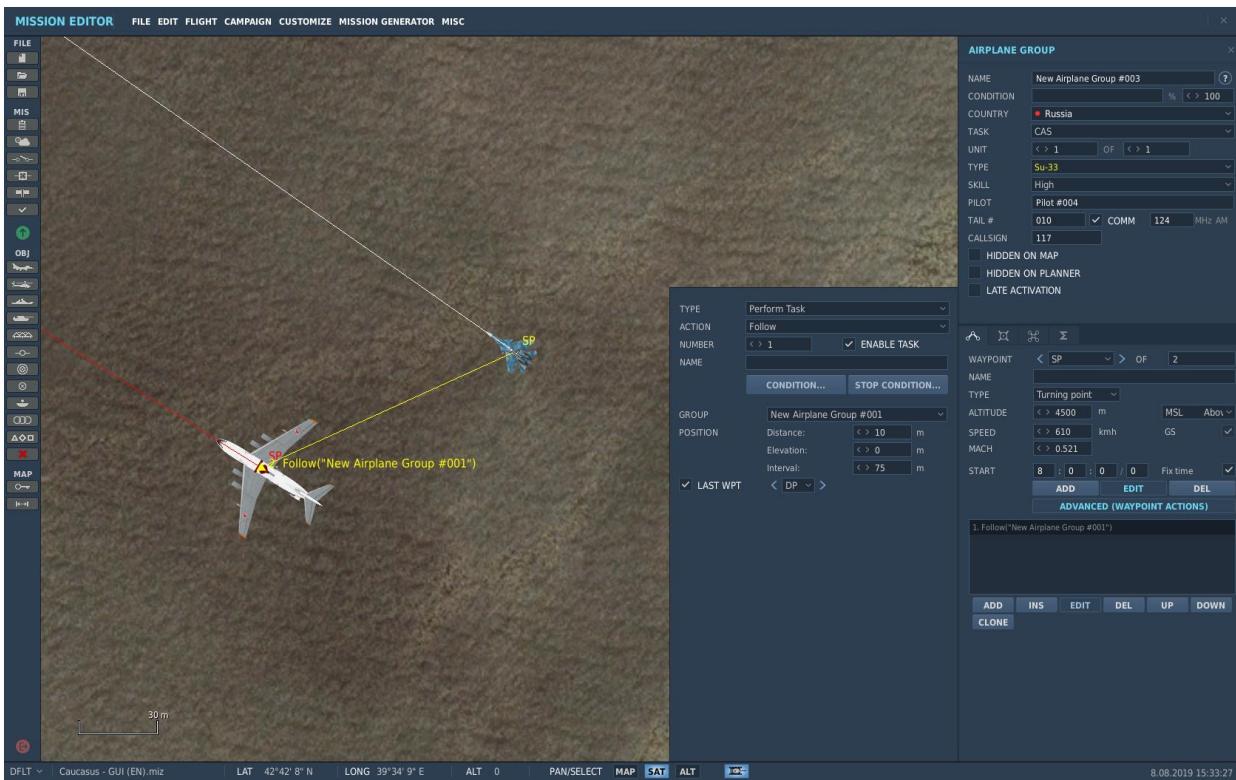
Threat Type List. Check types of threats that escort flight is cleared to engage as part of escort task.

Follow

Air group to follow other air group. Applicable to:

Group Type(s): fixed-wing and helicopter groups;

Group Task(s): All.



The target air group can be selected from the GROUP drop-down menu or by selecting the air group to follow on the map using the mouse.

Target Panel:

GROUP. Drop down menu to select the air group.

- **Distance** - Formation forward and back location of group to group being followed.
- **Elevation** - Formation altitude difference of group to group being followed.
- **Interval** - Formation side-to-side location of group to group being followed.

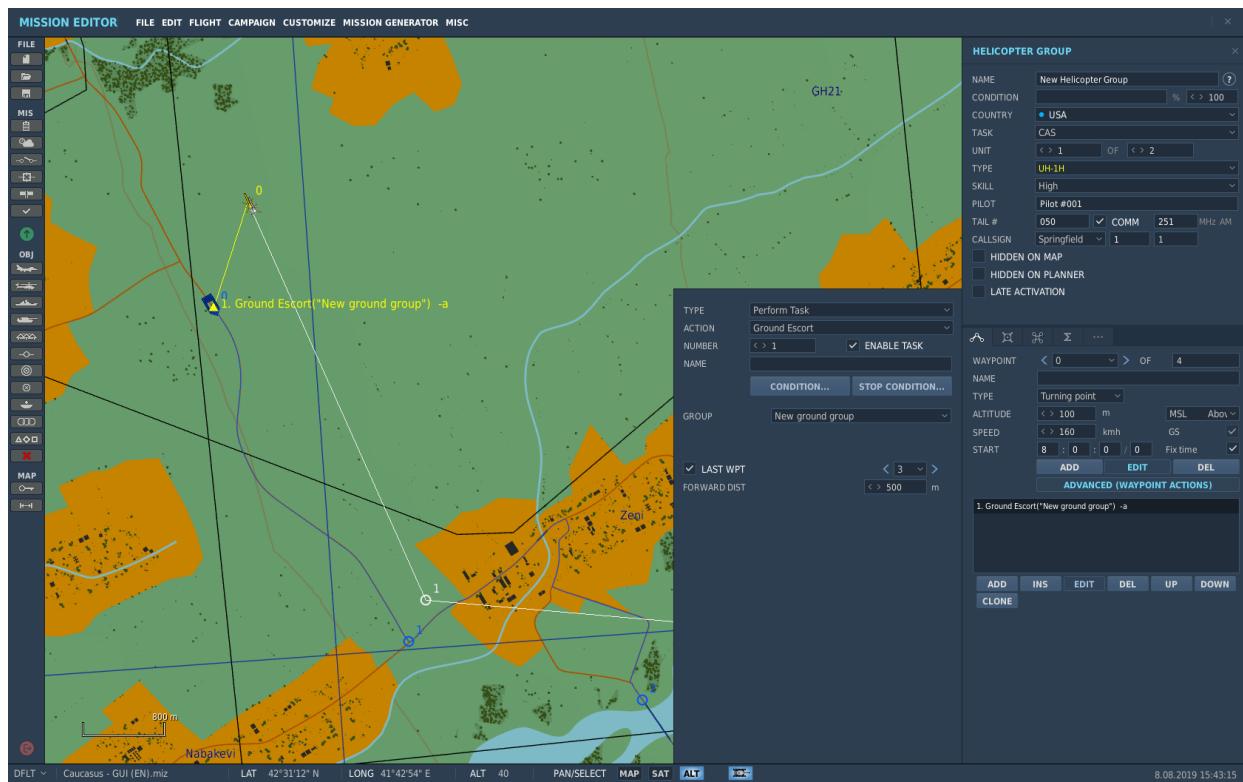
LAST WPT. Waypoint at which Follow action ends.

Ground Escort

This action is for organizing the aerial escort (performed by a helicopter group) of a ground unit group along the ground unit group's travel route. Applicable to:

Group Type(s): helicopter groups;

Group Task(s): "CAS", "Ground Attack", "Escort".



Target Panel:

GROUP. Selects the ground unit group to be escorted by the helicopter group.

LAST WPT. Waypoint at which Follow action ends.

FORWARD DISTANCE. Forward distance to the ground unit group's target area, in meters.

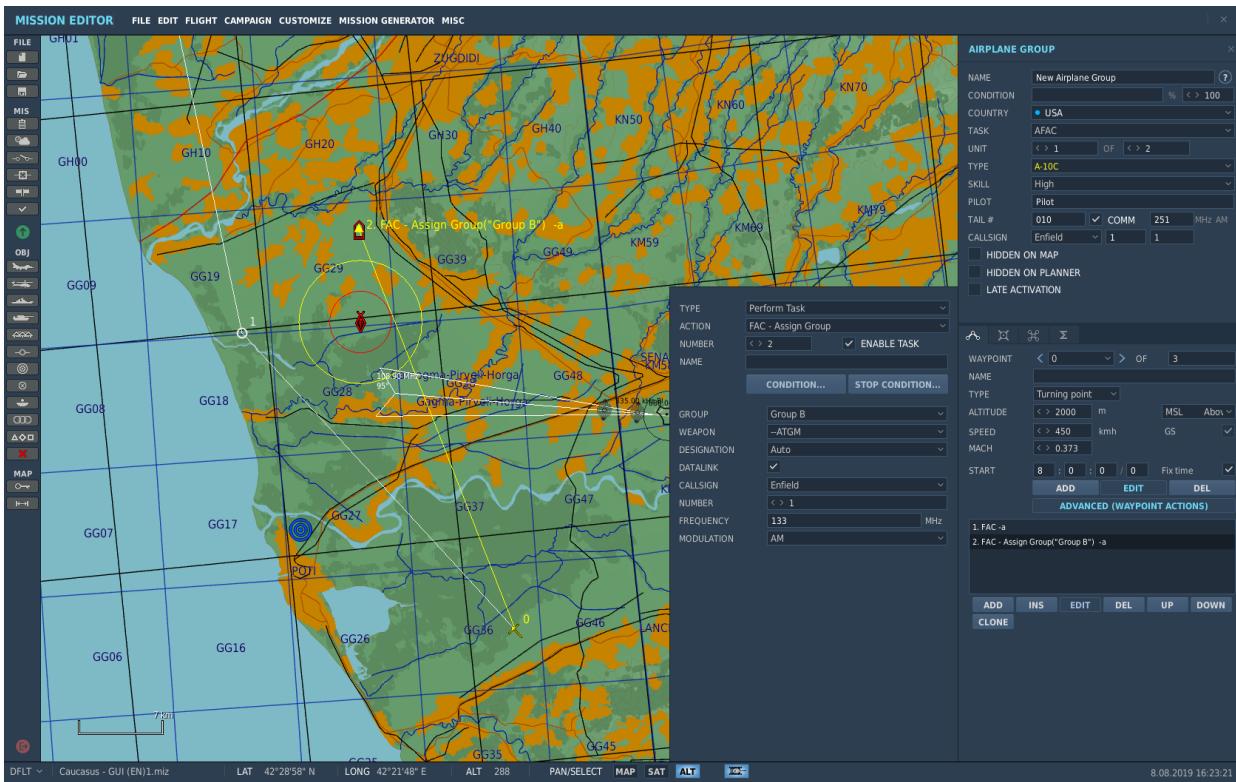
The target ground group can be selected from the GROUP drop-down menu or by selecting the ground group to follow on the map using the mouse.

FAC – Assign Group

This task creates an Airborne Forward Air Controller (AFAC) to direct friendly aircraft onto a target group designated by the mission designer. Applicable to:

Group Type(s): fixed wing and helicopter groups in **BLUE** coalition only;

Group Task(s): "AFAC".



Targeting actions will begin when friendly units arrive in the area and establish communication with the AFAC.

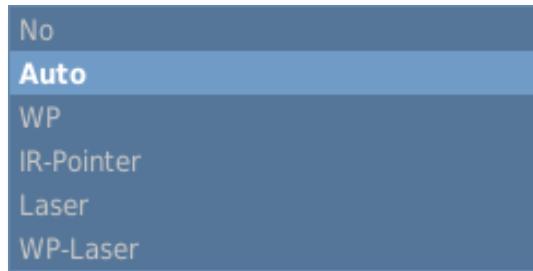
Note: the FAC: Assign Group Task assumes full situational awareness for the AFAC. The target's location will always be known and the AFAC will always attempt prosecute the attack if conditions permit, even when the target has not been independently detected by the AFAC.

Target Panel:

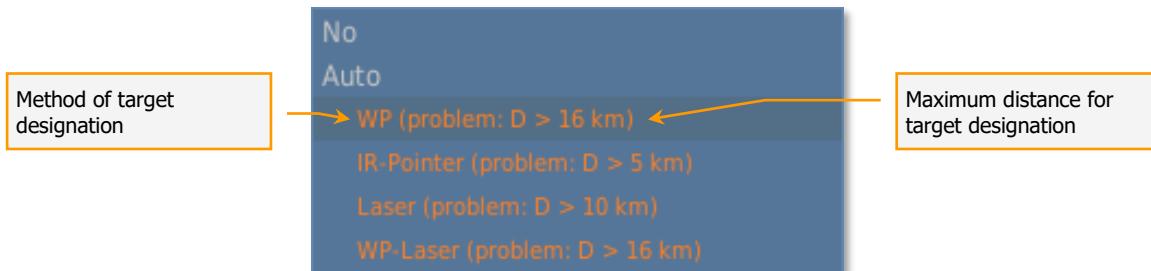
GROUP. Drop down menu to select the target group from all applicable enemy groups available in the mission. The FAC will only provide targeting against the group designated as the target in the mission editor and will not target other groups.

WEAPON. Drop down menu to select the weapon types cleared to use for this action. The FAC-Assign Group Task allows you to set the [weapon](#) type(s) for the FAC to request from the attacking groups.

DESIGNATION. Selects the method of target designation (Auto, smoke marker ("Willy Pete", WP), IR-Pointer, Laser, WP-Laser. Target designation is carried out on the player's radio request at a fixed radio range.



If the FAC unit is located from the enemy at a distance greater than the operational range of the target designator equipment, then the maximum ranges for each of the available equipment will be displayed in the menu.



In this case, it is necessary to adjust the distance of the Forward Air Controller to the enemy such that it is within the specified maximum range.

DATALINK. Automatic data transmission system for the exchange of target information between ground units and aircraft.

CALLSIGN. Callsign of the Forward Air Controller.

NUMBER. Selection field for the FAC's number.

FREQUENCY. Set the FAC group's radio communications frequency in MHz.

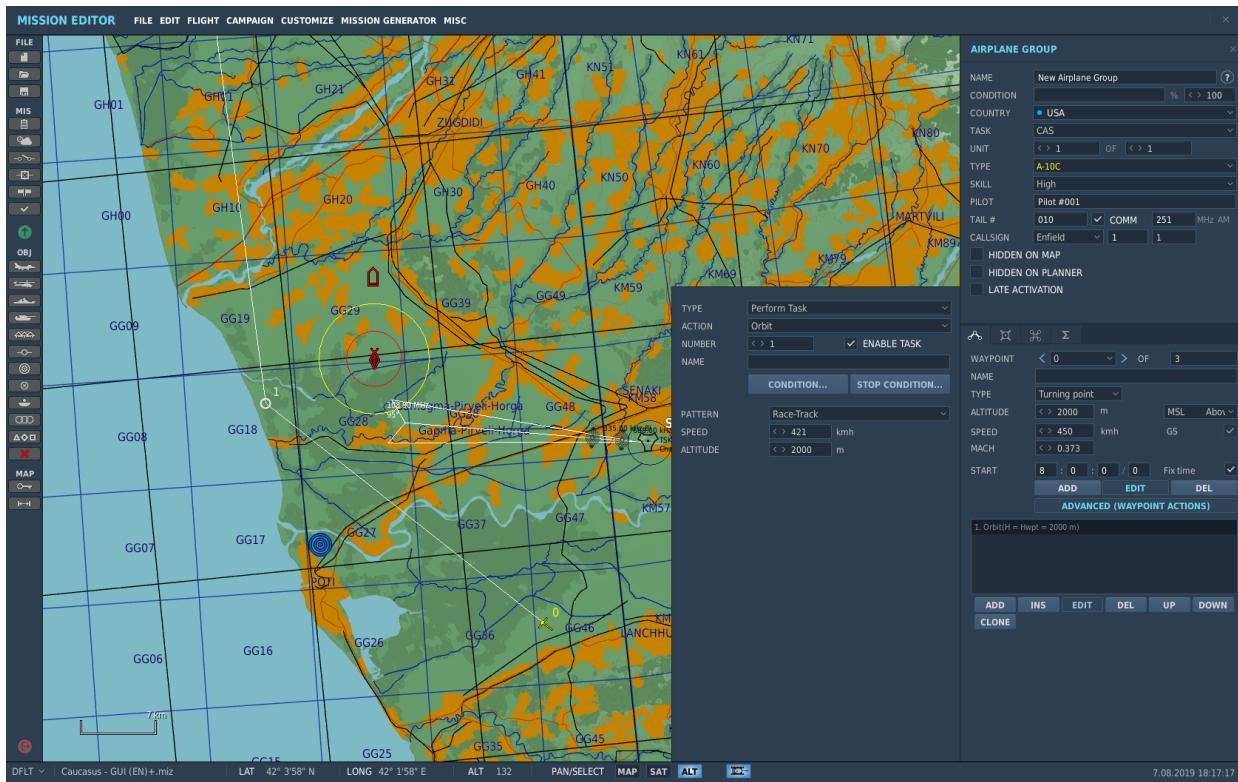
MODULATION. Set the FAC group's radio communications AM/FM modulation.

Orbit

Set the air group to orbit "on station" while awaiting for further conditions to proceed with the mission. Applicable to:

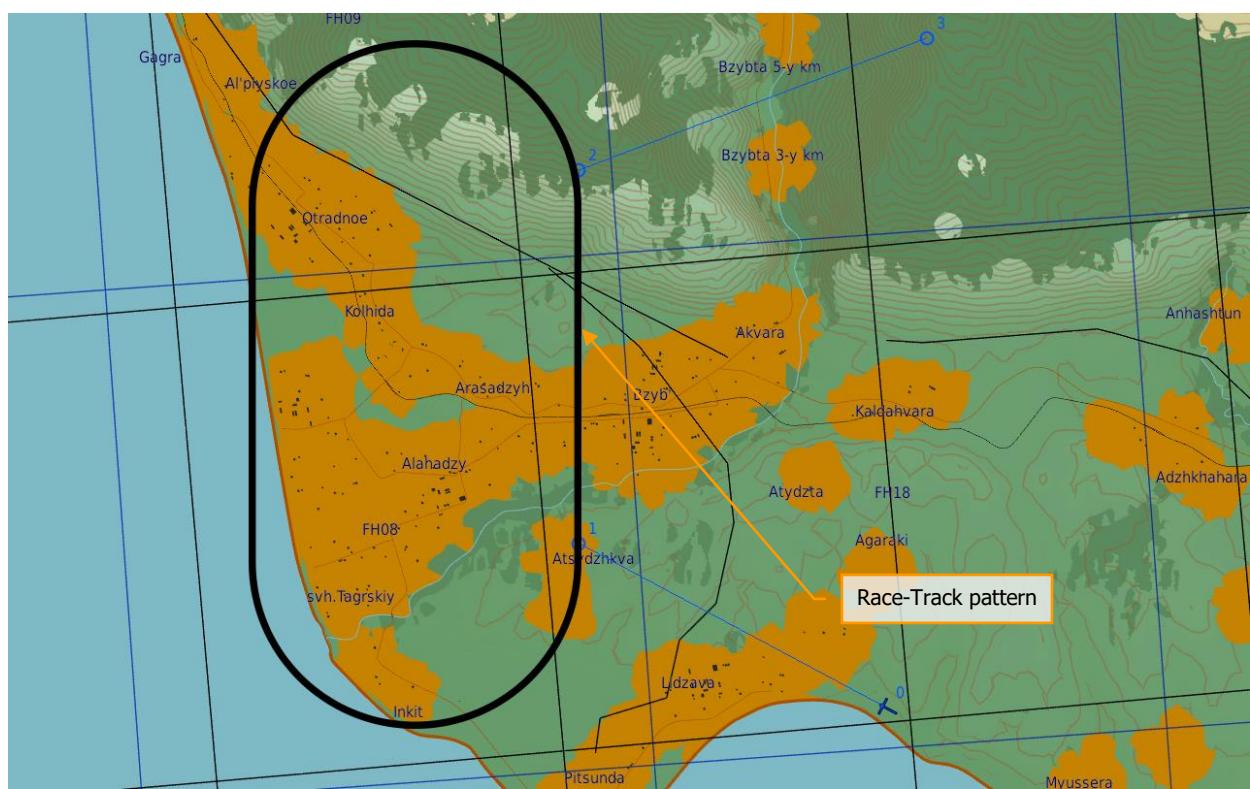
Group Type(s): fixed-wing and helicopter groups;

Group Task(s): all mission tasks.



The PATTERN drop-down menu allows the mission designer to select between a race-track pattern (loop between the current and subsequent waypoints) or a circle pattern. When circle pattern is selected, the orbit will be centered on the orbit waypoint.

The SPEED and ALTITUDE settings set the airspeed in kilometers per hour and altitude in meters for the pattern.



An Orbit Task will be stopped by the AI automatically upon reaching Bingo fuel state, when the AI only has enough fuel to return to base (RTB).

The Task can also be stopped using the Stop Conditions Panel by setting one or more stop conditions for the task.

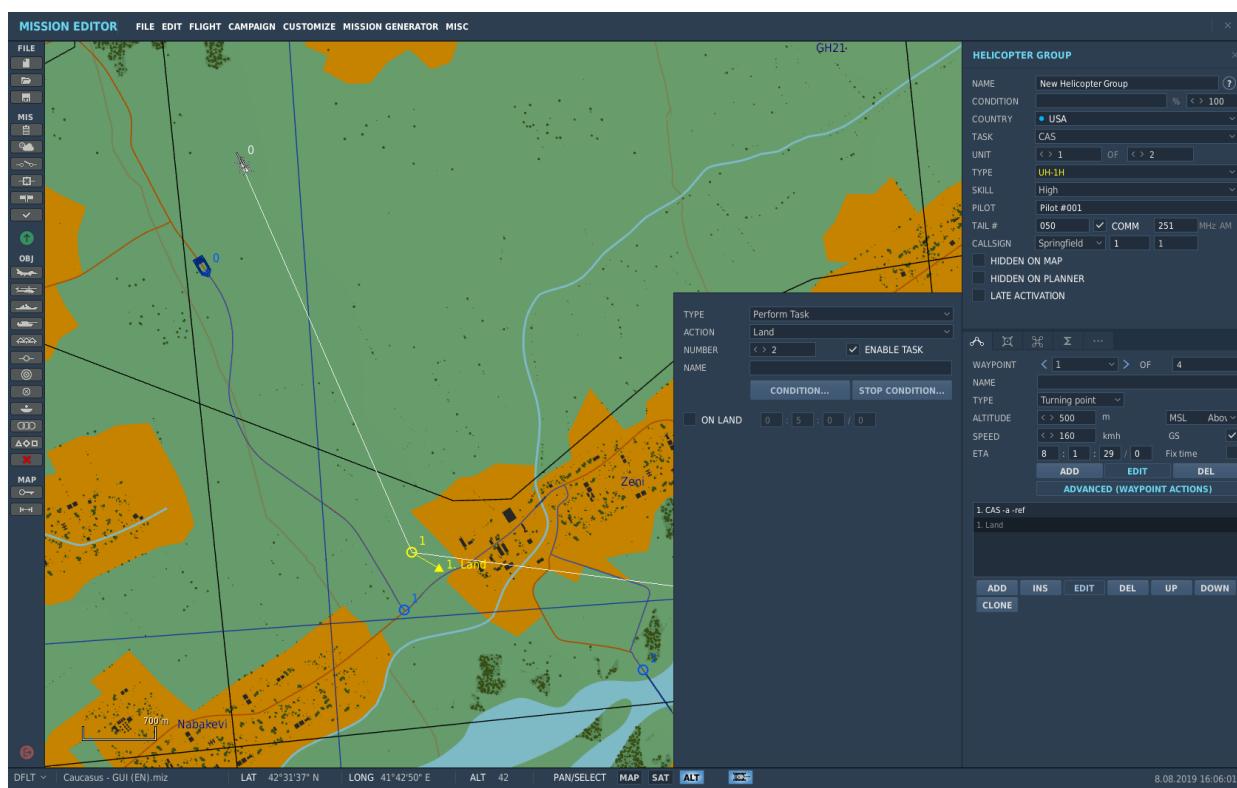
The Orbit Task allows the mission designer to create scenarios for the AI group to hold off on proceeding with the route until certain conditions are met. These can include a radio command from the player scripted through the Triggers Menu, the destruction of an enemy unit, such as a SAM threat, or the presence of particular units inside a designated zone. Any actions anticipated for the group after entering an orbit station should be added in the actions list below the Orbit Task.

Land

The action is for organizing of the en-route stopovers of the helicopter group between the waypoints of its travel route. Applicable to:

Group Type(s): helicopter groups;

Group Task(s): all mission tasks.



ON LAND. This flag activates the helicopter group's set waiting time on the ground after landing, in the format (hours: minutes: seconds / day).

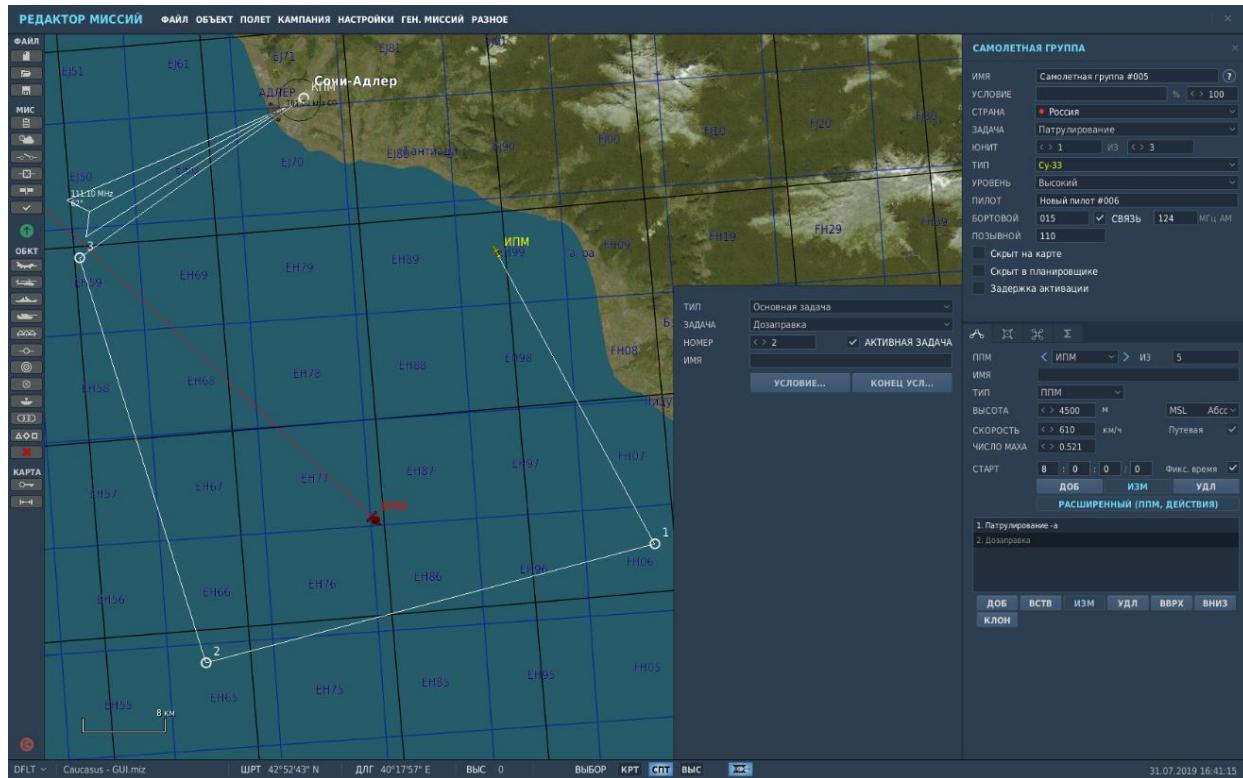
The target area can be placed on the map using the left mouse button. A line connects the center of the target area (triangle marker) with the action waypoint.

Refueling

Set the air group to refueling for forced following to nearest tanker and refueling. Applicable to:

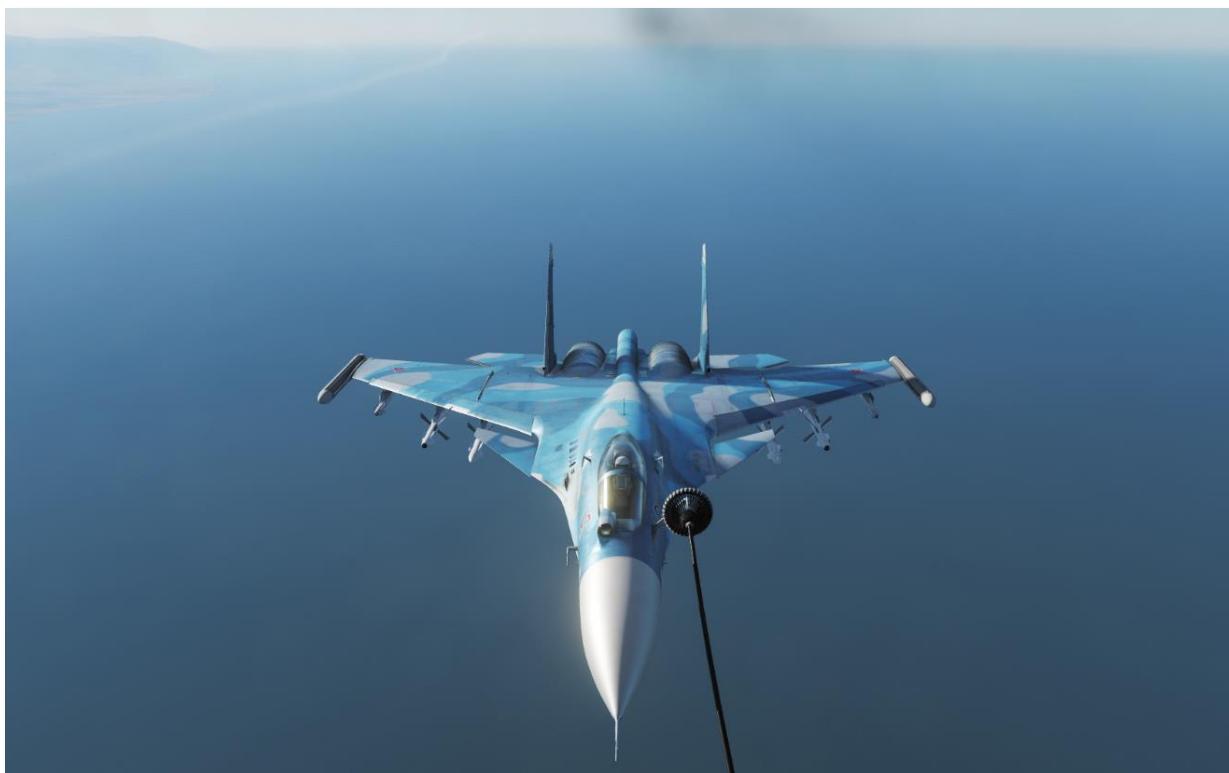
Group Type(s): fixed-wing groups;

Group Task(s): all mission tasks.



During the course of an aircraft group's TASKS (roles), for example, escort, patrol, attacking air / ground targets, etc., you can add refueling as one of the main tasks. When the aircraft group reaches a critical fuel level, the group will set course for the nearest friendly tanker, perform its approach, and refuel from the UPAZ suspended refueling units.

Standard options for airborne fuel transfer for the Il-78M tanker aircraft are: fuselage-mounted refueling apparatus for refueling heavy bomber class aircraft, and the paired underwing refueling units for refueling fighter-class aircraft. Options may vary for tankers of NATO countries.



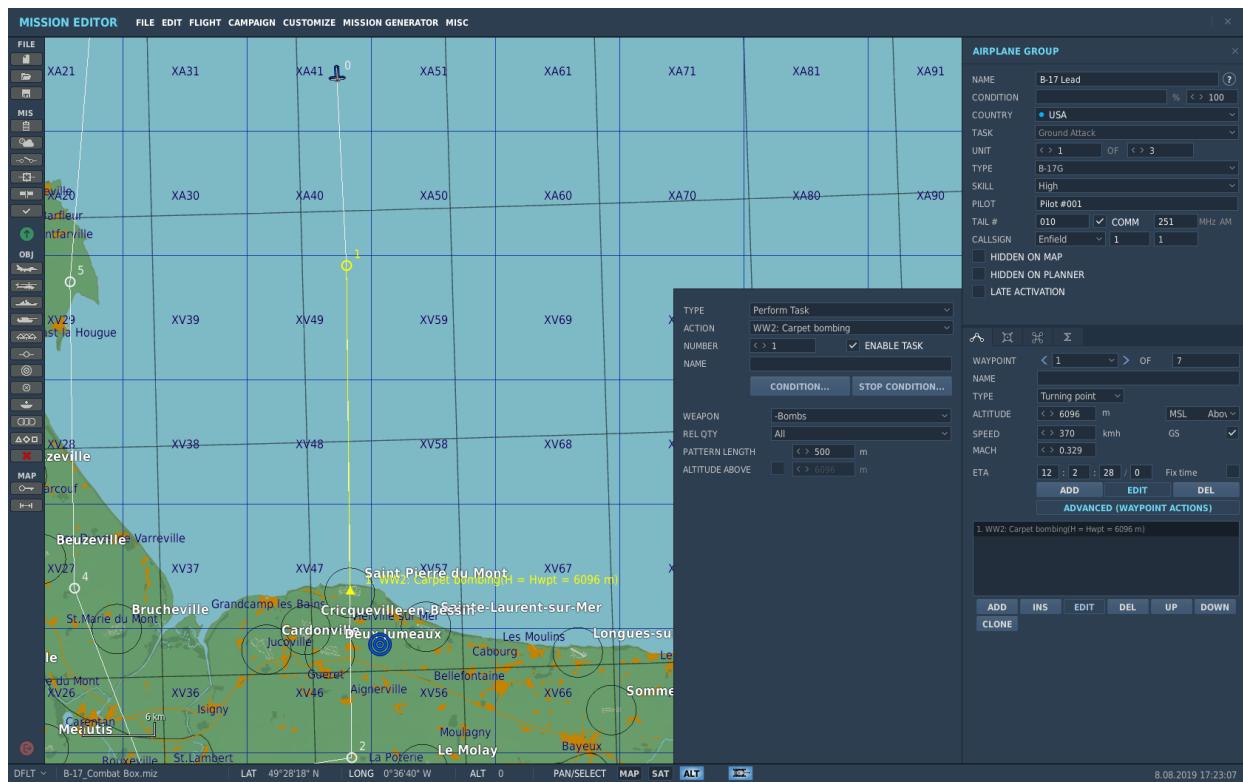
After refueling the group will resume assigned route.

WW2: Carpet Bombing

The action is for the organization of carpet bombardment of area-type targets, for missions during the WW2 period. Applicable to:

Group Type(s): fixed-wing groups, primarily for WW2 module bomber aircraft;

Group Task(s): "Ground Attack".



WEAPON. Drop down menu to select the weapon types cleared to use for this action.

REL QTY. The amount of payload cleared to expend in executing this action.

PATTERN LENGTH. Length of the aircraft group's formation.

ALTITUDE ABOVE. Altitude of the aircraft group on approach to target.

The target area can be placed on the map using the left mouse button. A target line connects the center of the target area (triangle marker) with the action waypoint (industrial areas, cities, or enemy ground unit groups). Keep in mind that this action for bombers should be set from the waypoint that comes after the starting point of the travel route. In this example, these waypoints are Waypoint 1 and Waypoint 0 respectively. For the starting point of the route, Waypoint 0, the main tasks to be set are for the construction and type of the battle formation.

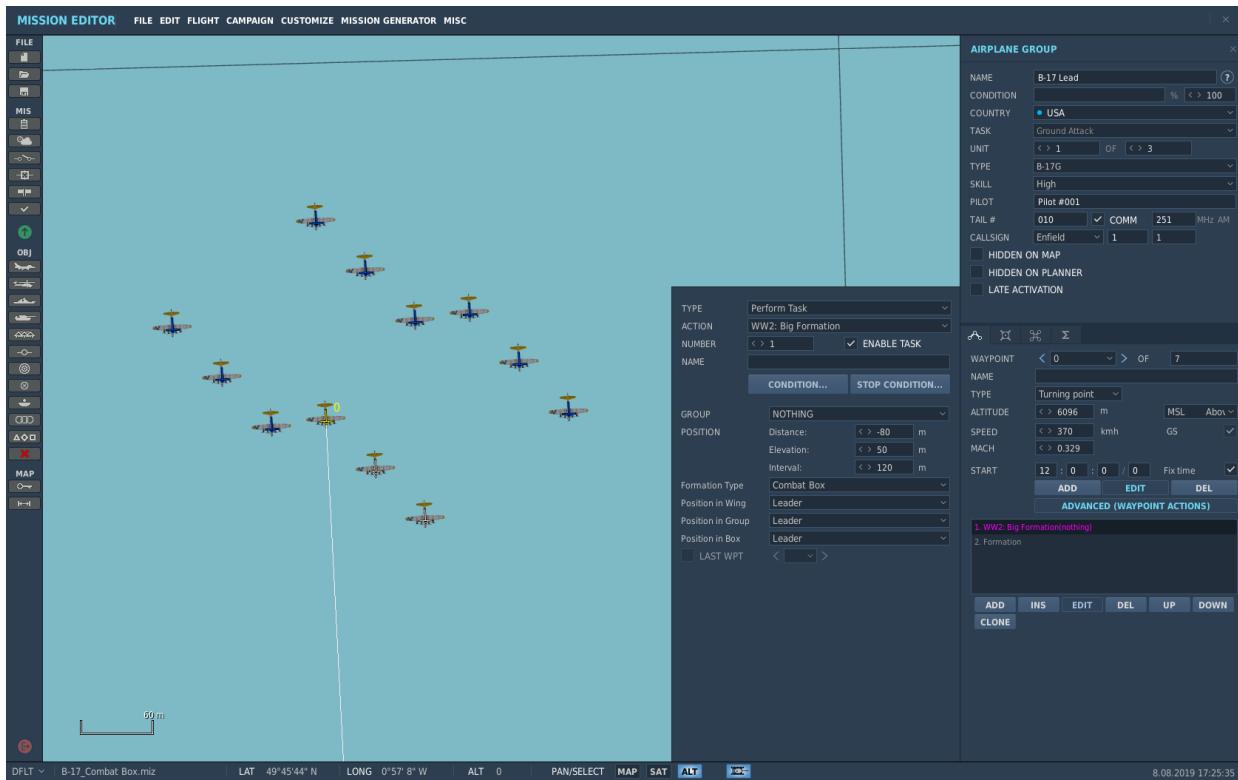
As with other attack Tasks, you can configure the Task properties, including the [weapons](#) to be employed. If the specified weapons are unavailable at the time of the planned attack, the aircraft will not execute any attack.

WW2: Big Formation

The action is for the organization of carpet bombardment of area-type targets, for missions during the WW2 period. Applicable to:

Group Type(s): fixed-wing groups, primarily for WW2 module bomber aircraft;

Group Task(s): "Ground Attack".



GROUP. Selects the lead aircraft from the list. The group's flight formation will be constructed with respect to this lead aircraft.

POSITION. Selects the position of the aircraft group highlighted on the map with respect to the lead aircraft group.

- **Distance** – Formation forward and back location of group to group being followed.
- **Elevation** – Formation altitude difference of group to group being followed.
- **Interval** – Formation side-to-side location of group to group being followed.

Below are the options for the battle formation and the location of the group relative to the leader in the formation.

- **Formation Type** – battle formation used by USAF bombers throughout the WWII ("Combat Box" and "Javelin Down" wedge).
- **Position in Wing** – position of the aircraft group within the wing (a relatively large formation of aircraft) with respect to the lead group, to a max of 500 meters.

- **Position in Group** – position of the group in the middle formation, to a max of 250 meters.
- **Position in Box** – position of the group in its battle formation, to a max of 80 meters.

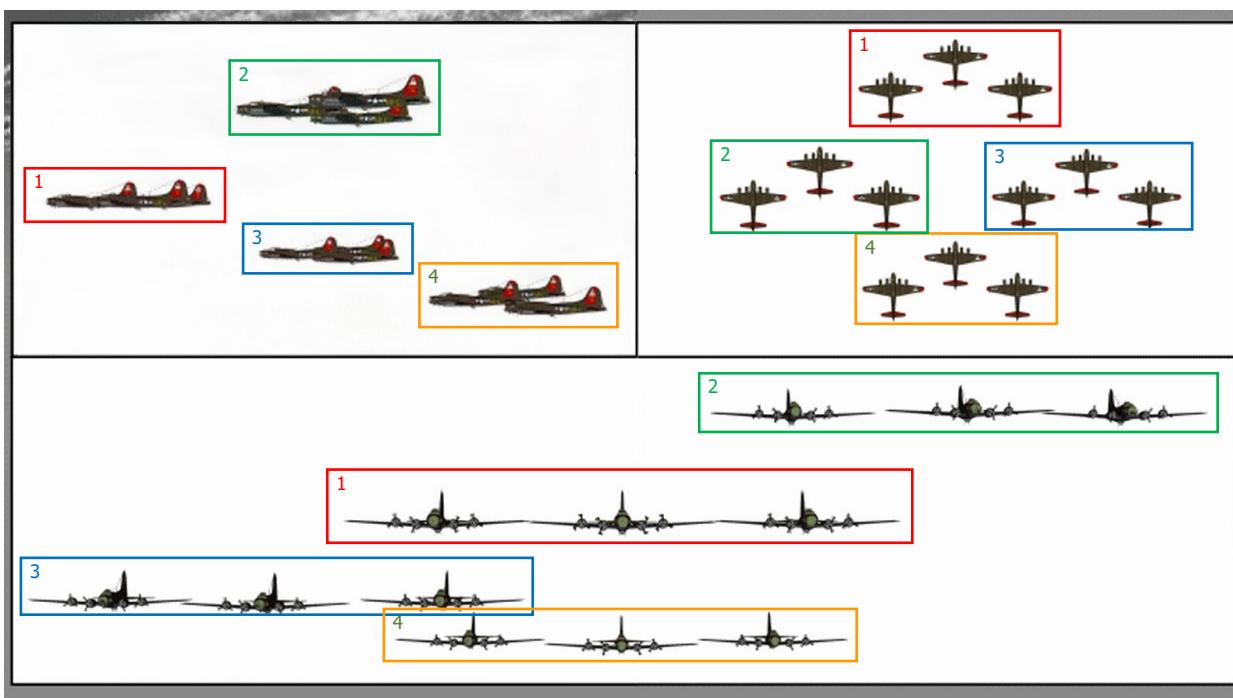
When you select a position in the formation, the distance/excess/interval are all automatically assigned. They can also be adjusted manually only after selecting all items. Keep in mind that the AI bomber groups will perceive short distances as critical and will maneuver to avoid a collision.

LAST WPT. Saving (execution) of this type of formation to the specified route point. Used for trailing groups following the route of the lead group.

Below are some examples of historically-accurate formations:

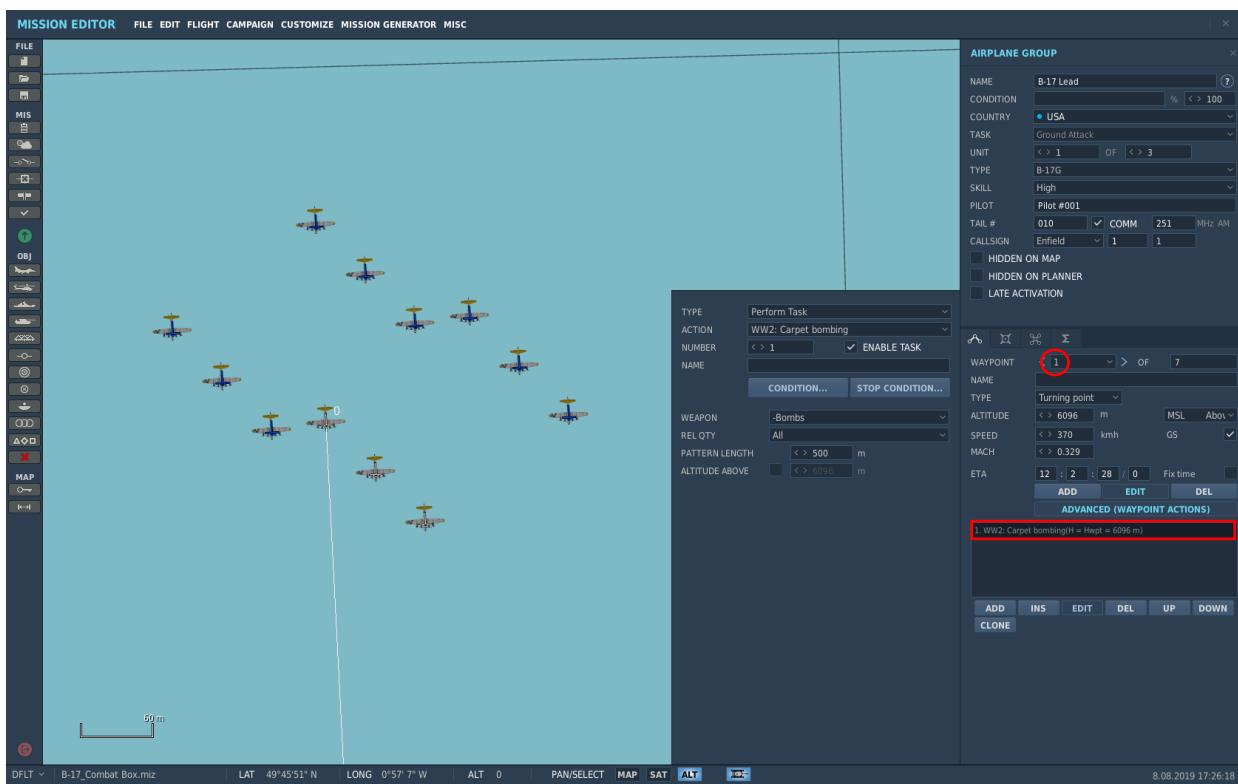
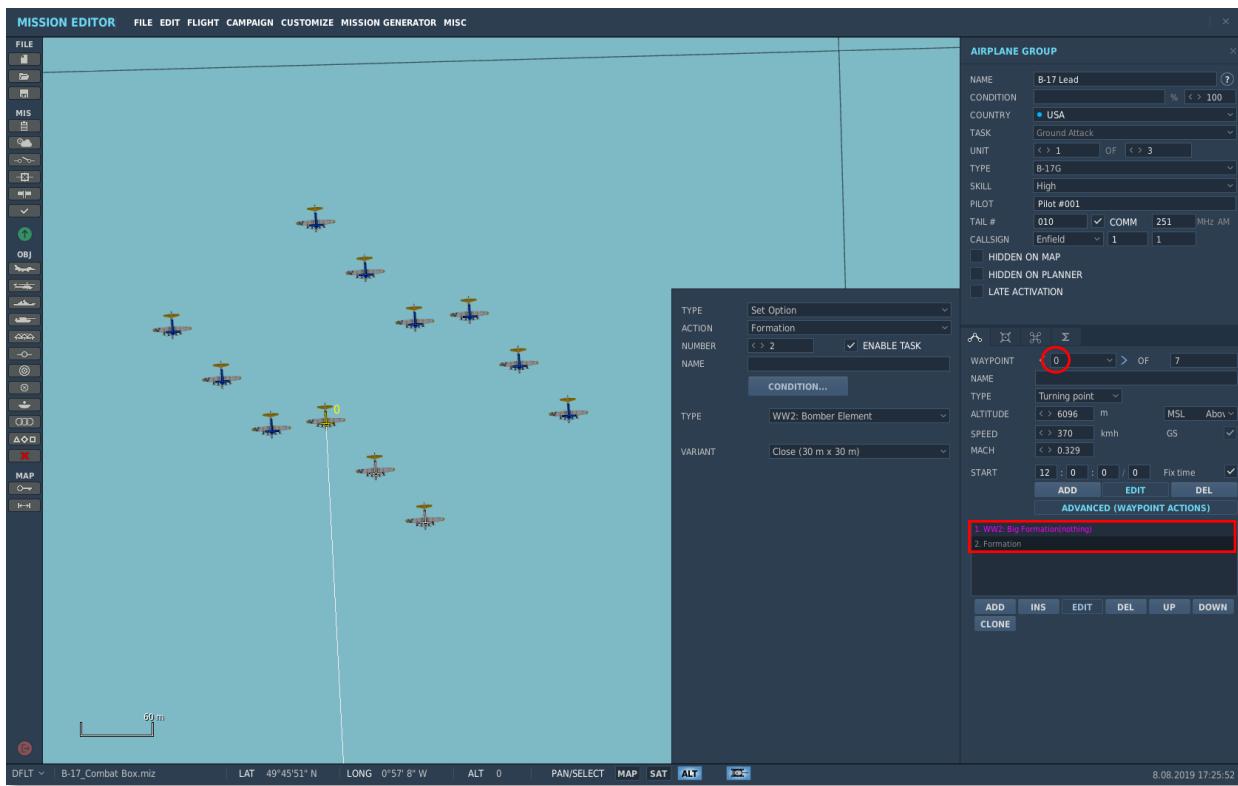
Example 1: "Combat Box".

Below is a diagram of the "Combat Box" formation employed by USAF bombers during WW2.

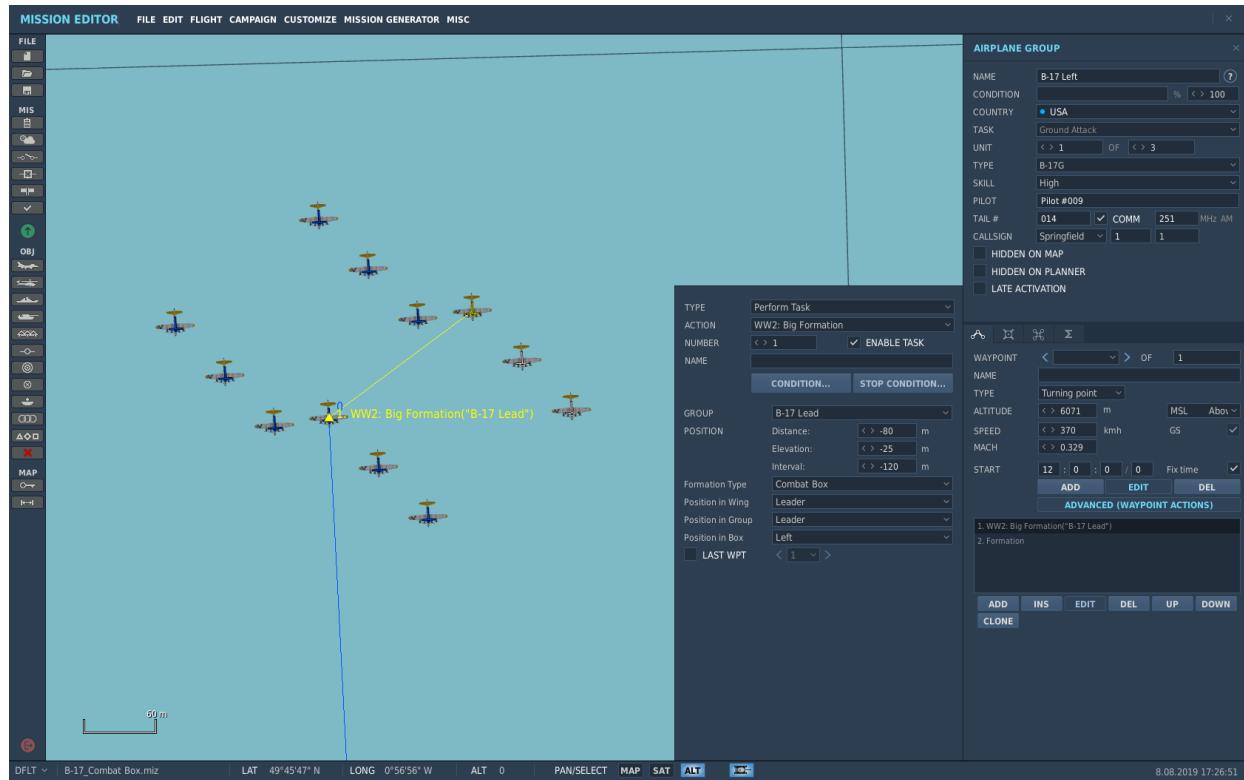


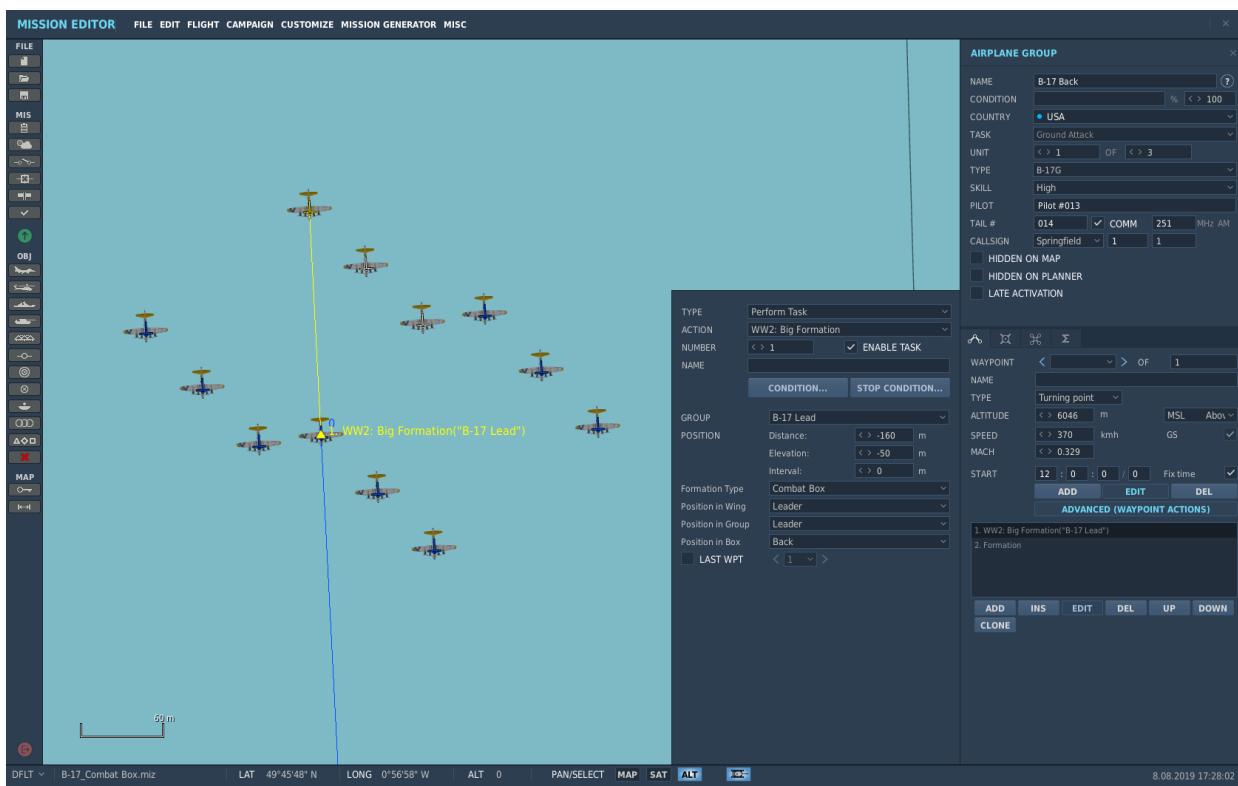
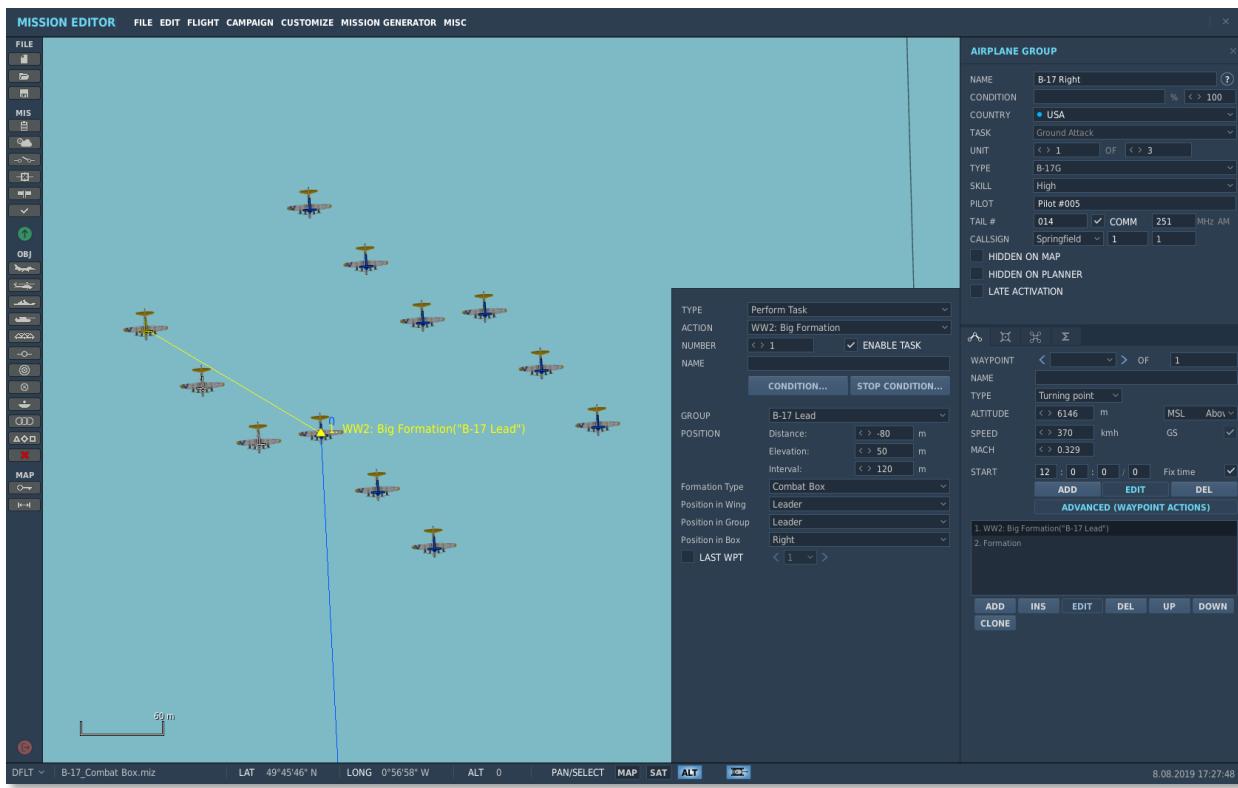
The diagram shows four wings (three aircraft in each) located at different heights relative to the lead wing. These wings together close the formation, in our case, a combat box. This formation made it possible for the wings to maintain a tight structure and conduct a circular fire defense covering the entire aircraft group.

The first lead wing in the formation is assigned the WPT route from 0 to 7. Under the actions for WPT 0 the main task is then set to "WW2: Big Formation" (formation type "Combat Box", with Leader in all positions). The second action for WPT 0 is set to the behavior option "VARIANT" (type "WW2: Bomber Element", any formation). At WPT 1, we then set the main task to "WW2: Carpet Bombing". The remaining wings will then orient themselves according to the tasks assigned to the lead wing for WPTs 0 and 1.



For each of the three trailing wings added in the example, we repeat the extended actions for WPT 0 as we did for the lead wing - this is necessary to build a large formation. In the GROUP field of the trailing wings, indicate the leading wing (B-17 Lead), with their position within the box set to Left / Right / Rear. To copy a group, select it and press [CTRL+C]. To paste the group with identical properties, position the mouse over the desired point on the map and press [CTRL+V].





This results in the "Combat Box" formation:

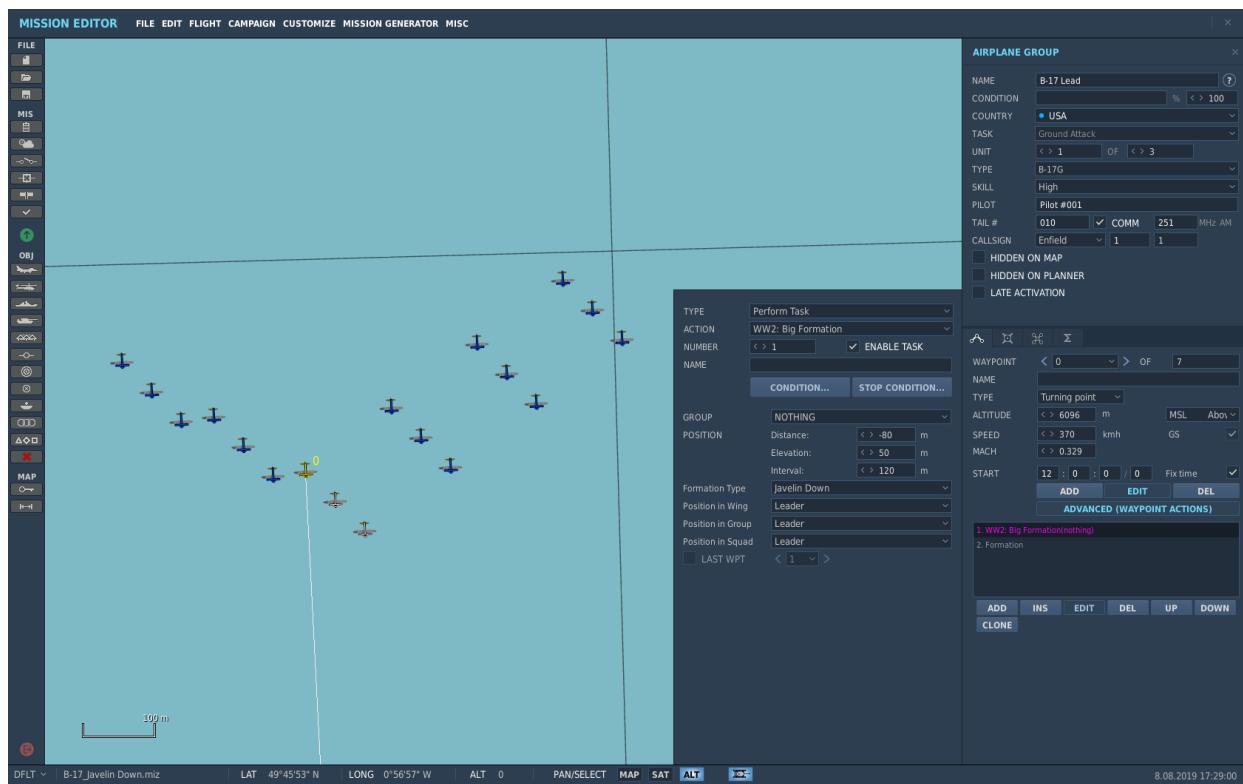


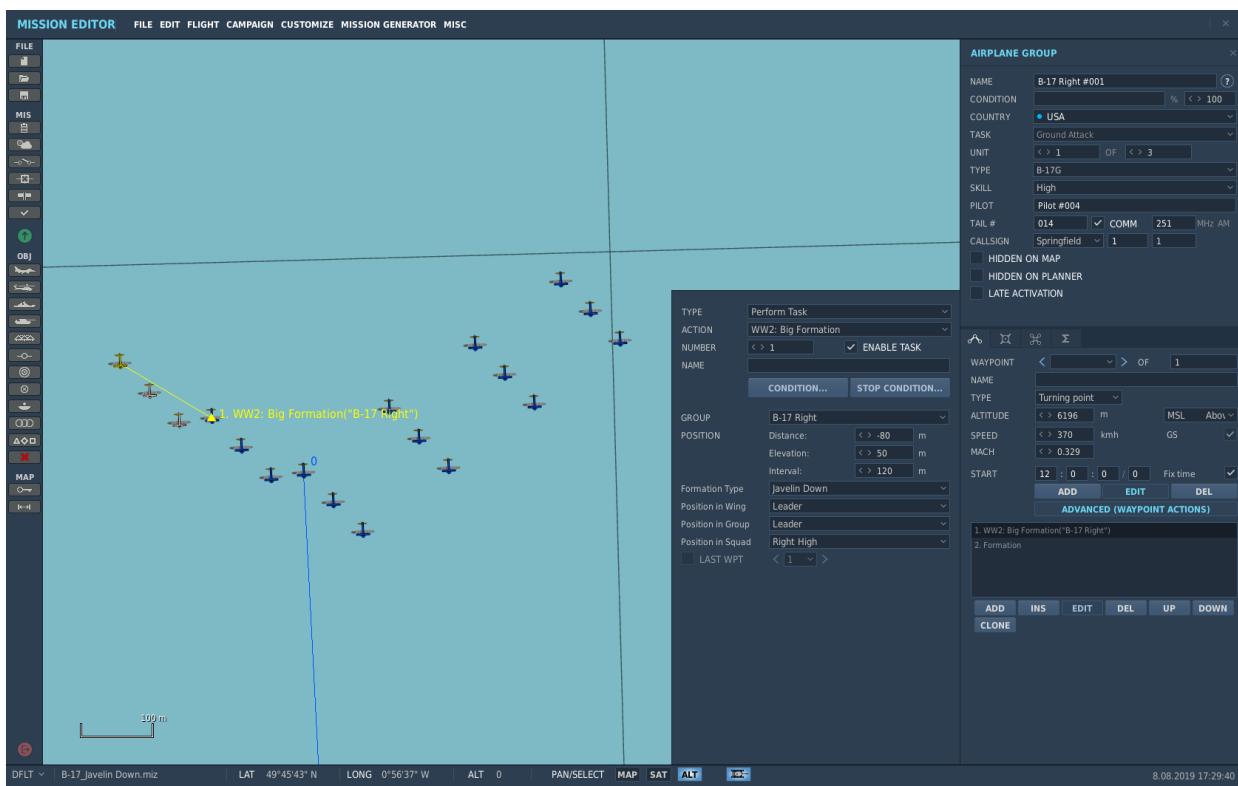
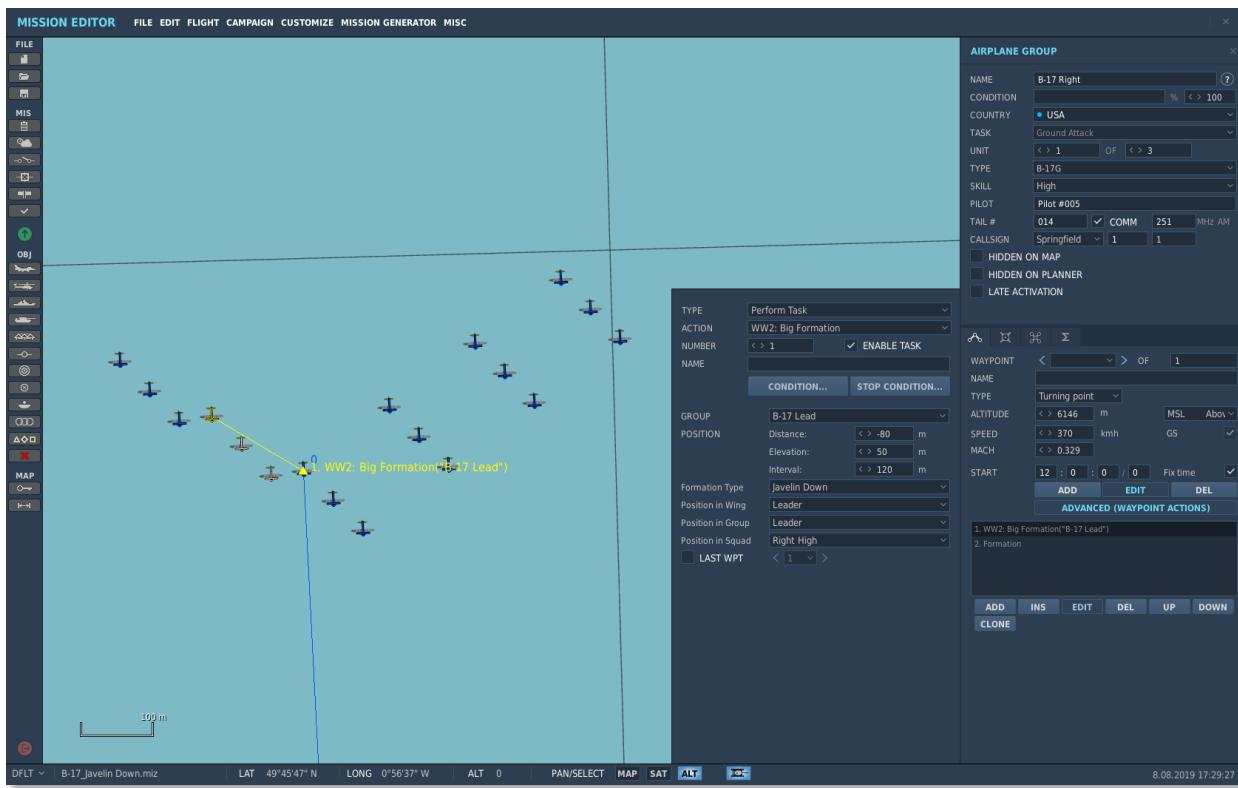
Bombing by cue of the lead wing:



Example 2: "Javelin Down".

The "Javelin Down" formation it is formed in the same way as the Combat Box formation by assigning extended actions to the lead wing for WPTs 0 and 1, and WPT 0 for the trailing wings. Since the construction is a wedge, the closest wing (looking towards the lead wing) must be selected in the GROUP field for all the remaining trailing wings. To copy a group, select it and press [CTRL+C]. To paste the group with identical properties, position the mouse over the desired point on the map and press [CTRL+V].





The left side of the formation is set in the same manner as with the right. This produces the "Javelin Down" formation:





Start Enroute Task

As mentioned previously, the Start Enroute Tasks available for a group depend on the group type (fixed wing or helicopter group) and the group task. Remember, unlike Tasks, Start Enroute Tasks involve target groups the AI will have to independently detect prior to being able to conduct an attack. The AI's ability to detect enemy groups depends on a number of factors, including the sensors carried by the aircraft, AI skill setting, weather, etc.

Aircraft sensors:

- Air-to-air radar
- Air-to-surface radar
- Multimode radar
- Radar Warning Receiver (RWR)
- Daytime electro-optical systems
- Night-time electro-optical system
- Visual detection (subject to cockpit visibility restrictions)

Attacking AI settings:

- Skill setting
- Airspeed
- Cockpit visibility restrictions

Environmental and target factors:

- Illumination level
- Background terrain (forest, field, road, open water)
- Direct visibility limitations due to atmospheric conditions such as fog, rain and snow
- Cloud interference
- Target unit size
- Target group size
- Target speed
- Firing activity around the target

When creating scenarios using Start Enroute Tasks, all of the above conditions should be taken into account. For example, sending a daytime CAS aircraft to attack a ground group at night or obscured in dense fog conditions may result in the failure of the aircraft to detect the target. In addition, consider the distance of the target zone from the AI's flight route and make sure it is within the AI's detection range.

The following Start Enroute Tasks may be available, depending on the group type and task:

- No Enroute Task

- Search Then Engage
- Search Then Engage in Zone
- Search Then Engage Group
- Search Then Engage Unit
- Refueling
- AWACS
- FAC
- FAC - Engage Group

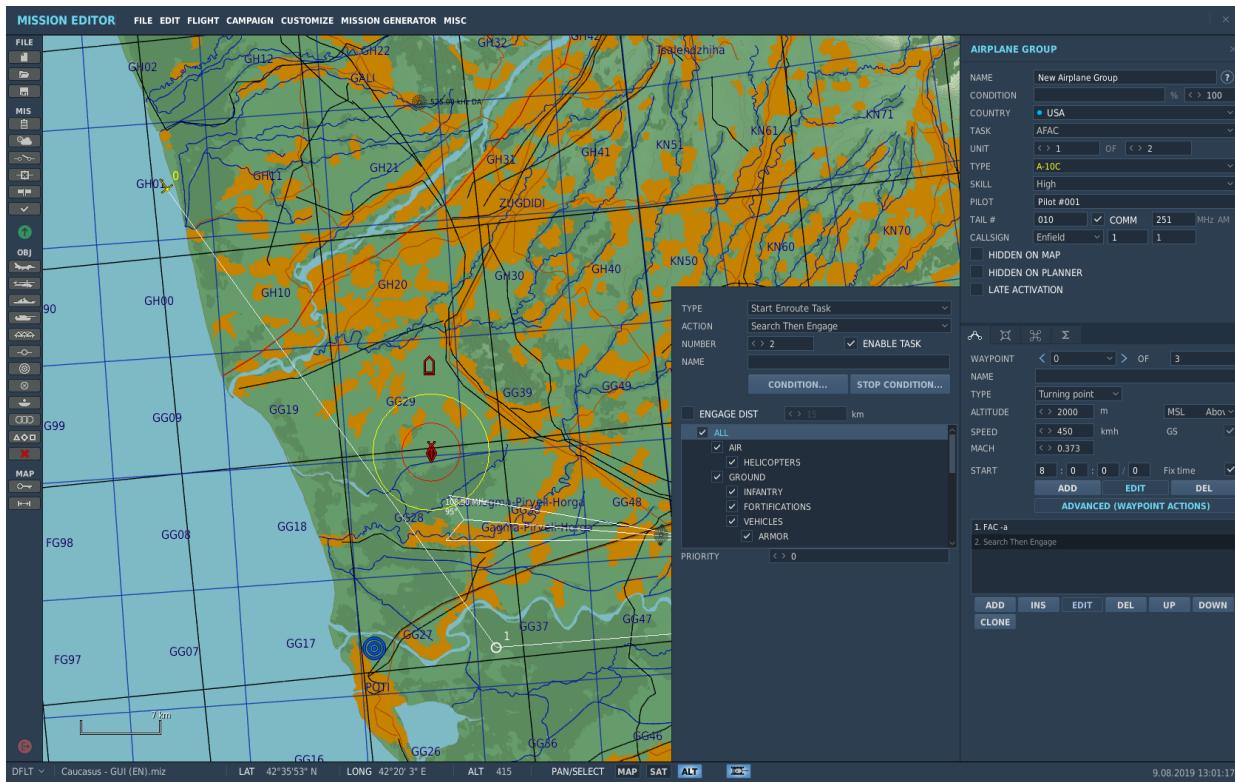
No Enroute Task

Available for all group types and all mission tasks. A No Enroute Task action does not set any action for the group to perform.

Search Then Engage

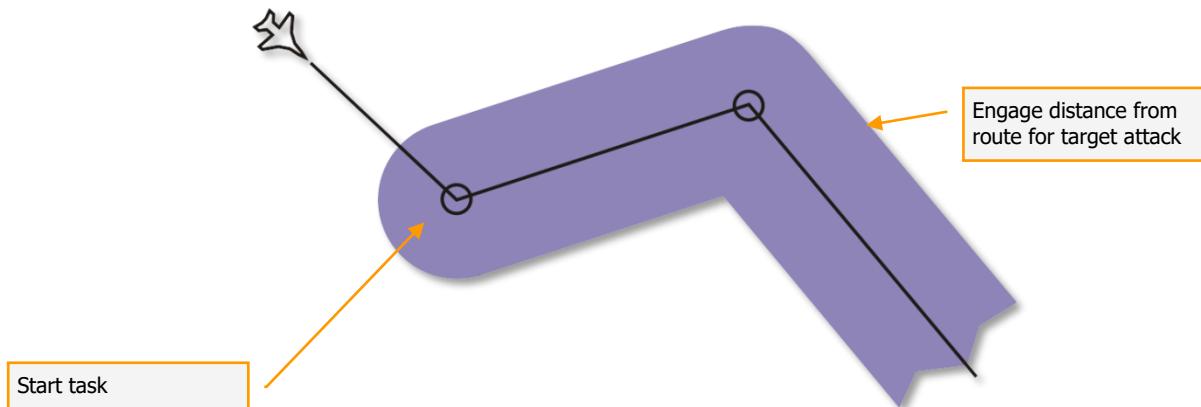
As long as the action is in effect, the AI will actively search for the target types set in the task properties and engage as soon as possible without conflicting with other tasks. Applicable to:

Group Type(s): fixed wing and helicopter groups.



Target Panel:

ENGAGE DISTANCE. This checkbox allows you to lock a specific range from the route leg for valid targets of the action. Targets beyond this range will not be attacked.



TYPES OF TARGETS. The list of available targets depends on the group task and the targets to be engaged are selected using check-boxes in the Lower Action Properties Menu:

1. SEAD.

- Air Defense
 - AAA (Anti-Aircraft Artillery)
 - SAM (Surface-to-Air Missile systems)
 - SR SAM (Short-Range SAM systems)
 - MR SAM (Medium-Range SAM systems)
 - LR SAM (Long-Range SAM systems)

2. Anti-Ship.

- Naval
 - Ships
 - Armed Ships
 - Heavy Armed Ships
 - Aircraft Carrier
 - Cruisers
 - Destroyers
 - Fregates
 - Corvettes
 - Light Armed Ships
 - Unarmed Ships

- Submarines
3. CAS and AFAC
- All
 - Air
 - Helicopters
 - Ground
 - Infantry
 - Fortifications
 - Vehicles
 - Armor
 - Tanks
 - IVF (Infantry Fighting Vehicles)
 - APC (Armored Personnel Carriers)
 - Artillery
 - Unarmed
 - Air Defense
 - AAA (Anti-Aircraft Artillery)
 - SAM (Surface-to-Air Missile systems)
 - SR SAM (Short-Range SAM systems)
 - MR SAM (Medium-Range SAM systems)
 - LR SAM (Long-Range SAM systems)
 - Naval
 - Light Armed Ships
4. Fighter Sweep and Intercept.
- Airplanes
 - Fighters
 - Bombers

PRIORITY. This number is used to set the action priority in relation to other actions of the waypoint. The priority number represents the order this action will take relative to other actions, starting with '0' as the highest priority.

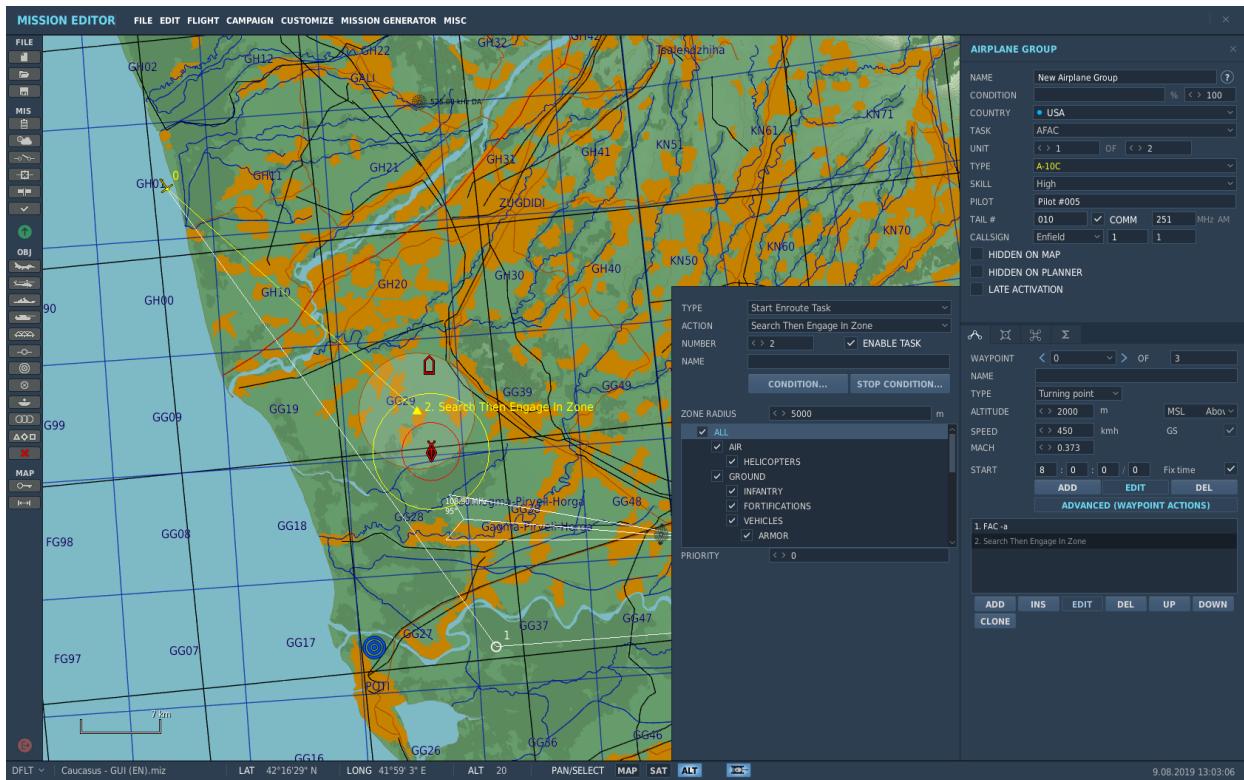
The Search Then Engage Enroute Task can be used to create scenarios where the air group maintains a holding pattern and leaves it to attack discovered enemy units within the limitations set by the task properties. To do this, create the Search Then Engage Enroute Task in the actions list after the Orbit Task.

Search Then Engage in Zone

Same as the Search Then Engage Enroute Task, but with an added restriction of a user-defined target area. The target area is a circular zone the user can place anywhere on the map and adjust the radius. Applicable to:

Group Type(s): aircraft and helicopter groups;

Group Task(s): all group tasks, except "Fighter Sweep" and "Intercept".



The target area can be placed on the map using the left mouse button. A target line connects the center of the target area (triangle marker) with the action waypoint.

Target Panel:

ZONE RADIUS. This field is used to enter the radius of the target area in meters.

TYPES OF TARGETS. The list of available targets depends on the group task and the targets to be engaged are selected using check-boxes in the Lower Action Properties Menu.

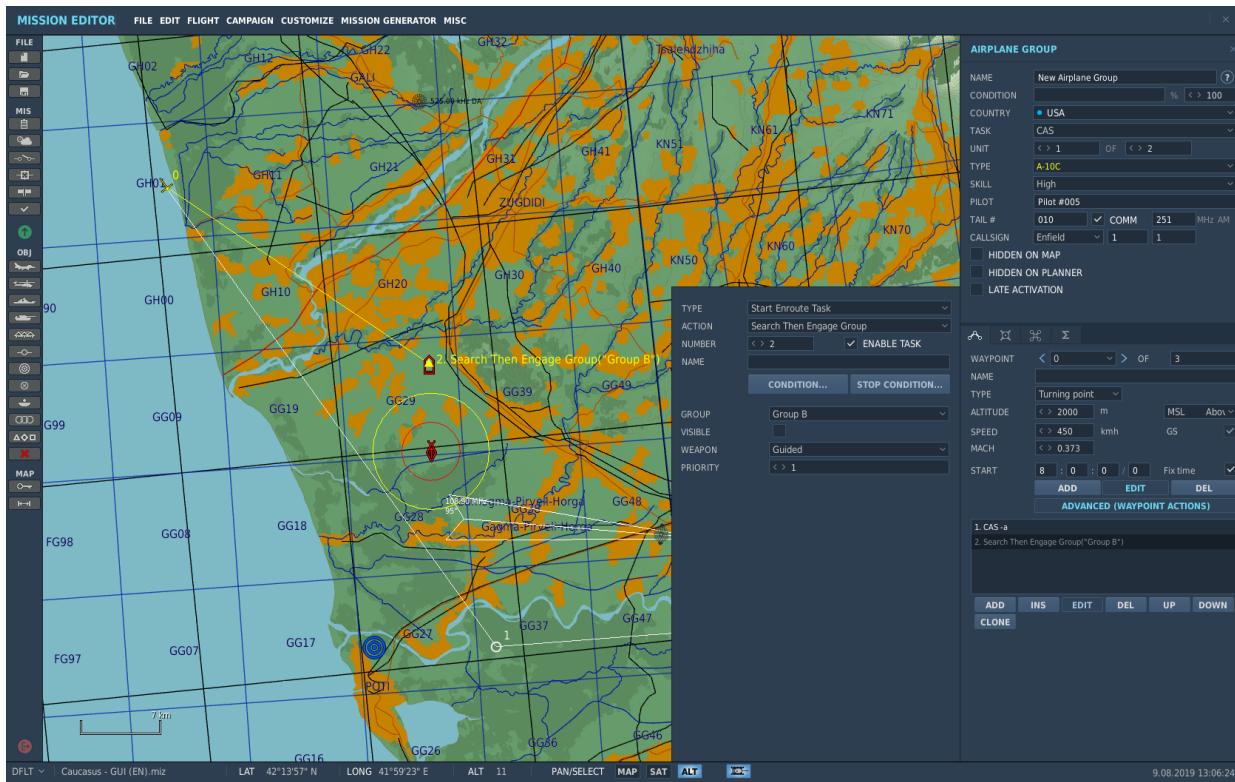
PRIORITY. This number is used to set the action priority in relation to other actions of the waypoint. The priority number represents the order this action will take relative to other actions, starting with '0' as the highest priority.

Like the Search Then Engage Enroute Task, the Search Then Engage in Zone Enroute Task can be used to create scenarios where the air group maintains a holding pattern and leaves it to attack discovered enemy units within the target area and the limitations set by the task

properties. To do this, create the Search Then Engage in Zone Enroute Task in the actions list after the Orbit Task.

Search Then Engage Group

Analogous to the Attack Group Task, but requires the attacking group to independently detect the target group prior to conducting an attack.



Target Panel:

GROUP. Drop down menu to select the target group from all applicable enemy groups available in the mission.

VISIBLE. The VISIBLE option allows the unit to know or not know the location of target position at the start of the mission.

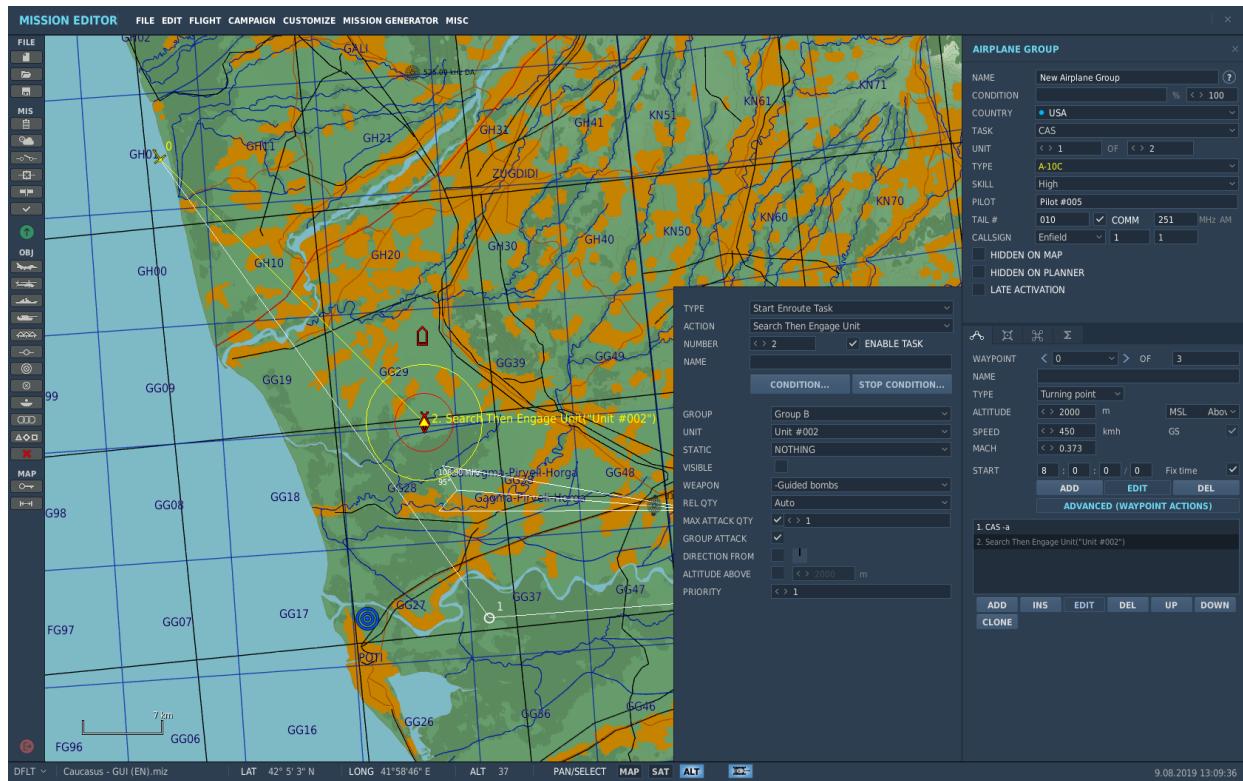
WEAPON. Drop down menu to select the weapon types cleared to use for this action.

PRIORITY. This number is used to set the action priority in relation to other actions of the waypoint. The priority number represents the order this action will take relative to other actions, starting with '0' as the highest priority.

The Search Then Engage Group Task can be used to create scenarios where the air group maintains a holding pattern and leaves it to attack the designated group whenever it is detected. To do this, create the Search Then Engage Group Enroute Task in the actions list after the Orbit Task.

Search Then Engage Unit

Analogous to the Attack Unit Task, but requires the attacking group to independently detect the target unit prior to conducting an attack.



Target Panel:

GROUP. Drop down menu to select the target group from all applicable enemy groups available in the mission.

UNIT. Drop down menu to select the specific unit of the target group to attack.

STATIC. Drop down menu to select a static object as the target (bunker, FARP, etc.)

VISIBLE. The VISIBLE option allows the unit to know or not know the location of target position at the start of the mission.

WEAPON. Drop down menu to select the weapon types cleared to use for this action.

REL QTY. The amount of payload cleared to expend in executing this action.

MAX ATTACK QTY. The maximum number of attack runs cleared for this action.

GROUP ATTACK. When checked, the entire flight group will participate in the attack of the target. By default, each aircraft in a flight group is assigned one target.

DIRECTION FROM. Allows you to set the course (azimuth) of the aircraft group for reaching the target for an attack.

ALTITUDE ABOVE. Sets the altitude of the aircraft group on approach to target.

PRIORITY. This number is used to set the action priority in relation to other actions of the waypoint. The priority number represents the order this action will take relative to other actions, starting with '0' as the highest priority.

The Search Then Engage Unit Task can be used to create scenarios where the air group maintains a holding pattern and leaves it to attack the designated enemy unit whenever it is detected. To do this, create the Search Then Engage Group Enroute Task in the actions list after the Orbit Task.

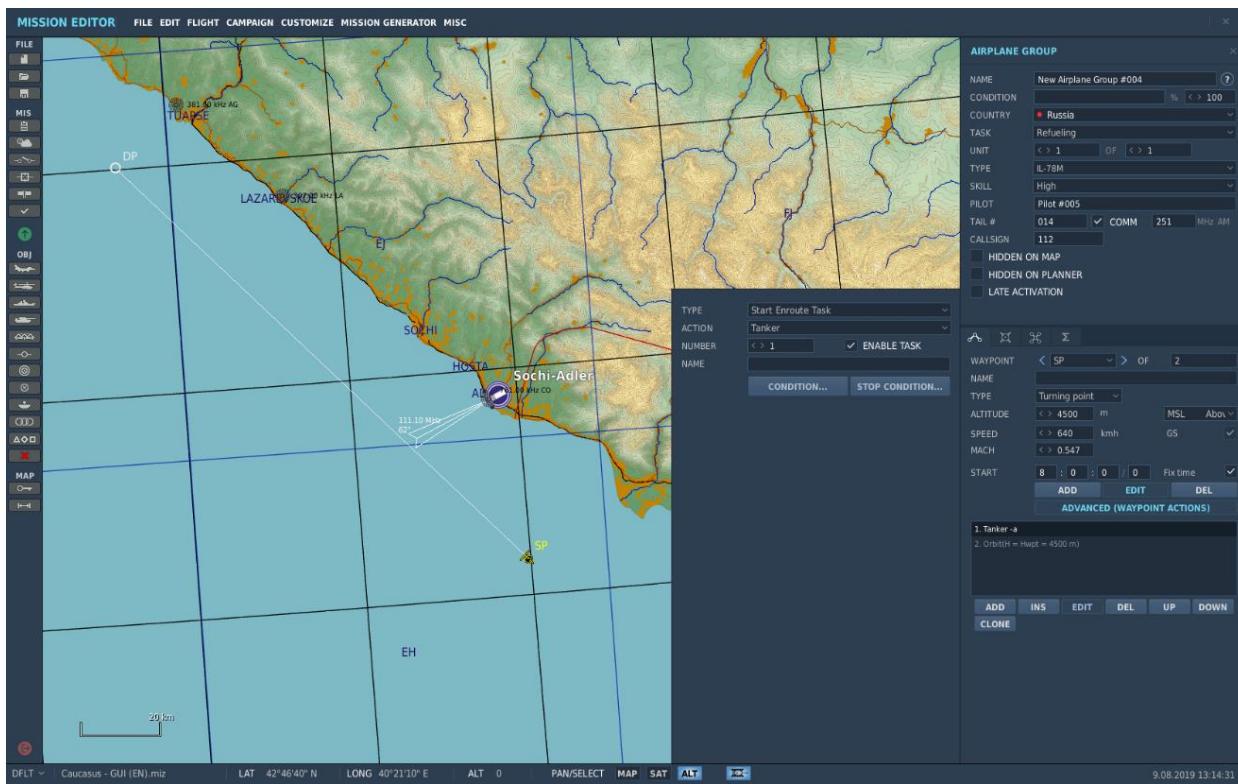
Refueling

The aircraft will perform aerial refueling. Applicable to:

Group Type(s): airborne tanker aircraft, including IL-78 and KC-135;

Group Task(s): Refueling.

When the Refueling Mission Task is created, a Refueling Enroute Task is created automatically as an automatic action at the initial waypoint. This action cannot be deleted or edited.



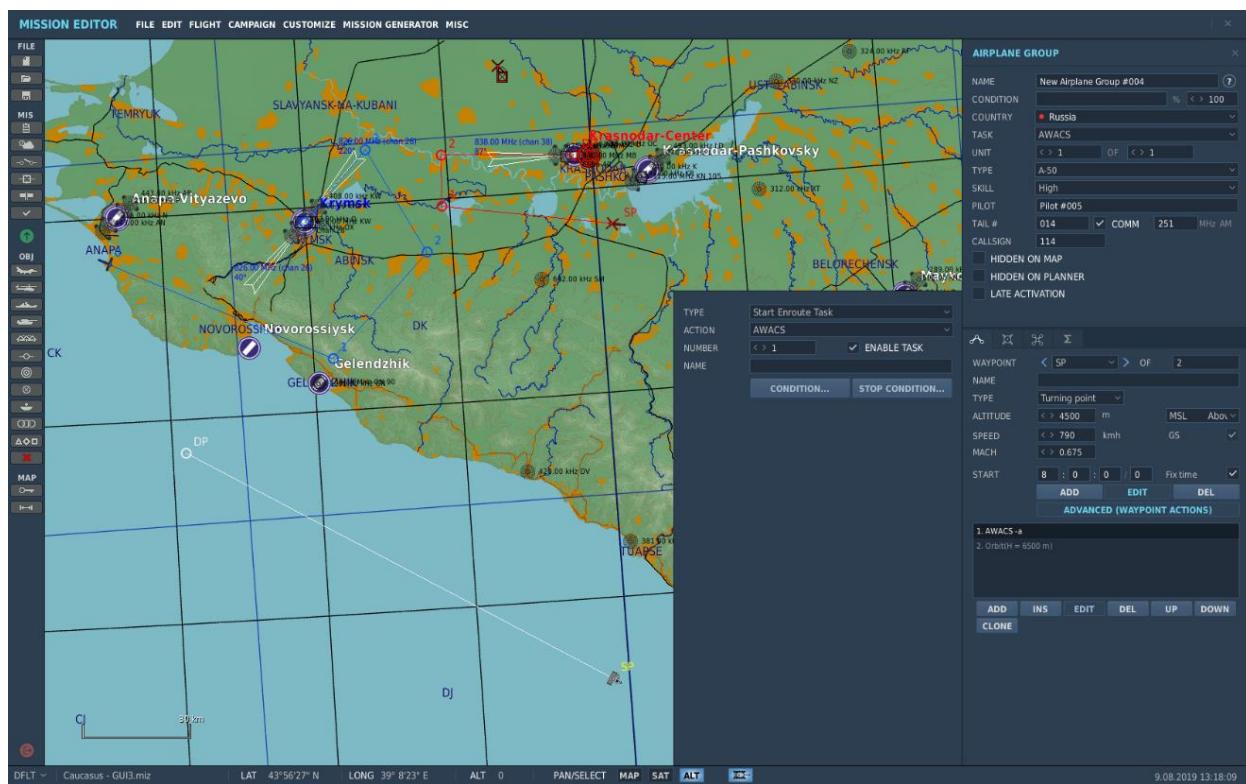
AWACS

The aircraft will perform Airborne Warning and Control for friendly units. Applicable to:

Group Type(s): dedicated AWACS aircraft, including A-50, E-2B, E-3A;

Group Task(s): AWACS.

AWACS detects aerial targets and transmits data to friendly aircraft via radio and data links. This information may be used by the player. When the AWACS Mission Task is created, an AWACS Enroute Task is created automatically as an automatic action at the initial waypoint. This action cannot be deleted or edited.



FAC

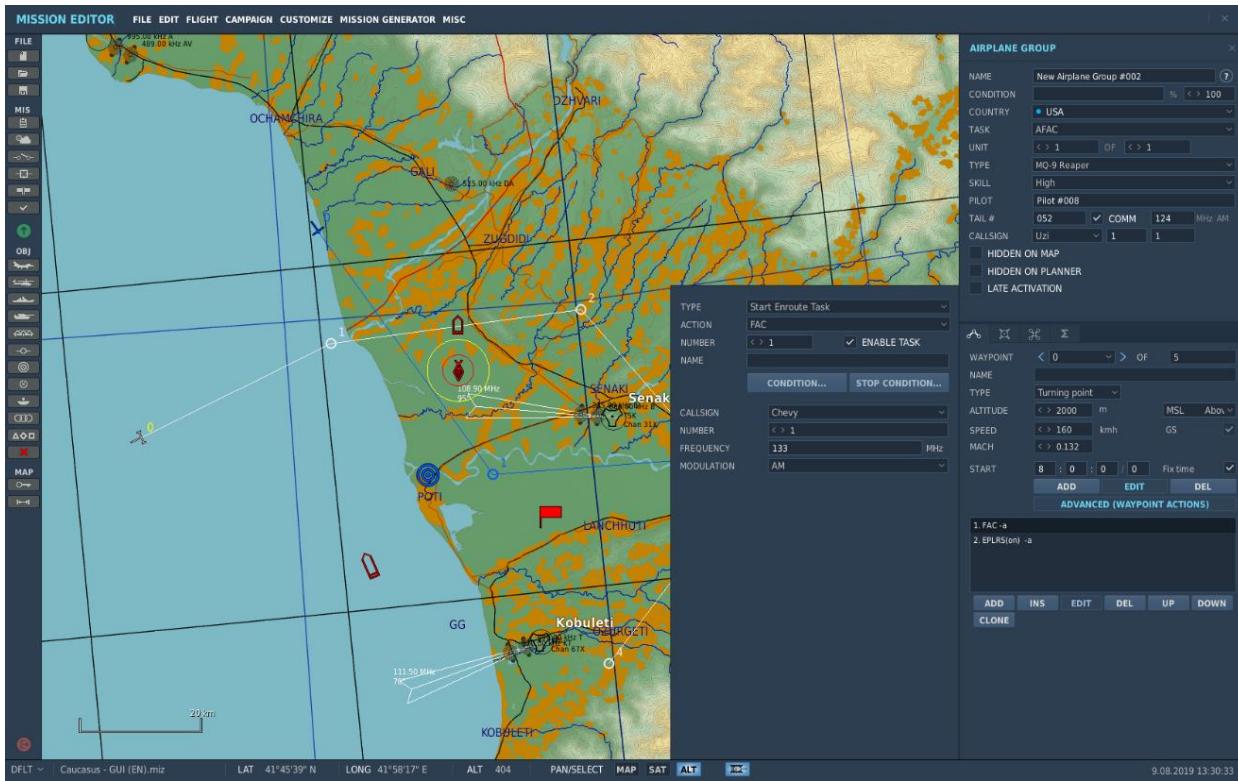
The aircraft will act as an Airborne Forward Air Controller (AFAC) to provide targeting orders for friendly units in the area. Applicable to:

Group Type(s): fixed wing and helicopter groups in **BLUE** coalition only;

Mission Task(s): AFAC.

Under a FAC Enroute Task, the FAC will automatically prioritize targets for the player or attacking AI groups and issue targeting orders throughout the attack phase.

Note: The FAC's target selection may not correspond to the targets intended for the player or attacking AI by the mission designer, because no specific target group is selected.



Target Panel:

CALLSIGN. FAC's callsign

NUMBER. FAC's number.

FREQUENCY. Set the FAC group's radio communications frequency in MHz.

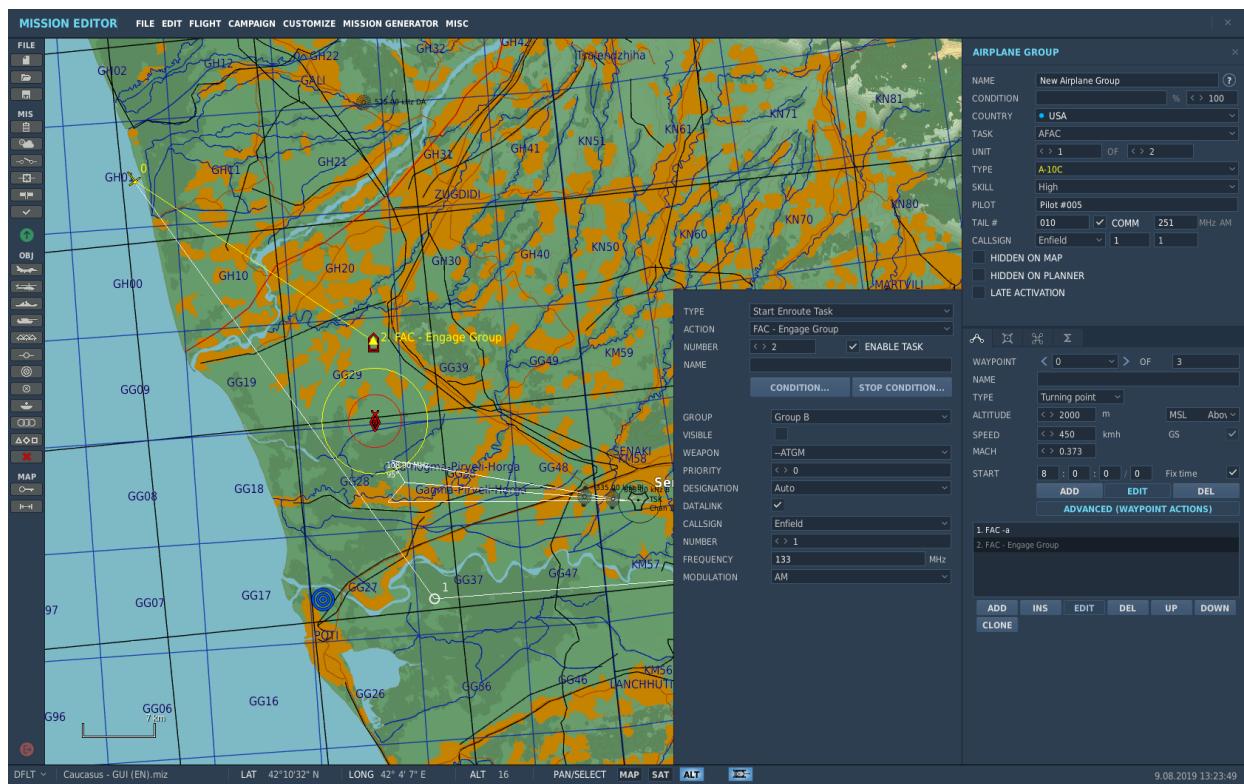
MODULATION. Set the FAC group's radio communications AM/FM modulation.

FAC – Engage Group

Analogous to the FAC Enroute Task, except in this case a specific enemy group is selected by the mission designer for the AFAC to target. Applicable to:

Group Type(s): fixed-wing and helicopter groups in **BLUE** coalition only;

Mission Task(s): AFAC.



Target Panel:

GROUP. Drop down menu to select the target group from all applicable enemy groups available in the mission.

VISIBLE. The VISIBLE option allows the unit to know or not know the location of target position at the start of the mission.

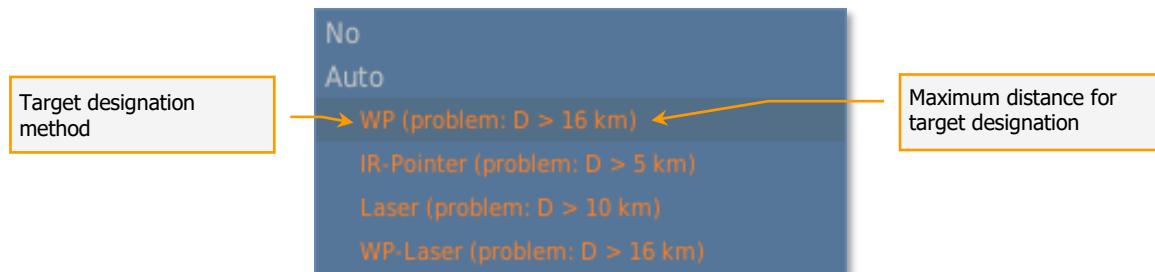
WEAPON. Drop down menu to select the weapon types cleared to use for this action. In the case of an AFAC, the WEAPON selection refers to [weapons](#) the AFAC will request to be employed against the target.

PRIORITY. This number is used to set the action priority in relation to other actions of the waypoint. The priority number represents the order this action will take relative to other actions, starting with '0' as the highest priority.

DESIGNATION. Selects the method of target designation (Auto, smoke marker ("Willy Pete", WP), IR-Pointer, Laser, WP-Laser. Target designation is carried out on the player's radio request at a fixed radio range.



If the FAC unit is located from the enemy at a distance greater than the operational range of the target designator equipment, then the maximum ranges for each of the available equipment will be displayed in the menu.



In this case, it is necessary to adjust the distance of the forward observer to the enemy such that it is within the specified maximum range.

DATALINK. Automatic data transmission system for the exchange of target information between ground units and aircraft.

CALLSIGN. Callsign of the FAC.

NUMBER. Selection field for the FAC's number.

FREQUENCY. Set the FAC group's radio communications frequency in MHz.

MODULATION. Set the FAC group's radio communications AM/FM modulation.

Remember, because this is an Enroute Task, the AFAC will have to independently detect the target group prior to being able to issue targeting commands against it. As described above, target detection will depend on a number of dynamic variables in-game, including possible terrain obstructions or weather interference. If the mission designer has not assigned any groups, the AFAC will not issue any targeting commands.

Perform Command

The following commands can be set as actions upon reaching a waypoint:

No Action

No command is set. Default selection.

Run Script

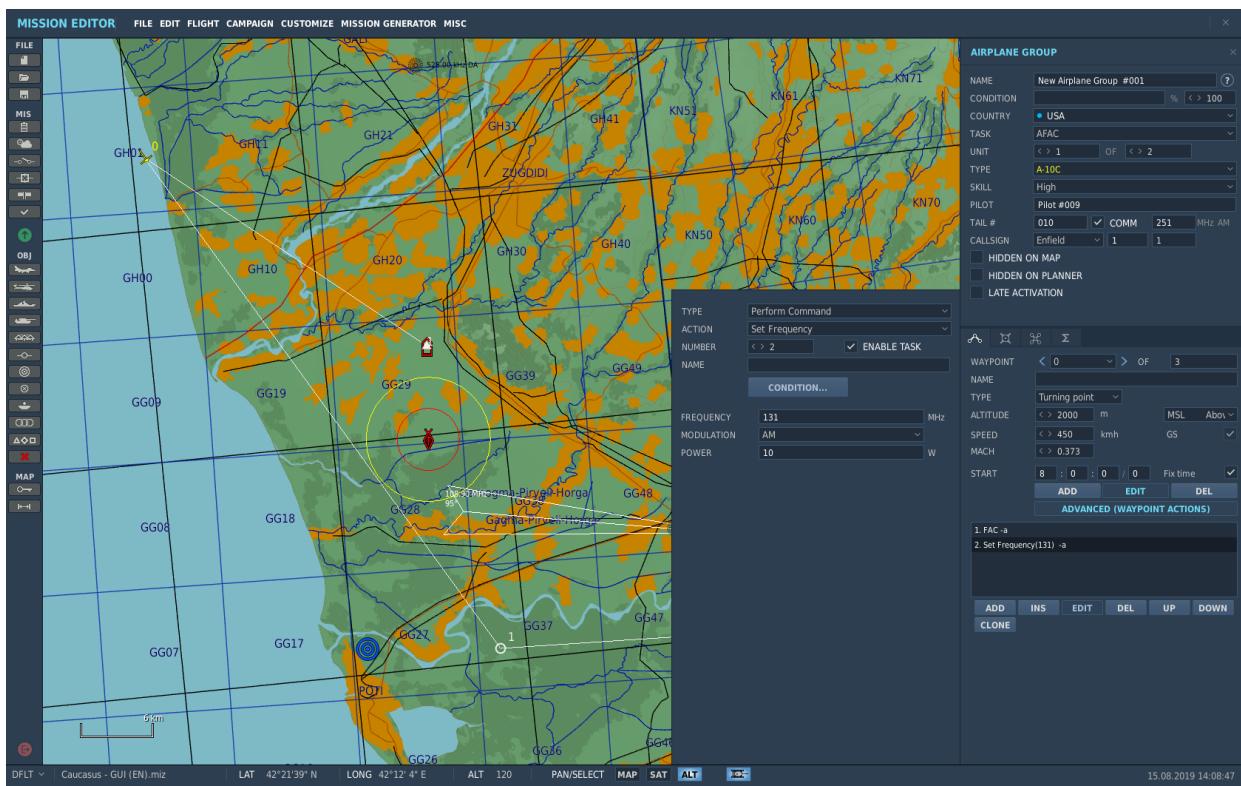
Run the Lua-script entered in the scratchpad.

Script File

Selects the LUA-script file.

Set Frequency

Set the group's radio communications frequency in MHz and AM/FM modulation.



FREQUENCY. Set the group's radio communications frequency in MHz.

MODULATION. Set the group's radio communications AM/FM modulation.

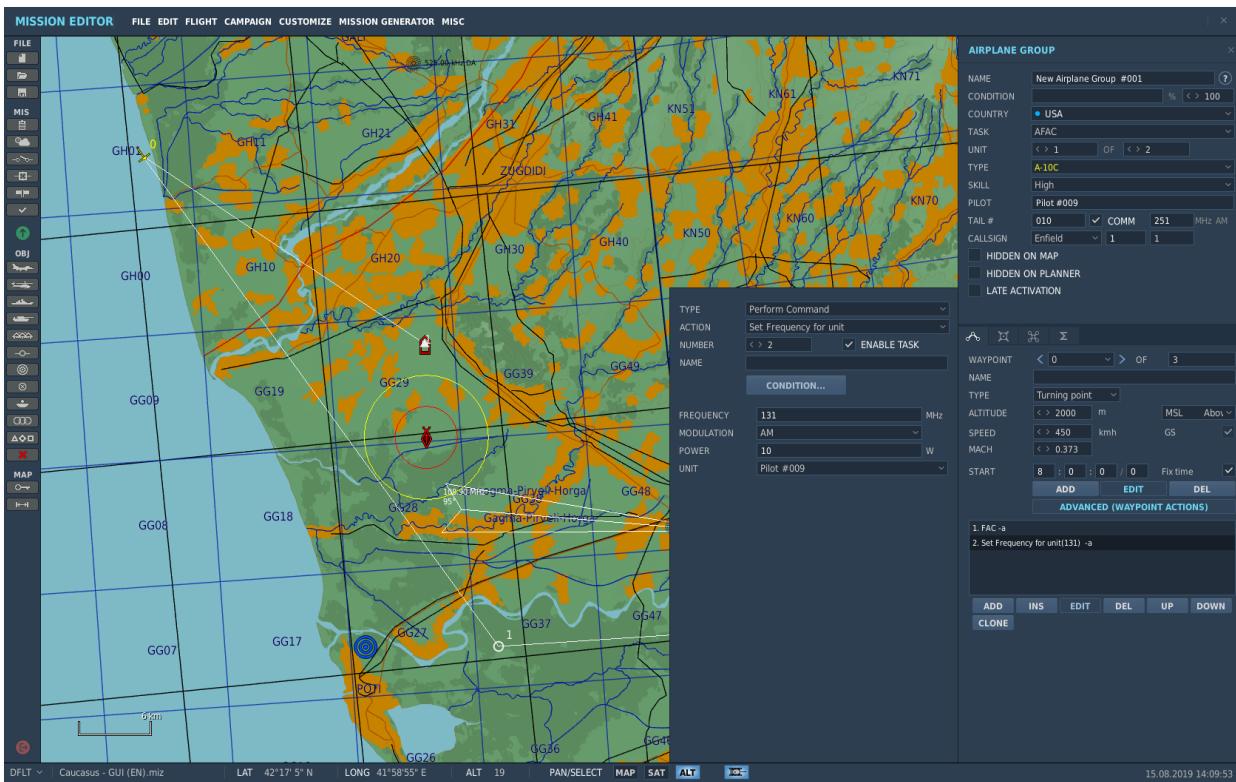
- **AM** - Amplitude modulation.

- **FM** - Frequency modulation.

POWER. Transmitter power. This affects communication range.

Set Frequency for unit

Command to switch to the specified radio frequency for the unit.



FREQUENCY. Set the group's radio communications frequency in MHz.

MODULATION. Set the group's radio communications AM/FM modulation.

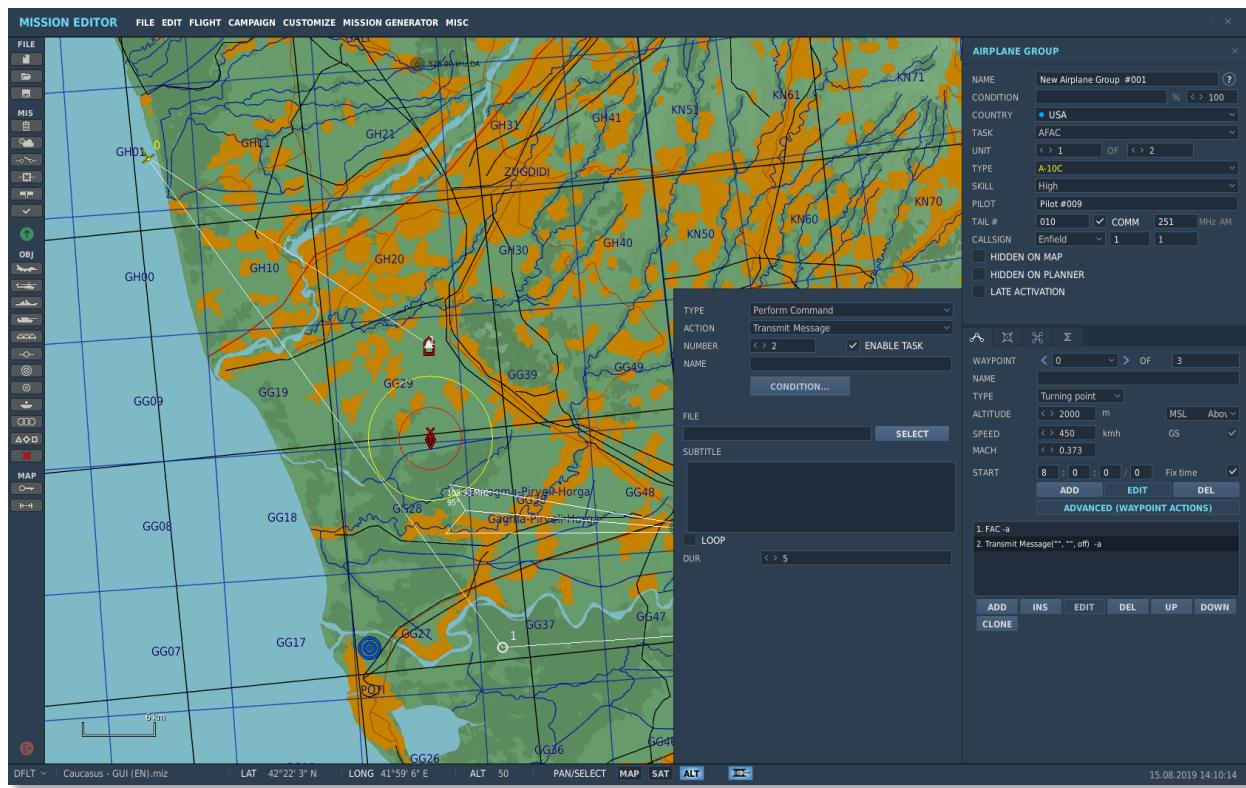
- **AM** - Amplitude modulation.
- **FM** - Frequency modulation.

POWER. Transmitter power. This affects communication range.

UNIT. Selects the unit to which the frequency is assigned.

Transmit Message

Command to send a message from the lead group.



FILE. Selects the audio file to be played during the radio transmission (*.ogg; *.wav).

SUBTITLE. Field for inputting the text message (subtitles) to be displayed during the radio transmission.

LOOP. Settings for repeating the message.

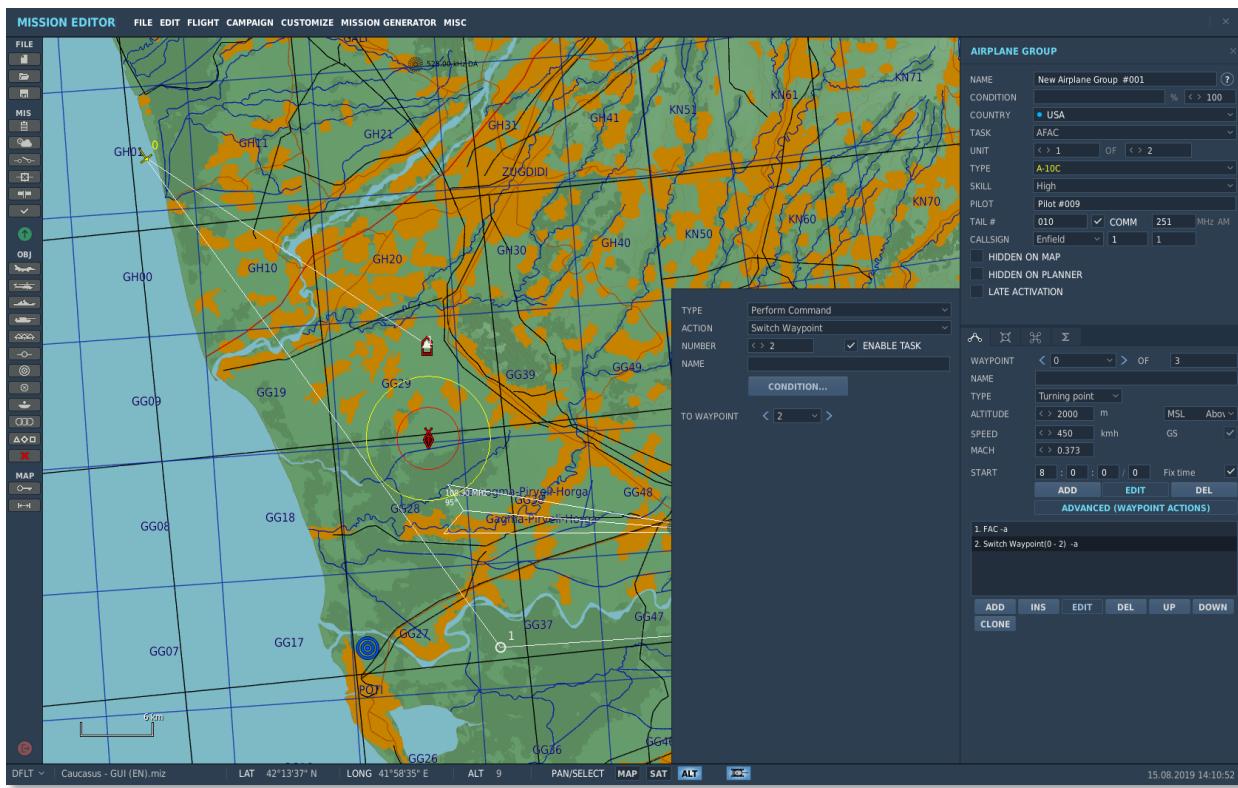
DURATION. Duration of the message, in seconds.

Stop Transmission

Stops the transmission from the lead group. This command has no available options.

Switch Waypoint

When the conditions for this action are in effect, the group will navigate from the current waypoint directly to the one set by this action. For example, the group can be made to fly from waypoint 3 directly to waypoint 6. When this command is executed, all other actions associated with the waypoint are stopped.



By default, this is set to the next waypoint in the route.

All main tasks, commands, and behavior options, missed waypoints, will not be fulfilled.

This command can also be used to create a looping route by switching to an earlier waypoint. The looping command can be stopped using a stop condition, such as a mission time or a flag state.

Invisible

Set the group to be invisible to all enemy AI units. Enabled and disabled using the ENABLE checkbox.

This command may be useful when creating ground-based FACs in close proximity to enemy positions as a means of simulated a well camouflaged position and preventing the FAC from being destroyed.

Immortal

Set the group to be immortal. Enemy AI units will be able to detect the group, but their weapons will have no effect.

This command may be useful when creating prolonged engagement scenarios, in which persistence of fire is a desired element.

EPLRS

Set the unit's position datalink on/off.

Smoke On_Off

This command activates the a smoke generator, if available, located on the aircraft's wing mounts. It has a single option – the VALUE checkbox, which allows or disables the execution of the command.

Set Option

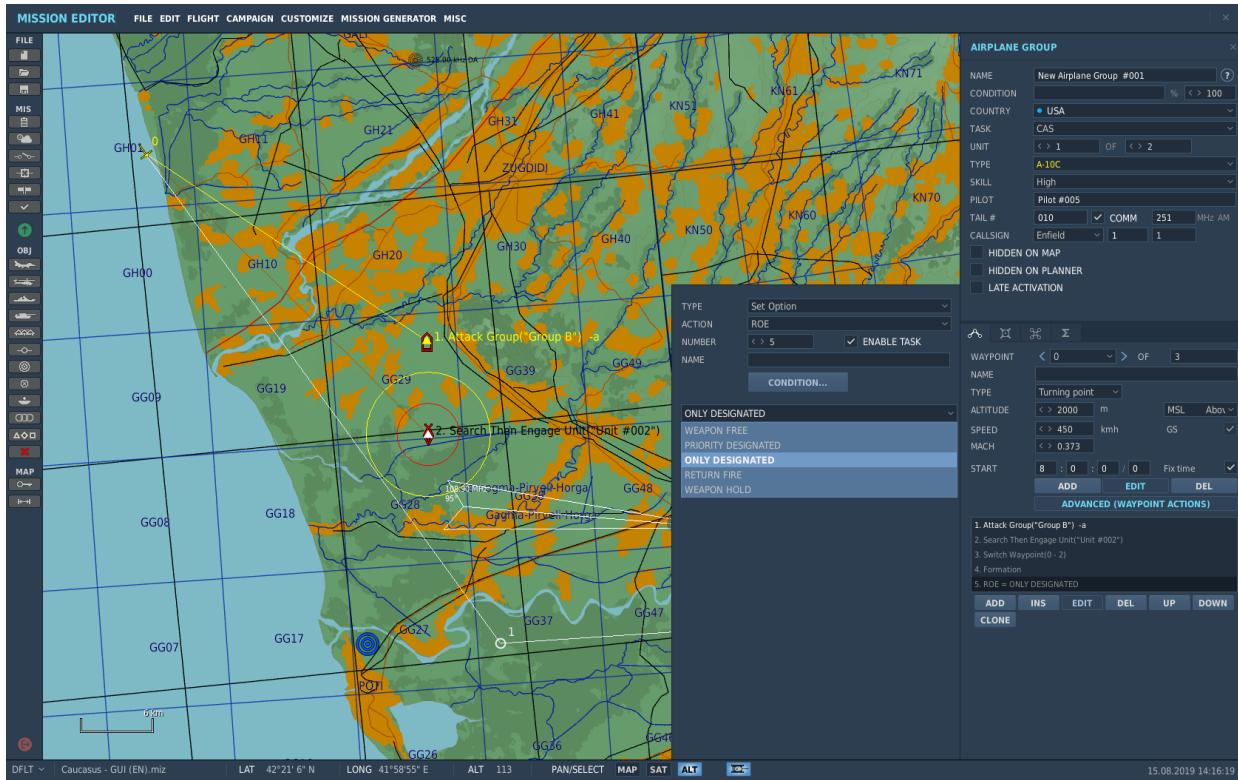
The following Options can be set as actions upon reaching a waypoint:

No Option

No option is set. Default selection.

ROE (Rules of Engagement)

Set fire rules to determine the group's combat behavior when encountering enemy units.

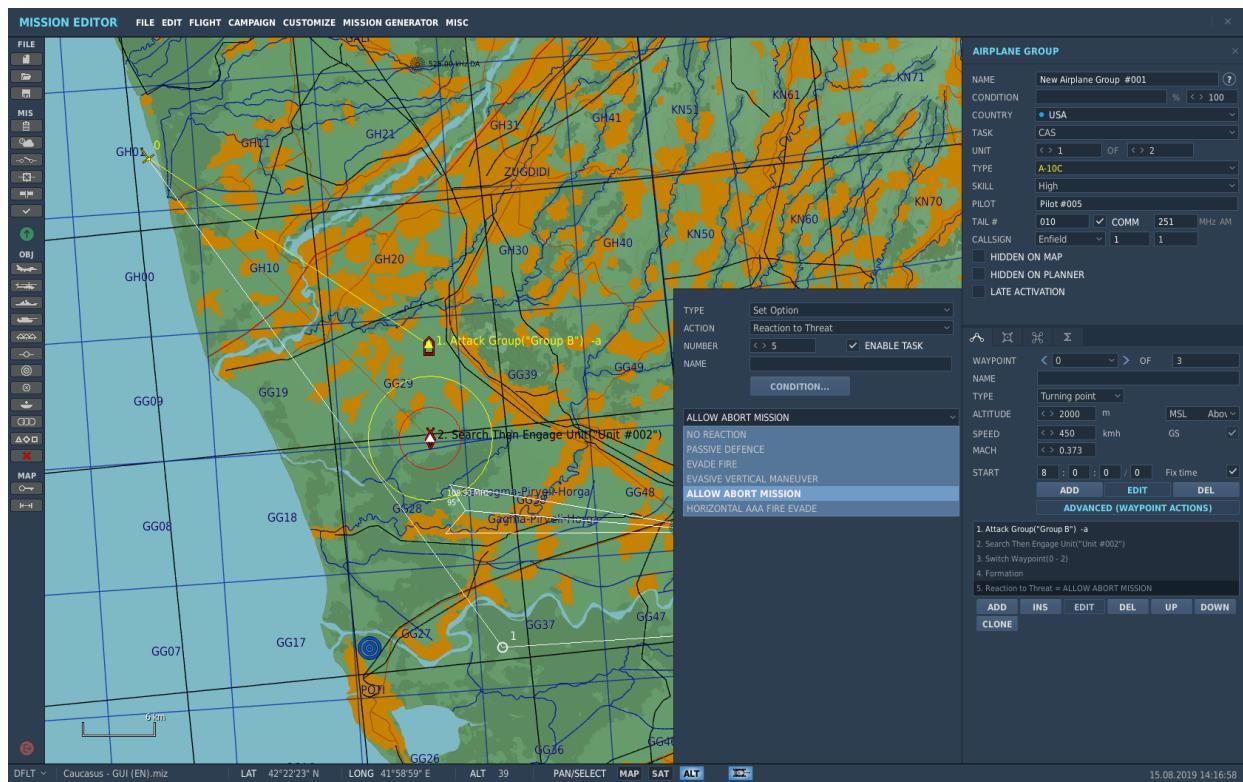


- **Weapon free** – engage any enemy group in contact. Target prioritization is performed automatically by the group based on the situation.
- **Priority designated** – engage any enemy groups in contact. However, the enemy group designated as the target for the action will be the primary target and engaged first. Once the primary target is destroyed, further target prioritization is performed automatically by the group based on the situation.
- **Only designated** – engage only the enemy group designated as the target for the action.
- **Return fire** – return fire only; do not engage first.
- **Weapon hold** – do not fire under any circumstances.

The default setting for all groups is *Only designated*.

Reaction to Threat

Set defensive rules to determine the group's combat behavior when encountering enemy units.



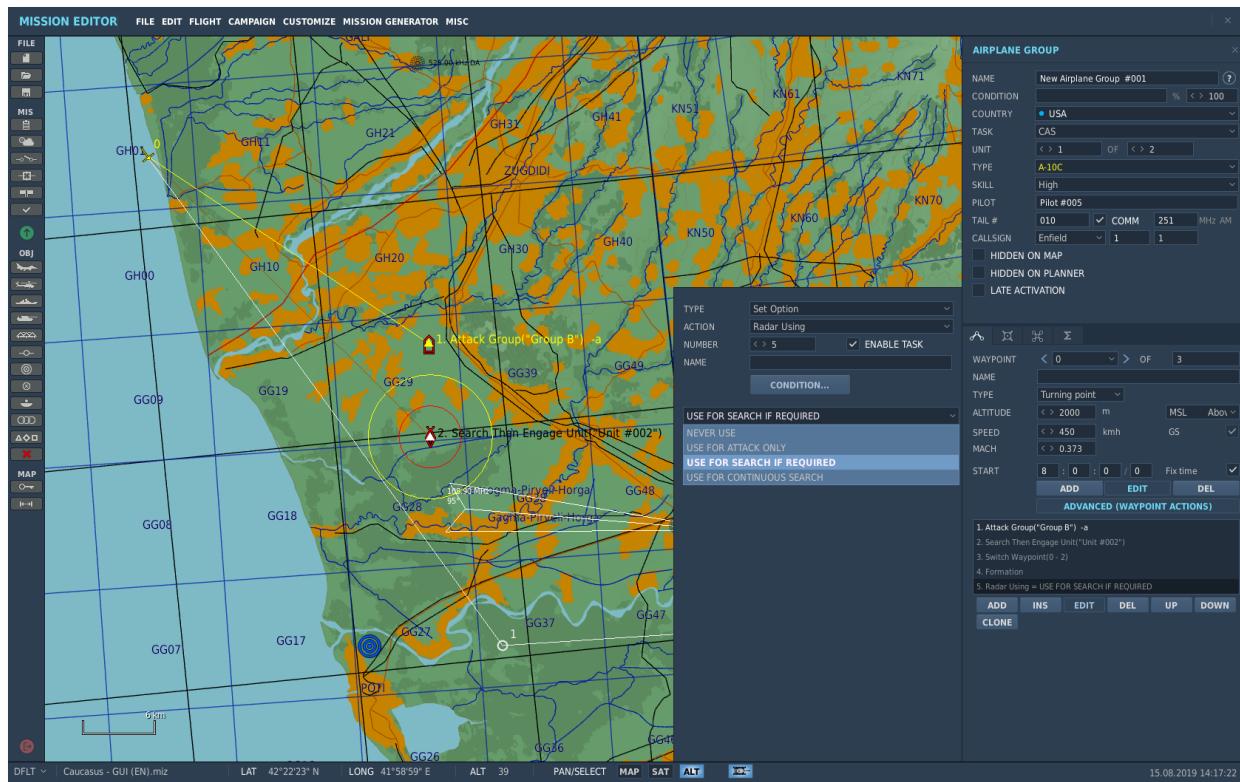
- **No reaction** – no defensive actions to counter threats.
- **Passive defense** – utilize passive and active defense measures, but no defensive maneuvering against incoming threats.
- **Evasive fire** – utilize passive and active defense measures as well as defensive maneuvering against incoming threats.
- **Evasive vertical maneuver** – the group will be able to increase or decrease altitude to avoid a known threat zone. The group will also utilize active and passive defense measures.
- **Allow Abort Mission** – allow group to cease mission if engaged.
- **Horizontal AAA fire evade** – The group performs evasive maneuvers against enemy anti-aircraft fire without changing altitude.

The Reaction on Threat Options are only in effect in defense. When performing an attacking action, the ROE option is in effect. In other words, the ROE option has a higher priority over the Reaction on Threat option.

The default setting for all groups is *Allow Abort Mission*.

Radar Using

Set the rules for the use of radar by the group.



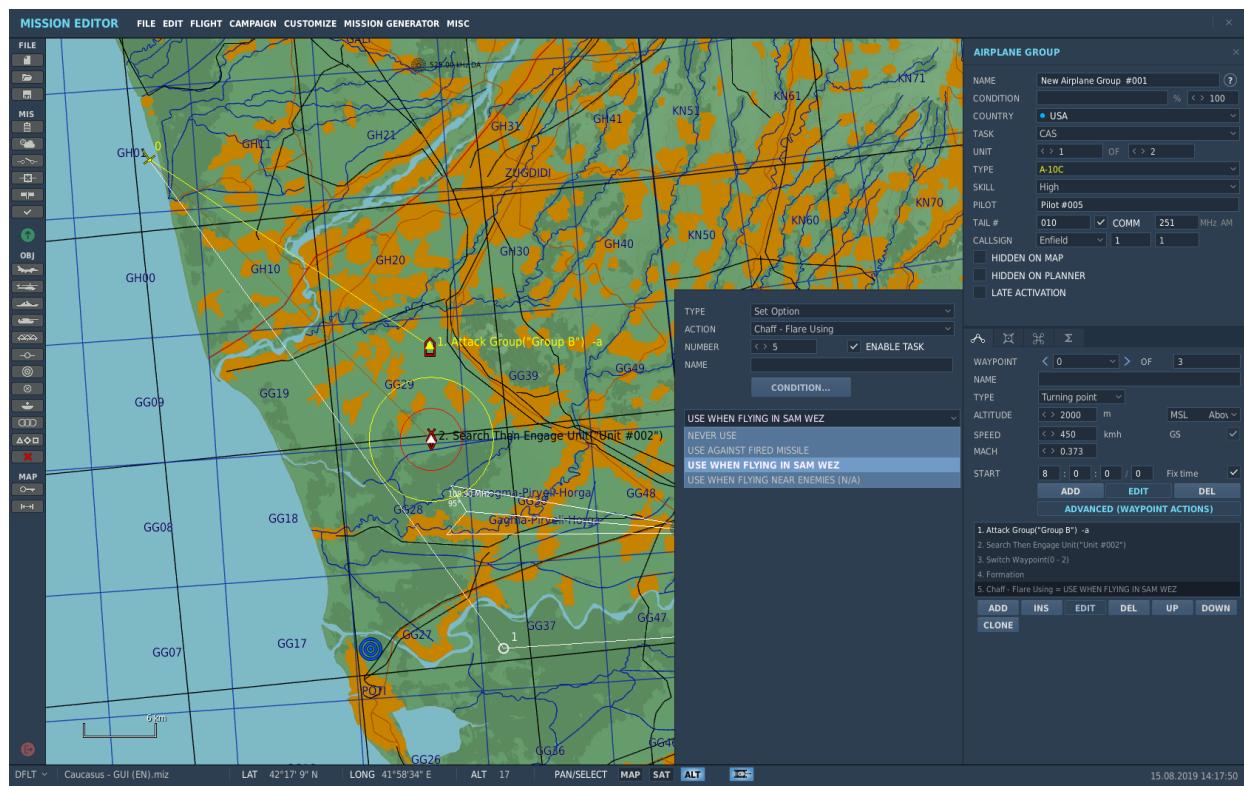
- **Never use** – do not use radar to perform target search or engagement (missile guidance).
- **Use for attack only** – do not use radar to perform target search, but use it if necessary to engage the target (missile guidance). Target search can be performed by other sensors if available.
- **Use for search if required** – allows the group to use radar for target search if necessary (when detection by other means is not successful).
- **Use for continuous search** – maintain radar on continuously.

The default setting is *Use for search if required*.

Keep in mind that radar illumination is a telltale signature and can ruin the element of surprise in combat operations, and as such pilots should ideally minimize radar uptime in covert operations.

Chaff – Flare Using

Set the rules for the release of chaff and/or flares by the group.

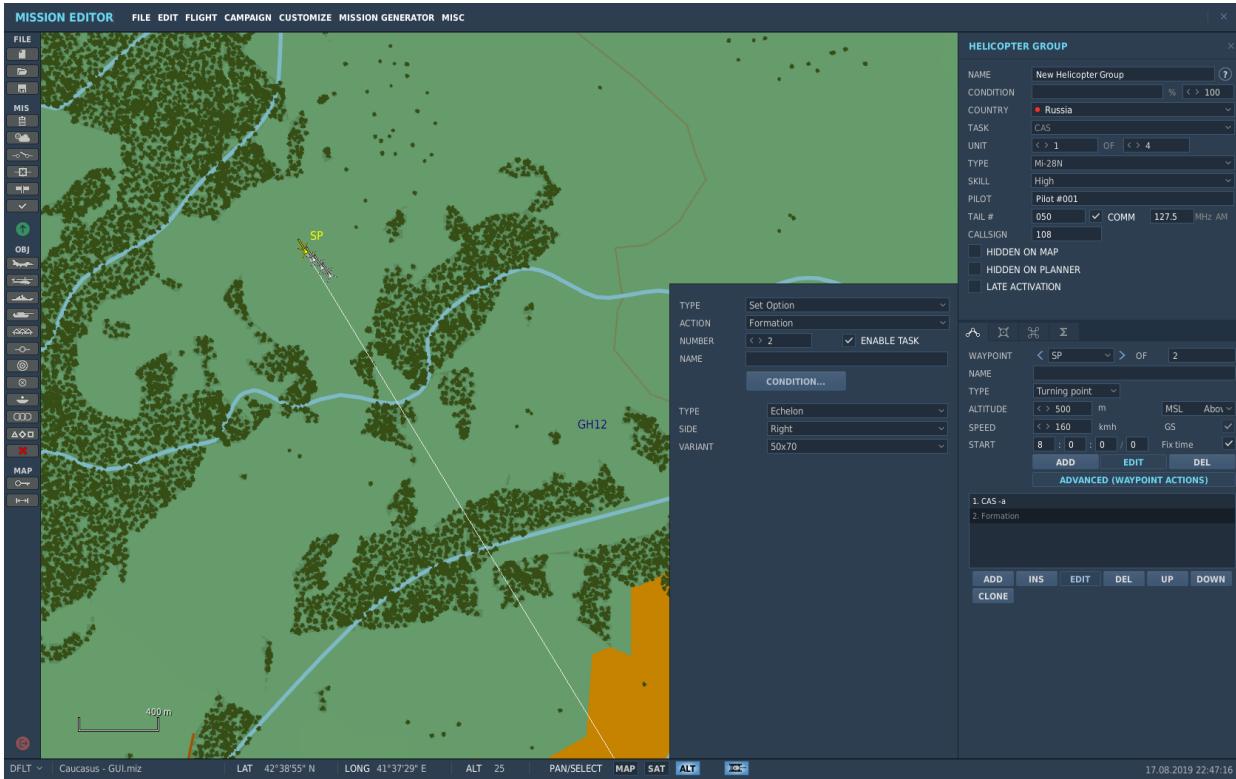


- **Never use** – do not release chaff and/or flares when engaged.
- **Use against fired missiles** – release chaff and/or flares only when incoming missiles have been detected.
- **Use when flying in SAM WEZ** – release chaff and/or flares as a preventative measure when inside a known enemy SAM threat zone or within weapons range of a known enemy aircraft armed with IR-homing missile.
- **Use when flying near enemies (n/a)** – The aircraft group will use countermeasures/decoys over enemy territory.

The default setting is *Use when flying in SAM WEZ*.

Formation

Set the formation for the group to assume upon reaching the waypoint. The following formations are available: Line Abreast, Trail, Wedge, Echelon Right, Echelon Left, Finger Four, Spread Four, WW2: Bomber Element, WW2: Bomber Element Height Separation and WW2: Fighter Vic.



TYPE. Formation type. 10 options are available for aircraft combat formations:

- **Line Abreast.**
- **Trail.**
- **Wedge.**
- **Echelon Right**, the default setting.
- **Echelon Left.**
- **Finger Four.**
- **Spread Four.**
- **WW2: Bomber Element.**
- **WW2: Bomber Element Height Separation.**
- **WW2: Fighter Vic.**

For helicopter combat formations, 4 options are available:

- **Wedge**, the default setting.
- **Front**.
- **Echelon**.
- **Column**.

SIDE. Choice of port/starboard side for asymmetrical formations. Used only for helicopter formations when choosing line abreast/echelon formation.

VARIANT. Choice of formation variant when selecting formation type, differing in size (indicated in meters).



For a more detailed explanation of the formations, including illustration, consult the Flight Manual.

The default setting is Echelon Right.

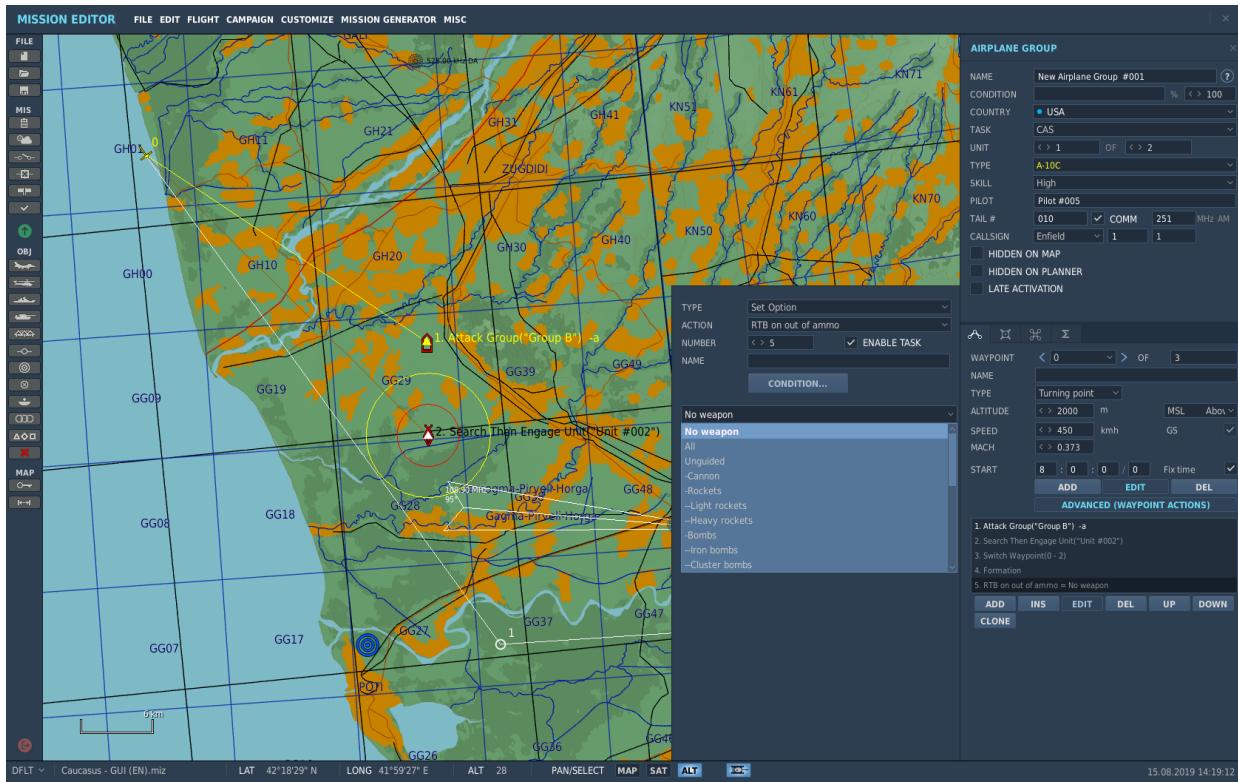
RTB on Bingo Fuel

This is a flag setting to allow/restrict the group to return to base upon reaching Bingo Fuel state (when there is only enough fuel left to return to base.)

The default setting is ON (allow).

RTB on out of ammo

This option allows for the group to return to base when all ammunition has been spent.



The default setting is *No weapon*.

Silence

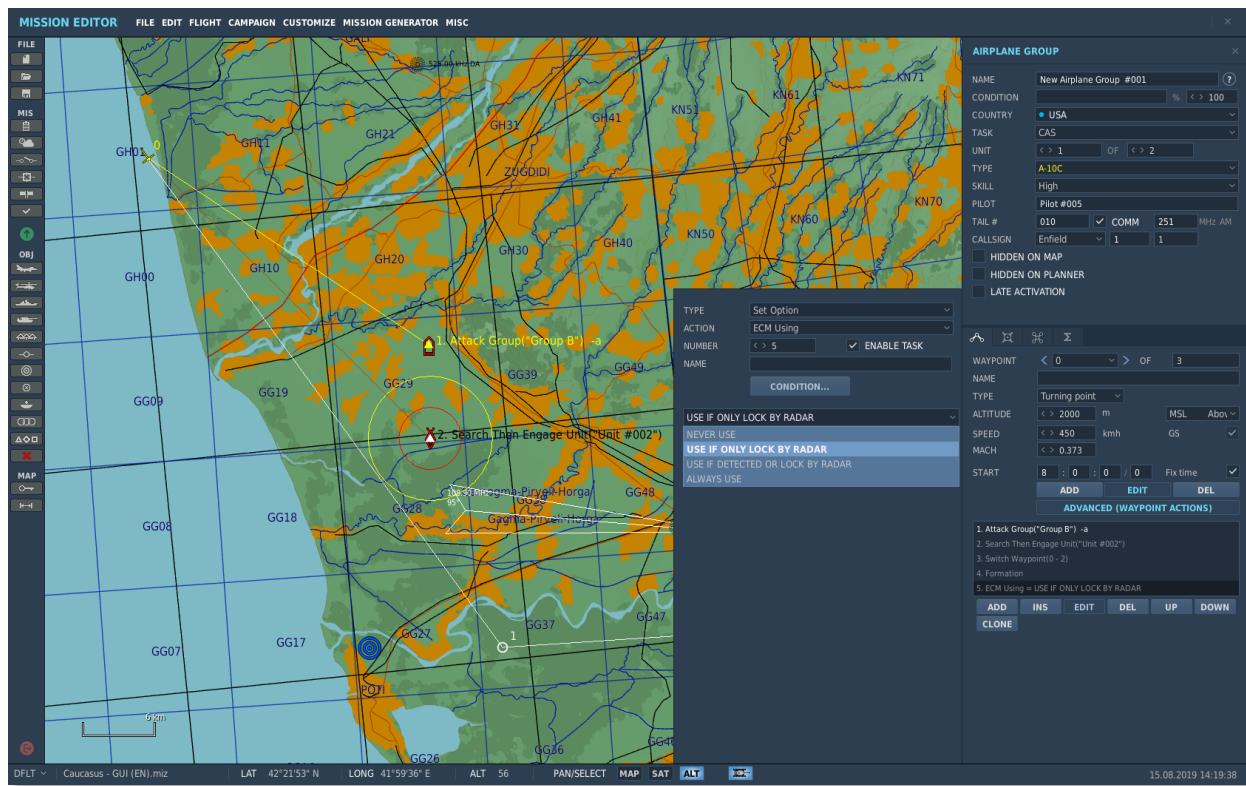
This is a flag setting to force the group to maintain radio silence upon reaching the waypoint.

The default setting is OFF (radio communications are allowed).

If no Options are set in the Actions List, the default settings for all options are assumed.

ECM Using

The "ECM Using" option determines the procedure for using the aircraft's onboard electronic warfare suite during the course of a combat mission.



The default setting is *Use if only lock by radar*.

Restrict Air-to-Air Attack

This option forbids units from attacking airborne targets. Tick the checkbox labelled VALUE to forbid this action.

The default setting is OFF.

Restrict Jettison

This option restricts units from jettisoning external stores. Tick the checkbox labelled VALUE to forbid this action.

The default setting is OFF.

Restrict Afterburner

This option restricts units from using afterburners, reducing IR visibility and improving survivability against heat-seeking missiles. Tick the checkbox labelled VALUE to forbid this action.

The default setting is OFF.

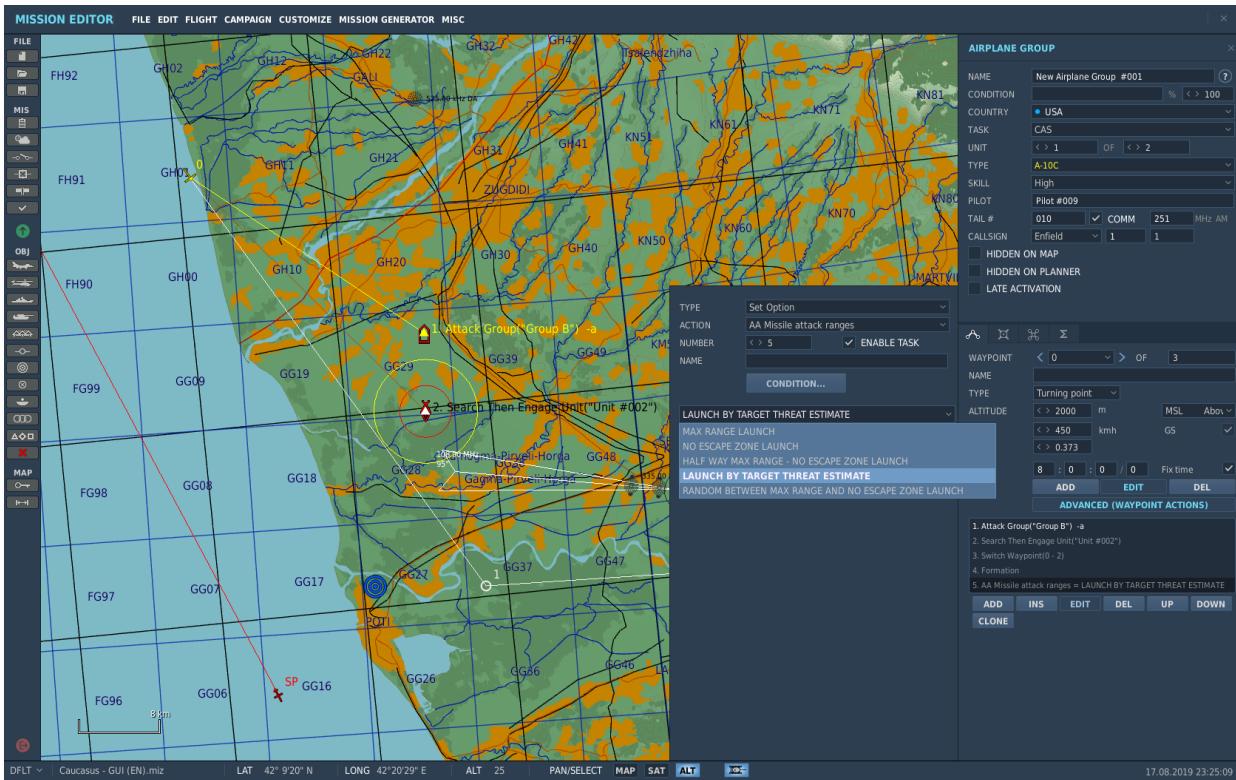
Restrict Air-to-Ground Attack

This option forbids units from attacking ground targets. Tick the checkbox labelled VALUE to forbid this action.

The default setting is OFF.

AA Missile attack ranges

This option determines the distance at which air-to-air missiles may be fired.



- **Max range launch** – Missile launch is permitted at the maximum possible range.
- **No escape zone launch** – Missile launch is permitted only when the target has entered the missile's no escape zone.
- **Half way max range - No escape zone launch** – Missile launch is permitted at a distance between the missile's maximum possible range and its no escape zone.
- **Launch by target threat estimate** – the default setting. Missile launch according to the threat level of the target: the closest hostile target that is closing in on the unit, with an active radar; either locked on or actively attacking.
- **Random between max range and no escape zone launch** – Missile launch is permitted at a random distance between the missile's maximum possible range and its no escape zone.

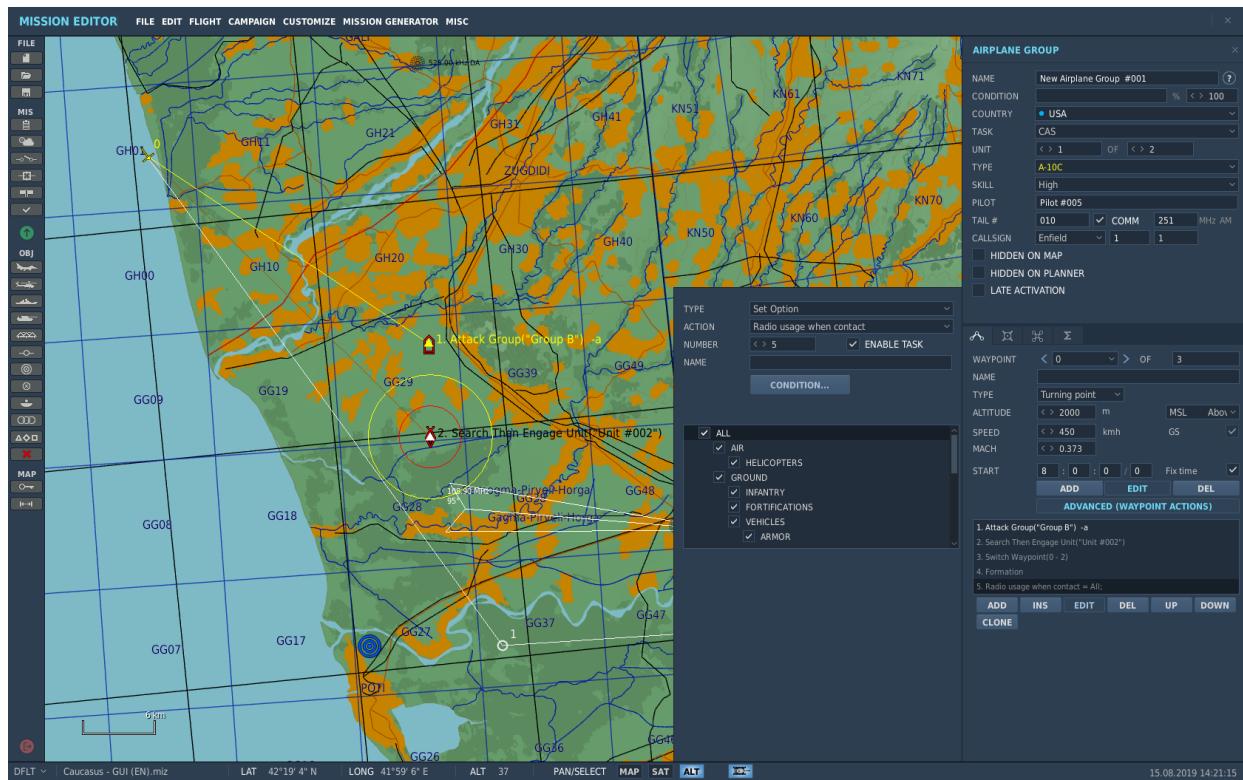
No Report Waypoint Pass

This option forbids the aircraft group from reporting on their passage through a waypoint. Tick the checkbox labelled VALUE to forbid this action.

The default setting is OFF.

Radio usage when contact

The option determines the type of targets for radio communications when the group is in contact with the enemy.



The default setting is ALL targets.

Radio usage when engage

The option determines the type of targets for radio communications when the group is actively engaged in combat with the enemy. The target panel is similar to that of the previous option.

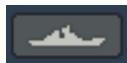
The default setting is ALL targets.

Radio usage when kill target

The option determines the type of targets for radio communications when the group has damaged or destroyed an enemy target. The target panel is similar to that of the previous option.

The default setting is ALL targets.

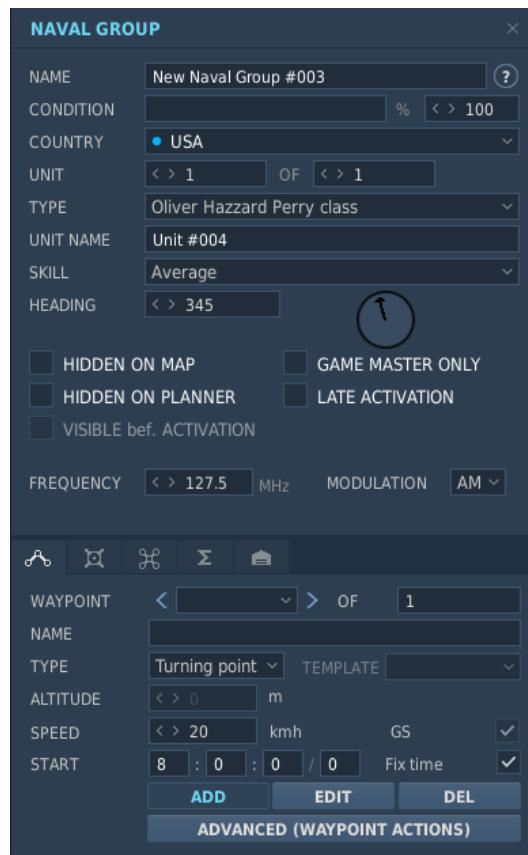
Place Ship Group



You will use this window to place ship groups in a mission, set their routes, and determine the actions they will take. Unlike aircraft groups, you can place up to 99 units within a single group (not recommended though). When placing ships, you will be automatically restricted to placing them on large bodies of water.

Note, the mission editor supports group copy/paste functionality. To copy a group, select it and press **[CTRL+C]**. To paste the group with identical properties, position the mouse over the desired point on the map and press **[CTRL+V]**.

The Place ship windows consist of numerous functions, which are described below. We will discuss them from top to bottom.



NAME. In the Name field, type in a unique name for the naval group. If you do not enter one, a default one will be generated. This Name you create will be used when assigning some types of Triggers such as Activate Unit. Always be careful not to assign more than one group with the same Name.

CONDITION. The condition for the random spawning of a group in a mission. For this, LUA expressions used in the [Simulator Scripting Engine Documentation](#) are entered into the field. First, the [initialization script](#) should be loaded in the trigger panel. The script is executed before the mission is loaded and its result is used to set the conditions for the random group spawn.

COUNTRY. The Country drop down list displays all the countries that have been assigned to either the RED or the BLUE sides when the mission was initially created by use of the CREATE NEW MISSION button. The Country selected will filter the TYPE of ships available.

UNIT. The Unit selection is composed of two fields and they allow you to select how many ships will be part of the naval group (1 to 99). The right field is used to set the total number of ships in the group; to do so, use the left and right arrow buttons. The left field is used to select a ship within the group; to do so, use the left and right arrow keys.

TYPE. Depending on the Country, a list of appropriate ships is listed in this pull-down list.

UNIT NAME. Enter a unique name for each unit within the naval Group. If you do not, a default name will be created automatically. This name is important because it will be used to set Trigger Conditions based on units. For example, if you create a condition based on the destruction of a unit, the unit will be selected from a list using its UNIT NAME.

SKILL. The Skill level allows you to select how competent the aircraft pilot is when flown by the artificial intelligence. This setting can control such factors on how much G the pilot can pull, at what range it will attack, and how accurate its weapon delivery skills are. There are five Skill options for AI aircraft:

- Average
- Good
- High
- Excellent
- Random. This option will randomly select from one of the four options above.

Note that a unit's skill level will affect its detection ranges, reaction times and targeting errors.

HEADING. The course dial can be used to set a unit's standing course when no route has been created to determine the direction of travel.

HIDDEN ON MAP check box. After creating a mission, you may wish to hide certain units so that people playing your mission cannot see them. Check this box to hide the selected naval group from the ME World Map. You can view all hidden groups using the Units List window (discussed later in this document).

HIDDEN ON PLANNER. This option hides aircraft from the mission map in the mission planner. This option can be useful if you need to hide an object from the player.

VISIBLE bef. ACTIVATION. If you choose to have a unit appear according to an Activate Group/Unit trigger, you can choose to have that unit visible in the world or invisible in the world until the unit is activated. If you wish to have the unit visible in the world but inactive until activation, check this box.

GAME MASTER ONLY. This option indicates that the selected group is available only to the game master – the owner of the game session.

LATE ACTIVATION. This option spawns a group of aircraft in the mission after a certain time after reaching any condition or event.

FREQUENCY. Frequency for radio communications in MHz. The AI group will conduct radio communications using the indicated frequency. Example: 127.5 MHz AM means 127.5 MHz in the AM (amplitude modulation) range.

Modal buttons

Five modal buttons control what is displayed on the lower half of the Naval Group Properties placement window. These include: ROUTE, AMMO, TRIGGERED ACTIONS, SUMMARY and SUPPLIERS.



Route Mode



When in Route mode, the data in the lower half of the ship placement window is in regards to waypoint management. A waypoint is an arbitrary point on the map (Lat, Long) that can be chained together to create a route. During the course of a mission, the group will steer from one waypoint to the next along the route line, and at each waypoint you can assign unique actions.

To place a new naval group, you will need to be in the Route mode with a ship Type selected. You may then left click on the map to place the group's starting point, which will be waypoint 1. When you place a group, its waypoint marker (circle with its waypoint number next to it) and route line will be colored appropriately:

- **White** - Selected unit.
- **Red** - A Red side unit that is not selected.
- **Blue** - A Blue side unit that is not selected.

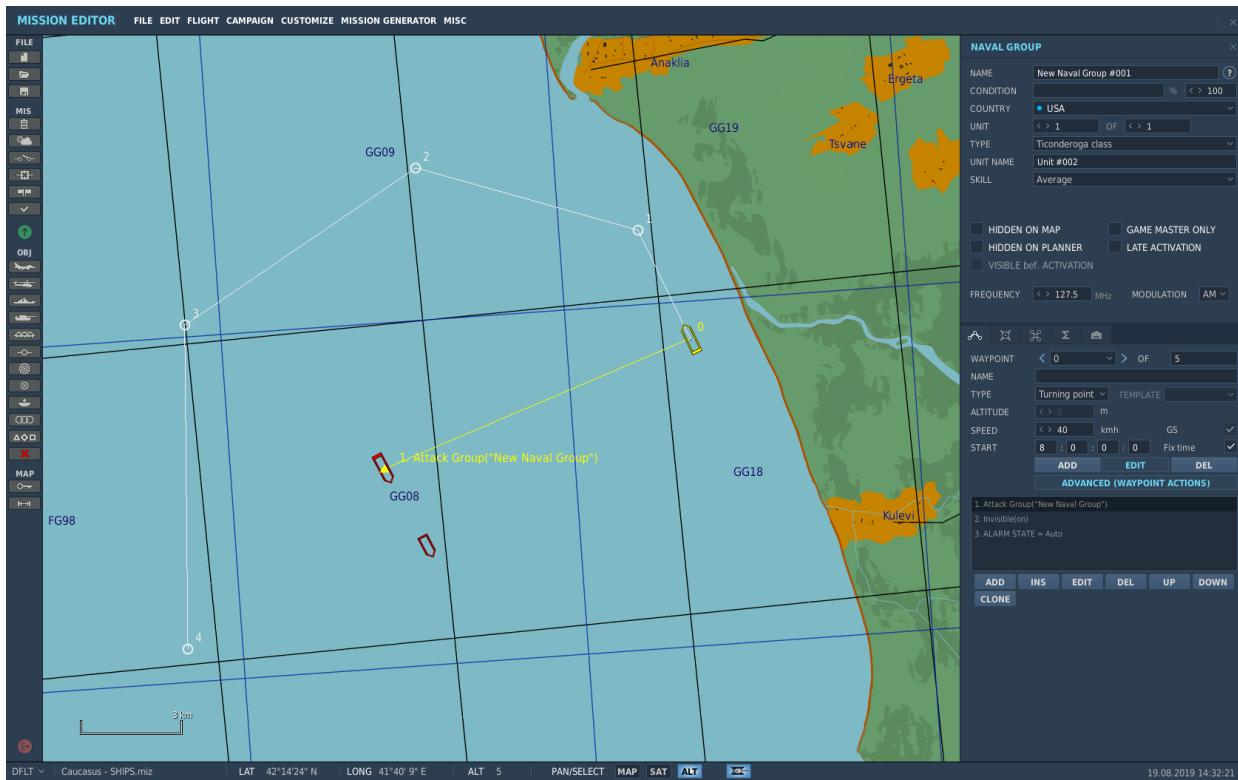
At waypoint one there will be a unit icon instead of a standard waypoint circle. Different icons denote different types of units:

Naval Editor Icons (Russian/Western)

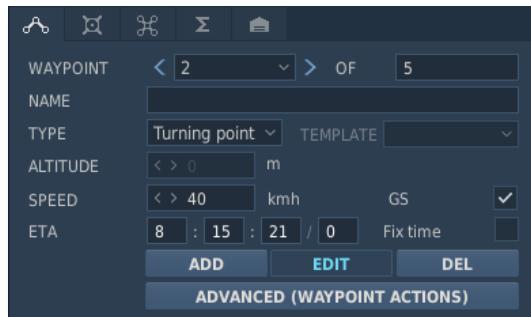
Russian	NATO	Unit Type
		Submarine

		Frigate
		Aircraft carrier
		Heavy cruiser
		Cruiser
		Medium ship/frigate
		Cargo (commercial) ship

To shift the entire group's position on the map, click and drag the group's lead unit to the desired location. To adjust the position of other units within the group, click and drag the desired unit relative to the leader's position.



Below the Modal buttons are the Route controls. For each waypoint of the route, the following options can be set in the waypoint control panel [as described above](#). From top to bottom:



WAYPOINT. The WAYPOINT fields allow you to cycle between waypoints you have created. The left field displays the currently selected waypoint and you can cycle it by pressing the left and right arrow buttons. The field on the right displays the total number of waypoints in the route. The circle and waypoint number of the selected waypoint is colored yellow on the map.

NAME. For each waypoint you can assign a unique name. Enter the name of the waypoint in this field and this name will then appear next to the waypoint on the map.

TYPE. Each waypoint can be assigned a type of action that the group will perform when it reaches the waypoint. These include:

- Turning Point. This is the most common and basic waypoint and the group will simply pass through such a waypoint and proceed to the next.

ALTITUDE. Not adjustable for naval groups.

SPEED. The speed setting will set the speed in kilometers per hour (km/h) that the ship group will have achieved when it reaches the waypoint. To set this, you can either use the left and right arrow buttons or enter it into the field. The group's maximum speed will not exceed the maximum speed of the slowest ship in the group.

GS (GROUND SPEED LOCK CHECKBOX). Selects between manual and automatic entry of the desired speed for the waypoint. Not applicable to a starting waypoint.

If the speed is locked, the group will attempt to maintain the desired speed on the route leg from the preceding waypoint to the current one. [See above "Group Route Planning".](#)

START/ETA. (Estimated Time of Arrival). Indicates the desired arrival time for the waypoint (or group start time in the case of the initial waypoint). This is set by the user if the ETA is locked or calculated automatically by the Mission Editor if the ETA is unlocked.

Fix Time (ETA LOCK CHECKBOX). Selects between manual and automatic entry of the desired ETA for the waypoint. The ETA is locked for the initial waypoint (group start time) by default.

When locked, the ETA field can be used to set a delayed group activation in the mission by setting an ETA for the initial waypoint at a time past the mission starting time. For example, if the mission is set to start at 12:00:00/1 and the user wishes to have the group appear in the mission 15 minutes after the mission starts, he can lock the ETA for waypoint-1 at 12:15:00/1. Furthermore, if the user wishes for the group to appear in the mission based on a triggered

event of unknown time, he can set the ETA for the starting time past any likely mission time, such as 100 days later (12:00:00/100). In such a scenario, the group will not appear until triggered by the scripted event or the starting ETA is reached.

If the ETA for the waypoint results in calculated speeds that are too slow or too fast for the aircraft type, the font will become red to indicate an invalid entry and a corresponding error message will appear when the user attempts to close the properties panel or save the mission. [See above for more information.](#)

Waypoint Mode Buttons

These three buttons allow you to add, edit and delete route waypoints.

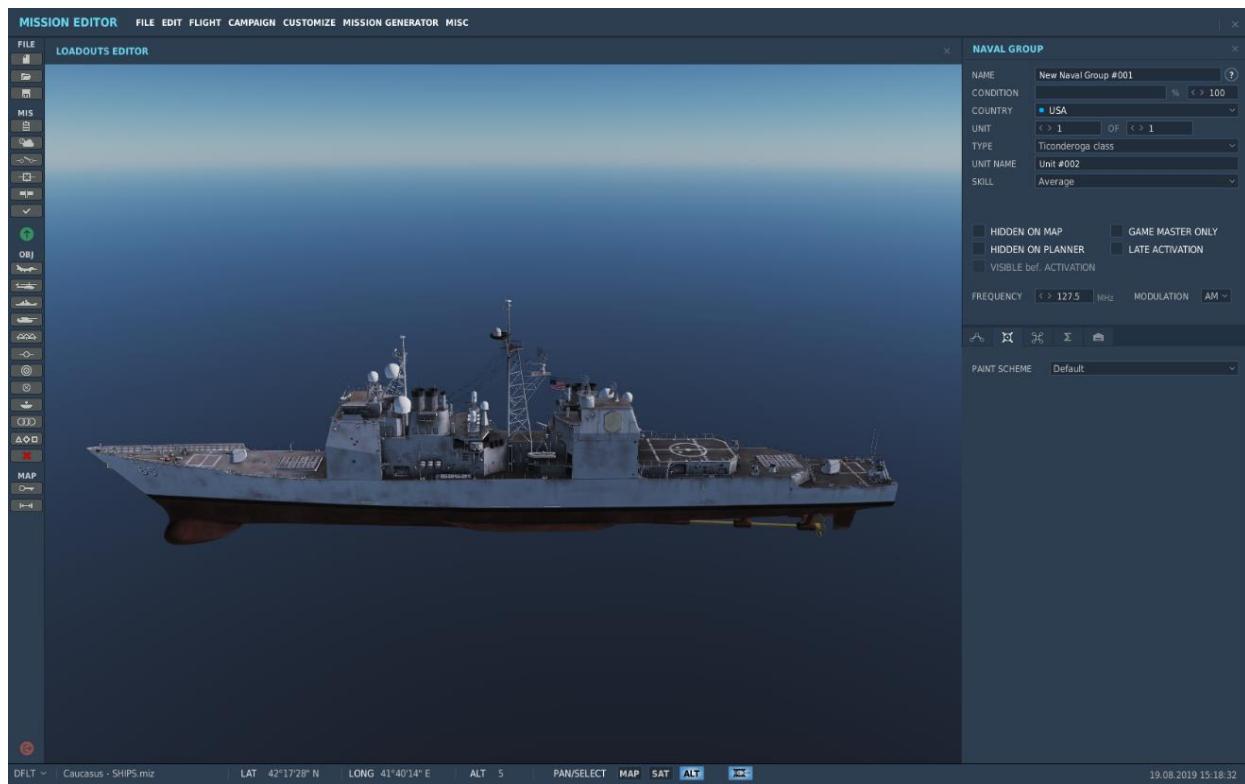


- **ADD** – In ADD mode, each press of the left mouse button over the map adds a new waypoint. This mode is selected on by default when a group properties panel is open.
- **EDIT** – In EDIT mode, existing waypoints can be selected on the map for editing in the waypoint properties panel.
- **DEL** – Pressing this button deletes the selected waypoint.

Ammo Mode



The LOADOUTS EDITOR panel is opened by pressing on the button labelled AMMO and allows the user to select the color scheme of the chosen unit.



Triggered Actions Mode

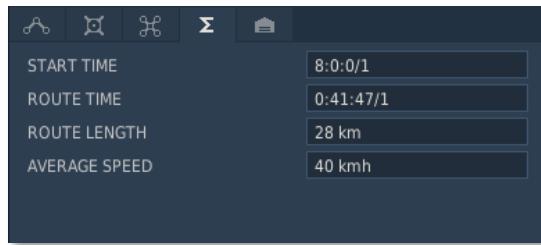


The Triggered Actions button opens the Triggered Actions Panel. This panel can be used to add or edit group actions analogous to the Advanced Actions Panel, but activated based on trigger rules as scripted in the Triggers Menu using the AI TASK trigger action.

Route Summary Mode



When in Summary mode, you are provided basic mission data in the lower half of the window. This data includes:



START TIME. The mission start time for the group in Hour:Minute:Second/Day.

ROUTE TIME. Estimated en-route time for the chosen route when travelling at the given speed. This is indicated in Hour:Minute:Second/Day format.

ROUTE LENGTH. Total distance of the route in kilometers.

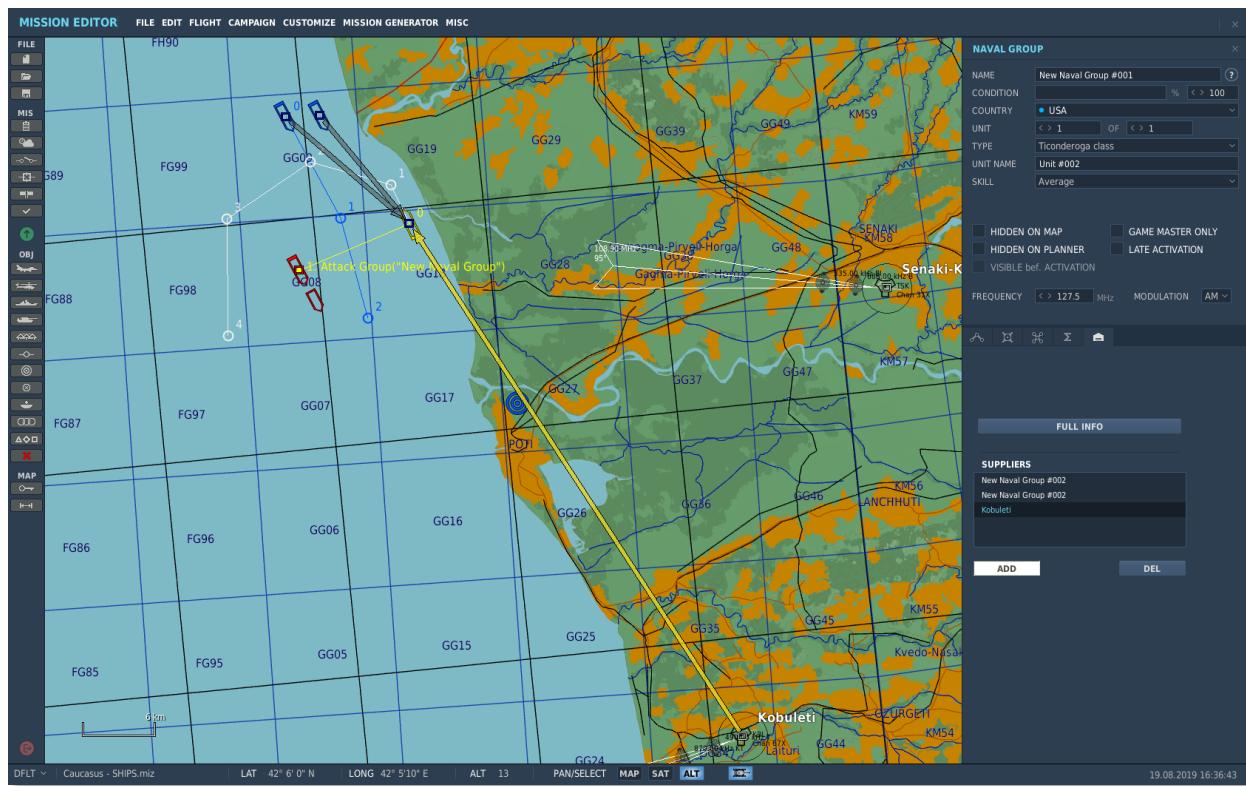
AVERAGE SPEED. The average indicated speed of the route by totaling the assigned speed of each route leg and then dividing by the number of legs.

Note, the mission editor supports group copy/paste functionality. To copy a group, select it and press **[CTRL+C]**. To paste the group with identical properties, position the mouse over the desired point on the map and press **[CTRL+V]**.

Suppliers



The SUPPLIERS button brings up an information panel with the ammunition suppliers for the chosen ship group.



FULL INFO. Opens the [Resource Manager](#) panel.

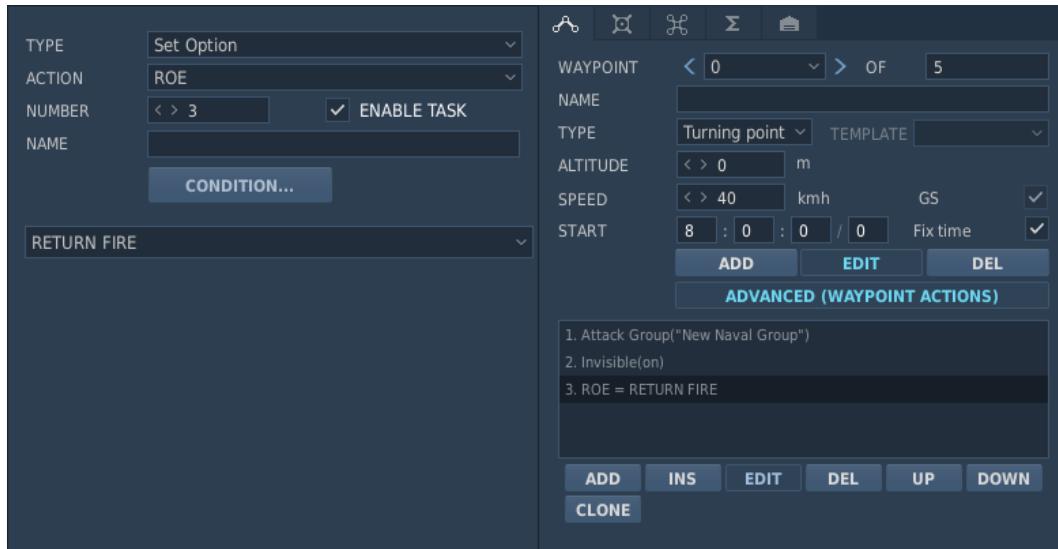
ADD. Adds a warehouse. When clicked, it marks all ship groups and airfields with checkboxes, that when ticked designates these groups as suppliers. This will create arrowed lines that go from these supplier units to the original ship group.

DEL. Removes the selected suppliers from the panel list.

Advanced Actions Mode (naval groups)

ADVANCED (WAYPOINT ACTIONS)

Pressing the Advanced tab opens the Advanced Actions Panel, which lists the actions associated with the selected waypoint:



This panel is used to set (add/edit/delete) group actions ([Perform Task](#), [Start Enroute Task](#), [Perform Command](#), [Set Option](#)), which are tasked to the AI at this waypoint by the user or generated automatically by the Mission Editor.

Panel Interface Controls

The following buttons are located at the bottom of the Advanced Actions Menu:

- **ADD** – Adds a new action to the list. When pressed, a default No Task action is created, which can be edited in the Action Settings pop-up panel to the left.
- **INS** – Inserts a new action above the currently selected one.
- **EDIT** – Opens the Action Settings pop-up panel to display and edit the settings of the action. The same functionality is duplicated when clicking on any route waypoint on the map.
- **DEL** – Deletes the selected action.
- **UP** – Moves the selected action up the list.
- **DOWN** – Moves the selected action down the list.
- **CLONE** – Clones the selected action down the list.

Action Properties Panel for Naval Groups

The Action Properties Panel for Naval Groups is analogous to the panel for [aircraft groups](#). In other words, this panel is used to set Perform Tasks, Start Enroute Tasks, Perform Commands and Set Options for the group to perform, as well as the starting and ending conditions of the actions. However, the specific types of actions available for naval groups differs from aircraft groups.

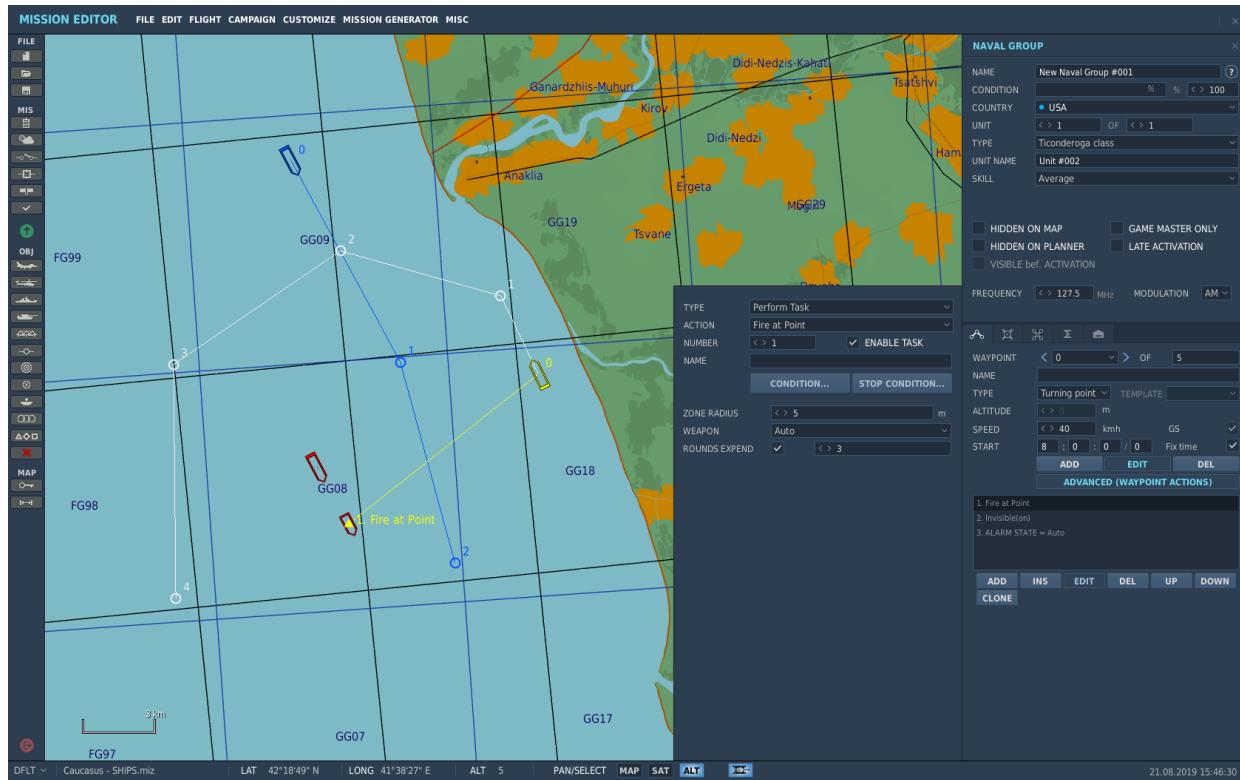
Perform Task

No Task

No action is assigned to the group to perform.

Fire at Point

Fire against a coordinate point on the map as designated by the mission designer.



To perform this action, move the triangular marker that appears near the group when this action is selected, to a desired point on the map.

Target Panel:

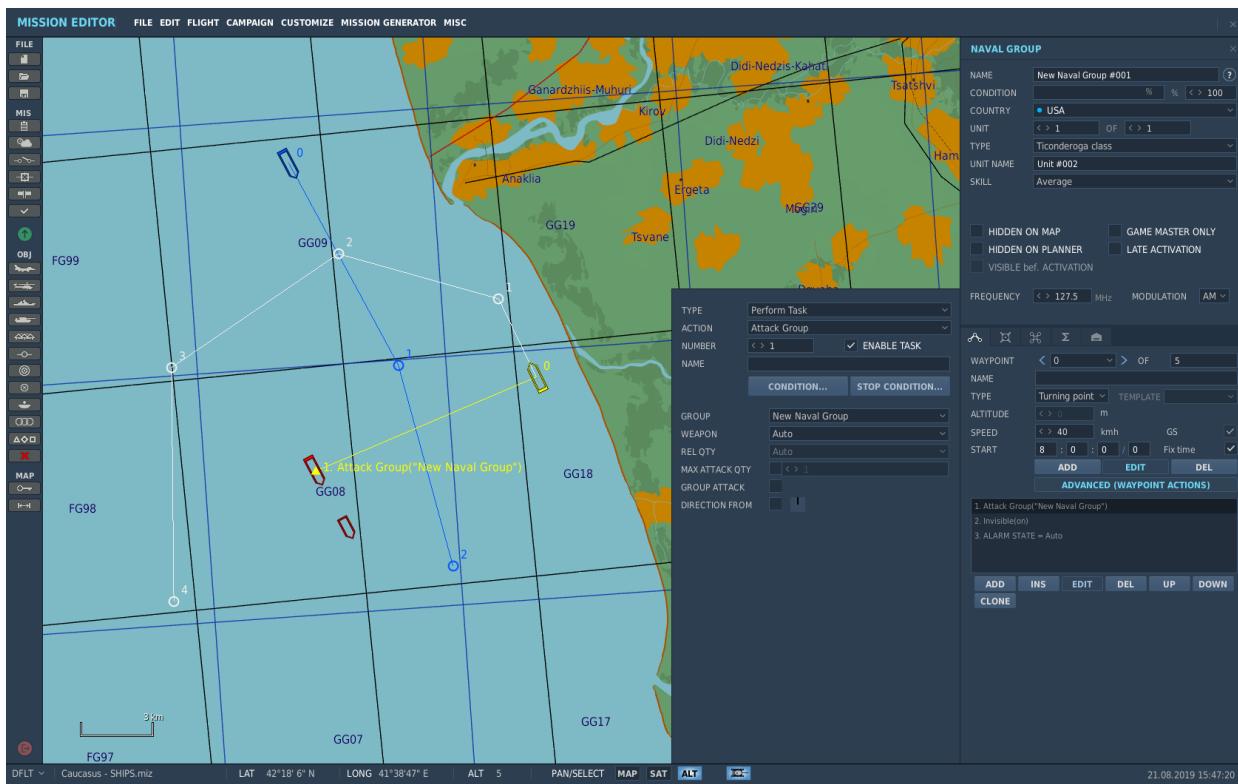
ZONE RADIUS. The value sets the radius of the target area. When firing artillery, the ship will spread rounds within the entire target area. When firing cruise missiles, the ship will target the center coordinate of the target area.

WEAPON. Drop down menu to select the [weapon types](#) cleared to use for this action. This menu is dependent on the type of ship and its available types of weaponry.

ROUNDS EXPEND. Setting this flag allows you to set the amount of ammunition consumed.

Attack Group

This action is intended to organize an attack of a specified group of ships.



GROUP. Selecting the target air/ground/ship group from the list.

WEAPON. Drop down menu to select the [weapon types](#) cleared to use for this action. This menu is dependent on the type of ship and its available types of weaponry.

REL QTY. The amount of payload cleared to expend in executing this action.

MAX ATTACK QTY. The maximum number of attack runs cleared for this action. The ship's group stops an attack if the target is defeated, even if the specified number of attacks has not yet been performed. If the target is not hit within the specified number of attacks, the ship's group also stops the attack.

GROUP ATTACK. When checked, the entire naval group will participate in the attack of the target. By default, each ship in a naval group is assigned one target.

DIRECTION FROM. Allows you to set a course (azimuth) for the selected ship group for its approach to the target.



The target marked for destruction is the enemy group that is marked with a triangular marker. A line will also be drawn from the waypoint to the target.

Start Enroute Task

Naval groups cannot be assigned any Start Enroute Task actions. Therefore, the only available selection is No Enroute Task.

Perform Command

The following commands can be set as actions upon reaching a waypoint:

No Action

No command is set.

Run Script

Run the Lua script entered in the scratchpad.

Script File

Selects the LUA script file.

Invisible

Set the group to be invisible to all enemy AI units. Enabled and disabled using the ENABLE checkbox.

Immortal

Set the group to be immortal. Enemy AI units will be able to detect the group, but their weapons will have no effect.

Set Option

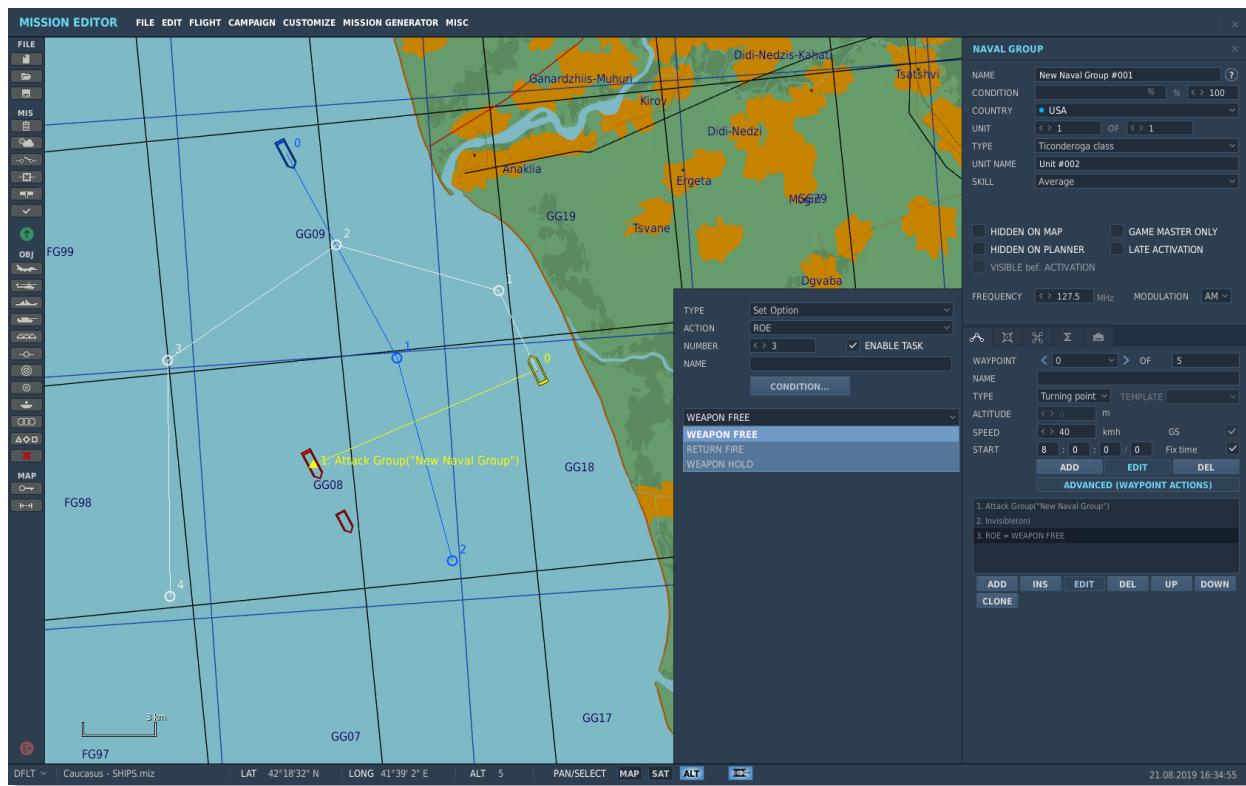
The following Options can be set as actions upon reaching a waypoint:

No Option

No option is set. Default selection.

ROE (Rules of Engagement)

Set fire rules to determine the group's combat behavior when encountering enemy units.

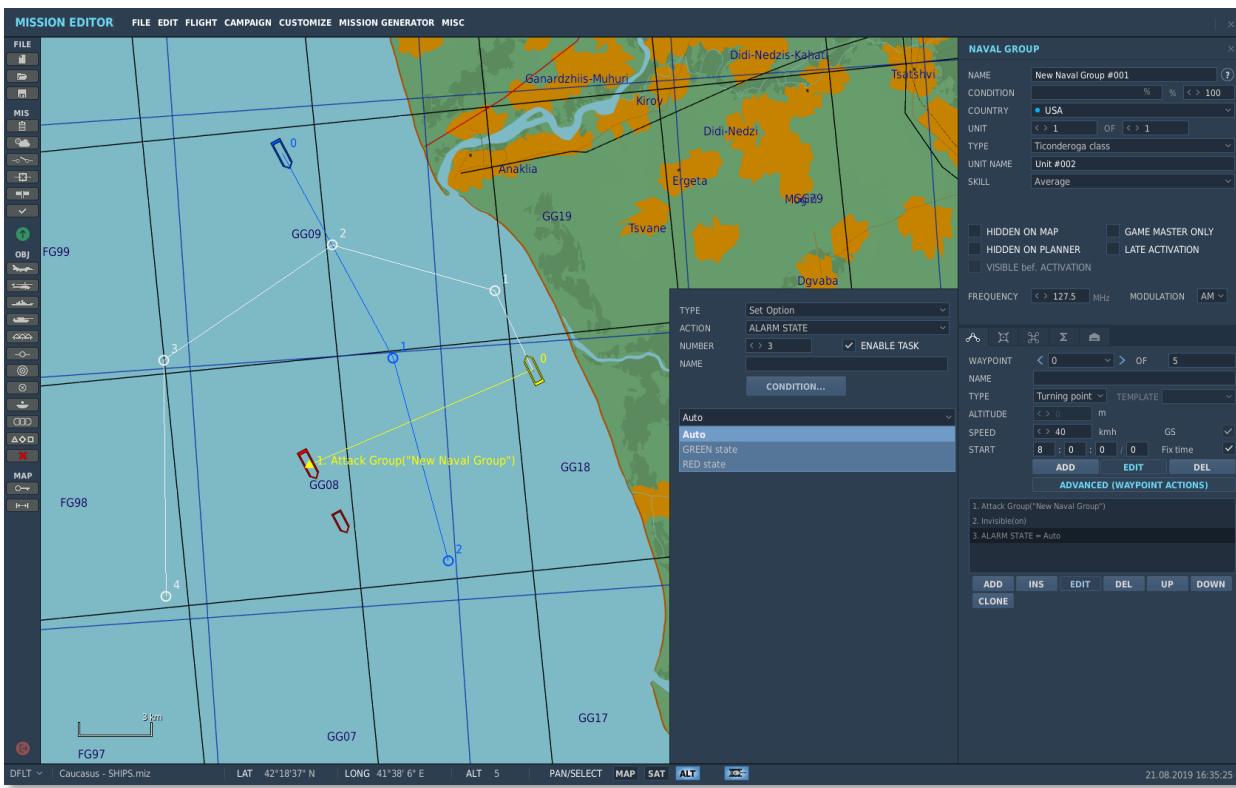


- **WEAPON FREE** – engage any enemy group in contact. Target prioritization is performed automatically by the group based on the situation. The default setting.
- **RETURN FIRE** – return fire only; do not engage first.
- **WEAPONS HOLD** – do not fire under any circumstances.

As mentioned above, all behavior options work regardless of the active task. If the behavior options are not added to the action list, then the default behavior options apply.

Alarm State

This option determines the readiness of the group for combat and has three definitions.



- **Auto** – Auto mode. The default option. The group switches from travel mode to combat alert when an enemy is detected. In the absence of an enemy, the group automatically returns to travel mode.
- **GREEN state** – Group is not ready for combat. Sensors and weapons are stowed.
- **RED state** – The group is combat ready; weapons and sensors are ready to fire and ships are actively searching for targets.

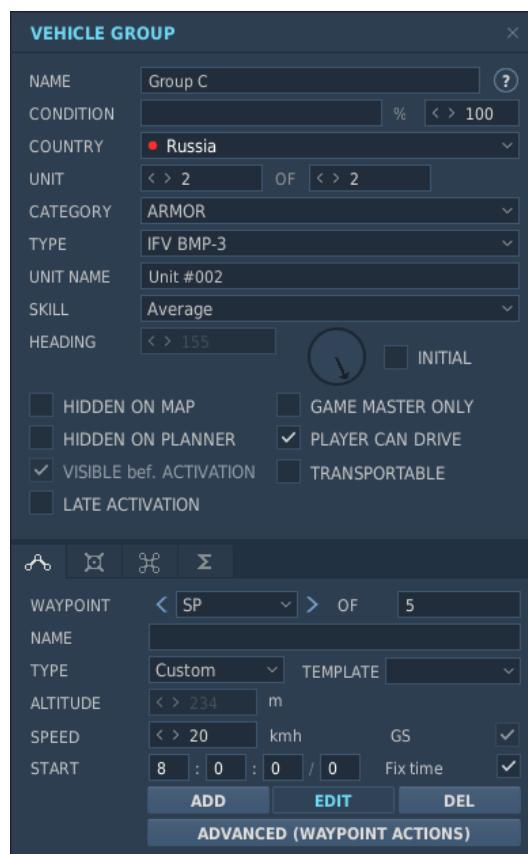
Place Ground Unit



You will use this button to place ground unit groups in the mission, set their routes, and create their actions. When placing a ground group, it is important to remember that the groups can consist of one to 99 vehicles. When placing groups, only the group lead vehicle will be visible on the map when zoomed out. As you zoom in though, the individual units of the group will appear on the map. This is important for accurate unit placement.

Note, the mission editor supports group copy/paste functionality. To copy a group, select it and press **[CTRL+C]**. To paste the group with identical properties, position the mouse over the desired point on the map and press **[CTRL+V]**.

The ground group placement windows consist of numerous functions which are described below. We will discuss them from top to bottom.



NAME. In the Name field, you may enter a unique name for the vehicle group. If you do not enter one, a default one will be generated. The Name you create will be used when assigning some types of Triggers such as Activate Unit. Always be careful not to assign more than one group with the same Name.

CONDITION. The condition for the random spawning of a group in a mission. For this, LUA expressions used in the [Simulator Scripting Engine Documentation](#) are entered into the field. First, the [initialization script](#) should be loaded in the trigger panel. The script is executed before the mission is loaded and its result is used to set the conditions for the random group spawn.

COUNTRY. The Country drop down list displays all the countries that have been assigned to either the RED or BLUE sides when the mission was initially created by use of the CREATE NEW MISSION button. The Country selected will filter the TYPE of ground units available.

UNIT. The Unit selection is composed of two fields and they allow you to select how many ground units will be part of the group (1 to 99). The right field is used to set the total number of vehicles in the group; to do so, use the left and right arrow buttons. The left field is used to select a vehicle unit within the group; to do so, use the left and right arrow keys.

Note: For Surface to Air Missile (SAM) batteries like SA-10, SA-11, etc., all the needed units of the SAM battery must all be part of the same Vehicle Group.

Note: If you place a ground unit to act as a JTAC, use a unit that is armed and has sensors. The armed HMMWV is a good choice.

CATEGORY. Drop-down list for selecting the unit category:

- Air Defence.
- Armor.
- Artillery.
- Fortification.
- Infantry.
- Missiles.
- Train.
- Unarmed

TYPE. Depending on the Country selection, a list of appropriate ground units will populate this pull-down list.

UNIT NAME. Enter a unique name for each unit within the Group. If you do not, a default name will be created automatically. This name is important because it will be used to set some Trigger Conditions. For example, if you create a condition based on the destruction of a unit, the unit will be selected from a list using its UNIT NAME.

SKILL. The Skill level allows you to select how competent the unit is controlled by the artificial intelligence. This setting can control such factors as what range it will attack from, and how accurate its weapon delivery skills are. There are five Skill options for AI ground units:

- **Average**
- **Good**
- **High**
- **Excellent**

- **Random.** This option will randomly select from one of the four options above.

Note: A unit's skill level will affect its detection ranges, reaction times and targeting errors.

Note: Regardless of skill level, AI aircraft will have great difficulty spotting infantry units unless the infantry unit is moving or firing weapons.

HEADING. The course dial can be used to set a unit's standing course when no route has been created to determine the direction of travel.

HIDDEN ON MAP check box. After creating a mission, you may wish to hide certain units so that people playing your mission cannot see them. Check this box to hide the selected ground group from the ME World Map. You can view all hidden groups using the Units List window (discussed later in this document).

HIDDEN ON PLANNER. This option hides ground unit from the mission map in the mission planner. This option can be useful if you need to hide an object from the player

VISIBLE before ACTIVATION. If you choose to have a unit appear according to an Activate Group/Unit trigger, you can choose to have that unit visible in the world or invisible in the world until the unit is activated. If you wish to have the unit visible in the world but inactive until activation, check this box.

LATE ACTIVATION. This option spawns a group of units in the mission after a certain time after reaching any condition or event.

GAME MASTER ONLY. This option indicates that the selected group is available only to the game master – the owner of the game session.

PLAYER CAN DRIVE. This option enables the player to drive the selected units by using [RAlt+J].

TRANSPORTABLE. This option allows the selected infantry, transport, armored, and cargo units for transport by helicopter.

Modal Buttons

Four modal buttons control what is displayed on the lower half of the Vehicle Group Properties placement window. These include: ROUTE, AMMO, TRIGGERED ACTIONS, and SUMMARY.



Route Mode



When in Route mode, the data in the lower half of the vehicle placement window is in regards to waypoint management. Waypoints are arbitrary points on the map (Lat / Long) that can be

chained together to create a route. During the course of a mission, the group will drive from one waypoint to the next along the route line and at each waypoint you can assign unique actions (like a formation).

To place a new vehicle group, you will need to be in the Route mode and have a vehicle group selected. You may then left click on the map to place the group's starting point, which will also be waypoint 1. When you place a group, its waypoint marker (circle with its waypoint number next to it) and route line will be colored appropriately:

- **White** - Selected unit.
- **Red** - A Red side unit that is not selected.
- **Blue** - A Blue side unit that is not selected.

At waypoint one will be a unit icon instead of a standard waypoint circle. Different icons denote different types of units:

Ground Unit ME Icons (Russian/Western)

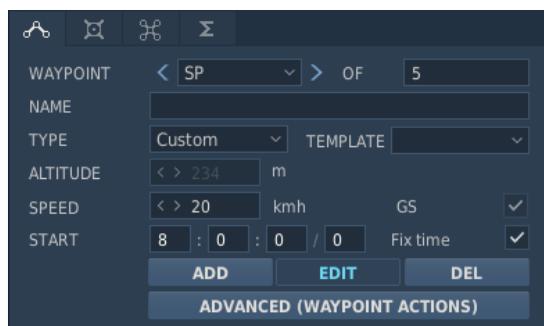
Russian	NATO	Unit Type
		Tank
		Infantry Fighting Vehicle (IFV)
		Combat reconnaissance vehicle
		Armored Personnel Carrier (APC)
		Transport
		Civilian vehicle
		Engineers
		Self-Propelled Gun (SPG)
		Multiple Launch Rocket System (MLRS)
		MLRS Medium
		MLRS Heavy
		Anti-tank Guided Missile (ATGM) tracked
		Anti-tank Guided Missile (ATGM) wheeled

		Forward Air Controller (FAC) vehicle
		Infantry
		Man-Portable Air Defense (MANPAD) SAM system
		Stinger SAM
		Anti-Aircraft Artillery (AAA)
		Self-propelled AAA
		Radar-guided AAA
		Wheeled AAA
		Tracked AAA
		SAM short range, wheeled
		SAM short range, tracked
		SAM short range, wheeled, radar-guided
		SAM short range, tracked, radar-guided
		SAM medium range, tracked
		SAM medium range, wheeled
		SAM medium range, tracked, radar-guided
		SAM long range, tracked, radar-guided
		SAM long range, wheeled
		Avenger SAM system
		M6 Linebacker SAM system
		Chaparral SAM system

		M-163 Vulcan AAA system
		Mobile radar
		Radio-navigation beacon
		Stationary radar
		Air controller
		Air defense direction center
		Battle command center
		Forward Air Controller (FAC)
		Command center
		Bunker
		Checkpoint
		Storage
		Fuel depot
		Structure (building)

To shift the entire group's position on the map, click and drag the group's lead unit to the desired location. To adjust the position of other units within the group, click and drag the desired unit relative to the leader's position.

Below the Modal buttons are the Route controls. From top to bottom:

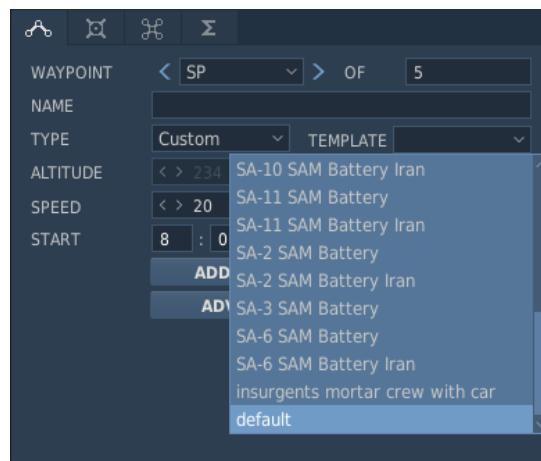


WAYPOINT. The WAYPOINT fields allow you to cycle between waypoints you have created. The left field displays the currently selected waypoint and you can cycle it by pressing the left and right arrow buttons. The field on the right displays the total number of waypoints in the route. The circle and waypoint number of the selected waypoint is colored yellow on the map.

NAME. For each waypoint you can assign a unique name. Enter the name of the waypoint in this field and this name will then appear next to the waypoint on the map.

TYPE. Each waypoint can be assigned a type of action that the group will perform when it reaches the waypoint. These include:

- **Offroad.** The vehicle group will drive to the next waypoint one in front of the other in a line.
- **On road.** When set to On Road, the waypoint will snap to the nearest road. When the next waypoint is also set to On Road, the editor will automatically plot a path along the road network between the two points. When placing an On Road waypoint, avoid doing so at a road intersection. If placing multiple groups on the same road, try to keep them at least 500 meters apart to avoid route conflicts.
- **Line Abreast.** The group vehicles will assume a line abreast formation.
- **Cone.** The group vehicles will assume a cone formation.
- **Vee.** The group vehicles will assume a vee formation.
- **Diamond.** The group vehicles will assume a diamond formation.
- **Echelon Left.** The group vehicles will assume an echelon left formation.
- **Echelon Right.** The group vehicles will assume an echelon right formation.
- **Custom.** Select a custom formation for the group using the template drop-down menu. Group templates can be created using the Templates Menu of the mission editor.



ALTITUDE. Not adjustable for vehicle groups. This field will indicate the altitude of the waypoint.

SPEED. The speed setting sets the speed in kilometers per hour (km/h) that the vehicle will drive to reach its next waypoint. To set this, you can either use the left and right arrow buttons or type it into the field.

GS (GROUND SPEED LOCK CHECKBOX). Selects between manual and automatic entry of the desired speed for the waypoint. Not applicable to a starting waypoint.

If the speed is locked, the group will attempt to maintain the desired speed on the route leg from the preceding waypoint to the current one.

START/ETA. (Estimated Time of Arrival). Indicates the desired arrival time for the waypoint (or group start time in the case of the initial waypoint). This is set by the user if the ETA is locked or calculated automatically by the Mission Editor if the ETA is unlocked.

Fix Time (ETA LOCK CHECKBOX). Selects between manual and automatic entry of the desired ETA for the waypoint. The ETA is locked for the initial waypoint (group start time) by default.

When locked, the ETA field can be used to set a delayed group activation in the mission by setting an ETA for the initial waypoint at a time past the mission starting time. For example, if the mission is set to start at 12:00:00/1 and the user wishes to have the group appear in the mission 15 minutes after the mission starts, he can lock the ETA for waypoint-1 at 12:15:00/1. Furthermore, if the user wishes for the group to appear in the mission based on a triggered event of unknown time, he can set the ETA for the starting time past any likely mission time, such as 100 days later (12:00:00/100). In such a scenario, the group will not appear until triggered by the scripted event or the starting ETA is reached.

If the ETA for the waypoint results in calculated speeds that are too slow or too fast for the aircraft type, the font will become red to indicate an invalid entry and a corresponding error message will appear when the user attempts to close the properties panel or save the mission. [See above for more information.](#)

Waypoint Mode Buttons

These three buttons allow you to add, edit and delete route waypoints.



- **ADD** – In ADD mode, each press of the left mouse button over the map adds a new waypoint. This mode is selected on by default when a Group Properties panel is open.
- **EDIT** – In EDIT mode, existing waypoints can be selected on the map for editing in the waypoint properties panel.
- **DEL** – Pressing this button deletes the selected waypoint.

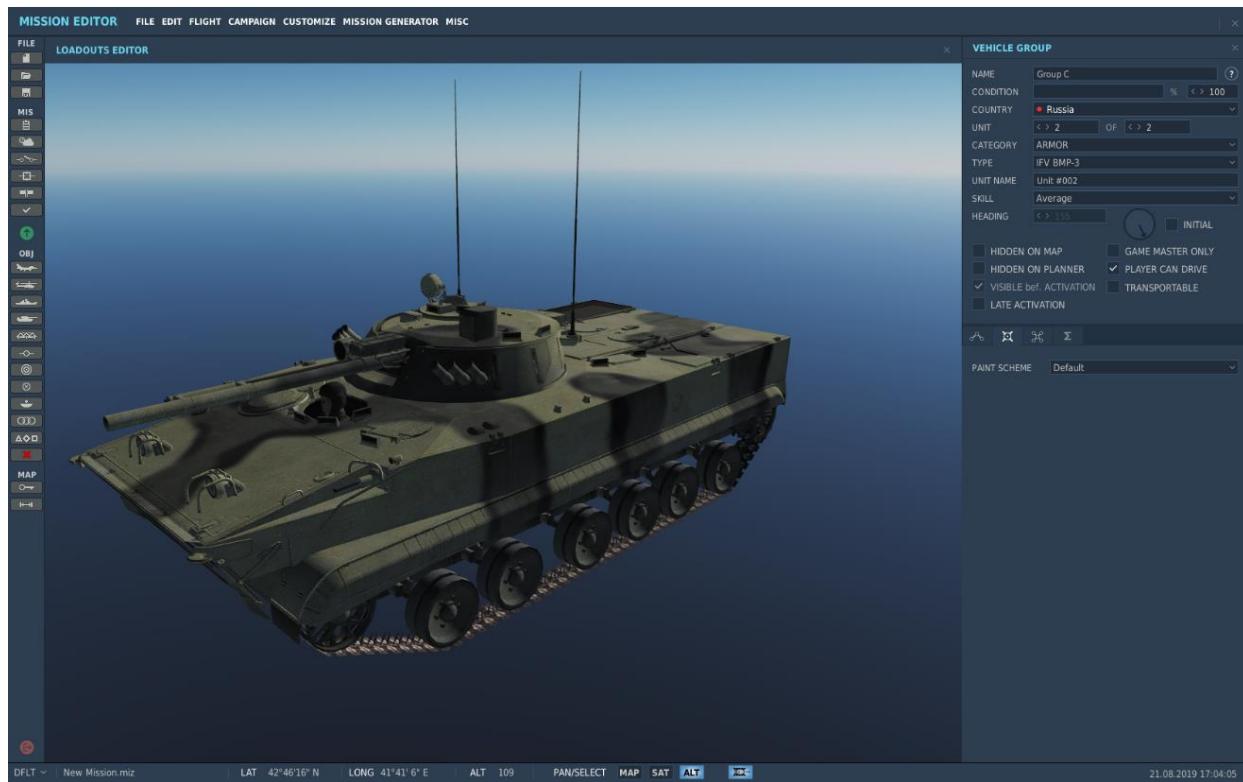
When planning engagements, consider some of the following: vehicle weapon fire is less accurate when on the move. Each vehicle has separate armor values depending on facing (front, sides, rear and top). As such, you generally want to keep units facing towards the enemy where their armor is the thickest. You may also want to have as many barrels pointing at the enemy as

possible, so formations like Line Abreast or Echelon Left/Right may be most effective. It's also helpful to do a careful study of the terrain when planning the mission. Consider the line of sight between friendly and enemy units to make sure vehicles can be detected (or not) in accordance with your plans.

Ammo Mode



The LOADOUTS EDITOR panel is opened by pressing on the button labelled AMMO and allows the user to select the color scheme of the chosen unit.



Triggered Actions Mode



The Triggered Actions button opens the Triggered Actions Panel. This panel can be used to add or edit group actions analogous to the Advanced Actions Panel, but activated based on trigger rules as scripted in the Triggers Menu using the AI TASK trigger action.

Route Summary Mode

Σ

When in Summary mode, you are provided basic mission data in the lower half of the window. This data includes:

START TIME	6:50:0/1
ROUTE TIME	0:37:4/1
ROUTE LENGTH	12 km
AVERAGE SPEED	20 kmh

START TIME. The mission start time for the group in Hour:Minute:Second/Day.

ROUTE TIME. Calculated travel time while maintaining a given speed. This is indicated in Hour:Minute:Second/Day format.

ROUTE LENGTH. Total distance of the route in kilometers.

AVERAGE SPEED. Average speed while travelling the given route.

Notes regarding airbase and FARP ground vehicle support equipment

At Forward Arming and Refueling Points (FARP)s, ground equipment resources are tracked to determine the level of support that can be provided to the player. This can include ground power, radio communications, fuel, and weapons for both AI helicopters and the player. For more details on contacting ground crew, see the Radio Communications section in the Flight Manual.

The ground equipment units must be placed within a 150 meters radius from the center of the FARP. The units required vary between eastern and western forces:

Table of objects/units at the airfield/FARP

Service	Required units (red coalition)	Required units (blue coalition)	Conditions
Airfield, ATC	Tower	Tower	Not destroyed
Airfield, ground crew, rearming, refueling, ground power, aircraft repair	Not required	Not required	Repair occurs automatically three minutes after the rotors (supporting propellers) are stopped
FARP, ATC	CP SKP-11 ATC, FARP Command Post	APC M1025 HMMWV, FARP Command Post	Within 150 meters from the FARP center
FARP, ground crew, rearming	GAZ-3308, GAZ-66, KAMAZ-43101, KrAZ-6322, Ural-375 KUNG, Ural-375, Ural-4320-09-31, Ural-4320T, FARP Ammo Storage	M818, FARP Ammo Storage	Within 150 meters from the FARP center
FARP, ground crew, refueling	ATMZ-5, ATZ-10, FARP Fuel Depot	Tanker M978 HEMTT, FARP Fuel Depot	Within 150 meters from the FARP center
FARP, ground crew, ground power	GPU APA-5D, GPU APA-80	M818	Within 150 meters from the FARP center

FARP, night lighting system	CP SKP-11 ATC	APC M1025 HMMWV	Within 150 meters from the FARP center
FARP, repair	UAZ-469, Ural-4320-09-31, Ural-4320T, ZIL-131 KUNG, KAMAZ-43101, FARP Tent	M818, FARP Tent	Within 150 meters from the FARP center. Repairs take three minutes after rotors (supporting propellers) are stopped

The vehicles must be within a radius of 150 meters from the center of the FARP to provide appropriate service.

For example, if you want to provide on FARP radio communication with the CP (command post) and electrical power, you must supply at least two vehicles – CP SKP-11 ATC and one of the APAs for the red side or the M1025 HMMWV and M818 for the blue side.

If any of the above units are absent or destroyed, the assigned resource will be unavailable. In case a FARP is attacked and all units are destroyed, you may wish to set up a trigger to move new units within 150 meters of the destroyed base to provide support functions.

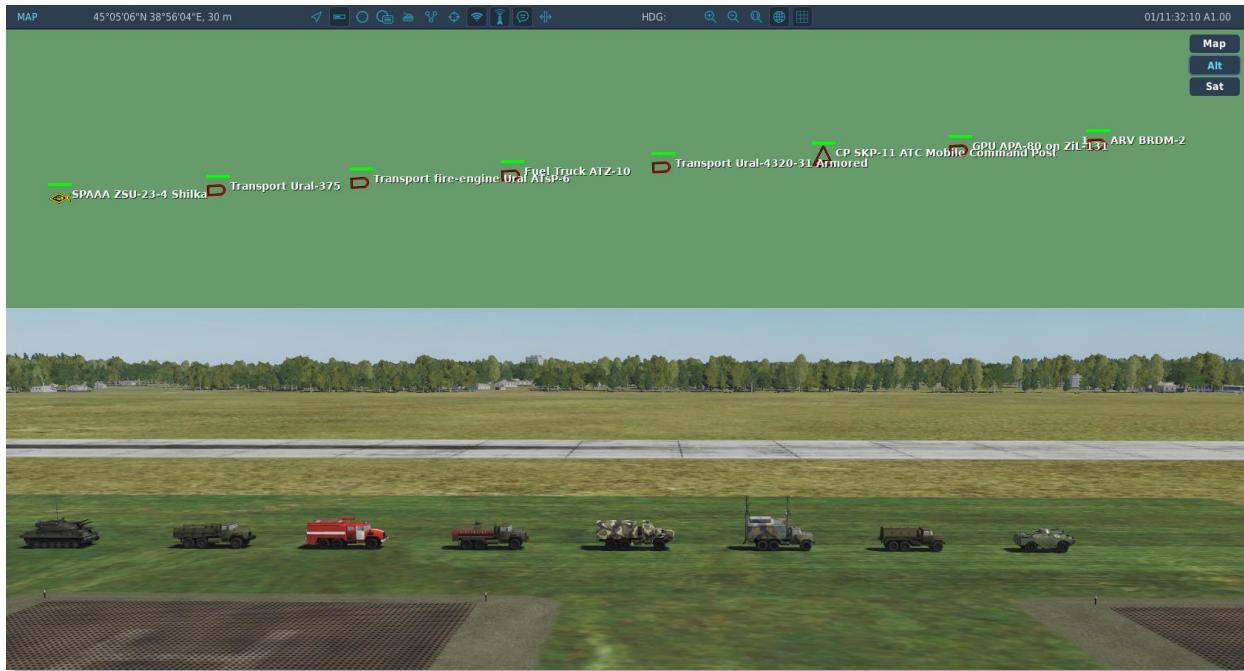
Service vehicles shall be located within a radius of 150 meters from the center of the FARP. The size of the FARP shall be approximately 200x200 meters.

The rearm, refuel, and electric power at the airfields do not depend on vehicles. Again though, the radio communications to request these depend on the tower (the tower must not be destroyed). If the tower is destroyed, the communications can be restored with either the SKP-11 for the red side or the HMMWV M1025 for the blue side. To prepare for such an event, you can set the mission up so that if the tower is destroyed a mobile command vehicle will be dispatched to the airbase.

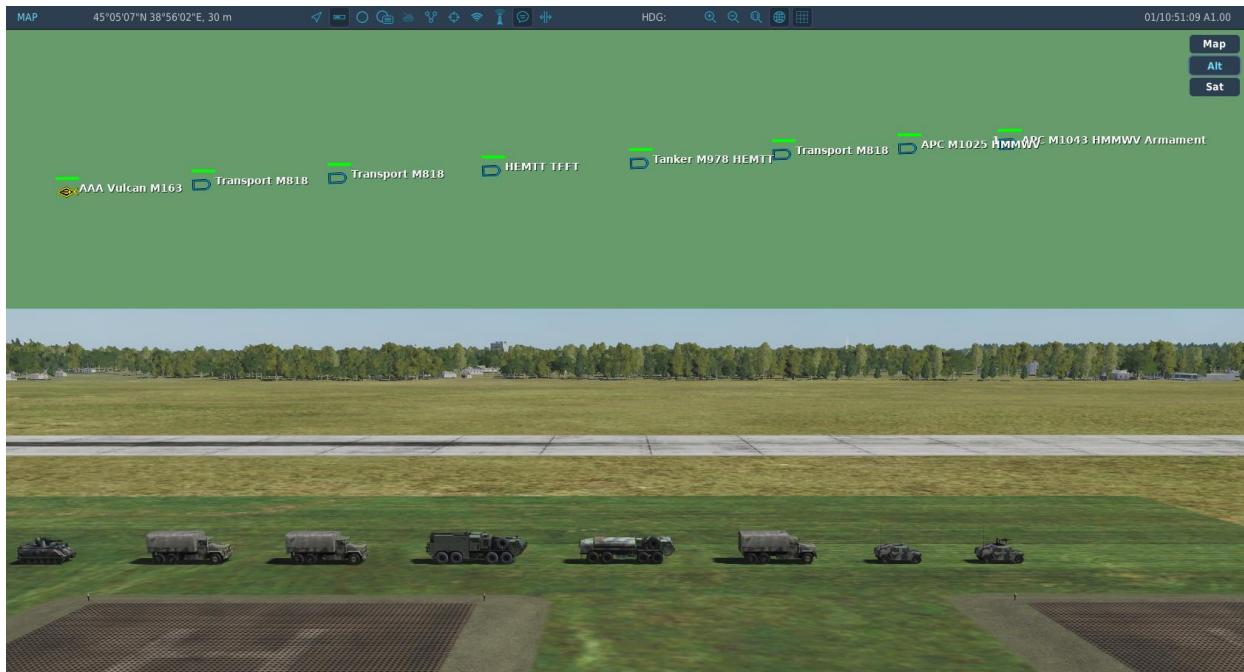
Repair of the player's helicopter is carried out in the airfield or FARP within 3 minutes after the rotors (supporting propellers) stop.

Below is one of the many possible options for symmetrical service convoys for the red and blue coalitions for the FARP. The units in the columns perform all the functions as shown in the table above, plus column security is added.

Service Column (Red Coalition):



Service column (blue coalition):



Ammo supply for ground units

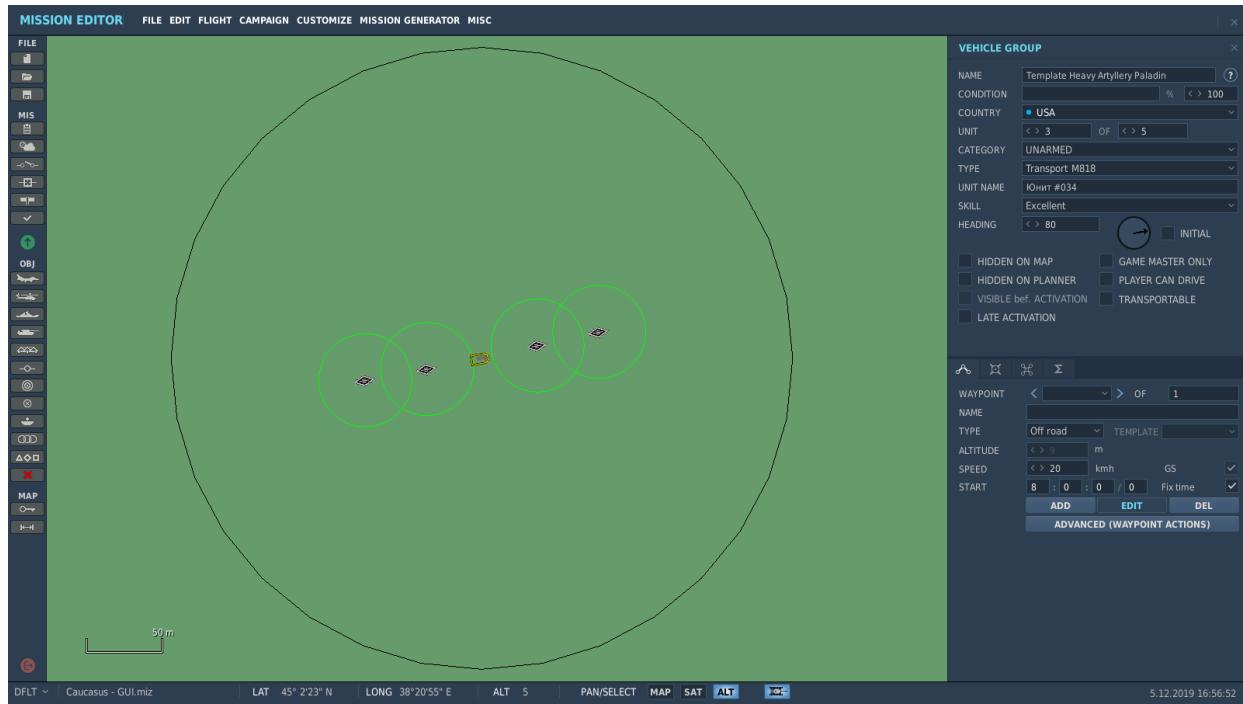
Upon exhausting all their ammunition, ground units, such as air defense systems, missile defense systems, self-propelled guns, infantry fighting vehicles and tanks, may all have their ammunition stores be replenished using supply vehicles. Supply vehicles are counted as unlimited warehouses. They can be included in the composition of both a static group of units (SAM positions) and mobile unit groups (self-propelled gun convoy or armored vehicles). A group can have several supply vehicles, and if a coalition of a group has different types of these machines, then the creator of the mission can diversify the composition of the group for added realism. One supply vehicle replenishes the ammunition of all units located within a radius of 200 meters from it. If the unit is outside this 200 meter radius, its ammunition will not be replenished. The creator of the mission in the editor should take this into account when forming diverse positions of air defense groups and convoys of armored vehicles, especially if they are large in length and do not fit into a radius of 200 meters. Ammunition replenishment time depends on the type of unit.

Supply vehicles for ground forces

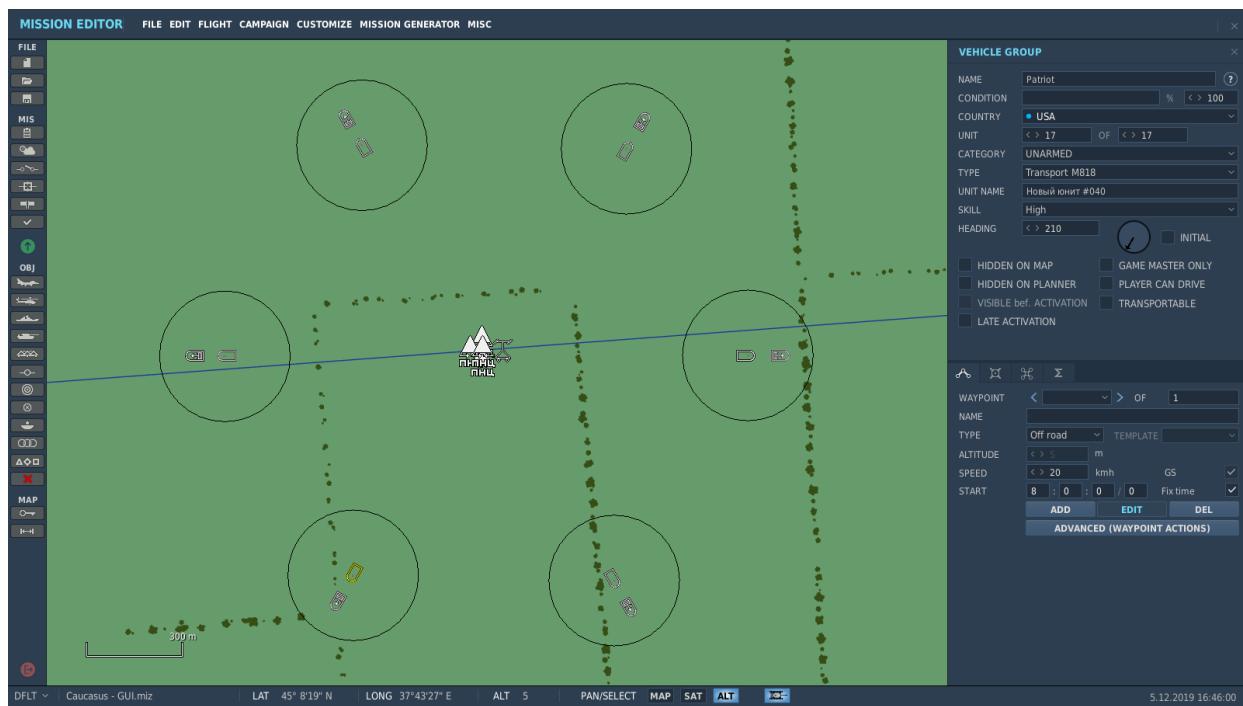
Supply vehicle (warehouse)	Country	The ammo supply condition
GAZ-3308	Russia	Within a radius of 200 meters of the supply vehicle
GAZ-66	Russia	Within a radius of 200 meters of the supply vehicle
KAMAZ-43101	Russia	Within a radius of 200 meters of the supply vehicle
KrAZ-6322	Ukraine	Within a radius of 200 meters of the supply vehicle
M818	USA	Within a radius of 200 meters of the supply vehicle
Ural-375 KUNG	Russia	Within a radius of 200 meters of the supply vehicle
Ural-375	Russia	Within a radius of 200 meters of the supply vehicle
Ural-4320-09-31	Russia	Within a radius of 200 meters of the supply vehicle
Ural-4320T	Russia	Within a radius of 200 meters of the supply vehicle

The following are examples of the location of the supply vehicle in mobile vehicle formations and fixed unit groups (examples are not a limitation on the mission creator's intent):

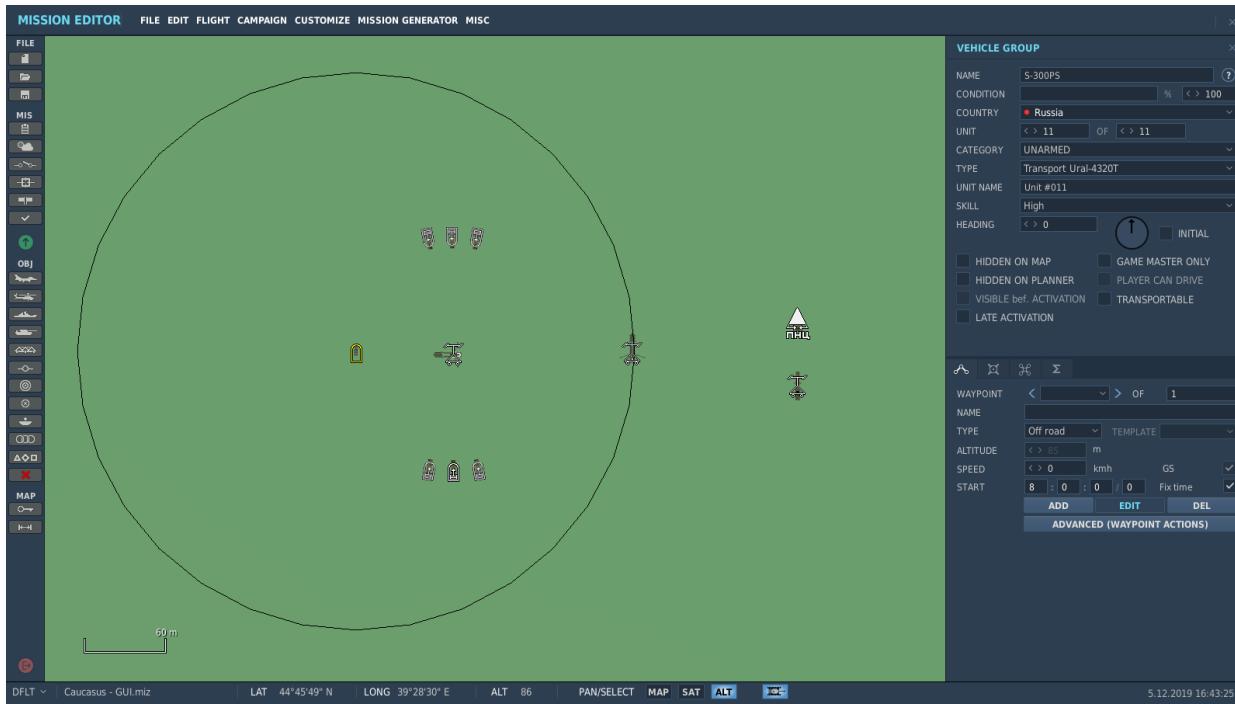
Example 1. Supply vehicle in a column of self-propelled guns (one for 4 self-propelled guns).



Example 2. Supply vehicle at a Patriot SAM site (one for each launcher).



Example 3. Supply vehicle at a S-300PS SAM site (one for all launchers).



Replenishment time consists of the time required to move the launchers or ammunition to a given unit, replace them (replenish them), and connect them, such as on the chassis of Patriot, S-300PS, Buk, Hawk SAMs and other units according to their type of weapon.

Supply ammo for SAM

SAM	Armament	Supply ammo time from a supply vehicle (warehouse), sec.
SA-19 Tunguska 2S6M	Cannons 2x30MM	2400
	Missiles	960
SA-6 Kub LN 2P25	Missiles	1800
SA-3 S-125 LN 5P73	Missiles	600
SA-10 S-300PS LN 5P85C(D)	Missiles	7200
SA-8 Osa 9A33	Missiles	1800
SA-9 Strela-1 9P31	Missiles	1200

SA-13 Strela-10M3 9A35M3	Missiles	960
SA-11 Buk LN 9A310M1	Missiles	780
SA-15 Tor 9A331	Missiles	1080
Patriot LN M901	Missiles	3600
SPAAA Gepard-1A2	Cannons 2x35MM	1800
Hawk LN M192	Missiles	420
SA-18 Igla MANPADS	Missiles	120
Linebacker M6	Missiles	200
	Cannon 25MM	880
Chaparral M48	Missiles	360
Vulkan M163	Cannon 20MM	1200
Avenger M1097	Missiles	400
Roland ADS	Missiles	300
Stinger MANPADS	Missiles	120
SPAAA ZSU-23-4 Shilka	Cannons 4x23MM	20
ZU-23 Emplacement	Cannons 2x23MM	60
ZU-23 Closed	Cannons 2x23MM	60
ZU-23 on Ural-375	Cannons 2x23MM	60

Supply ammo for MLRS

MLRS	Armament	Supply ammo time from a supply vehicle (warehouse), sec.
9K51 Grad BM-21	Solid propellant rockets 40x122MM	420
9K57 Uragan BM-27	Solid propellant rockets 16x220MM	840
9A52 Smerch	Solid propellant rockets 12x300MM	2160
M270 MLRS	Solid propellant rockets 12x227MM	560

Supply ammo for Howitzers

Howitzers	Armament	Supply ammo time from a supply vehicle (warehouse), sec.
2B11 Mortar	Mortar tube 120MM	30
2S1 Gvozdika	Gun 122MM	940
2S3 Akatsia	Gun 152MM	1186
2S9 Nona-S	Gun 120MM	500
2S19 Msta-S	Gun 152MM	1080
	Machine gun 12,7MM	110
M109 Paladin	Gun 155MM	936
SpGH vz.77 Dana	Gun 152MM	1488

Supply ammo for IFV/APC

IFV/APC	Armament	Supply ammo time from a supply vehicle (warehouse), sec.
AAV7	Grenade launcher 40MM	210
	Machine gun 12,7MM	90
BMD-1	Gun 73MM	600
	ATGM "Malutka"	80
	Machine guns 3x7,62MM	60
BMP-1	Gun 73MM	600
	ATGM "Malutka"	80
	Machine gun 7,62MM	60
BMP-2	Cannon 30MM	1800
	ATGM "Konkurs"	120
	Machine gun 7,62MM	600
BMP-3	Cannon 30MM	1800
	Gun 100MM	710
	ATGM "Kastet"	120
	Machine guns 3x7,62MM	600
MT-LB	Machine gun 7,62MM	150
BRDM-2	Machine gun 14,5MM	230

	Machine gun 7,62MM	140
BTR-80	Machine gun 14,5MM	230
	Machine gun 7,62MM	140
BTR-RD	ATGM "Konkurs"	125
	Machine guns 2x7,62MM	60
Cobra	Machine gun 12,7MM	100
LAV-25	Cannon 25MM	1200
	Machine guns 2x7,62MM	480
M2A2 Bradley	Cannon 25MM	240
	ATGM "TOW"	140
	Machine gun 7,62MM	480
M113	Machine gun 12,7MM	75
M1043 HMMWV	Machine gun 12,7MM	75
M1045 HMMWV	ATGM "TOW"	180
M1126 Stryker ICV	Machine gun 12,7MM	125
M1134 Stryker ATGM	ATGM "TOW"	280
	Machine gun 7,62MM	-
Marder	Cannon 20MM	2000

	Machine gun 7,62MM	400
MCV-80 Warrior	Cannon 20MM	380
	Machine gun 7,62MM	75
TPz 1 Fuchs	Machine gun 7,62MM	120
ZBD-04A	Cannon 30MM	1800
	Gun 100MM	710
	ATGM "Kastet"	120
	Machine gun 7,62MM	600

Supply ammo for Tanks

Tank	Armament	Supply ammo time from a supply vehicle (warehouse), sec.
Challenger 2	Gun 120MM	450(AP), 440(HE)
	Machine gun 7,62MM	-
Leclerc	Gun 120MM	530(AP), 230(HE)
	Machine gun 7,62MM	-
Leopard 1A3	Gun 105MM	515(AP), 290(HE)
	Machine gun 7,62MM	40
Leopard 2A5	Gun 120MM	400(AP), 275(HE)
	Machine gun 7,62MM	126

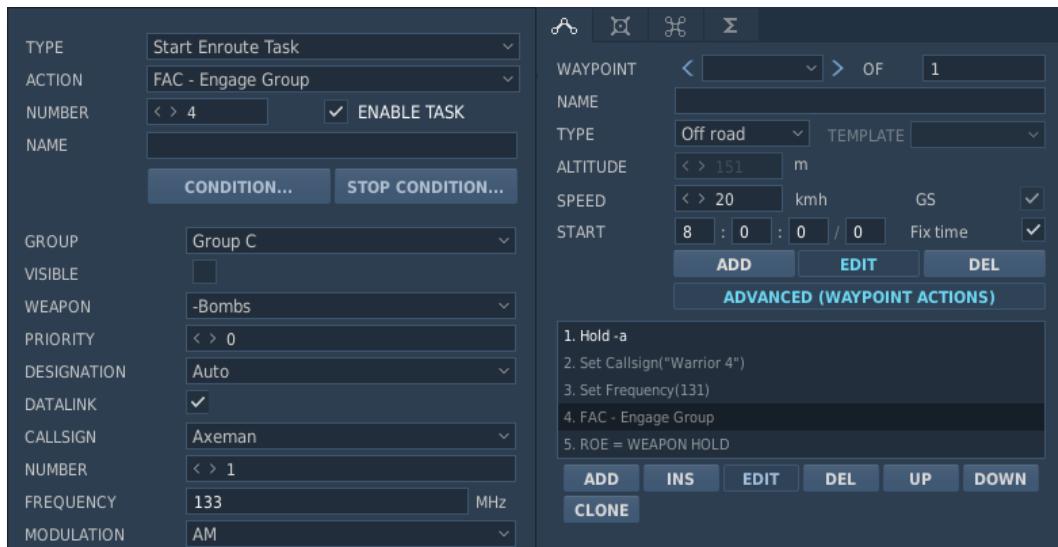
M1A2 Abrams	Gun 120MM	400(AP), 260(HE)
	Machine gun 12,7MM	90
	Machine gun 7,62MM	580
M1128 Stryker MGS	Gun 105MM	260(AP), 140(HE)
	Machine gun 12,7MM	95
	Machine gun 7,62MM	500
Merkava Mk.4	Gun 120MM	465(AP), 300(HE)
	Machine gun 2x7,62MM	545
T-55	Gun 100MM	495(AP), 184(HE)
	Machine gun 12,7MM	110
	Machine gun 7,62MM	-
T-72B	Gun 125MM	416(AP), 308(HE)
	ATGM "Refleks"	130
	Machine gun 12,7MM	110
	Machine gun 7,62MM	-
T-80U	Gun 125MM	406(AP), 316(HE)
	ATGM "Refleks"	120
	Machine gun 12,7MM	150

	Machine gun 7,62MM	-
T-90A	Gun 125MM	408(AP), 310(HE)
	ATGM "Refleks"	130
	Machine gun 12,7MM	50
	Machine gun 7,62MM	-

Advanced Actions Mode (ground groups)

ADVANCED (WAYPOINT ACTIONS)

Pressing the Advanced tab open the Advanced Actions Panel, which lists the actions associated with the selected waypoint:



This panel is used to set (add/edit/delete) group actions ([Perform Task](#), [Start Enroute Task](#), [Perform Command](#), [Set Option](#)), which are tasked to the AI at this waypoint by the user or generated automatically by the Mission Editor.

Panel Interface Controls

The following buttons are located at the bottom of the Advanced Actions Mode:

- **ADD** – Adds a new action to the list. When pressed, a default No Task action is created, which can be edited in the Action Settings pop-up panel to the left.
- **INS** – Inserts a new action above the currently selected one.
- **EDIT** – Opens the Action Settings pop-up panel to display and edit the settings of the action. The same functionality is duplicated when clicking on any route waypoint on the map.
- **DEL** – Deletes the selected action.
- **UP** – Moves the selected action up the list.
- **DOWN** – Moves the selected action down the list.
- **CLONE** – Clones the selected action down the list.

Action Properties Panel for Ground Groups

The Action Properties Panel for Ground Groups is analogous to the panel for [aircraft groups](#). In other words, this panel is used to set Perform Tasks, Start Enroute Tasks, Perform Commands and Set Options for the group to perform, as well as the starting and ending conditions of the actions. However, the specific types of actions available for vehicle groups differs from aircraft groups.

Perform Task

No Task

No action is assigned to the group to perform.

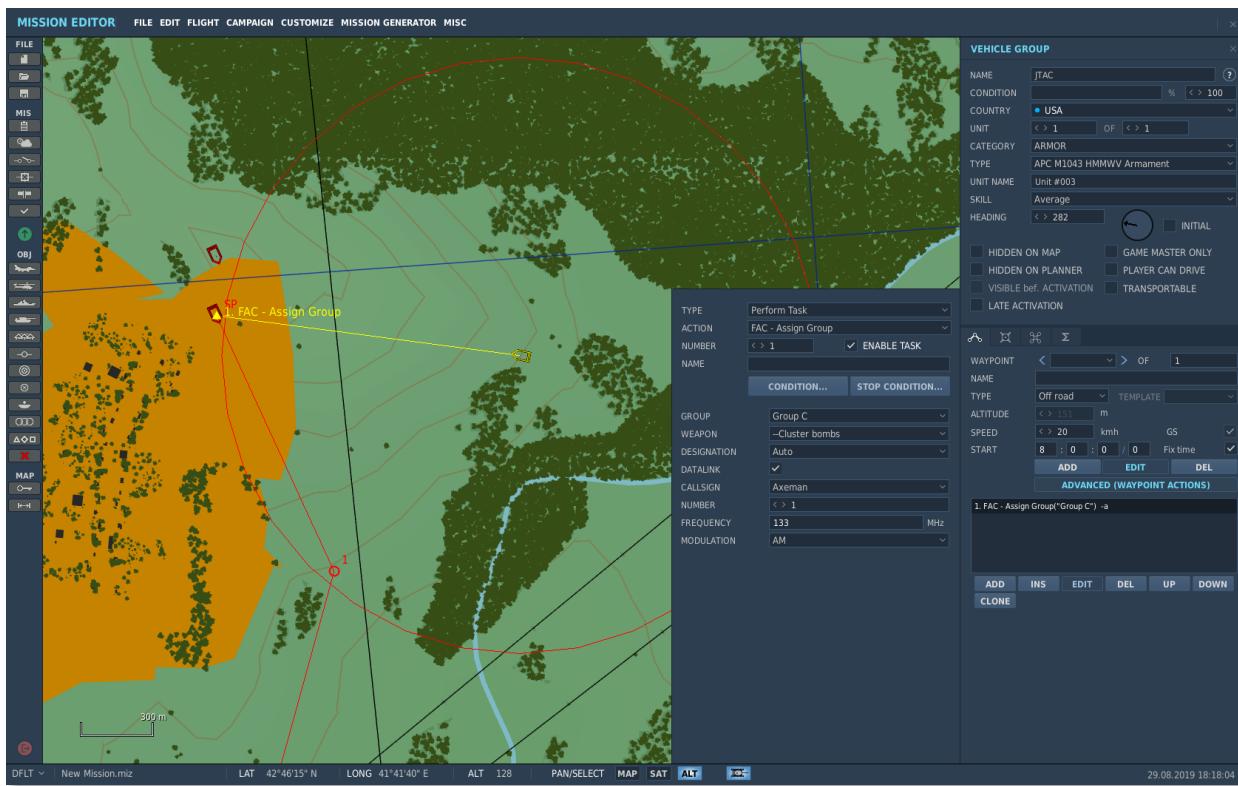
FAC – Assign Group

This task creates a Forward Air Controller (FAC) to direct friendly aircraft onto a target group designated by the mission designer. To achieve full FAC functionality, the FAC unit should be an armed vehicle with direct line of sight to the target and placed within a few kilometers range.

Targeting actions will begin when friendly units arrive in the area and establish communication with the FAC.

Note: The FAC: Assign Group Task assumes full situational awareness for the FAC. The target's location will always be known and the FAC will always attempt prosecute the attack if conditions permit.

The FAC will only provide targeting against the group designated as the target in the mission editor and will not target other groups.

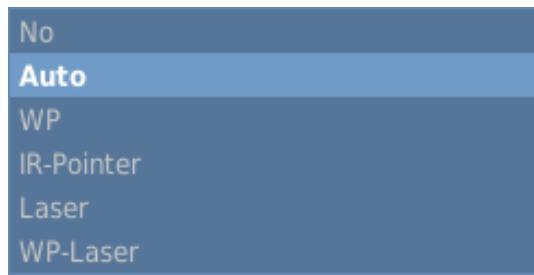


Target Panel:

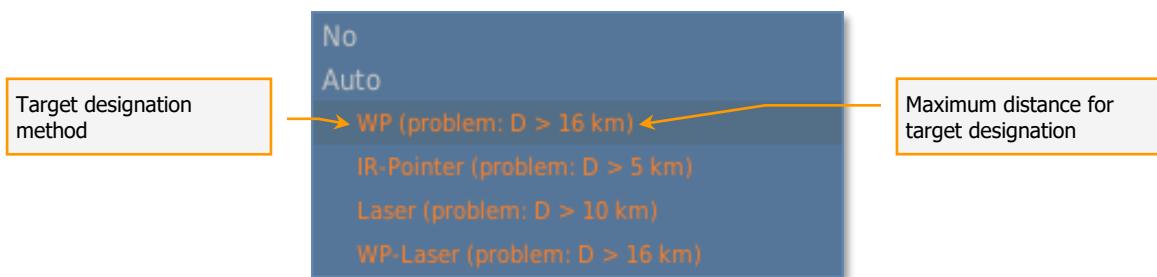
GROUP. Drop down menu to select the target group from all applicable enemy groups available in the mission.

WEAPON. Drop down menu to select the weapon types cleared to use for this action. The FAC-Assign Group Task allows you to set the [weapon](#) type(s) for the FAC to request from the attacking groups.

DESIGNATION. Selects the method of target designation (Auto, smoke marker ("Willy Pete", WP), IR-Pointer, Laser, WP-Laser). Target designation is carried out on the player's radio request at a fixed radio range.

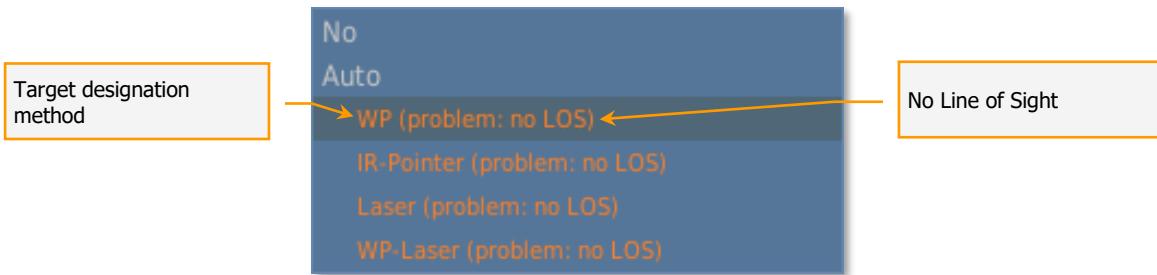


If the FAC unit is located from the enemy at a distance greater than the operational range of the target designator equipment, then the maximum ranges for each of the available equipment will be displayed in the menu.



In this case, it is necessary to adjust the distance of the FAC to the enemy such that it is within the specified maximum range.

If an enemy unit is obscured from the forward air observer's line of sight (for example, due to terrain), the message "problem: no LOS" will be displayed in brackets, signifying that target designation is currently impossible for the player.



For target designation the FAC must first maneuver until the target is in their line of sight.

DATALINK. Only ground units that have EPLRS (as shown in waypoint advanced options) can transmit target location data via datalink to suitably equipped aircraft.

CALLSIGN. Callsign of the FAC.

NUMBER. Selection field for the FAC's number.

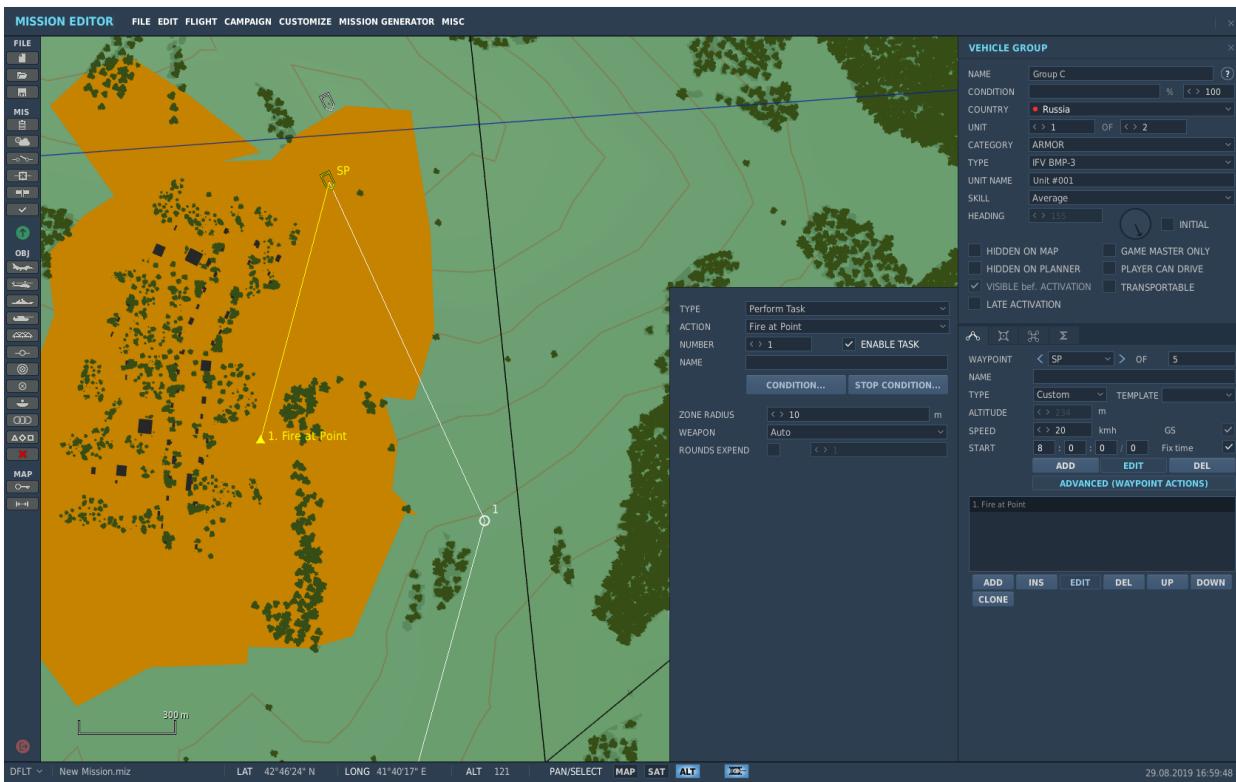
FREQUENCY. Set the FAC group's radio communications frequency in MHz.

MODULATION. Set the FAC group's radio communications AM/FM modulation.

Fire at Point

Fire against a coordinate point on the map as designated by the mission designer.

To perform this action, move the triangular marker that appears near the group when this action is selected, to a desired point on the map.



Target Panel:

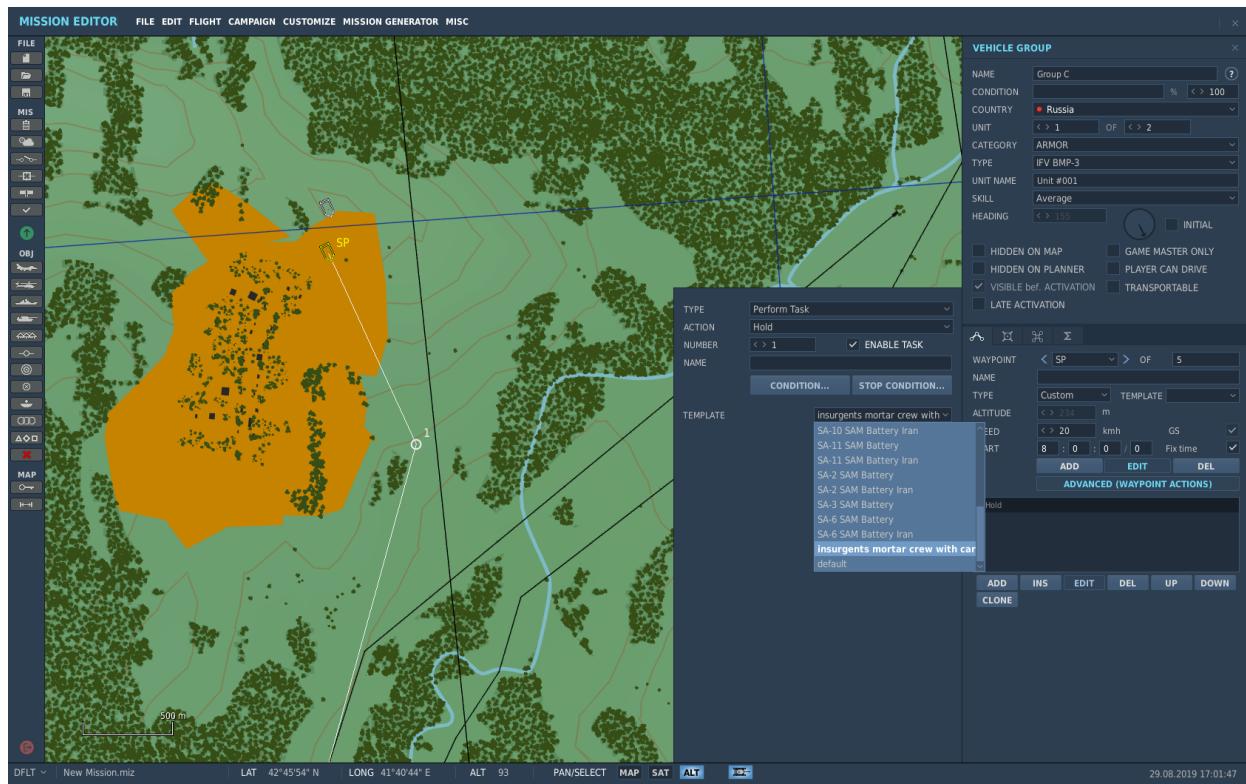
ZONE RADIUS. This parameter affects the distribution of fire: artillery systems will shell the entire area of the zone, whereas missiles will hit only the center of the zone.

WEAPON. Drop down menu to select the [weapon](#) type(s) cleared to use for this action. This menu is dependent on the type of armoured vehicles and its available types of weaponry.

ROUNDS EXPEND. Setting this flag allows you to set the amount of ammunition consumed.

Hold

Stop at the waypoint location and maintain position as long as the action is in effect.



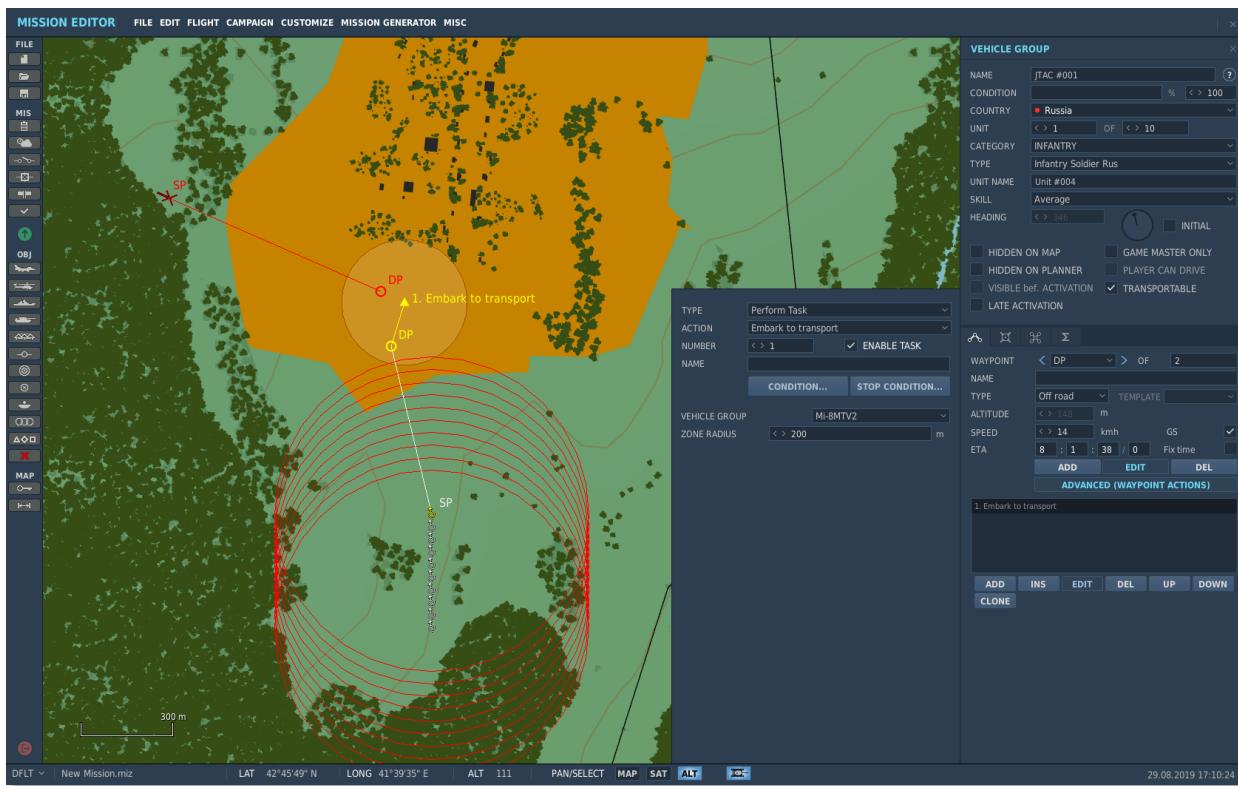
The Lower Action Properties Panel can be used to select a custom formation for the group to take while holding.

This function may be useful for various combat tasks, such as post patrols or artillery fire. For example, an artillery battery can be set to hold in a fire mission formation to conduct fire.

Embark to Transport (work in progress)

Facilitates ground unit embarkation to transport. Available for the following ground unit group categories: "INFANTRY".

Each infantry squad must have "Perform Task – Embark to transport" set, and the TRANSPORTABLE flag activated in the vehicle group panel.



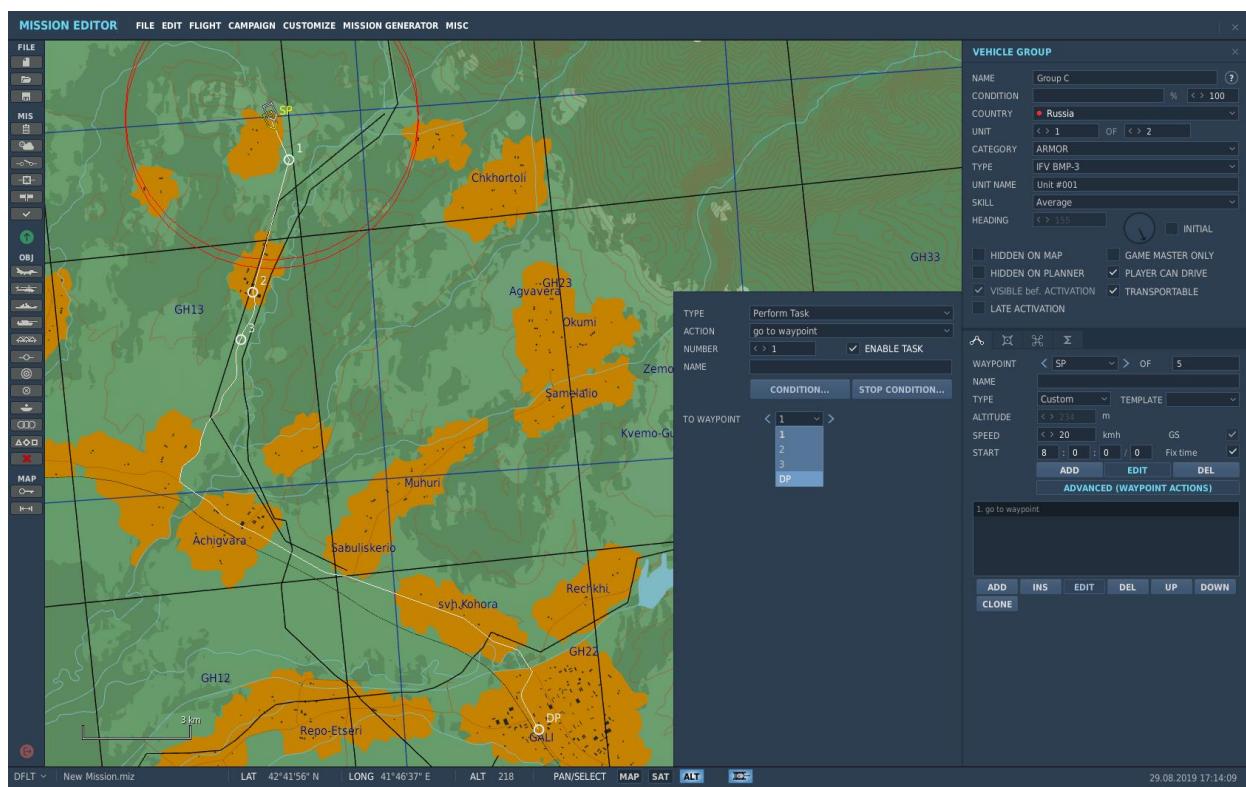
Target Panel:

VEHICLE GROUP. Selects the vehicle group for the embarkation task.

ZONE RADIUS. The radius of the embarkation area of the infantry squads, in meters.

Go to Waypoint

The group will follow the route until it reaches the specified waypoint.



Target Panel:

TO WAYPOINT. Specifies the destination waypoint.

Start Enroute Task

No Enroute Task

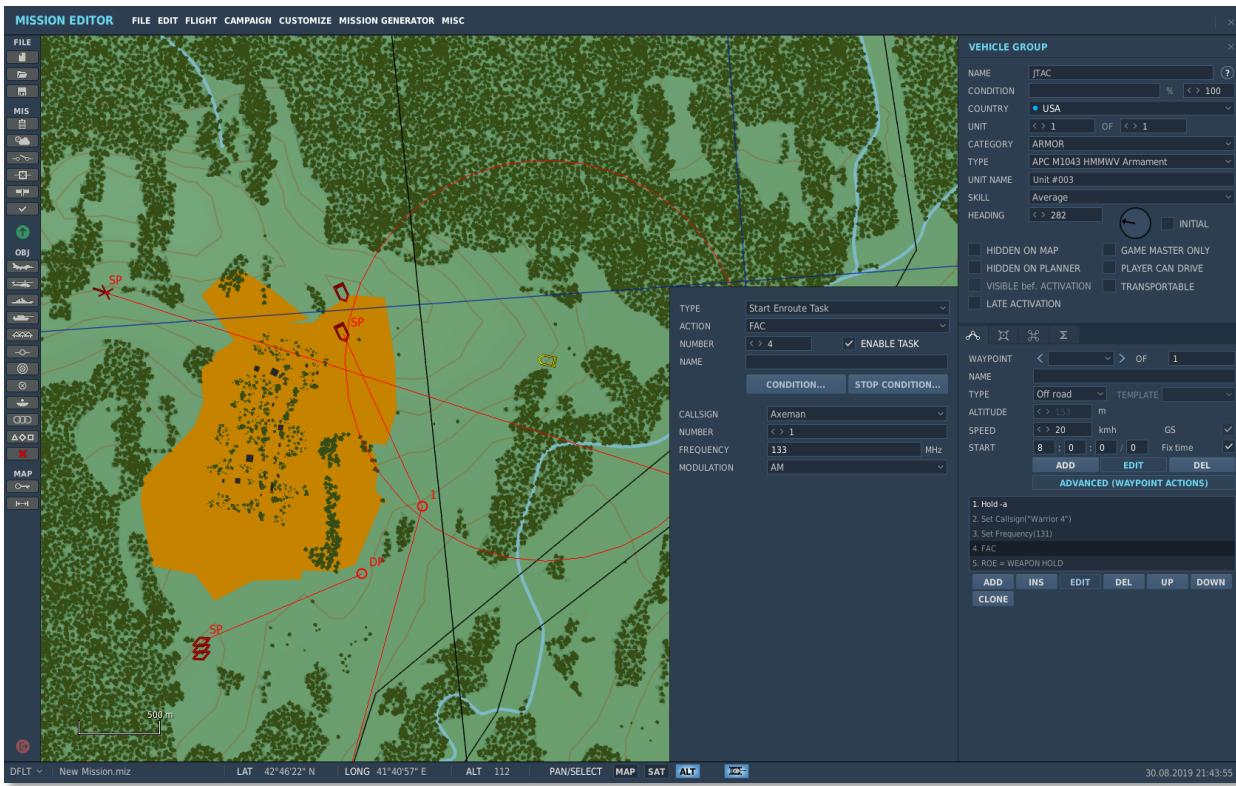
A No Enroute Task action does not set any action for the group to perform.

FAC

The group will act as a Forward Air Controller (FAC) to provide targeting orders for friendly units in the area.

Under a FAC Enroute Task, the FAC will automatically prioritize targets for the player or attacking AI groups and issue targeting orders throughout the attack phase.

Note: The FAC's target selection may not correspond to the targets intended for the player or attacking AI by the mission designer.



Target Panel:

CALLSIGN. Callsign of the FAC.

NUMBER. Selection field for the FAC's number.

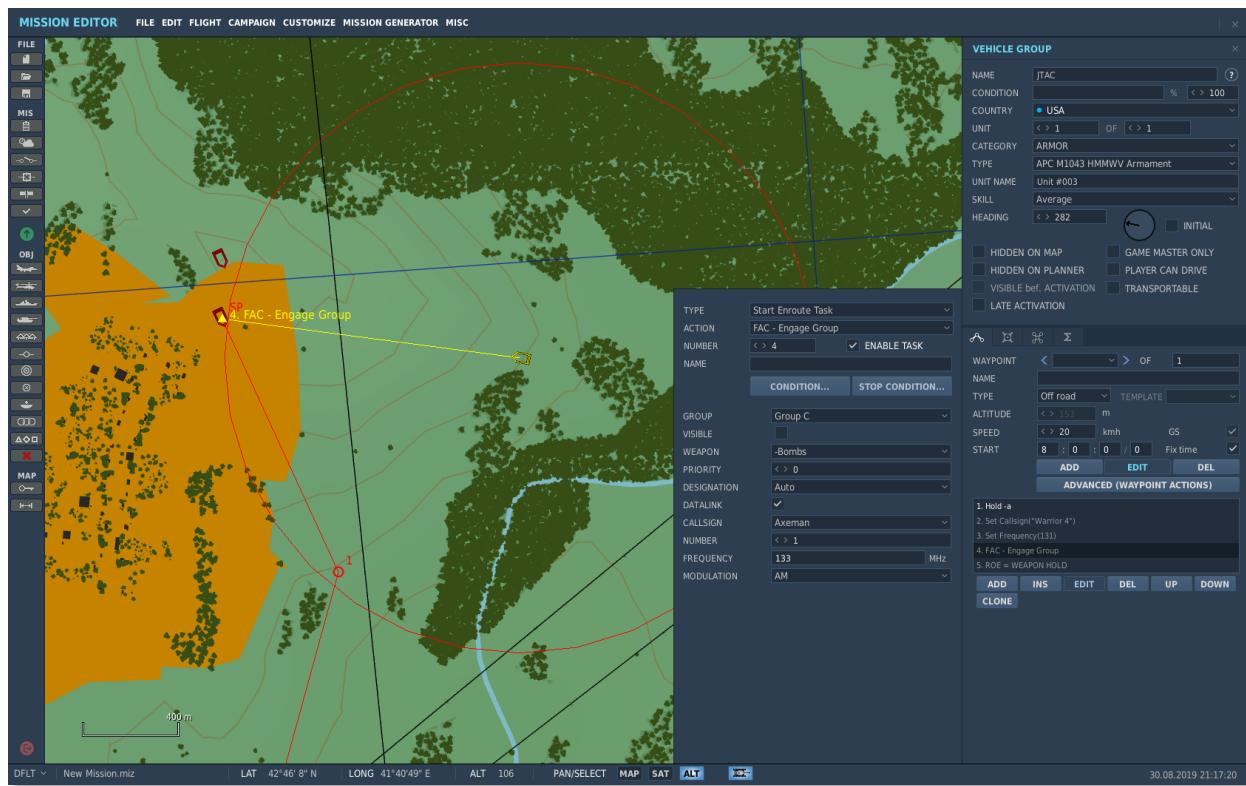
FREQUENCY. Set the FAC group's radio communications frequency in MHz.

MODULATION. Set the FAC group's radio communications AM/FM modulation.

FAC – Engage Group

Analogous to the FAC Enroute Task, except in this case a specific enemy group is selected by the mission designer for the FAC to target.

Remember, because this is an Enroute Task, the FAC will have to independently detect the target group prior to being able to issue targeting commands against it. As described above, target detection will depend on a number of dynamic variables in-game, including possible terrain obstructions or weather interference. If no group is designated by the mission designer, the FAC will not issue any targeting commands.



Target Panel:

GROUP. Drop down menu to select the target group from all applicable enemy groups available in the mission.

VISIBLE. The VISIBLE option allows the unit to know or not know the location of target position at the start of the mission.

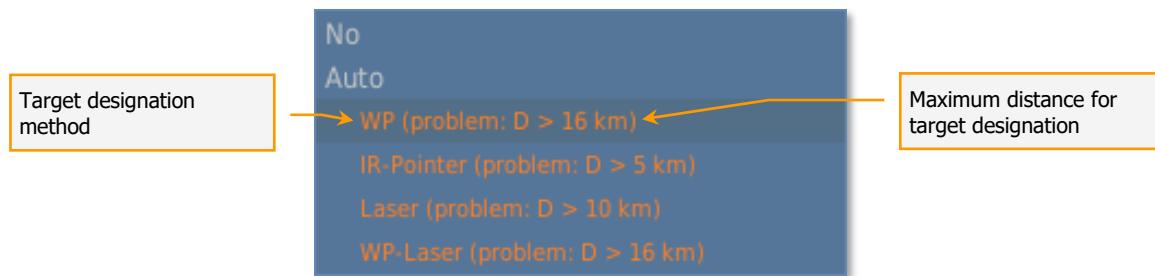
WEAPON. Drop down menu to select the weapon types cleared to use for this action. The FAC-Assign Group Task allows you to set the [weapon](#) type(s) for the FAC to request from the attacking groups.

PRIORITY. The PRIORITY number is used to set the action priority in relation to other actions of the waypoint. The priority number represents the order this action will take relative to other actions, starting with '0' as the highest priority.

DESIGNATION. Selects the method of target designation (Auto, smoke marker ("Willy Pete", WP), IR-Pointer, Laser, WP-Laser. Target designation is carried out on the player's radio request at a fixed radio range.

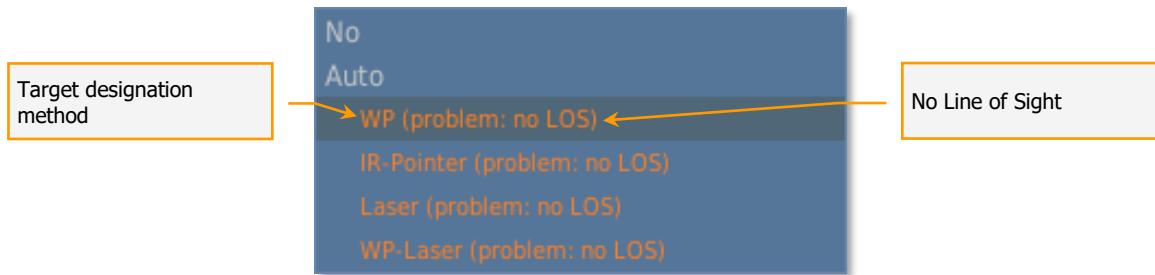


If the FAC unit is located from the enemy at a distance greater than the operational range of the target designator equipment, then the maximum ranges for each of the available equipment will be displayed in the menu.



In this case, it is necessary to adjust the distance of the FAC to the enemy such that it is within the specified maximum range.

If an enemy unit is obscured from the FAC's line of sight (for example, due to terrain), the message "problem: no LOS" will be displayed in brackets, signifying that target designation is currently impossible for the player.



For target designation the FAC must first maneuver until the target is in their line of sight.

Only armed units can designate a target with smoke and laser. (e.g. APC M1043 HMMWV Armament).

DATALINK. Only ground units that have EPLRS (as shown in waypoint advanced options) can transmit target location data via datalink to suitably equipped aircraft.

CALLSIGN. Callsign of the FAC.

NUMBER. Selection field for the FAC's number.

FREQUENCY. Set the FAC group's radio communications frequency in MHz.

MODULATION. Set the FAC group's radio communications AM/FM modulation.

Perform Command

The following commands can be set as actions upon reaching a waypoint:

No Action

No command is set.

Run Script

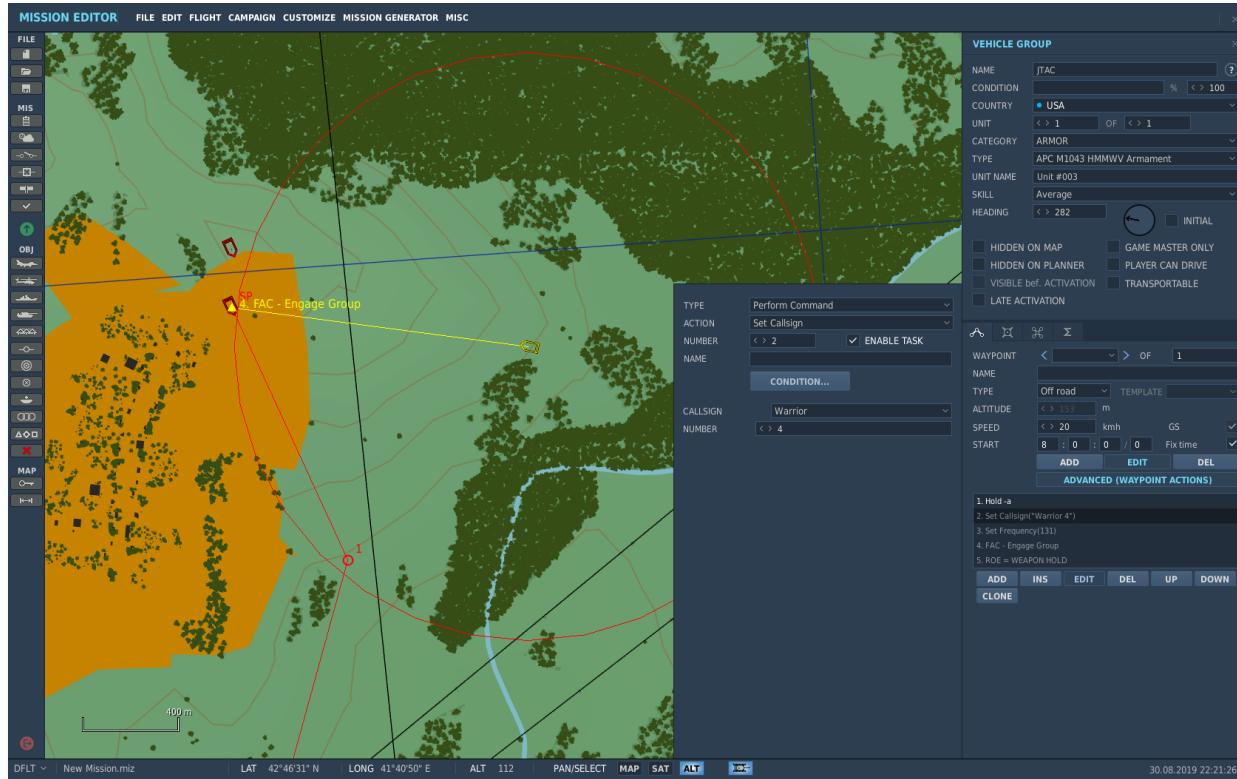
Run the Lua script entered in the scratchpad.

Script File

Selects the LUA script file.

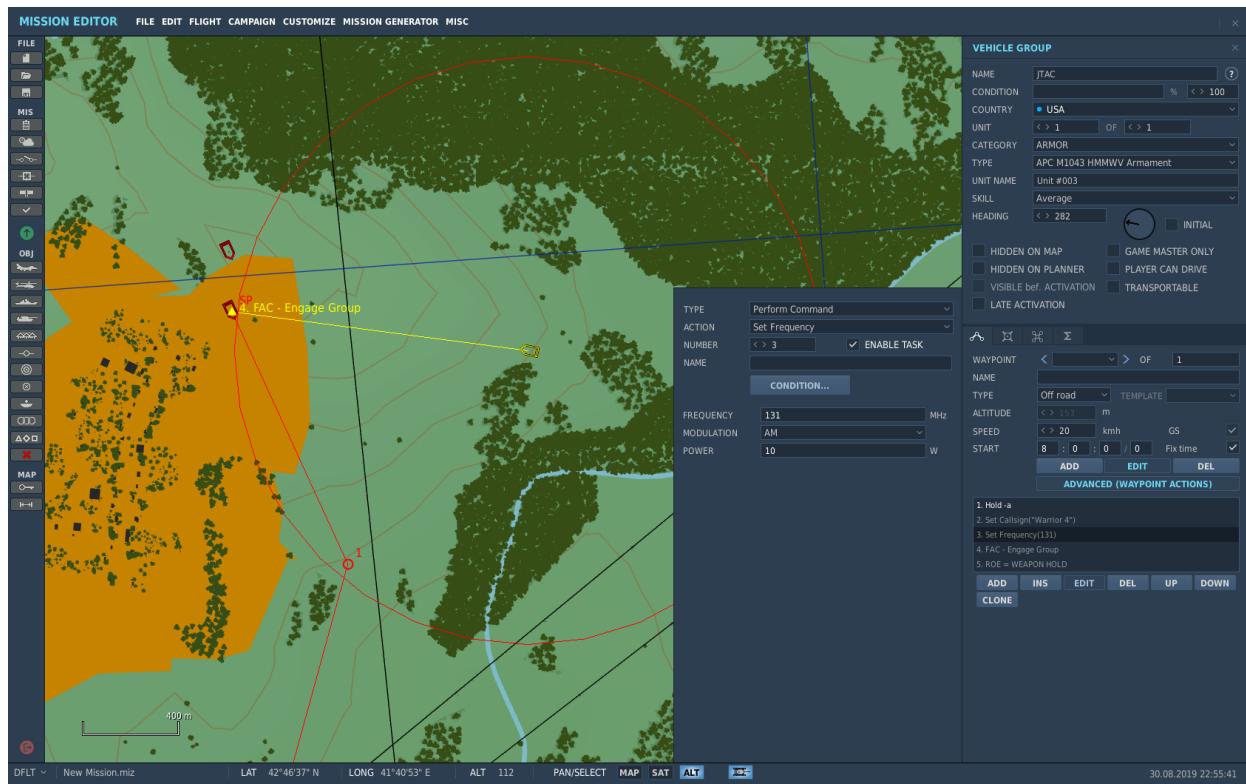
Set Callsign

Set the group's callsign. For Western units, the callsign consists of a primary designation and a numerical ID. For example, "Warrior 4".



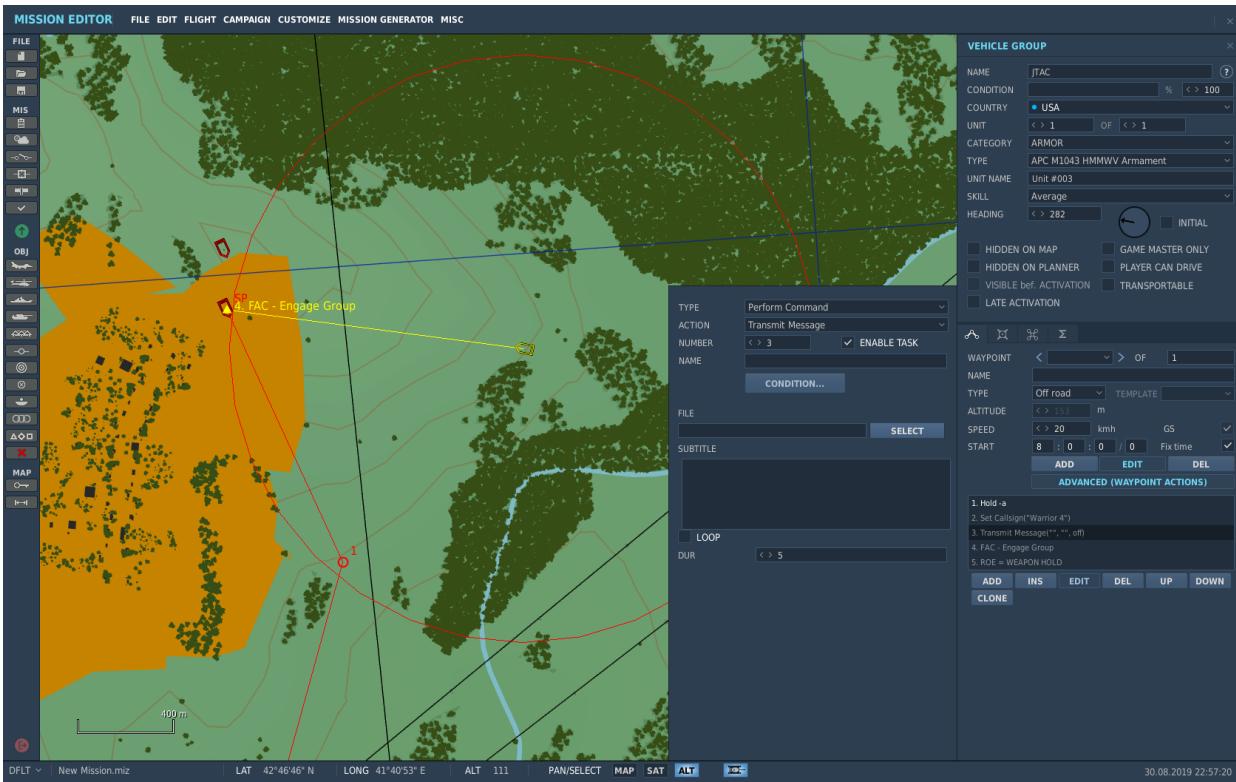
Set Frequency

Set the group's radio communications frequency in MHz and AM/FM modulation.



Transmit Message

Command to send a message from the lead group.



FILE. Selects the audio file to be played during the radio transmission (*.ogg; *.wav).

SUBTITLE. Field for inputting the text message (subtitles) to be displayed during the radio transmission.

LOOP. Settings for repeating the message.

DURATION. Duration of the message, in seconds.

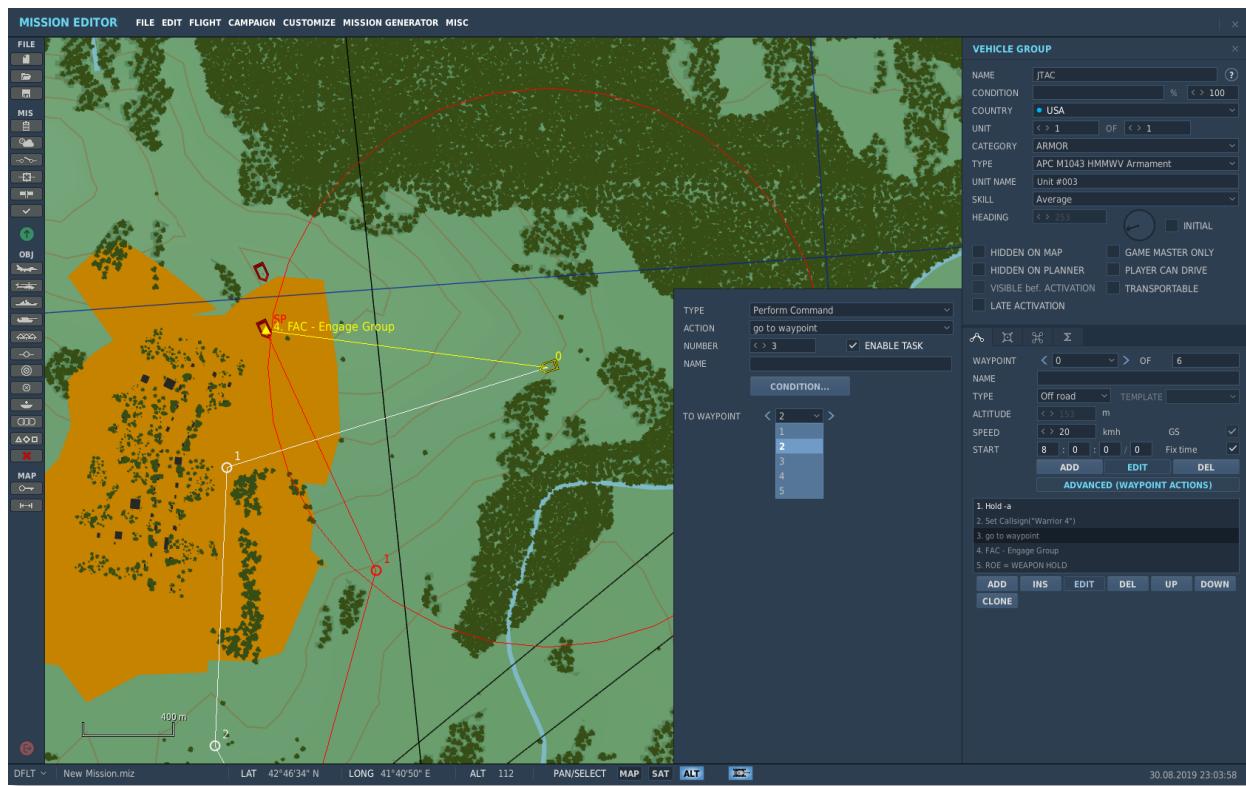
Stop Transmission

Stops the transmission from the lead group. This command has no available options.

Go to Waypoint

When the conditions for this action are in effect, the group will navigate from the current waypoint directly to the one set by this action.

For example, you can send a unit from WPT 0 immediately to WPT 2, or vice versa, from WPT 2 back to WPT 0.



By default, this is set to the next waypoint in the existing route.

All main tasks, commands, and behavior options, missed waypoints, will not be fulfilled.

This action can be used when organizing a circular route. For example, if you send a unit to WPT 0 after WPT 2, it will return along the route to WPT 2 and again go to WPT 0 while the command is active. You can limit the command with logical conditions by using CONDITION ..., for example, to set a time limit for executing the command.

Invisible

Set the group to be invisible to all enemy AI units. Enabled and disabled using the ENABLE checkbox.

This command may be useful when creating ground-based FACs in close proximity to enemy positions as a means of simulated a well camouflaged position and preventing the FAC from being destroyed.

Immortal

Set the group to be immortal. Enemy AI units will be able to detect the group, but their weapons will have no effect.

EPLRS

This command enables the usage of the EPLRS (Enhanced Position Location and Reporting System) system and the transmission of EPLRS data to units in the group. Has one option for enabling or disabling this function.

Set Option

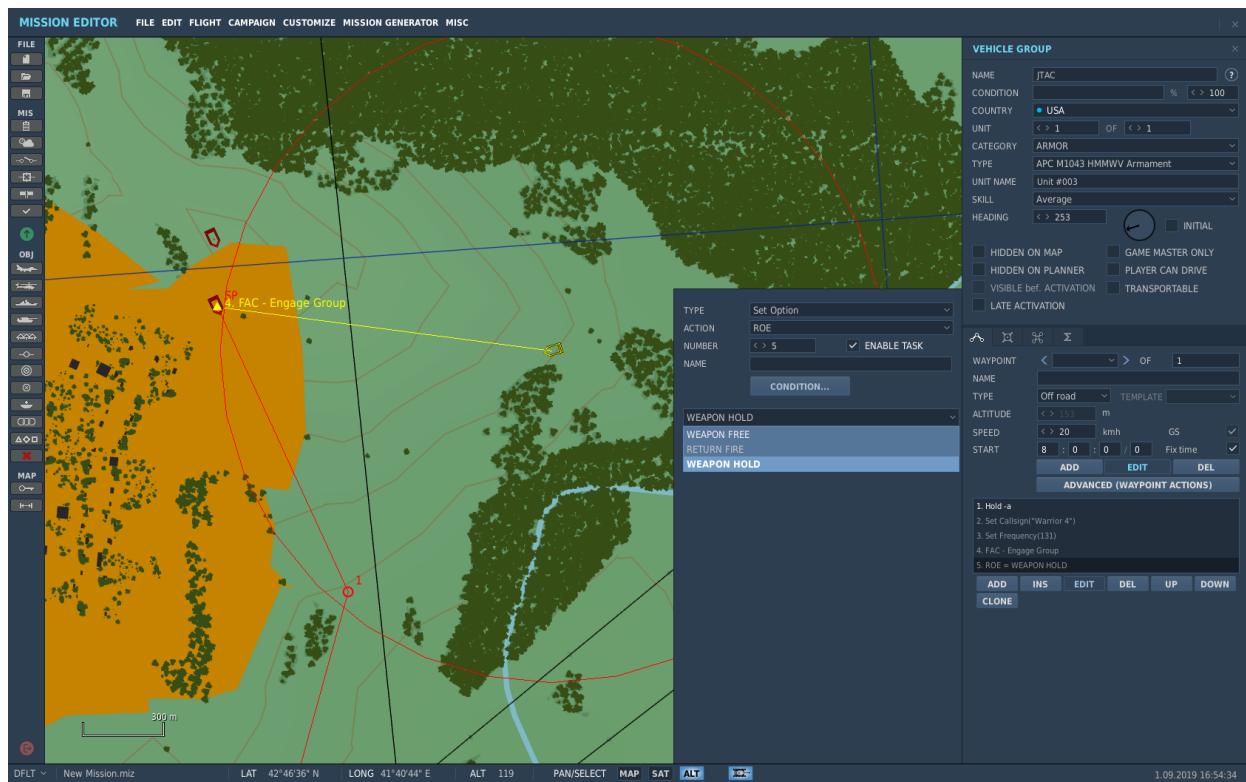
The following Options can be set as actions upon reaching a waypoint:

No Option

No option is set. Default selection.

ROE (Rules of Engagement)

Set fire rules to determine the group's combat behavior when encountering enemy units.



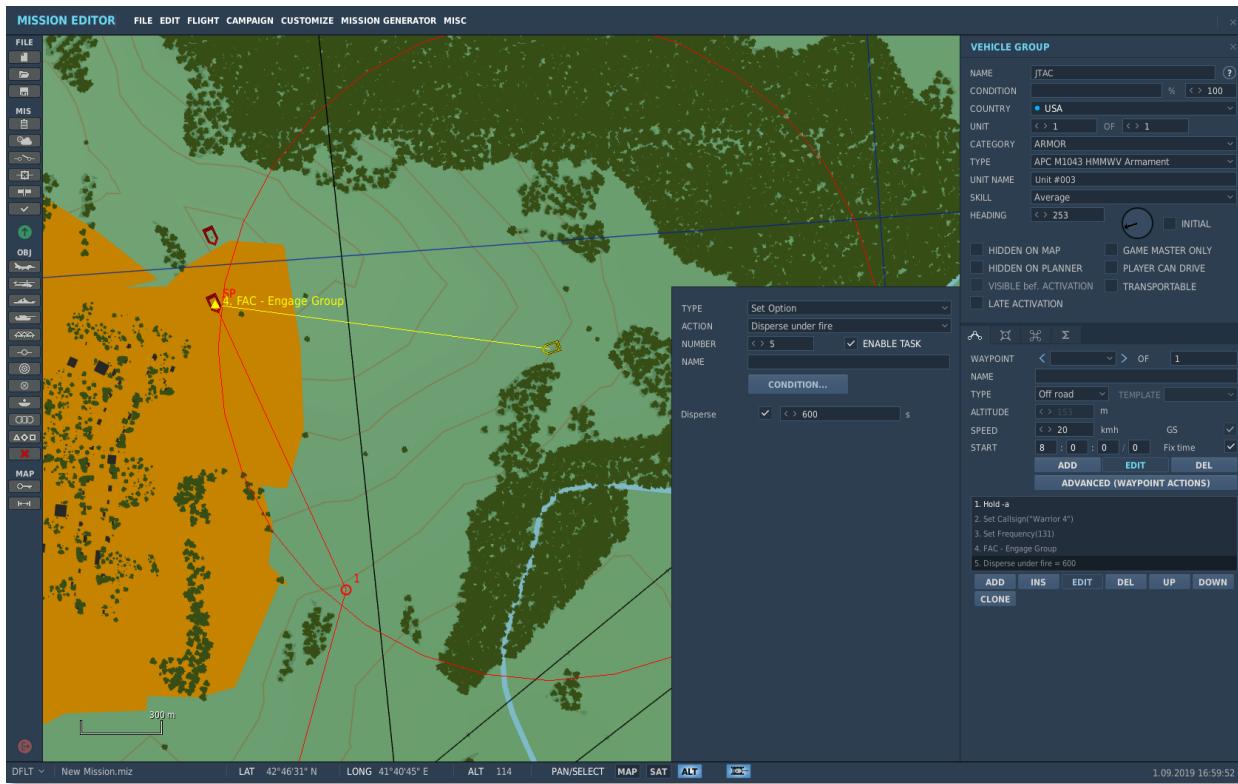
- **WEAPON FREE** – engage any enemy group in contact. Target prioritization is performed automatically by the group based on the situation.
- **RETURN FIRE** – return fire only; do not engage first.
- **WEAPONS HOLD** – do not fire under any circumstances.

The default setting is WEAPONS FREE.

Disperse Under Fire

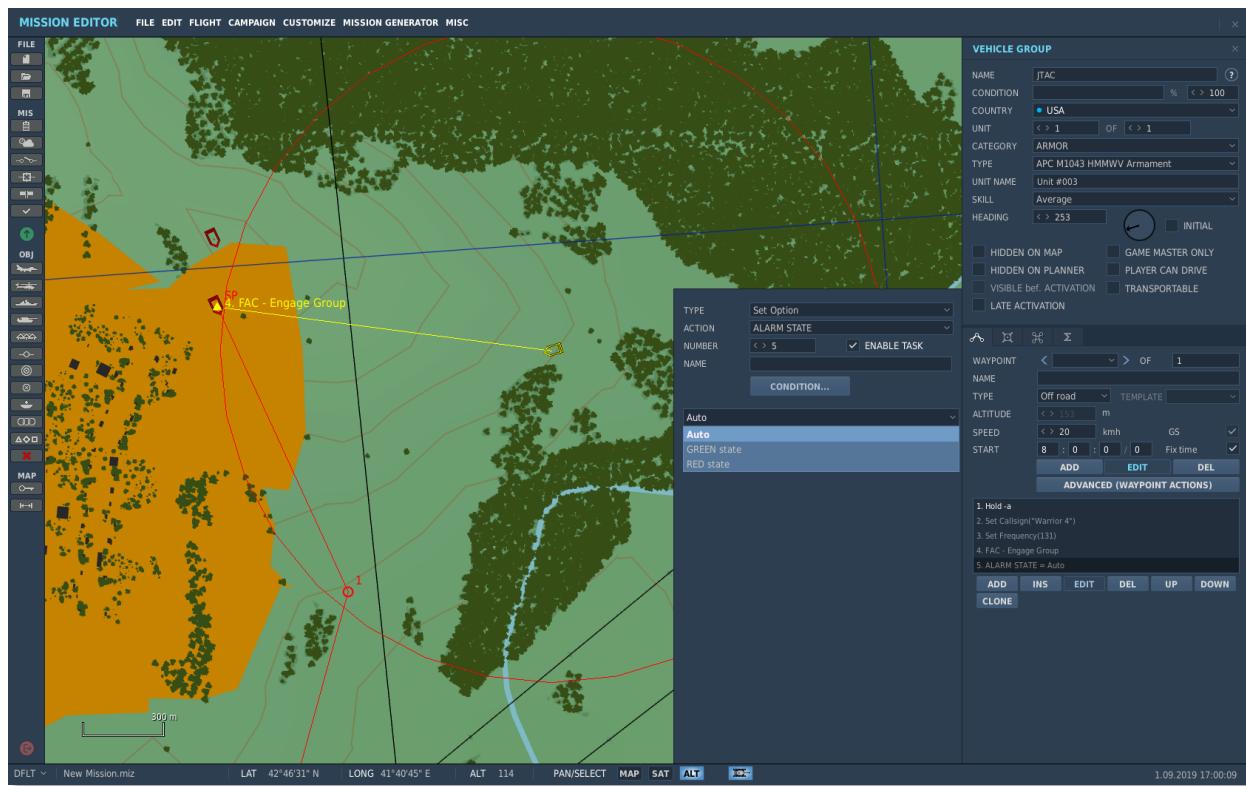
When enabled, this option will allow the group to disperse when under attack. The default value is Allow. In this case, the unit group will disperse when any one of its units is destroyed or damaged. The dispersal duration is indicated in seconds, after which the group will return to

formation and continue moving along the route. If this option is not enabled, the group will continue to move in formation while under fire.



Alarm State

Sets the combat readiness state of the group.



- **Auto** – default setting, where the group is not combat ready until the presence of enemy units is detected. Note, the AI may “sense” the presence of enemy units without actually detecting them with own sensors.
- **GREEN state** – group is not combat ready. It does not perform target search or engagement, maintains sensors off and stowed if possible.
- **RED state** – group is combat ready and actively searching for targets. Depending on the unit, it may or may not be able to move while in combat ready state.

Engage Air Weapons

This option allows the ground group to intercept and destroy aircraft-launched weapons on their approach to target. It has one checkbox which allows or forbids this action.

Place Static Object



In addition to placing active air, land, and sea units, you may also place static versions of these objects to populate a mission. Static objects share the same external model as their active-object counterparts, but they are immobile and do not use sensors or weapons. Unlike active units, you can only have one unit per group.

Note, the mission editor supports group copy/paste functionality. To copy a group, select it and press [\[CTRL+C\]](#). To paste the group with identical properties, position the mouse over the desired point on the map and press [\[CTRL+V\]](#).

The Static Object window includes the following functions from top to bottom:



NAME. In the Name field, enter in a unique name for the static object. If you do not enter one, a default one will be generated. The Name you create will be used when assigning some types of Triggers such as Unit Dead. To avoid confusion, be careful not to assign more than one group with the same Name.

COUNTRY. The Country drop down list will display all the countries that have been assigned to either the RED or BLUE sides when the mission was initially created by use of the CREATE NEW MISSION button.

CATEGORY. Static Objects are divided into six general categories:

- **Airfield and deck equipment** enables the usage of airfield-based maintenance equipment for aircraft.
- **Animals** enables the spawning of a set of certain types of animals.
- **Cargos** that includes a range of different types of cargo for helicopters.
- **Effects** that includes a set of smoke effects.
- **Ground Vehicles** that include vehicles appropriate to the selected country.
- **Helicopters** that include those belonging to the selected country.
- **Heliports** that allow the placement of a Forward Arming and Refueling Point (FARP) for forward helicopter operations. When setting a FARP, you can choose the FARP callsign for radio communications from the CALLSIGN drop-down menu and set the radio frequency in MHz in the FREQUENCY field.
- **Planes** that include fixed-wing aircraft of the selected country.
- **Sea Shelf Objects** that includes drilling rigs and gas production platforms.
- **Ships** that belong to the selected country.
- **Structures** that includes pillboxes and many other types of buildings (military and civil).
- **Warehouses** that includes a set of warehouses and tanks.

TYPE. Depending on the Category selection, a list of appropriate units is listed in this pull-down list.

HEADING. You may use this control to set the heading of the unit in the simulation world. You can do this by either using the left and right arrow keys, typing in the heading value, or clicking on the heading dial.

HIDDEN. If you wish to hide the static object on the World Map and make it invisible to players in the briefing map, check this box.

HIDDEN ON PLANNER. This option hides aircraft from the mission map in the mission planner. This option can be useful if you need to hide an object from the player.

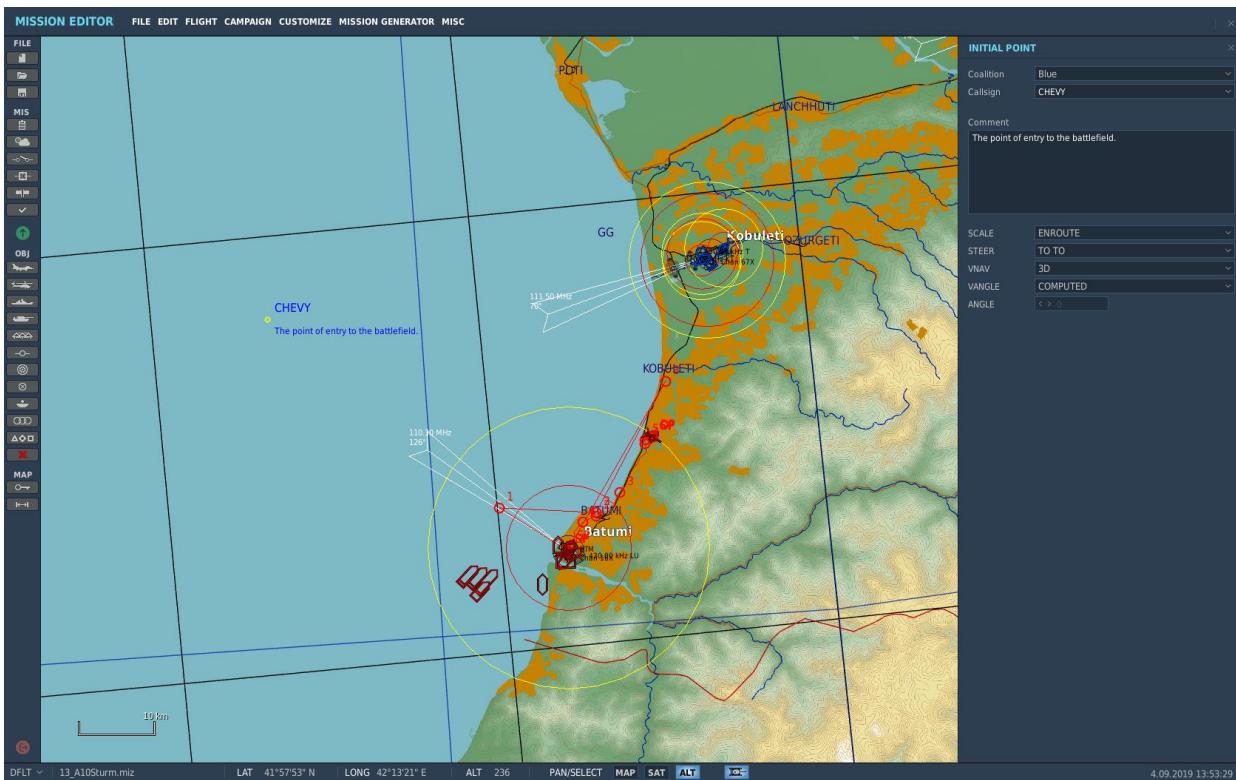
DEAD. In addition to the normal static object, you may also populate the world with the destroyed version of the object by checking the DEAD box.

PAINT SCHEME. Allows the user to select the paint scheme for static objects.

Place Initial Point (A-10C only)



The Initial Point (IP) button opens the Initial Point window, which is used to place an IP on the map. This point will be stored in the player's A-10C navigation system as an independent navigation point.



The IP window allows you to set the following options:

COALITION. Select coalition the navigation point will be available to.

CALLSIGN. Select the IP callsign (ID) of the point from the list of eight available choices.

COMMENT. Optional comments to be indicated on the Mission Editor map.

Below the comment field, you can set the IP properties as specific to the navigation system of the aircraft. These settings have no function in the A-10C.

SCALE. The scale mode of the waypoint.

STEER. The steering mode of the waypoint.

VNAV. The vertical navigation mode of the waypoint.

VANGLE. When VNAV is set to 3D, the vertical angle computation mode.

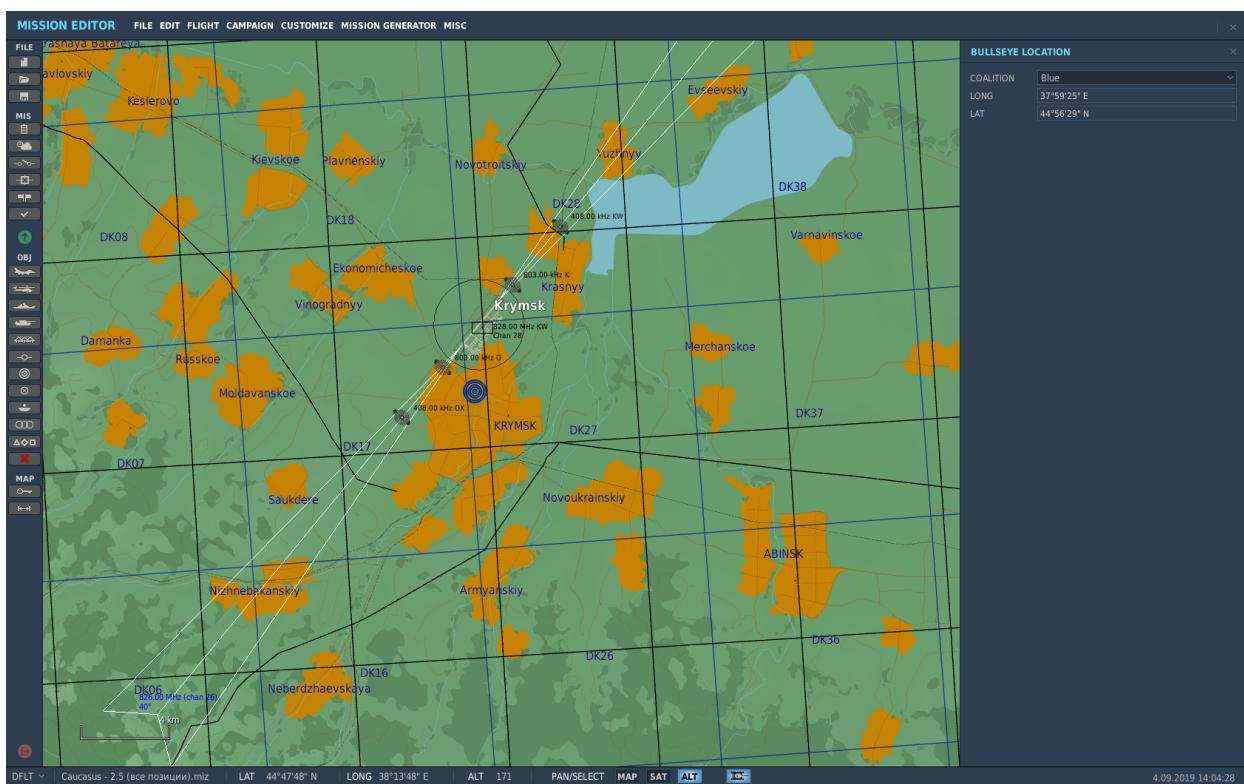
ANGLE. When VNAV is set to 3D and VANGLE is set to ENTERED, the vertical angle of the waypoint.

Place Bullseye



The Bullseye button opens the Bullseye window, which is used to place a Bullseye point on the map. Bullseye is a reference point used by friendly forces to communicate their position. Each coalition is provided a single Bullseye point. To move the position of the Bullseye on the map, simply click and drag it to the desired location.

The Bullseye window allows you to select the coalition of the Bullseye to edit and indicates the current world coordinates of the selected Bullseye.

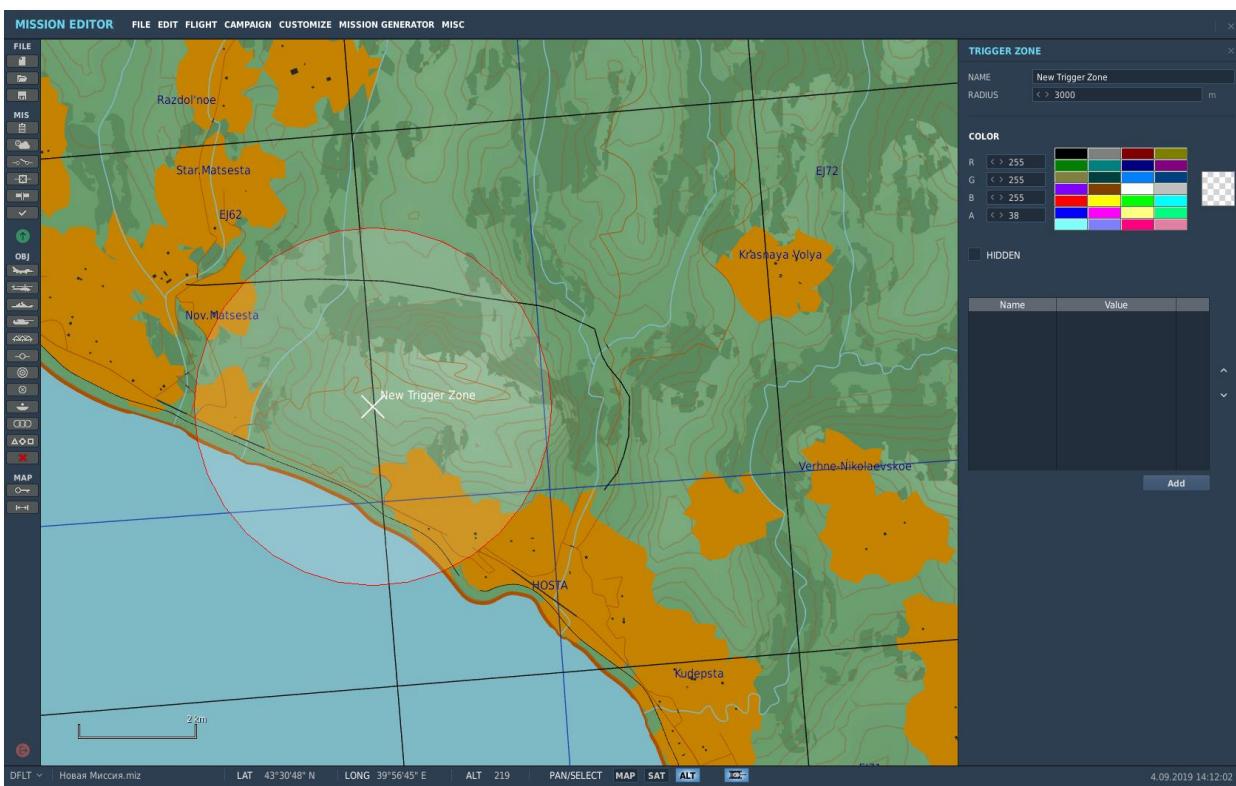


Create Area Trigger Zone



Area trigger zones are a powerful tool that allow you set triggered conditions based on a specified unit entering or exiting a defined area on the map. Trigger zones can be placed anywhere on the map, can be any size, and can vary in color. You can also create a trigger zone and assign that zone to a mobile unit in the mission.

Once you open the trigger zone tool, left click on the map where you want the zone to be centered (all trigger zones are circular). Upon doing so, the trigger zone will be displayed on the map with a default name.



On the right-side trigger zone window, you have the following options:

NAME. Enter in the name to give the trigger zone in this field. If no name is entered, a default one will be used. This is the name you will use when setting up a trigger condition.

RADIUS. The trigger zone may vary in size by adjusting this value. The value can be changed by either clicking on the left and right arrows or by entering the value in the field. The radius in meters is displayed in the field.

COLOR. To help distinguish trigger zones from each other, you may use the default colors or create a custom one. To select a default color, click on one of the 28 colors. To create a custom color, use the left and right arrows of the R (red), G (green), and B (blue) color values. The A (alpha) value adjusts the transparency. The selected/created color is displayed in the RGB values.

HIDDEN. When the mission is played by others, you will probably not want the trigger areas to be visible on the map. To hide them you must check this box.

It is also possible to add a trigger zone to the ground structures, such as an airfield hangar or a building in a settlement, for example. If you right-click on a building on the ground, select assign as ... and set up the trigger zone as desired:



Create Unit Template



Because you can create ground vehicle groups that consist of many different types of vehicles, it may be useful for you to save a vehicle group composition for later use. A good example might be an artillery battery that consists of artillery units, ammunition trucks, a command and control truck, security APCs, etc. You can place these all in a single vehicle group and then use the Template tool to save it and use it again later. Additionally, templates may be useful in conjunction with the [STOP AND DEPLOY TO TEMPLATE action of the Trigger Menu](#).

To create a new template:

1. Create a new ground vehicle group with all of the group's required units.
2. Position the units as desired for the template. The figure shows one of the options for the SA-10 (S-300PS) battery position. Keep in mind that moving the lead unit of a group will move the entire group.
3. With the desired group selected, press the Create and Modify Templates button.
4. Select the appropriate country for the group from the COUNTRY drop-down menu.
5. Confirm that the ground vehicle group that you wish to make a Template of is listed in the SELECTED GROUP field.
6. In the TEMPLATE NAME field, enter a name that you wish to save for the Template.
7. Press the SAVE TEMPLATE button.
8. Close the TEMPLATES panel by pressing the Create and Modify Templates button again or "X" in the upper right corner of the panel.

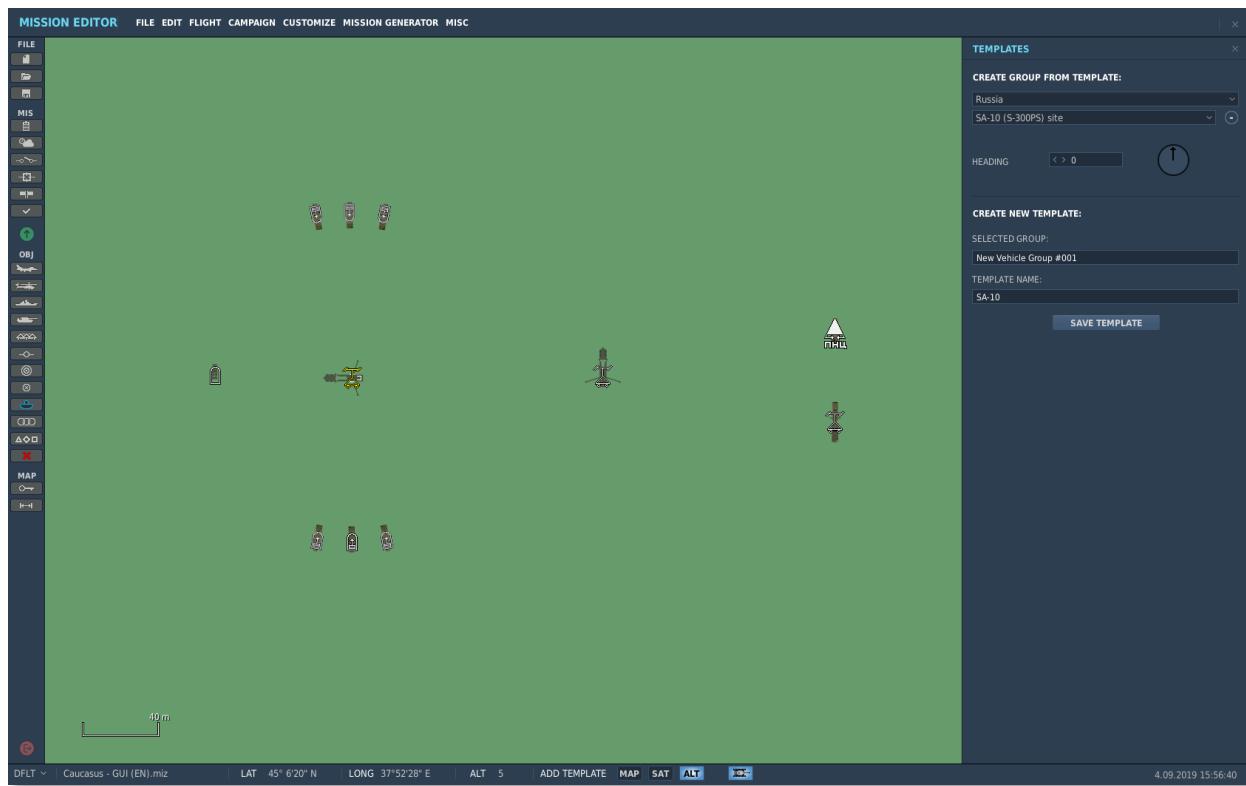
User templates are saved in the file

C:\Users\UserName\Saved Games\DCS\MissionEditor\templates.lua.

You have now created and saved a template.

You have controls at the top of the Template window to manage your templates.

- The top field allows you to select the country for which to save or open Templates.
- The field below the country field is a drop-down menu that lists all the Templates you have created for the selected country.
- Using the heading field, you can orient the template using the left and right arrows or by clicking on the dial. The set orientation is indicated in the HEADING field in degrees.



Below are step-by-step instructions for placing a ground vehicle group from the **TEMPLATES** panel:

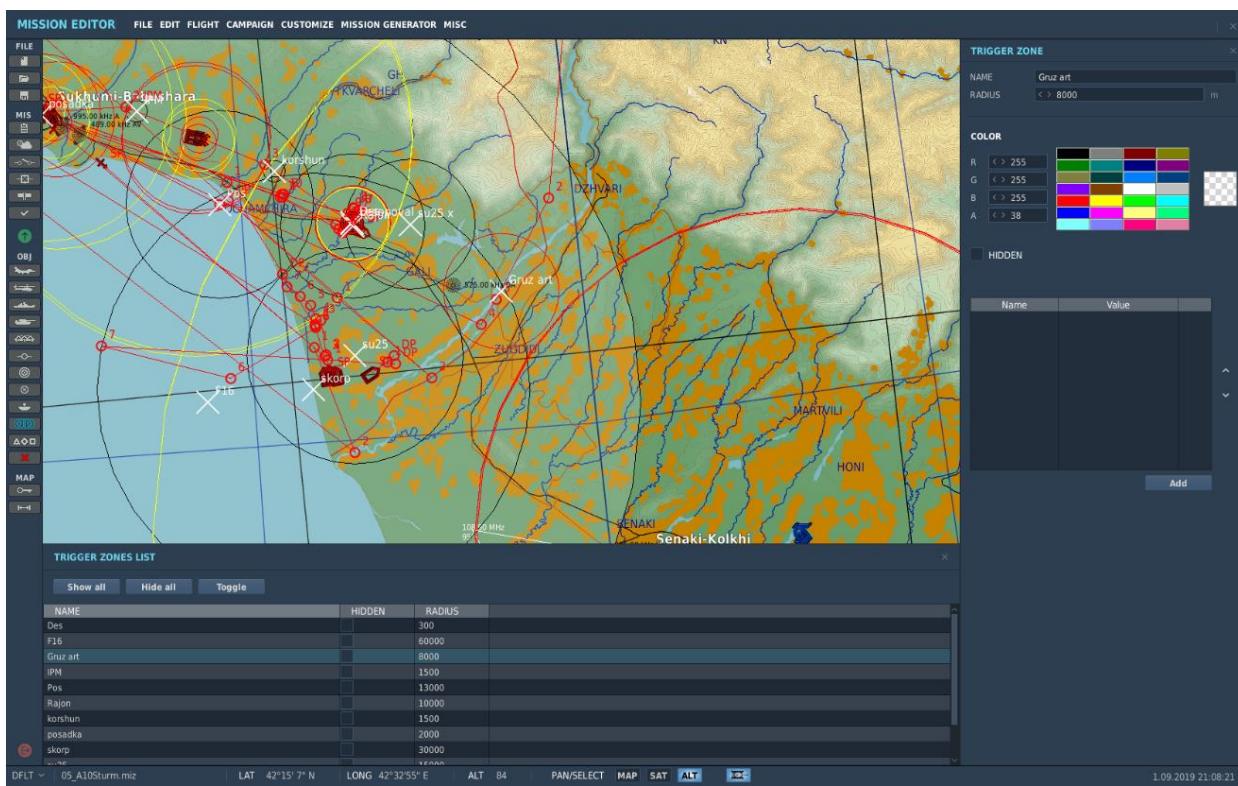
1. Open the **TEMPLATES** panel by clicking on the Create and Modify Templates button.
2. In the first drop-down list, select a country.
3. In the second drop-down list, select the template for the ground unit group.
4. Place the template on the map by left-clicking on the desired start position.
5. Set the desired start orientation of the ground unit group by using the **HEADING** dial.

After all the desired templates have been placed on the map, close the panel by clicking the Create and Modify Templates button again, or by clicking the "X" in the upper right corner of the panel.

Area Trigger Zone List



When creating area trigger zones, you have the option to hide them so that users playing your missions cannot see them. Pressing the area trigger zone list button will display the area zone trigger tool on the right side of the screen and list all the zones you have created for the mission along the bottom.



At the top of the zone list are three buttons that allow you to enable and disable the hide function for all the listed trigger zones.

Show All. Pressing this button will set all trigger zones to a visible state.

Hide All. Pressing this button will set all trigger zones to a Hide state.

Toggle Selection. The Hide state of the trigger zones will toggle.

In the trigger zone listing window there are three columns, and each row lists a different trigger zone. The columns include:

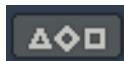
NAME. The name of the trigger zone as entered in the NAME field.

STATE. This can either be blank (indicating a visible state) or HIDDEN to indicate that the trigger zone is currently hidden.

RADIUS. The radius of the trigger zone in meters.

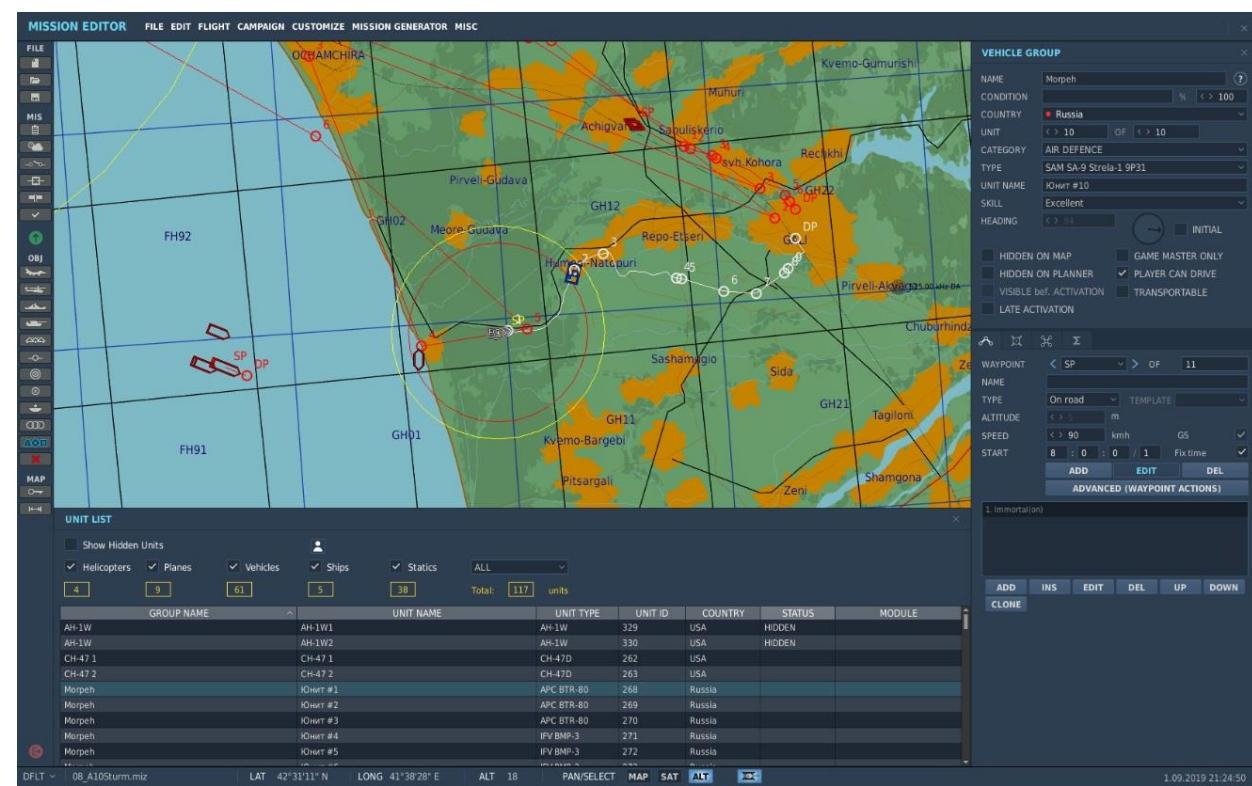
To close the widow, you may press the X button in the top right corner of the window.

Unit List



The Unit List displays the list of units (active and static) that you have placed in the mission, and allows you to quickly find a unit and view data on it.

At the top of the list are five check boxes that allow you to filter the types of units that are displayed on the list. These include Show Hidden Units, Helicopters, Planes, Vehicles, Ships, and Statics. To view one of the types in the list, check the box next to the category name.



Each row of the list represents a different unit group; you can use the scroll bar on the side for when the list becomes long.



– This button centers the map on the player-controlled aircraft.

There are seven columns that provide data for each group. They are:

GROUP NAME. Name of the group as set when the group was created.

UNIT NAME. Name of the unit.

UNIT TYPE. Unit type.

UNIT ID. Unit Identifier.

COUNTRY. The name of the country that the group is assigned to.

STATUS. This can either be blank to indicate that it is not hidden or say HIDDEN to indicate that the group is currently in a Hide state.

MODULE. Name of the module required for the chosen unit (e.g. WWII).

Note: To quickly Hide or Show a group, you may double-click on it.

Delete Unit/Object



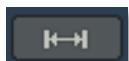
To remove a group entirely from the mission, including waypoints, select the group and then press the Delete button [DELETE].

Map Options



The Map Options panel has been described in detail previously in the [System Bar chapter of the manual](#).

Distance Tool



You can use the Distance Tool to measure distance on the World Map. When enabled by pressing the Distance Tool button, left mouse button click, and hold and drag to measure a distance. The distance line is drawn in blue and the distance (in meters) and bearing (degrees) are in black. You must press the Distance Tool button again in order to disable it, and resume normal map functioning.

Exit Mission Editor



To exit the Mission Editor, press the Exit button.

DCS World



CAMPAIGN

CAMPAIGN

To select a new campaign to play or continue an existing one, select the CAMPAIGN button from the Main Menu screen.



The CAMPAIGN screen is divided into four primary areas that allow you to select modules, campaigns, view statistics, and view the general briefing of the campaign. The screen consists of the following elements:

MODULES. Select the module to be used for the current campaign.

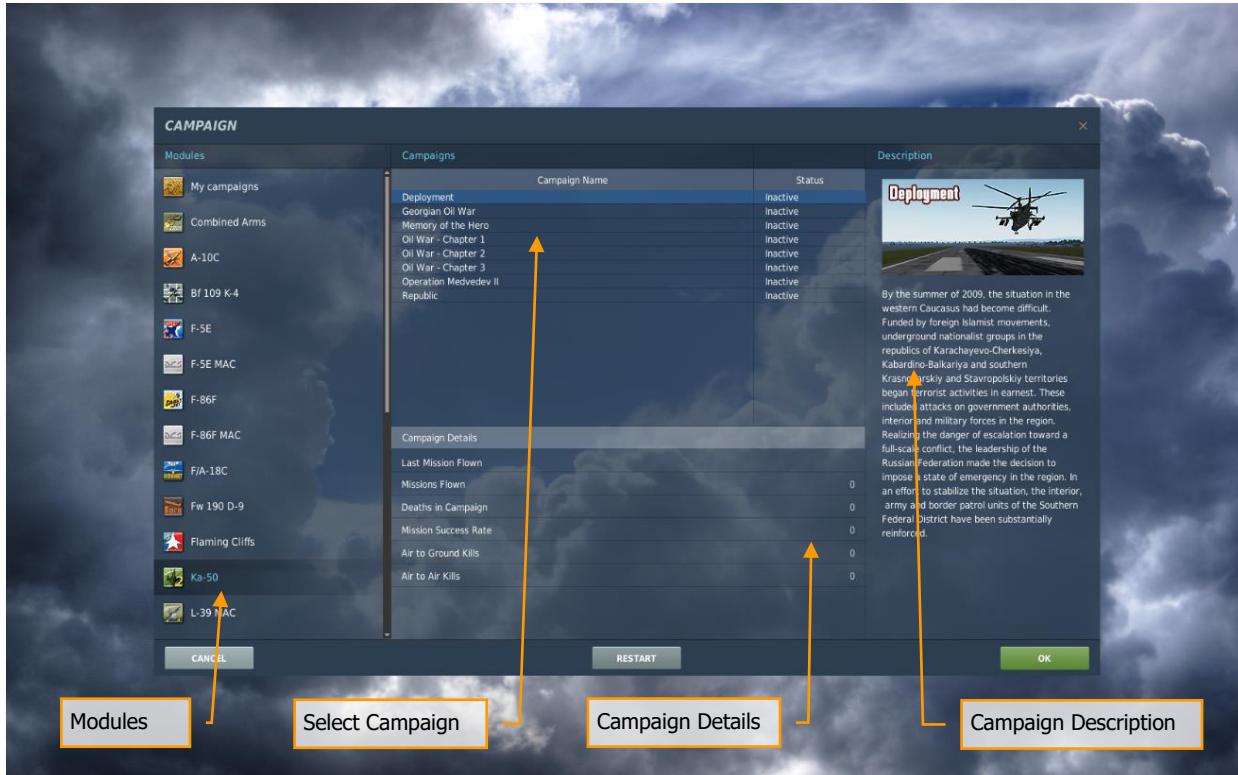
SELECT CAMPAIGN. Along the left side of the screen is a list of all new campaigns you may start, and saved campaigns in progress. The left column of the list displays the name of the campaign and the right column displays its status. To select a campaign, left click on it to highlight it. Once selected, progress statistics are displayed in the Campaign Details section where you can review the general briefing of the campaign.

Campaign Details. Once a campaign has been selected, details of the progress of the campaign are listed in this pane. Information includes:

- **Last Mission Flown.** Date and time of the last flown mission.
- **Missions Flown.** How many missions the player has flown in the campaign.
- **Deaths in Campaign.** How many times the player has died in the campaign.

- **Mission Success Rate.** Mission success rate as a percentage.
- **Air to Ground Kills.** Number of ground units destroyed by player.
- **Air to Air Kills.** Number of air units destroyed by player.

CAMPAIGN DESCRIPTION. When a campaign is created in the Campaign Builder, a general campaign briefing is written. Here you can view that briefing.



At the bottom of the screen are three additional buttons:

- **CANCEL.** Press the CANCEL button to return to the Main Menu screen. You may also exit the Campaign screen by pressing the yellow X in the top right corner of the screen.
- **RESTART.** Press this button to RESTART the campaign from its original start point and reset all Campaign Details.
- **OK.** Once you have selected a new or saved campaign to play, press the OK button to begin the next mission in the selected campaign.

DCS World

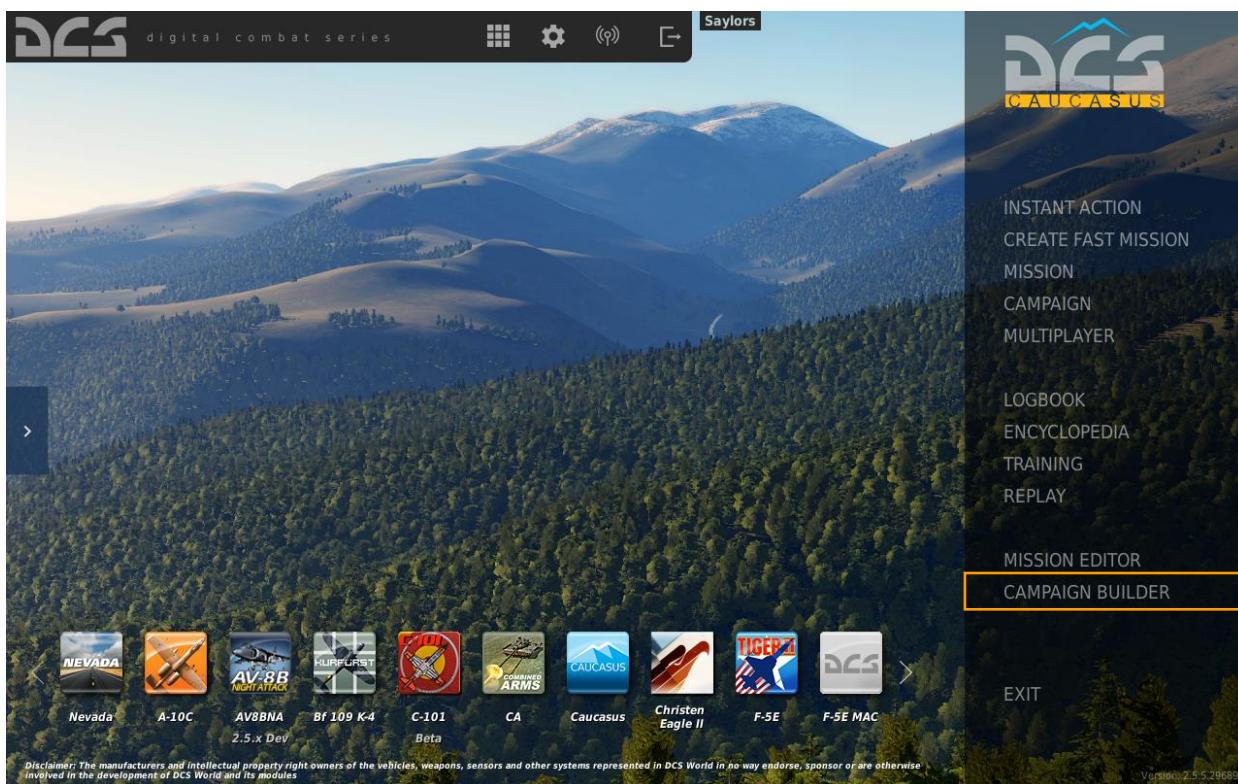


CAMPAIGN BUILDER

CAMPAIGN BUILDER

The Campaign Builder creates what we term a Staged Campaign System (SCS). A SCS is somewhere between a dynamic campaign system that automatically generates missions, and a linear, scripted campaign that plays the same way through every time. A SCS may consist of one or more (many more if you wish) stages and each stage can consist of one or more (many more if you wish) missions. Each of these missions is created in the ME as a single mission. As such, each mission may consist of numerous triggers and random settings. Using the Campaign Builder, you may create your campaigns by creating stages and populating them with the missions (.miz) you create.

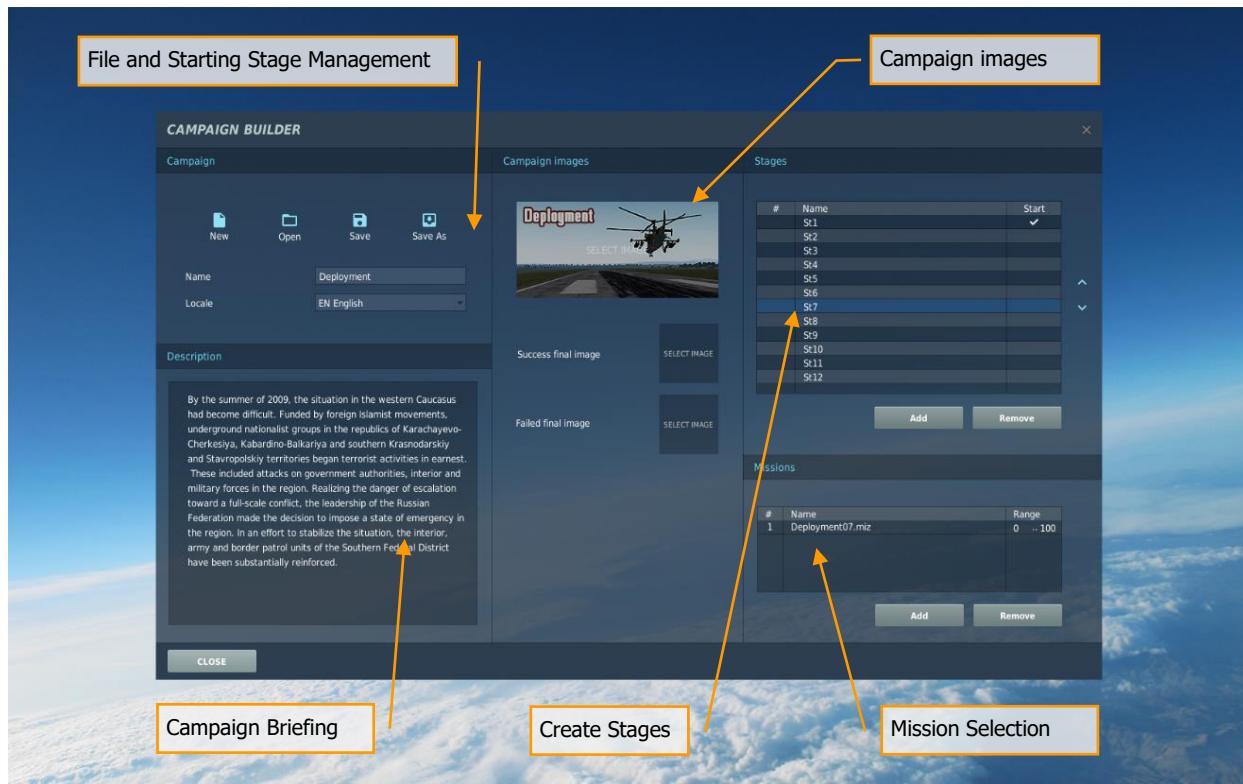
Upon selecting the CAMPAIGN BUILDER from the Main Menu, you will then be shown the campaign builder menu.



In the top left corner are functions to manage the files and set the stage that the campaign will start on. From here you may Open an existing campaign, Save the current campaign as is, create a New campaign, or Save the current campaign As a new file. Below the File and Starting Stage Management is a field that displays the briefing created for the mission. In the section Description, you can also delete the default text and enter your own.

At the top right section of the screen is the area where you define how many stages the campaign will consist of. At the bottom of the section are two buttons: Add and Remove. To add a stage to the campaign, press the add button. To remove a stage, click on the stage and

then press the Remove button. You may also use the Up and Down buttons to rearrange the order of the stages.



The window of the campaign editor has five logical sections:

FILE AND STARTING STAGE MANAGEMENT.

This section contains the following options:

- **New.** Creates a new campaign.
- **Open.** Opens an existing campaign.
- **Save.** Saves all changes to the current campaign.
- **Save As.** Saves the currently-open campaign under a new filename.
- **Name.** Specify the campaign name in this field.
- **Locale.** Drop-down list for choosing the localization language for the campaign.

CAMPAIN IMAGES.

In this section you may choose the image files to be used for the campaign:

- **Campaign Image.** Clicking on the SELECT IMAGE field opens a standard file selection window in which you can select an image (*.jpg; *.jpeg; *.png) for the campaign. The image must be 273x130 pixels in size.
- **Success final image.** Clicking on the SELECT IMAGE field opens a standard file selection window in which you can select an image (*.jpg; *.jpeg; *.png) to be displayed upon campaign completion. The image must be 512x512 pixels in size.

- **Failed final image.** Clicking on the SELECT IMAGE field opens a standard file selection window in which you can select an image (*.jpg; *.jpeg; *.png) to be displayed upon failure to complete the campaign. The image must be 512x512 pixels in size.

CAMPAGN BRIEFING. In this field you may enter a brief description of the campaign.

CREATE STAGES. List of campaign stages. This section contains 4 buttons for controlling the stages:

- **Up.** Shifts the selected stage one spot higher in the list.
- **Down.** Shifts the selected stage one spot lower in the list.
- **Add.** Adds a new stage.
- **Remove.** Removes the highlighted stage.

MISSION SELECTION. Displays a list of missions for the selected stage:

- **Name.** Mission name.
- **Range.** In this field you need to set the range of points according to which missions will be assigned to the player, depending on the previous results garnered.
- **Add.** Adds a mission to the stage.
- **Remove.** Removes a mission from the stage.

Below of the Stages section is the Missions section. It is from here that you will populate each stage with missions. To do so, first select the Stage you wish to populate and then press the Add button in the Missions section. Upon doing so you will be presented a folder/file selection dialog window to select the mission you want. Once you select it, press the OK button on the file browser. The mission will now be listed as part of the selected stage, and its mission name and value range will be displayed. Each mission can be assigned a value range which will determine mission selection within a phase.

When creating a mission, you may assign values to triggered events such as the destruction of a unit, a unit reaching a defined area, a time value, etc. At the end of a mission, these values are totaled and used to determine what the next stage will be and which mission from within that stage will be chosen.

If mission total values are 49 or lower, the player will fall back one stage. If the value is 50, they stay in the same stage. If the mission total value is 51 or above, the player will advance to the next stage. By populating a stage with multiple missions, each with different values, you can create a campaign that flows back and forth according to mission results.

If two missions are assigned the same value range in a stage, the mission will be randomly selected.

The assigned value range of a mission within a stage is listed in the Range column.

At the bottom of the section, next to the Add button, is the Remove button. Use this to remove a mission from a stage.

From the start stage field, you may set the starting stage for the campaign. You generally will not want to start the campaign on stage 1 in case the player loses the first mission and subsequently loses the campaign! The starting stage for the campaign will be marked with an asterisk (*) on the stage listing.

Some notes about campaign building:

- The more stages you put in a mission and the more missions you place in each stage, reduces the chances of mission repetition.
- When creating a stage, it can often save time by creating a template for the stage. This “template” mission would include general force layouts so that you could simply add to and/or modify the mission many times resulting in unique missions for a particular stage.
- Use random settings and triggers as much as you can. These can be used to create unpredictable force set ups including air defense units and variable AI skill settings.
- By placing front lines adjacent to each other over several stages, you can reproduce a front line that moves back and forth according to mission results.

DCS World

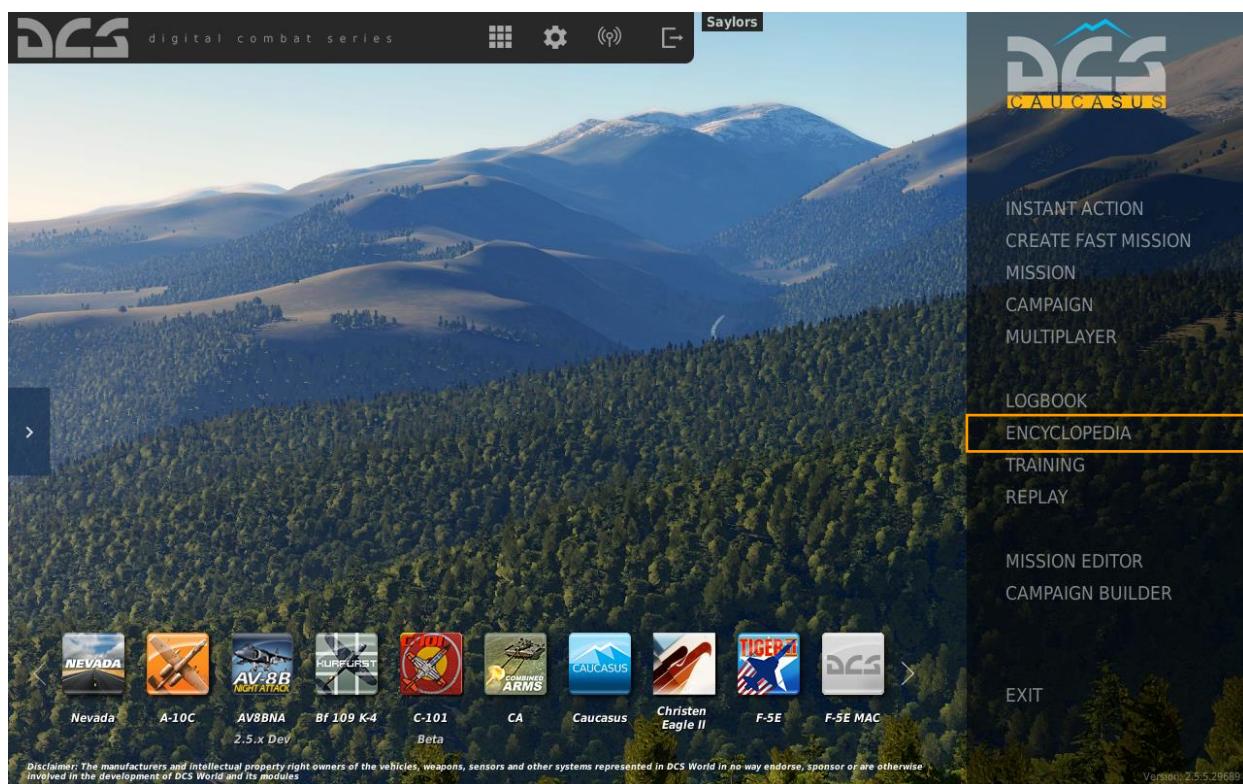


ENCYCLOPEDIA

ENCYCLOPEDIA

The ENCYCLOPEDIA is an invaluable tool for visual recognition of various units in the game, and is also an excellent source of technical data for each unit.

To select the Encyclopedia, click the ENCYCLOPEDIA button on the Main Menu page.



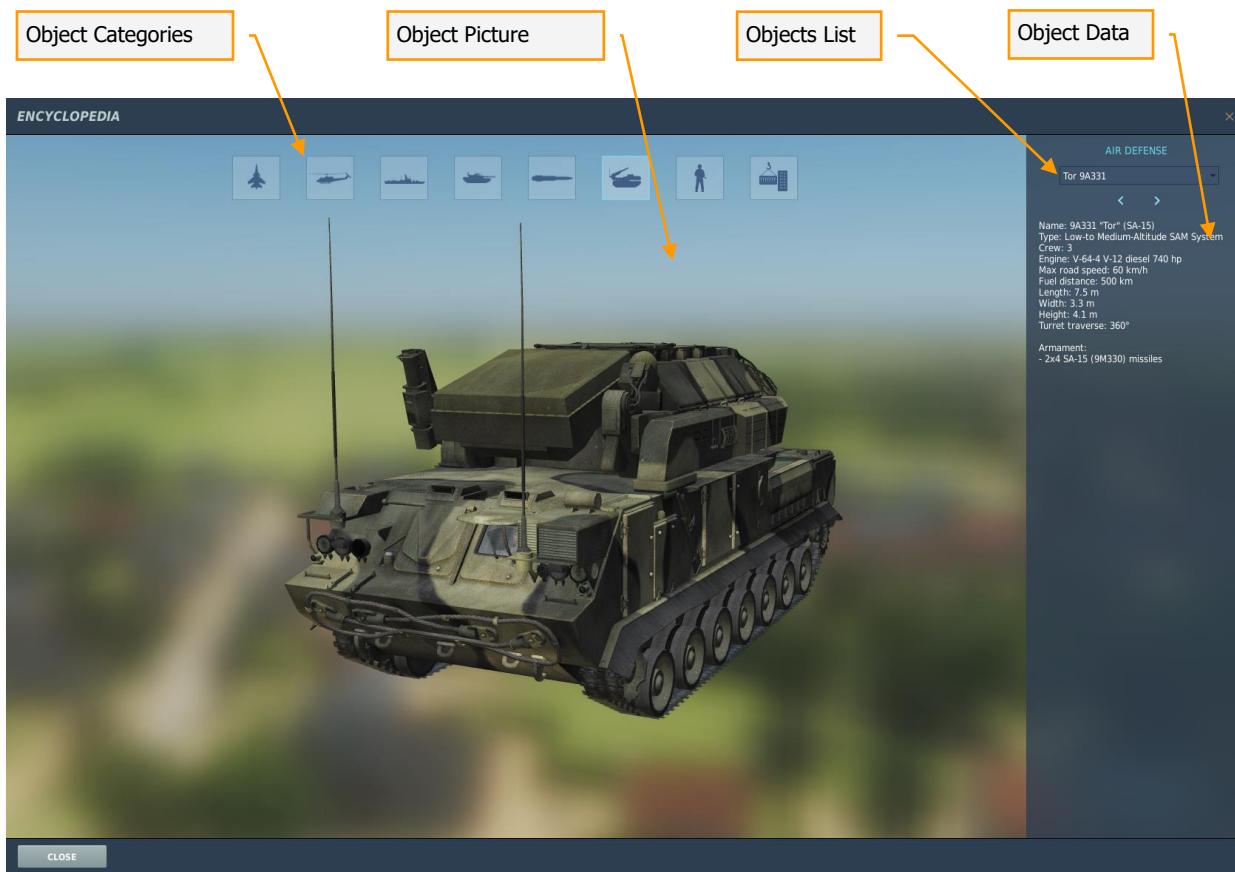
The Encyclopedia consists of two primary parts: the object picture on the left, and the object data window on the right.

Along the top of the screen are a series of eight tabs that correspond to eight categories of objects (unit types) in the game. These include:

1. **AIRPLANES.** All fixed-wing aircraft.
2. **HELICOPTERS.** All rotary-wing aircraft.
3. **SHIPS.** All naval vessels.
4. **VEHICLES.** All non-air defense-related ground vehicles.
5. **WEAPONS.** Air, land, and sea weapons that can be launched/dropped from a unit.
6. **AIR DEFENSE.** Air defense systems.
7. **PERSONNEL ASSETS.** Aircraft carrier deck personnel and infantry.

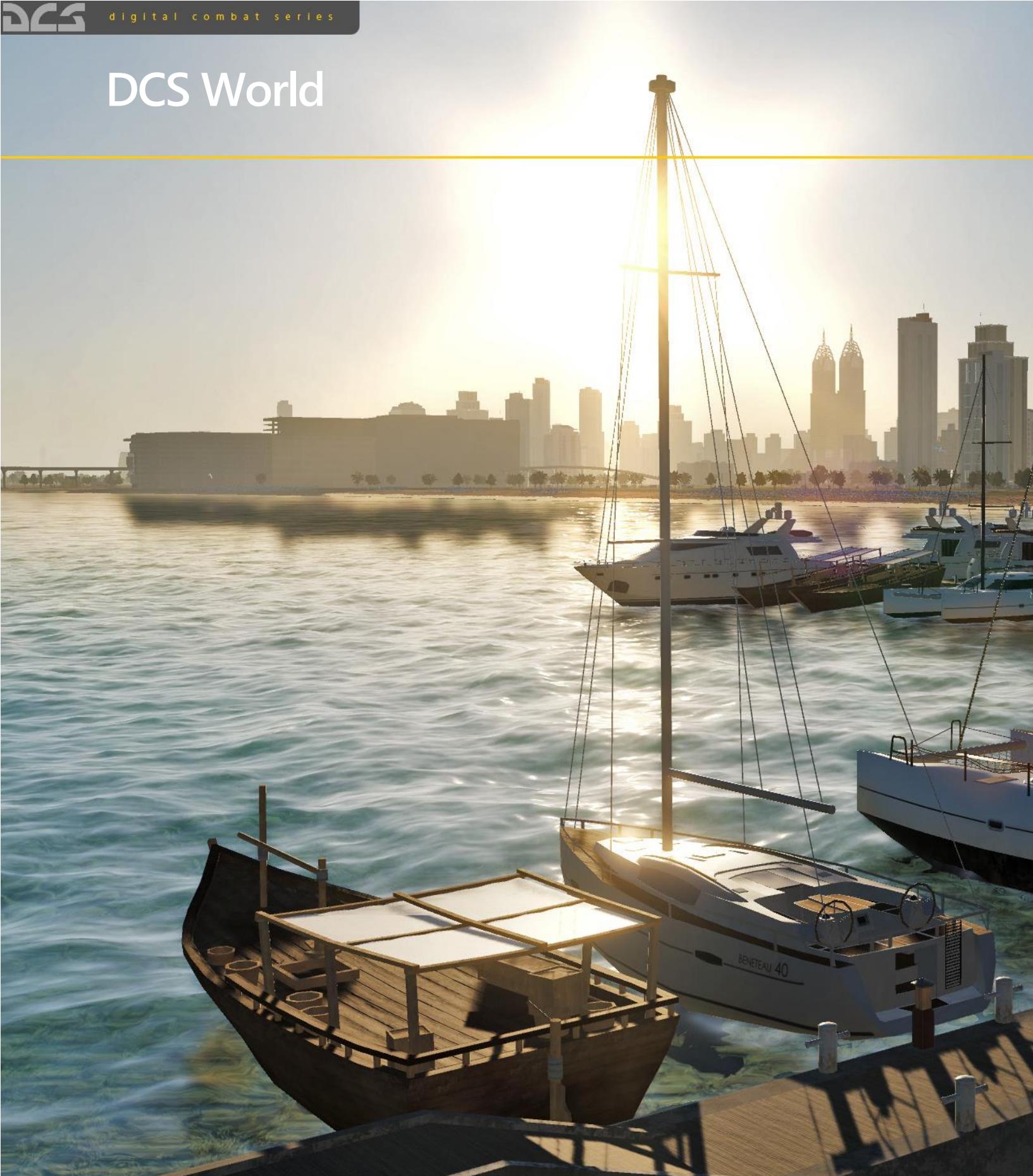
8. MISCELLANIOUS. Ground structures, helicopter cargo, etc. that are available to the user in the mission editor as static objects.

After selecting an Object Category, you may use the Object List drop down list on the right side of the screen to view all units in that category that are represented in the game. Once you have selected a unit, left mouse click on it to view a picture on the left side of the screen, and view its data on the right side.



To exit the Encyclopedia, press the CLOSE button at the bottom of the screen or press the yellow X in the top right corner.

DCS World



MULTIPLAYER

MULTIPLAYER

ATTENTION! AN INTERNET CONNECTION IS REQUIRED FOR MULTIPLAYER INCLUDING LAN PLAY

Multiplayer missions can be created by you in the Mission Editor. When creating a multiplayer mission though, it is important to remember that all player-controlled aircraft in the mission must be set to the SKILL of CLIENT and not PLAYER. Also, keep in mind that only one CLIENT aircraft can exist in an aircraft group. For example, to create a mission for four online pilots, you will need to create four aircraft groups with a single unit set to CLIENT in each.

To access the multiplayer menu, click mouse on MULTIPLAYER in the Main Menu.



In the Main Multiplayer Menu screen, you can create own server or join another server as a client.

In the upper part of the window is the SERVER LIST SETTINGS block, the CONNECT BY IP button and the player's call sign.

- **CONNECT BY IP** – To connect to a game over the Internet, you use the CONNECT BY IP option. To do so, press the CONNECT BY IP button. Upon doing so, the Connection to server window will be displayed.

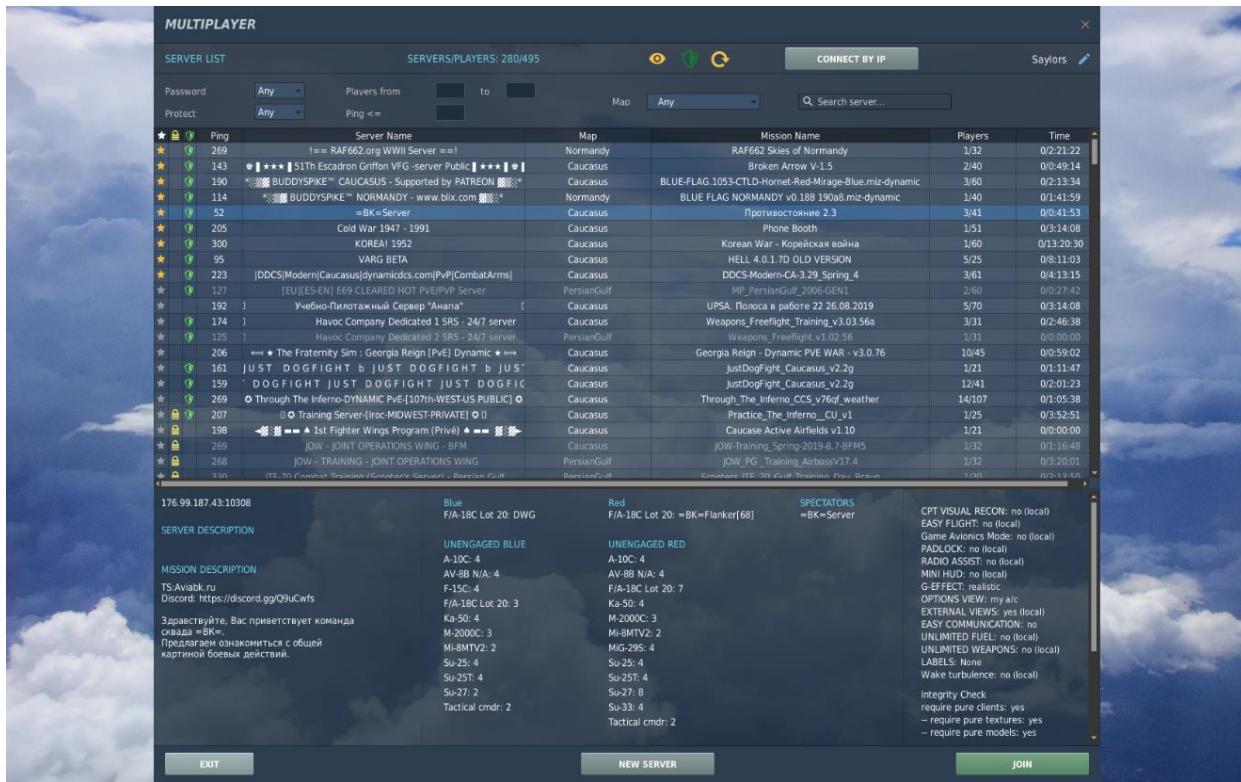


This window consists of two fields:

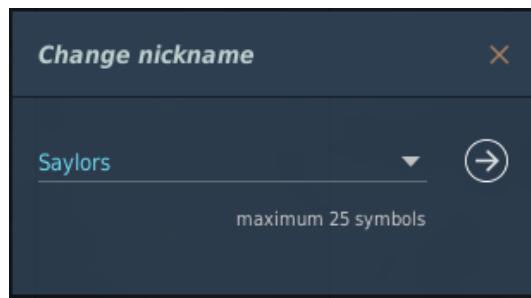
IP/URL: Enter the IP number or URL of the server you wish to join.

PASSWORD: If the server is password protected, enter the password into this field. If the server is not password protected, you may leave this field blank.

After completing these fields, you can either press the CANCEL button to exit the window and not join the server, or press the OK button to join the server.



- CHANGE NICKNAME** – The pencil icon in the upper right corner of the network game window opens the input / selection window of the player callsign. Enter the name you wish other multiplayer members to see you as here. This name will be visible in the menu screens and also as a unit label in the simulation. If no name is entered, a default one will be used. Callsigns may be a max of 25 characters long, and up to five different callsigns may be saved.



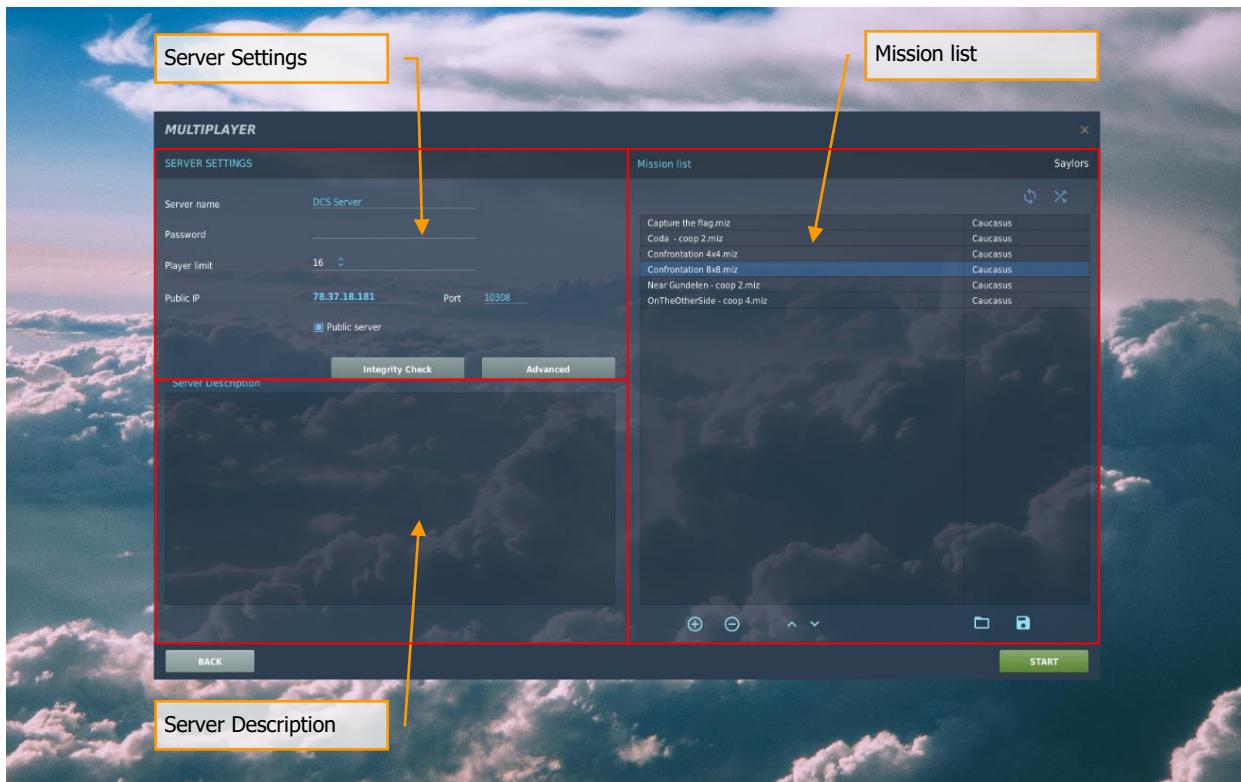
In the center of the window is a list of available servers. At the bottom are the buttons for the main actions.

- **EXIT.** The EXIT button will exit Multiplayer and return you to the main menu.
- **NEW SERVER.** The NEW SERVER window allows you to host a mission that other players (clients) can join.
- **JOIN.** After you have selected a server from the Server List, press the JOIN button to join the server.

New Server

For a mission to run as a multiplayer game, one user must be set up as a Server (host) that runs the mission that other players (clients) can join. This is done as either a mission listing on a server list or as a direct IP connection.

To start a mission Server, select the NEW SERVER button on the Main Multiplayer Menu screen.



The Server screen has three main areas: Server Settings, Server Description, and Mission list. After you have selected a mission and set the server options, you will press the START button at the bottom of the screen to start the server and allow clients to join it. It will also direct you to the MULTIPLAYER – Select role screen.

Server settings

The Server Options allow you to setup and view the basic parameters of the mission server. Some of the items can be modified and some are information only and cannot be modified. These are:

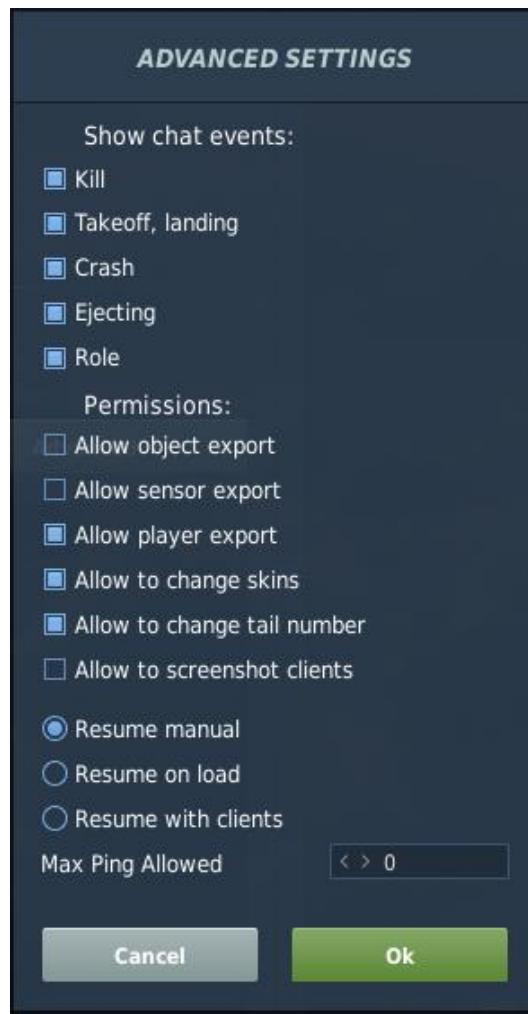
- **Server Name.** Enter the name of the server in this field. This name will then appear in a client's server list if on a LAN network.

- **Password.** To prevent unwanted guests from joining your server, you may enter a password here. Any client joining the server will be required to enter this password before joining.
- **Player limit.** Enter the maximum number of players that may join the server.
- **Public IP.** The IP of the server computer is displayed in this field. Note that if you are behind a router, the router IP may be listed and this will be an invalid IP for clients to directly connect to. Router IP numbers generally start with 192.
- **Port.** Each server can be assigned a unique port by entering it here. By default, the port number is 10308. However, in order to access the server behind a firewall, you may need to change this port number or open the default port number in the firewall.
- **Public server.** This indicates the type of server detected.

INTEGRITY CHECK. This button brings up the server integrity check settings panel:



ADVANCED. This button brings up a panel of advanced server settings:



-  – The LOOP button cycles through the missions in the server mission playlist.
-  – The SHUFFLE button randomizes the order of missions in the server mission playlist.
-  – The ADD MISSION button opens a browser window for selecting and adding missions into the server mission playlist.
-  – The REMOVE MISSION button removes the selected mission from the server mission playlist.
-  – The UP/DOWN arrows move the highlighted mission one step up or down the server playlist.
-  – The OPEN button opens a browser window for selecting and adding mission playlists (*.lst) into the server playlist.
-  – The SAVE AS button opens a browser window for saving mission playlists (*.lst) under a new filename into the chosen folder.

At the bottom of the window are the START and BACK buttons:

START. Pressing the START button will allow clients to join the server and direct you to the Select role screen.

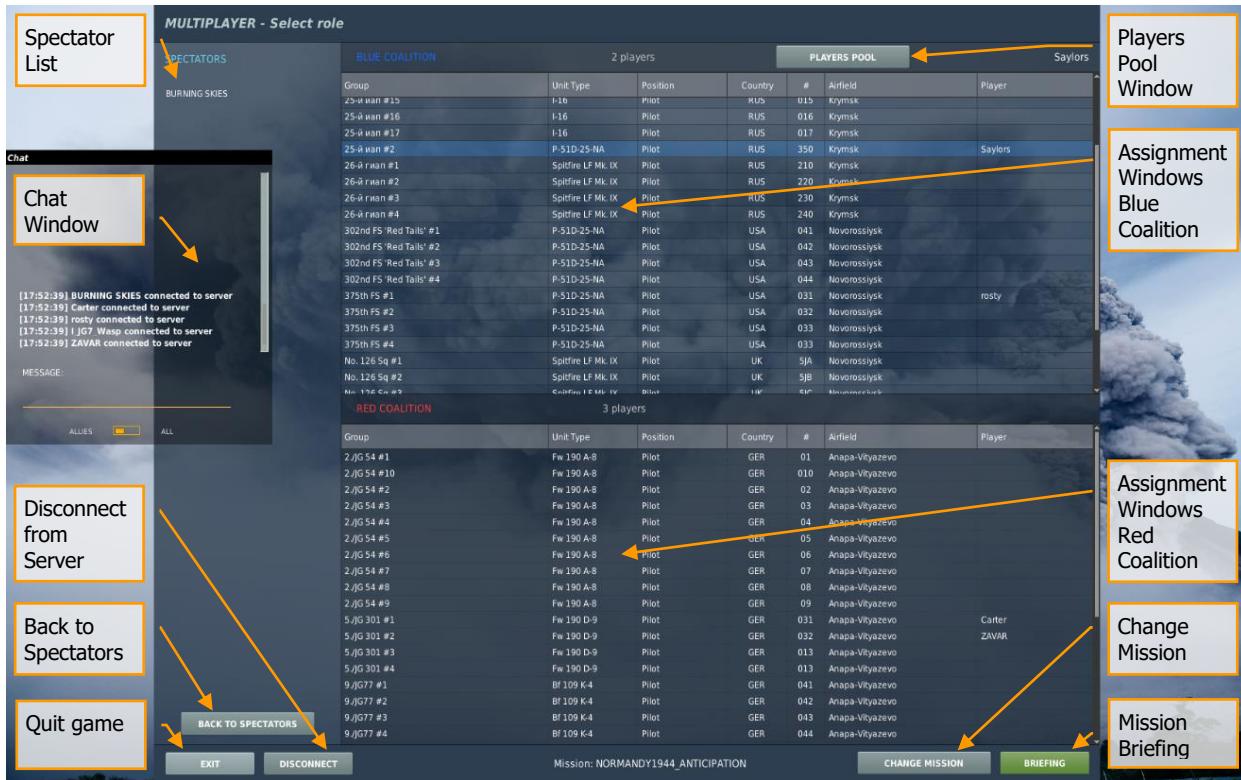
BACK. At the bottom of the screen is the BACK button which will direct you back to the Main Multiplayer Menu screen without saving changes.

You can also cancel the screen by pressing the yellow X in the top right corner of the screen.

Select role (Server)

The next step after creating the server is to select a coalition and an aircraft.

The SELECT ROLE window appears after clicking the START button.



SPECTATORS. When a player first enters the Join screen, they are not assigned a side or aircraft and are instead listed in the Spectator List. When in this list, they are effectively neutral, and may view all players on the server. However, once the player has joined an aircraft, they are automatically removed from the Spectator List.

CHAT. The chat window is used for server and player messages.

[Tab] - Chat open/close.

[LCtrl+Tab] - Chat channel to ALLIES.

[LShift+Tab] - Chat channel to ALL.

To enter text, left click in the message window until you see a flashing cursor. You may then type in your message. When complete, press the Enter button on your keyboard to send it.

You can also switch the message recipient by clicking on the slider.

The assigned chat keys cannot be changed. The window can be moved by clicking and dragging the window by the title bar (in this case, the chat should be in recording mode). The size of the chat window cannot be changed.

Remove the envelope icon from the screen using the key combination [[LCtrl+LShift+Y](#)].

BACK TO SPECTATORS. At the bottom of the list is the BACK TO SPECTATORS button; press this button to return your pilot to the Spectator List.

EXIT. Disconnect from the server and return to the Main menu.

DISCONNECT. Disconnect from the server and return to the Server list.

ASSIGNMENT WINDOWS. These two windows display all Red Coalition and Blue Coalition unit type that are assigned to the mission and are capable of being flown by players (set as Client in the mission editor). Both windows have seven columns that provide information about each unit type listed:

- **Group.** Name of unit group.
- **Unit Type.** Unit type.
- **Position.** Role/position selection in a multi-seat unit.
- **Country.** Country that unit is assigned to.
- **#.** Onboard number assigned to the unit.
- **Airfield.** Home airfield.
- **Player.** Player Name assigned to the unit.

PLAYERS POOL. Player list open / close button ['] (apostrophe). Pressing this button displays a semi-transparent table that lists all players on the server and basic information about each.

Ban List								
Callsign	Ping	Unit	Tac. No	Score	A/C	Ground	Ships	Loss
rosty	85	P-51D-25-NA	031	20	1	0	0	1
Saylor	75	P-51D-25-NA	350	0	0	0	0	0
ZAVAR	35	Fw 190 D-9	032	140	1	7	1	2
Carter	69	Fw 190 D-9	031	5	0	1	0	2
IJG7_Wasp	81	Bf 109 K-4	011	0	0	0	0	1
BURNING SKIES	0			0	0	0	0	0

The following data is displayed in the players pool window:

- **Callsign.** Player callsign.

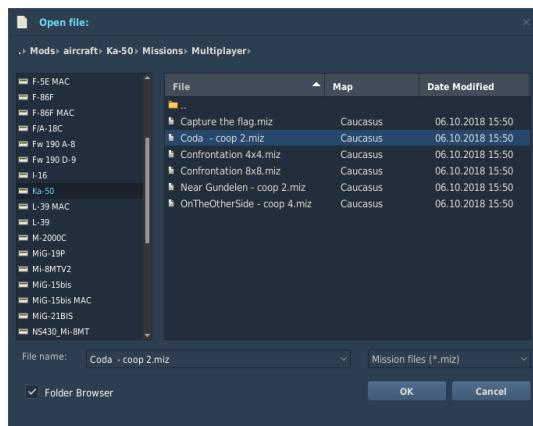
- **Ping.** The connection latency between you and the server. Lower numbers equate to better Ping numbers.
- **Unit.** Player aircraft/unit type.
- **Tac. No.** Player unit TAC number.
- **Score.** Total score the player has made on the mission.
- **A/C.** Number of downed aircraft.
- **Ground.** Number of ground units destroyed.
- **Ships.** Number of ships destroyed.
- **Loss.** Number of times the player has been killed.

At the top of the panel is the BAN LIST button:

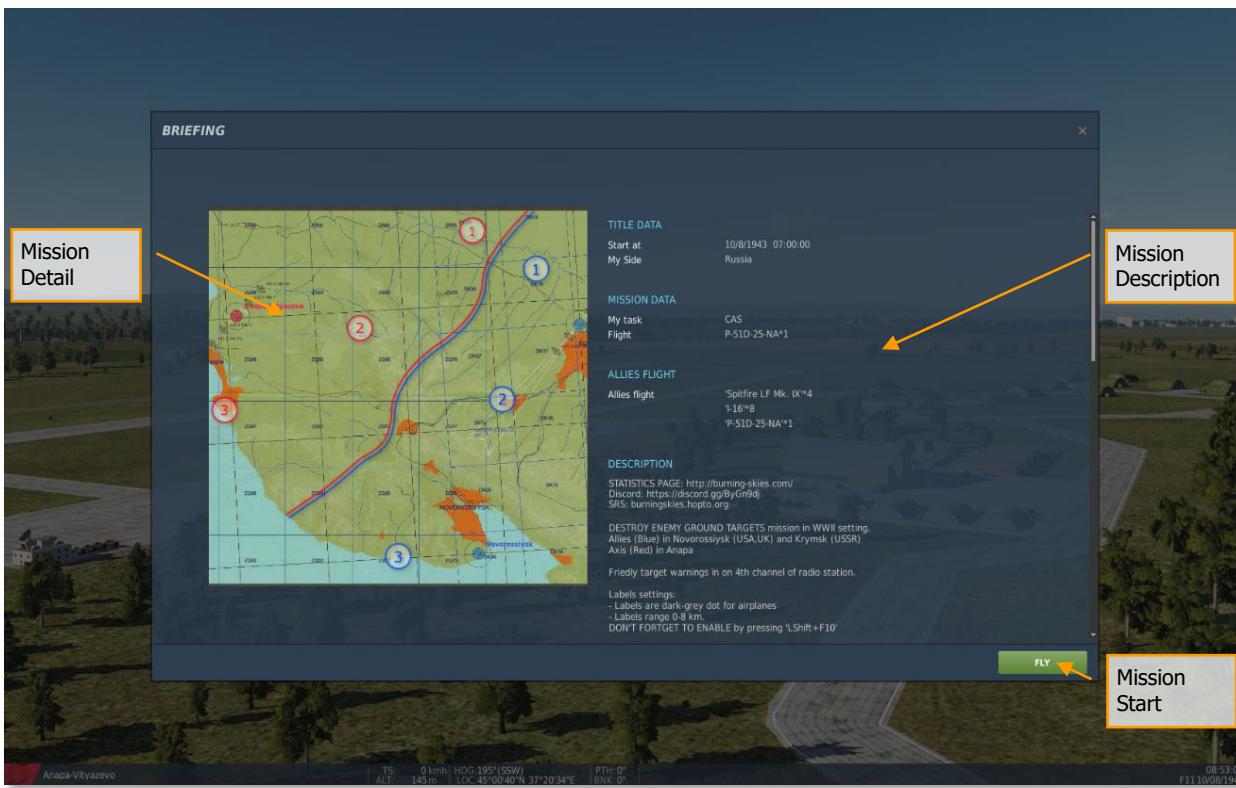
BAN LIST. The player hosting the server of the mission (Host) will also have access to the BAN LIST button. After selecting a player from the list, the Host may press the BAN LIST button to remove the player from the server.

To exit the Player Pool window, press the CLOSE button.

CHANGE MISSION. If you are the server host, you also have access to the CHANGE MISSION button on the bottom of the screen. Using the standard Windows folder and file browser function, select the drive and folder that holds your multiplayer missions. In general, they will be stored in the Missions/Multiplayer folder. Left click on the desired mission and it will be highlighted (selected). Press the OK button load the new mission onto the server.



BRIEFING. After selecting your coalition and aircraft, press the BRIEFING button to view the briefing for your coalition (side). This briefing consists of an image on the left page and a text briefing on the right page. When you are ready to enter the simulation, press the blue FLY button along the bottom of the screen.



- **ОПИСАНИЕ.** The mission description and data are displayed on the right side of the BRIEFING window.
- **ДЕТАЛИ.** The picture(s) with mission details for the selected coalition is displayed on the left side of the window.
- **FLY.** Starts the mission.

Client to server connection

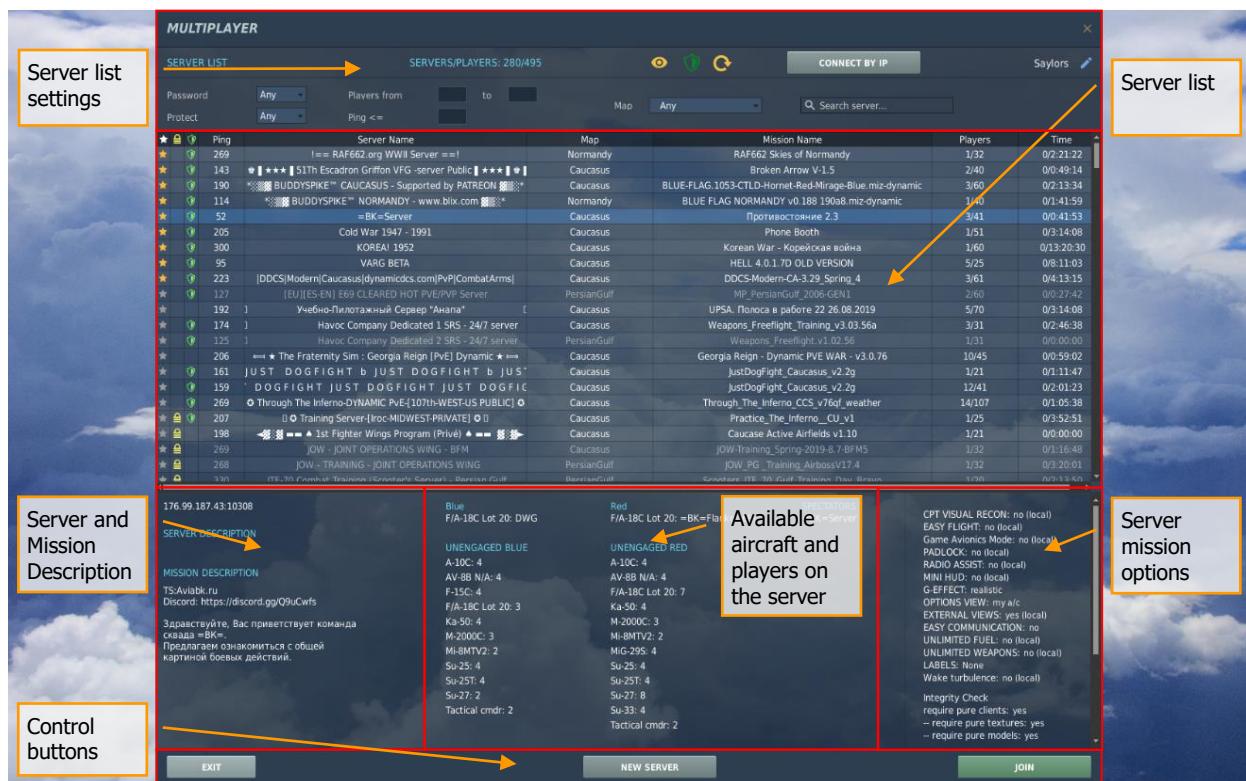
The MULTIPLAYER client window is designed to connect to existing servers in a multiplayer game. Choosing and connecting to a server is the first step in a network game.

After you have selected a server from the Server List, press the JOIN button at the bottom of the screen to join the server.

The SERVER LIST displays all available servers and takes up the majority of the screen. The SERVER LIST is designed to show all detected Servers running the game over the Internet or a LAN. Each row of the Server List represents a different server. Each column in the Server List provides different information about each Server.

Below is the appearance of the window with explanations of the control elements.

The MULTIPLAYER window consists of six logical blocks.



The SERVER LIST SETUP block consists of the following elements:

- **SERVERS/PLAYERS**: .../... – Shows the total number of currently available servers and players online.
- **Password** – Sorts the server list by password (Any/Yes/No).
- **Protect** – Sorts the list of servers by game file integrity check (Any/Yes/No).
- **Players from ... to ...** – Sorts the server list by the number of players on the server.

- **Ping <=** – Sorts the server list by ping.
- **Map** – Sort the list of servers by map/map module.
- **Region** – Sort the list of servers by region.
-  – The button allows you to toggle between displaying servers with only modules available to the player, or all servers regardless of modules.
-  – Integrity check passed. The green shield icon shows the integrity of the player's game files. If the player has any third-party modified files installed in the game, the shield icon will be red. In this case, connecting to servers where file integrity verification is required will be impossible.
-  – The Refresh button will refresh the data for the servers currently in the server list.
- **Search server ...** – Searches for servers by server name.
- **CONNECT BY IP** – To connect to a game over the Internet, you use the CONNECT BY IP option. To do so, press the CONNECT BY IP button. Upon doing so, the Connection to server window will be displayed.



This window consists of two fields:

IP/URL: Enter the IP number or URL of the server you wish to join.

PASSWORD: If the server is password protected, enter the password into this field. If the server is not password protected, you may leave this field blank.

- **CHANGE NICKNAME** – The pencil icon in the upper right corner of the network game window opens the input / selection window of the player callsign. Enter the name you wish other multiplayer members to see you as here. This name will be visible in the menu screens and also as a unit label in the simulation. If no name is entered, a default one will be used. Callsigns may be a max of 25 characters long, and up to five different callsigns may be saved.



The SERVER LIST block displays all found game servers and consists of the following elements (which may be sorted by clicking):

- – Favorite servers are marked by the star icon displayed in the first column.
- – Padlock symbol. This column will be marked with a padlock symbol if the server is password protected.
- – A shield icon is displayed in the third column if a game file integrity check is set on the server.
- **PING.** The connection latency between the player and the server. Lower numbers equate to a better Ping number.
- **REGION.** The name of the server region.
- **SERVER NAME.** The name of the server is listed in this column.
- **MAP.** The map module on which the mission on the server is running.
- **MISSION NAME.** The title of the mission being run on the server.
- **PLAYERS.** Maximum number of players allowed on the server and current number on it.
- **ELAPSED TIME.** The time elapsed since the start of the mission in the format – Mission duration in days / Mission duration in hours : minutes : seconds.
- **TIME IN MISSION.** The local mission time in the format – hours : minutes (AM/PM).

SERVER AND MISSION DESCRIPTION block:

- **SERVER DESCRIPTION.** Displays information about the server.
- **MISSION DESCRIPTION.** When a mission is created in the Mission Editor, the mission designer has the option to include a general mission briefing that will be displayed to both Red and Blue sides. This briefing will be displayed in the Mission Description field.

The AVAILABLE AIRCRAFT and PLAYERS ON THE SERVER block shows the number and type of available aircraft for each coalition, the callsigns of the players who are occupying the aircraft for each coalition, and the callsigns of the players currently spectating.

The forced difficulty settings for the mission on the server are shown in the SERVER MISSION OPTIONS block. Forced server settings are applied over the player's difficulty settings.

In the bottom part of the window are the control buttons:

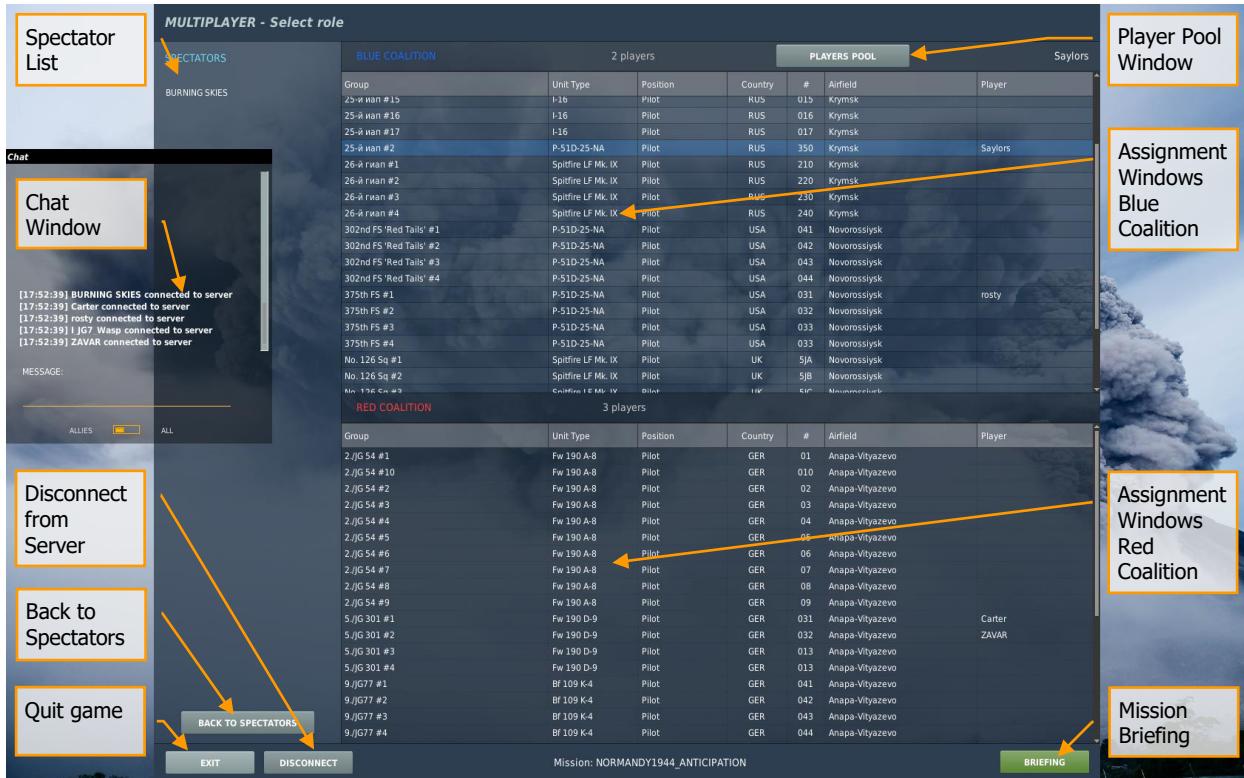
- **EXIT.** The EXIT button will exit Multiplayer and return you to the Main Menu.
- **NEW SERVER.** The NEW SERVER window allows you to host a mission that other players (clients) can join.
- **JOIN.** After you have selected a server from the Server List, press the JOIN button to join the server.

Select role (Client)

After you have joined a mission (Server List or Connect by IP), you are directed to the Join Window. From this window you may select a side, select your aircraft, chat with other mission players, view the briefing, and view the server pool to see who is on the server.

The next step after connecting to the server is coalition and role selection, as well as mission briefing.

The ROLE SELECTION window on the client side is similar to the ROLE SELECTION window on the server side, but the CHANGE MISSION button at the bottom is missing in the window.



Game Server Creation (Server)

Below are step-by-step instructions for creating a server for online play:

1. Open the MULTIPLAYER window.
2. Press the NEW SERVER button to bring up the server creation window.
3. In the SERVER SETTINGS section, enter the server name, select the type of game, specify the maximum number of players. If necessary, select the network interface (if several network cards are installed on the computer) and the port.
4. In the MISSION LIST section, select the desired missions for the game and configure their rotation.
5. Press the START button.
6. In the SELECT ROLE window, select the unit for the game or remain in the list of spectators (recommended).
7. Press the BRIEFING button.
8. In the BRIEFING window, review the mission briefing.
9. Press the FLY button.
10. After all players are ready to start, remove the game from pause by pressing the [Pause] key.

Connecting to a Server (Client)

Below are step-by-step instructions for connecting to an already-existing game server:

1. Open the MULTIPLAYER window.
2. In the list of servers, select the desired server. If necessary, press the refresh button  to refresh the list of servers, or manually connect to a server by inputting its IP address.
3. Click the JOIN button.
4. In the SELECT ROLE window, select the unit for the game or remain in the list of spectators.
5. Click the BRIEFING button.
6. Familiarize yourself with the mission details.
7. Click on FLY to start the game.

Ending the Session

1. Press [Esc].
2. In the MISSION PAUSED window, click LEAVE SERVER or QUIT TO DESKTOP.



3. You may also end the session by clicking on DISCONNECT or EXIT in the SELECT ROLE window.

DCS World



EXIT

EXIT

Exit by pressing the EXIT button on the Main Menu page.



