16. AIR UNITS AND COMMAND STRUCTURE

Focus: This chapter covers the building blocks to the air war in WiTE2.

Key Points:

- How the air command structure works
- The difference between Air Commands and Air Operational Groups
- How individual planes are allocated to Air Groups
- How the concept of air profiles limits both the upgrade options for air units and the AOGs they can be assigned to
- How to upgrade your air force as new types of planes become available
- The role of air bases

- How individual pilots are tracked and allocated to air groups
- The types and role of anti-aircraft units

16.1. OUTLINE OF THE BASIC CONCEPTS

The air war in WiTE2 tracks individual planes and pilots and allows the player (if they wish) to manage the modernisation of their air forces, their allocation to combat missions and the load-out used by the planes. However, much of the air war is handled automatically by the computer in the Air Execution Phase (5.3.2).

16.1.1. AUTOMATION

The player can choose to partly automate the air war. If the 'AI assist' option is selected the AI will generate Air Directives (17.4) and allocate air groups to Air Operational Groups according to set priorities. In addition it will rebase planes as the linked HQ is moved on the map.

However, the player will need to make some decisions such as which ground HQ (Axis Army or Army Group, Soviet Front or Military District) an Air Command is assigned to follow and the relative priority (for air group assignment) between the AOGs. This process is summarised in the relevant one page guide (4.6.1).

There are two variants to using the AI-assist. If it is selected as part of setting up a game then the orders will be executed twice each turn when the F12 key is pressed. If this approach is used then in a multi-player game the players will need to decide whether to automate the air war at the start of the game and this decision cannot be changed.

The alternative allows the player to access the AI-assist at any point in a turn. It also allows the player to over-ride those decisions (as long as they do not then press the AI-assist option again).

Practically the two methods yield the same options (and require the same inputs) but they work in different ways allowing a different level of direct player intervention.

> If you want to focus on the ground war then it is suggested to use the set-up option and ensure that the required actions are taken each time you press F12.

16.1.2. PILOTS, PLANES AND AIR GROUP UNITS

While the game engine tracks individual pilots and planes, the lowest command unit available to the player is the Air Group Unit (16.4). This includes a variable number of planes and pilots and can be assigned to a variety of missions depending on the type of planes it is equipped with.

16.1.3. COMMAND STRUCTURE

Air Operational Groups (a collection of air group units) report to air commands (for the Germans these are the Luftflotte and Fleigerkorps, other Axis nationalities use their

own command structure and the Soviets use Air Armies and some Air Corps). For the Germans, the air commands in turn report to the OKL.

16.1.4. AIR DIRECTIVES

Most actual air missions take place in the Air Execution phase following pre-created Air Directives. This can be set by the computer (17.1) or manually by the player (17.4).

Most bombing and all reconnaissance missions take place this way. Ground Support bombing missions (18.1.3) are created using an air directive but executed during the Ground Execution Phase. The transfer of air units (17.2.5 and 17.3.5) between airbases can be done in either the air planning or ground phase. Air transport (of freight or units) (22.5) and paratroop drops (22.5.3) happen in the ground phase.

Each Air Command can have up to 32 Air Directives at any one time.

16.2. AIR COMMAND STRUCTURE

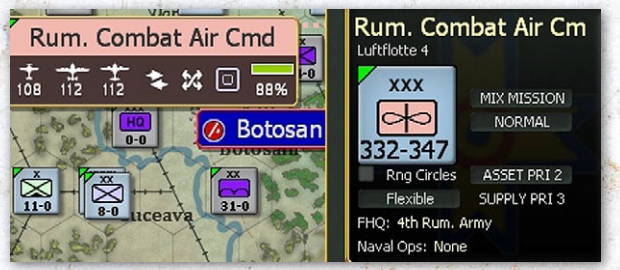
The air command structure is different to that used for Ground HQs and primarily exists to enable the allocation of leaders and to provide a means to link air units to ground operations.

16.2.1. AIR HEADQUARTERS

The actual structure of the air commands varies between the different nationalities.

The Germans use Luftflotte and Fliegerkorps and these in turn report to the OKL.

Axis allies have a mixture of a national Air Command and sometimes a separate formation (such as the Rumanian Combat Air Command) that controlled those air assets committed to the invasion of the Soviet Union in June 1941). These start the game assigned to a German Luftflotte as opposed to their national air commands.



The Soviets mostly use Army Air Formations (air commands and air armies) and these report to Soviet Fronts or Military Districts. In addition at the start the Soviets have the elements of their long range bomber fleet and the various PVO Corps (that are assigned to one of the Army Air Formations).

As the war progresses, AOGs, Air Corps and Air Army commands are added or removed as a result of scripted transfers and reinforcements.

The Air Headquarters are used to assign leaders, and set the relative asset and supply priority.

Note that in addition to their own command hierarchy, Air Commands can be linked to a particular Axis Army or Army Group or Soviet Front or Military District. If the AI assistance is used, this will influence how the planes are based as those ground HQs move on the map.

16.2.2. AIR OPERATIONAL GROUP UNITS AND AIR COMMANDS

Air Operational Groups control the individual air groups and are assigned to a given Air Command. Supply priority can only be set at the Air command/air army level. If wanted, asset priority, and the HQ being followed can be set at corps AOG level (if so ensure that the air command is set first as otherwise that will override any allocations at the AOG level).

Each AOG can command from one to five air groups.

16.2.3. AIR BASES AND AIR COMMANDS

A given air base can have planes from more than one air command.

16.2.4. THEATRE BOXES

Each Theatre Box (with the exception of the National Reserve) has a required air garrison strength. Air losses in a Theatre Box will be set by varying the air combat intensity (13.3.1) to reflect shifting events in the wider war.

There are a number of scripted transfers of air units between the Theatre Boxes and the Map and between Theatre Boxes.

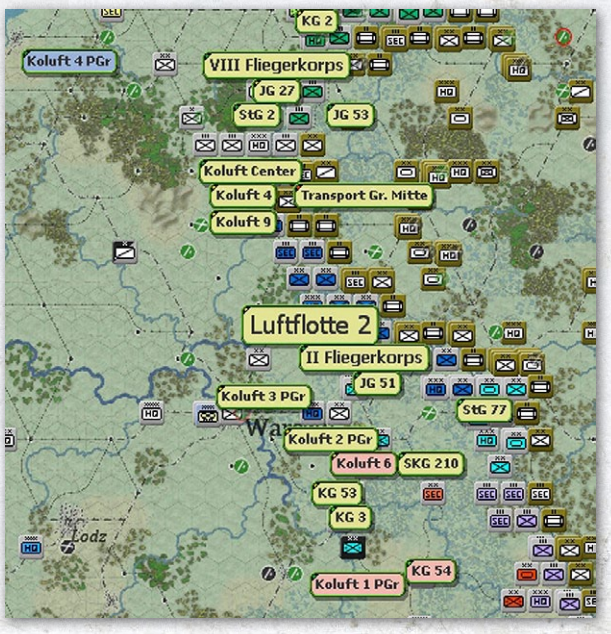
Freshly raised air units are placed in the appropriate National Reserve and can be deployed to an airbase on the map when the player is ready. Equally air units can be removed from the map and placed in the National Reserve for training or to refit.

16.3. AIR OPERATIONAL GROUPS

Air Operational Groups report to one of the levels of the Air Command system and directly control the air groups.

They can be used to automate the control of the air war if you wish to do this (17.1).

If you intend to manually control your air operations then you will still need to allocate air groups to AOGs. In turn the AOGs will be displayed on the map (the label will be roughly central to the locations of the individual air units) and you will need to use these when you wish to move your air groups.



16.3.1. MANUAL AND AUTOMATIC (AI ASSIST) CONTROL OF AOGS

The detailed rules for allocation air groups to AOGs, creating Air Directives and moving Air Groups are in sections 17.1, 17.3 and 17.4 respectively.

16.3.2. AIR OPERATIONAL GROUPS AND AIR UNIT TYPES

Certain plane types can only be assigned to particular types of Air Operational Groups. Both sides can only assign transport and reconnaissance air units to the appropriate AOGs. These constraints effectively follow the air profiles (16.4.6) that are also used to limit the conversion of planes as new models become available.

For the Germans, the following restrictions apply:

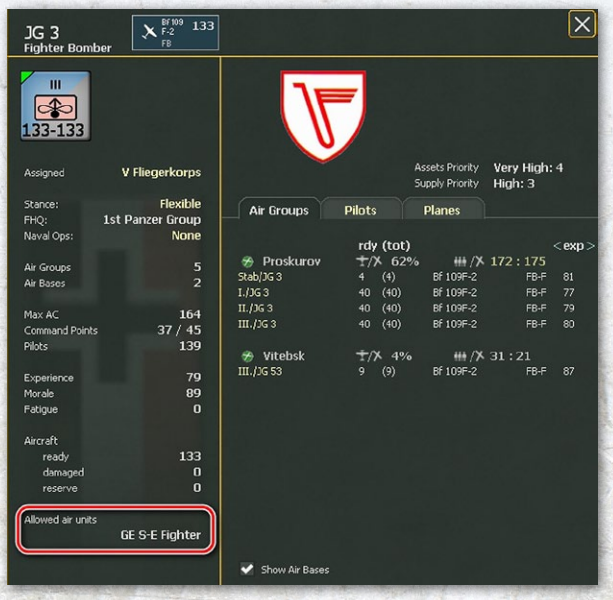
- JG – fighters
- KG(J) – German single-engined fighters
- StG and SG – ground attack aircraft (FB and tactical bombers)
- KG – level bombers
- NAGr/ FAGr/Koluft – recon
- NJG – German multi-engined and single-engined fighters
- NSGr – night bombers, German light bombers, multi-engined fighters and bi-plane bombers
- TG – German transport air groups

For the Soviets, the following restrictions apply:

- IAD – fighters and fighter bombers only
- BAD – level bombers
- DBAD – heavy bombers only
- NBAD – night bombers only
- ShAD – tactical bombers
- SAD – Fighters and bombers

Soviet naval only air groups can only be assigned to an AOG with a fleet suffix (16.4.9) such as –CHF.

The air profile (16.4.6) of the types of planes eligible to be assigned to an AOG is shown on the bottom left of the AOG detail screen (if there are any restrictions).



16.3.3. DISBANDING AND CONVERTING AOGS

Over the game a number of AOGs will arrive as reinforcements, be disbanded (or withdrawn) of convert to a different type. If they arrive as a reinforcement they can be called to the map using the procedures in section 17.3.

In particular a number of Soviet SAD AOGs will (ahistorically) be retained in early 1942 and will be renamed in early Summer 1942. In addition, five of the SAD commands will be retained and will convert to ShAD AOGs in early Summer 1942.

Both these changes are needed or the Soviet player will not have enough AOGs to manage the air force, in particular the SADs are needed to enable usage of the Il-2 formations.

16.3.4. SOVIET GUARDS AOGS AND AIR GROUPS

A number of Soviet AOGs will convert to Guards status on their historical dates. This has no direct impact on their performance but will also lead to the upgrade of air groups to Guards status.

For every Guards AOG, usually 3 Air Groups of the appropriate type (16.4.6) will be automatically converted to Guards status (16.4.8). Usually these will be groups directly assigned to the relevant AOG but if that AOG is not currently in use (or lacks sufficient air groups), then groups in the reserve will be converted instead. If there are not enough of these, then air groups in other AOGs will be converted.

Guards air groups gain +5 on their national morale which will raise the average quality of their pilots (16.7).

16.3.5. AXIS ALLIED AOGS

These have some limits as to the nationality of their higher command. They can all be set to report to a German HQ or AOG. However, Rumanian and Slovakian AOGs cannot report to a Hungarian command and Rumanian AOGs cannot report to a Hungarian or Slovakian HQ.

16.4. AIR GROUP UNITS

Air group units are the basic tactical unit that contain aircraft. Each air group unit is designated by group type, which determines the maximum number of aircraft in the unit, and functional type, which determines the kinds of air missions the unit can undertake. The name of the air group unit usually indicates its function as well. Air group units consist of a number of the same type and model of aircraft that are categorized as ready, damaged or reserve.

Aircraft are characterized by a number of attributes, to include speed, climb rate, maximum altitude, radius in miles, number of engines, armour rating, durability, manoeuvrability, and reliability (37.16.1).

Aircraft carry devices such as machine guns, cannons, rockets, bombs, drop tanks and electronic warfare systems such as radar. Aircraft may have several different load outs of devices that can be selected through the Air Group Unit detail window (37.16.3). Pilots and air crews are assigned to air group units and their aircraft from the manpower pool, with pilots also being tracked individually as they gain experience.

Air Groups that appear as reinforcements will initially be placed in their National Air Reserve (13.2.2). Reinforcement Air Groups do not use pilots already in the pool, but create them when they are placed in the national reserve. The pilots in reinforcement Air Groups will have experience levels that are an average value equal to the Air Group's experience.

16.4.1. AIR GROUP UNITS STATUS

The Air Unit can be set to one of two main basic statuses. A unit in **rest** will not be used in the current turn but will regain lost morale and reduce fatigue.

All other Air Units are deemed to be active and will take part in air operations according to the type of plane and Air Directive selected. This includes being set to fly missions only during the day (DO), only at night (NO) or both (DN).

In addition, the method by which the Air Group will change planes to deal either with shortages or when more modern planes become available can be set. The options are M>> (this will be done manually by the player) or A (this will be done automatically in the logistics phase using the routines set out in section 16.5).

16.4.2. FIGHTER BOMBERS

Fighter Bombers (FB) can be assigned to fly either Fighter Missions or Bomber Missions in the air group unit detail window by selecting the Mission text. The setting determines whether they are available for escort duty or to bomb targets.

The air group unit detail window lists whether the unit is trained as a Fighter or Bomber unit. Fighter bomber air groups trained as fighters will bomb at 80% net effectiveness. Fighter bomber air groups trained as bombers will dogfight with opposing fighters (and fighter-

bombers without bombs) as if they had only 80% of their normal experience.

In the Commander's Report (35.4.1), FB are shown as either Ftr or Bmr according to their current role. If they are ordered to act in a role they are not trained for, this will be shown as Bmr* or Ftr* as in the example below:

Air Group	Nat	Size	Aircraft	Type	FB
I.(Jagd)/LG 2	Ger	III	Bf 109E-7	FB	Ftr
II.(Sch)/LG 2	Ger	III	Bf 109E-4B	FB	Bmr
Stab/JG 3	Ger	I	Bf 109F-2	FB	Ftr
I./JG 3	Ger	III	Bf 109F-2	FB	Ftr
II./JG 3	Ger	III	Bf 109F-2	FB	Ftr
III./JG 3	Ger	III	Bf 109F-2	FB	Ftr
Stab/JG 27	Ger	I	Bf 109E-7	FB	Ftr
II./JG 27	Ger	III	Bf 109E-7	FB	Ftr
III./JG 27	Ger	III	Bf 109E-7	FB	Ftr
Stab/JG 51	Ger	I	Bf 109F-2	FB	Bmr*

The same designation of a mismatch between current role and training can be found on the unit tab (37.16.3).

A player can retrain an air group unit by selecting the air group detail screen training type. This will take the unit off the map for 8 turns and when it returns, it will be switched from fighter to bomber or vice versa. For example, a FB air group unit trained as a fighter will bomb at 80 percent effectiveness and dogfight at full experience level. If that air group unit was retrained as a bomber, when it returned it would bomb at full effectiveness and dogfight at 80 percent experience level.

Fighter bombers will dive down to conduct attacks at 1,000 feet altitude if their mission altitude is set at 5,000 and above.

Fighter bombers can only participate in strategic bombing missions as escorts.

Fighter aircraft carrying drop tanks will automatically drop them once they have been used up during the mission. Bomb carrying aircraft will drop their drop tanks at the same time they drop their bombs. Fighters and Fighter Bombers carrying drop tanks and/or bombs will fight less effectively if engaged in air to air combat by enemy interceptors. In such a situation, there is a chance that some of the aircraft will prematurely drop bombs and/or drop tanks to more effectively engage the enemy interceptors.

16.4.3. AIRCRAFT STATUS

Individual aircraft will be ready (i.e. can fly if assigned), damaged (and need to repaired) or in reserve (due to a lack of aviation support at the airbase and unavailable for air missions).

The number of ready planes is shown on the air command tab (in the example below the AOG has 41 ready and 10 damaged or in reserve:

This can also be seen indirectly on the AOG label which shows that 41 planes are available and these constitute 68% of the total aircraft.

Ready aircraft are available to fly in air missions that the air group unit is selected to conduct.

Damaged aircraft require repair and are unavailable to fly, but do count against the maximum number of aircraft allowed by the group type. Damaged aircraft that were not repaired during the maintenance segments of the air execution phase may be destroyed (written off) during the logistics phase. Older aircraft with low durability and low reliability have a greater chance of being written off.

Aircraft are usually placed in reserve status due to a lack of aviation support at their assigned air base unit or a shortage of pilots in the air group unit. Reserve aircraft are categorized as unready and do not fly in air missions, but are considered flyable if the air base unit their air group unit is attached to is captured (16.6.8).

Reserve aircraft are not counted against the maximum number of aircraft in the unit, but may be re-designated as ready aircraft during the logistics phase if the number of ready and damaged aircraft is below the maximum number of aircraft allowed in the unit. If the number of ready aircraft in an air group unit exceeds the maximum

> Note that if the 'percentage to fly' has been set (17.4.3) in the air doctrine window then neither damaged or reserve planes count as ready. This may lead to the entire air unit being grounded due to a lack of ready planes.

number allowed, aircraft designated as reserve in the air group detail window will automatically be sent back to the applicable production pool over a number of logistics phases, while the excess ready aircraft will be moved to the reserve designation over a number of logistics phases.

16.4.4. AIR GROUP UNIT MISSION SETTINGS

Air group units can be set to operate during day only, night only, or day and night. Alternatively, air group units can be set for rest. Rest means the unit does not fly at all. Air groups in TBs ignore mission settings. Air units in the Reserve TB are available for training missions if they have low experience and are not set to rest.

The mission setting may be changed on the CR screen (individually or in bulk using the mission setting function) or on the unit detail screen for the group (37.16.3).

16.4.5. AIR GROUP UNIT WEAPON AND FUEL LOADOUTS

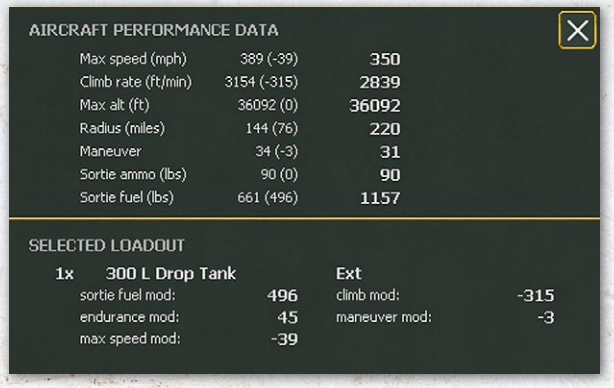
Air Group Units have a default loadout determined by the type of aircraft and the assigned mission. The player has the option to change the loadout through the air group unit detail window, which also can be accessed through the Commander's Report air group unit tab, either individually or for multiple air group units with the same aircraft model.

The image above shows some of the loadouts available to the German Ju-88 in June 1941.

Use of manual air group selection allows multiple air group units of the same model assigned to the same type of air directive to change load outs as well (18.2). The type of loadout can impact aircraft effectiveness by decreasing various attributes such as climb rate, speed, and manoeuvrability, though fighters and fighter bombers may drop bombs and/or fuel drop tanks when engaging in air to air combat (19.2).

> Note that if planes are at an airbase with low levels of fuel by default a load out with no additional fuel tanks will be selected. If this is done manually, you may find that the available fuel is used up quickly resulting in planes not being available for missions.

If you change the loadout then the performance data for the aircraft may vary and these changes are shown as:



In this case, adding the fuel tanks lower the maximum speed and climb rate and manoeuvre values. In turn the fuel required for the mission is increased and the range extended.

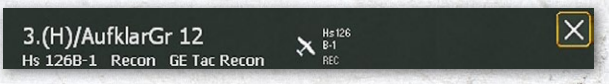
16.4.6. AIR PROFILE AND AIR GROUP UNIT TYPES

Air group unit type designations are based on the maximum number of aircraft allowed in the unit, the type of aircraft, and the unit's nationality. The exact numbers vary by type of group and date and are determined by the current Aircraft Profile for each group, which lists the maximum size for each of three group sizes, corresponding to small, medium and large size groups.

The Air Profile is also used when assigning air units to AOGs (16.3.2) and swapping planes (16.5.1).

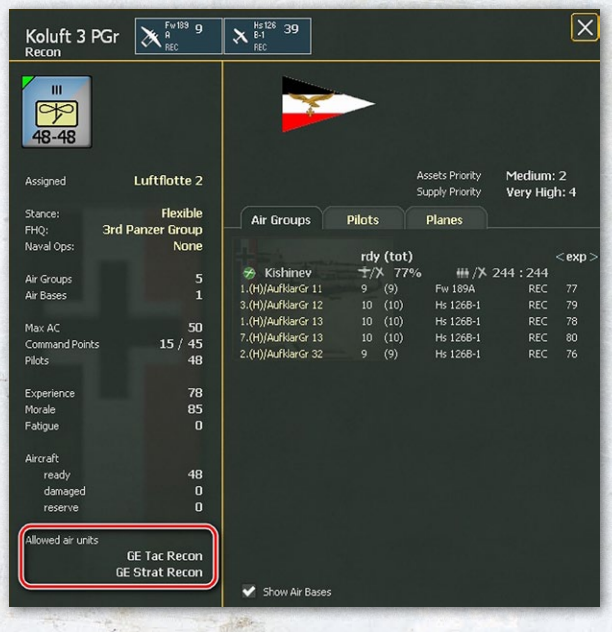
Players desiring to know the full list of air plane types and profiles should go to the game editor aircraft tab, select 'EDIT AIR PROFILES' and click on the Profile for that type of aircraft. A list of the plane models that fit that profile will then be displayed. An indicative list is in 16.5.1 of this manual.

For each individual air group the profile is shown on the unit tab.



In addition each AOG detail screen will show the types of planes it can control (if there are any restrictions).

Note that especially for the Soviets a number of AOGs will change their designation over the game. It is possible this will leave air groups in the AOG that could not be assigned but they can remain in that command with no ill effects.



16.4.7. AXIS AIR GROUP UNIT TYPES

The list below shows the maximum number for each air group formation. However, these vary across the game and a German medium bomber group unit would have a maximum size of 3 for a Schwarm, 9 for a Staffel, and 30 for a Gruppe while a German fighter group in July 1944 would have a maximum size of 4 for a Schwarm, 16 for a Staffel, and 68 for a Gruppe.

Schwarm = 4 aircraft (Germany)
Staffel = 12 aircraft (Germany)
Gruppe = 40 aircraft (Germany)
Escad = 10/12 aircraft (Rumania)
Grup = 36 aircraft (Rumania)
Lentu = 12 aircraft (Finland)
Oszta = 18 aircraft (Hungary)
Szaza = 9 aircraft (Hungary)
Sezione = 4 aircraft (Italy)
Squadriglia = 12 aircraft (Italy)
Gruppo = 36 aircraft (Italy)

16.4.8. SOVIET AIR GROUP UNIT TYPES

Polk = 20-67 planes depending on type and turn
Eskadriliya = 2-12 planes
Soviet formations also change their maximum size across the game. The table below is not exhaustive but gives some idea of the main changes to the more common Polk air groups.

The headings are covered in more detail in section 16.4.9 and more information can be found in the game's editor (41).

DATE	FIGHTER	BOMBER	GROUND ATTACK	LONG RANGE BOMBER	RECON
At Start	67	62	62	42	62
Aug 1941	32	32	33	32	32
Sep 1941	20	20	20	20	20
Apr 1943	32	30	32	32	30
Jun 1943	34	30	32	32	30
Dec 1943	40	32	40	40	32

16.4.9. AIR GROUP UNIT NAMES

Though some of the air group unit names in the game are self-explanatory, many use terms and abbreviations that may not be familiar. The lists below are not comprehensive, but are provided to assist in recognizing the type of air group unit from the name.

German Air Group Unit Names

Stab – Command Flight
JG (Jagdgeschwader) – Fighter Wing
NJG (Nachtjagdgeschwader) – Night Fighter Wing
ZG (Zeröstrergeschwader) – Destroyer (Twin Engine Bf110) Wing
StG (Stukageschwader) – Stuka Wing
SG (Schlachtgeschwader) – Battle (Fighter Bomber) Wing
KG (Kampfgeschwader) – Bomber wing
SKG (Schnellkampfgeschwader) – Fast Bomber Wing
NAGr (Nahaufklärungsgruppe) – Short Range Reconnaissance Wing
FAGr (Fernäufklarungsgruppe) – Long Range Reconaissance Wing
NSGr (Nachtschlachtgruppe) – Night Bomber Wing
SG (Schlachtgruppe) – Fighter Bomber Wing
TG (Transportgeschwader) – Transport Wing
KGrzbV (Kampfgruppe zur besonderen Verwendung) – Battle Group Special Purposes or Operations
Lehr – School/Training

Axis Allied Air Group Unit Names

LeLv (Lentolaivue) – Regiment (Finnish)

Soviet Air Group Unit Names

Soviet air group names include both an indication of the formation's principle purpose, its status and any wider role or attachment.

The addition of 'G' before any other initials indicates the air group had been awarded Guards status (Gvardeyskiy).

Initials after the title (in the form –KBF) indicate that the formation was notionally part of a different air organisation than the mainstream VVS formations attached to the Red Army.

Examples of this include:

PVO (Protivovozdushnaya Oborona) – Soviet Air Defence Forces
SF (Severnyy Flot) – Northern Fleet
KBF (Krasnoznamyonnyy Baltiyskiy Flot) – Red Banner Fleet
ChF (Chernomorsky Flot) – Black Sea Fleet
GVF (Grazdanskovo Vozdushnogo Flota) – Civil Air Fleet
PF (Tikhookeanskiy Flot) – Pacific Fleet

The rest of the initials give an indication of the primary function of the formation:

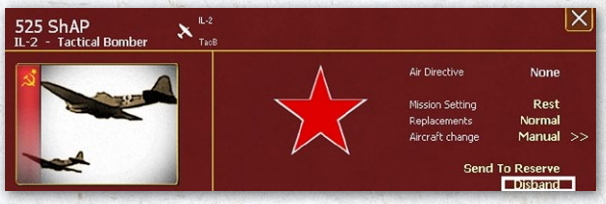
BAP (Bombardirovchnyy Aviatsionnyy Polk) – Bomber Aviation Regiment
BBAP (Blizhne-bombardirovochnyye Polki) – Short Range Bomber Aviation Regiment
DBAP (Dahl'nyaya Bombardirovchnyy Aviatsionnyy Polk) – Long Range Bomber Aviation Regiment
IAP (Istrebitel'nyy Aviatsionnyy Polk) – Fighter Aviation Regiment
NBAP (Nochnoy bombardirovochnyy aviapolk) – Night Bomber Aviation Regiment
MTAP (Minno-torpednyy Aviatsionnyy Polk) – Minelaying and Torpedo-Bomber Aviation Regiment
MRAP (Morskoy Razvedyvatel'nay Aviatsionnyy Polk) – Naval Reconnaissance Aviation Regiment
OAS (Otdel'nyi Aviatsion'nyi Aviaeskadril'ya) – Independent Aviation Squadron
ODRAE (Otdel'naya Dahl'nyaya Razvedyvatel'naya Aviaeskadril'ya) – Independent Long-Range Reconnaissance Squadron
OIAE (Otdel'naya Istrebitel'naya Aviatsionnyy Aviaeskadril'ya) – Independent Fighter Aviation Squadron
ORAE (Otdel'naya Razvedivatel'naya Aviatsion'naya Eskadrilya) – Independent Reconnaissance Aviation Squadron

RAP (Razvedyvatel'nay Aviatsionnyy Polk) – Reconnaissance Aviation Regiment
SBAP (Smeshannaya Bombardirovchnyy Aviatsionnyy Polk) – Composite Bomber Aviation Regiment
ShAP (Shturmovoy Aviatsionnyy Polk) – Ground attack Air Regiment
TAP (Transportnaya Aviahtsiya Polk) – Transport Aviation Regiment
TBAP (Tyazhelobombardirovochnyy Aviapolk) – Heavy Bomber Aviation Regiment

The various parts of the name are combined so for example TAP-GVF represents one of the civil transport squadrons converted to military service during the war. More commonly, GIAP is the designation of a Guards Fighter Regiment.

16.4.10. DISBANDING AIR UNIT GROUPS

Air Group Units can be disbanded either using the Commanders Report or the unit screen (37.16.3).



If an Air Group Unit is disbanded then any planes will be returned to the relevant pool and the pilots can be re-assigned to other air unit groups.

An Air Group Unit on an isolated air base may not disband.

16.4.11. CREATION OF NEW AIR UNIT GROUPS

The Axis player cannot raise new air unit groups as this is handled by the reinforcement and withdrawal procedures.

New air units are automatically created for the Soviet player and placed in the National Reserve to train. These will initially be equipped with any planes that are available in the pools including those with low production rates.

To avoid having rare or valuable planes allocated to units with low experience, the Soviet player may need to either disband some of these formations or swap them to use an obsolete plane until they have sufficient experience to be deemed combat ready.

16.4.12. DEPLETED AIR UNIT GROUPS

This concept is used by the AI-assist when deciding which air groups to send to the reserve (17.1.9) and is also shown in the Commander's Report. Air groups are treated as depleted for the Axis if they have less than 25% of their total planes and for the Soviets less than 33%.

In addition, air groups are treated as understrength if they have less than 33% of their planes (Axis) or 50% (Soviet).

16.5. UPGRADING AND SWAPPING AIRCRAFT

Dependent on the availability of aircraft models in the production pool, air group units may be changed to a different model aircraft manually by the player or automatically during the player's logistics phase. The default setting for air group unit upgrades is manual

An aircraft model has to be in production for at least 1 month before it can be used to upgrade an air group unit. However, it may be used to equip newly raised air groups created as part of the Soviet player's production system. These can be manually swapped to an older plane type if the player wishes while the air group unit is in the National Reserve.

Players have the option to manually change (swap) the aircraft model through an air group unit's detail window (37.16.3), with possible aircraft models listed when the "CHANGE" link has been toggled from "Automatic" to "Manual" (default is manual). Changing the aircraft model

AIRCRAFT	TYPE	IN POOL	IN AIR GROUPS
I-153	Fighter Bomber	183	0
I-15bis	Fighter Bomber	78	0
I-16 Type 24	Fighter Bomber	236	0
I-16 Type 29	Fighter Bomber	50	0
I-16 Type 5	Fighter Bomber	18	0
MiG-3	Fighter	86	106
Yak-1	Fighter Bomber	119	205
Yak-7A	Fighter Bomber	43	0
LaGG-3 '11 Series'	Fighter Bomber	49	60
LaGG-3	Fighter Bomber	139	548
Hurricane IIB (SO)	Fighter Bomber	61	100
P-40B (SO)	Fighter	0	12
P-40E (SO)	Fighter Bomber	34	0

in an air group unit may result in up to fifty percent of the new aircraft arriving damaged.

If Manual upgrade is chosen, clicking on upgrade will generate a list of the possible new planes, as seen on the screenshot on the previous page.

The chance of an automatic change increases as a group's total number of aircraft as a percentage of the maximum number of aircraft in the air group unit decreases. The air group unit cannot have flown any missions yet in the turn and will be unable to fly any missions after the change out.

Some damaged planes may be written off when swapped out.

16.5.1. AIR PROFILES AND UPGRADE RESTRICTIONS

When upgrading (either manually or using the automatic routines) an air unit can only swap to planes with the same air profile.

PROFILE	TYPICAL AXIS TYPES	TYPICAL SOVIET TYPES
Generic	Slovakian bi-planes	
Bi Plane Bomber	Go-145; Hs-123A-2; Hs 126B-2	R-Z; U-2VS
Single-Engined (S-E) Fighter; Fighter	Bf 109x; Fw 190x, He 112, He 162; He 163B, Me 262x	I-15x; I-16; Mig-3; Yak 1x/7x/9x/3; LaGGx; La-5x; La-7x; Pe-3x; Hurricane IIx; P-39x; P-40x, P-47; Spitfire
Multi-Engined (M-E) Fighter	Bf-110x; Do-17x; Do-215x; Do-217x; He 219, Ju-88x; Me-210x; Me-410x;	
Light Bomber Ground Attack	Fw 190 F/G; Hs 123A-1; Hs 129B, Ju-87x, Bf 109E-7	I-153BS; Su-2; Il-2x; Il-10
Medium Bomber Bomber	He 111x; Do 17x, He 177x; Ju 188x; Ju 86x; Ju 88x; Do 217	SB-2; Ar-2; Tu-2x; Pe-2x; Li-2VV; A20x
Long Range Bomber	None	Yer-2x; DB-3x; Il-4x; TB-3; Pe-8; B-25x
Tactical Recon	Bf-109x; Fi 156x; Fw 189x; Hs 126x	Il-2KR; Yak 7B
Bi Plane Recon		R-5; R-10; U-2Rcn
Strategic Recon	Bf 110x; Do-17P; Do 215; Fw 200x; Ju-86; Ju-88x; Me-262x; Me-410x; He-111x	Yak-2; Yak-4; SB-2; Pe-2x
Bi-Plane Transport		U-2
Transport	Go-244; He-111x; Ju-52; Ju-86; Me 323; Si 204D; SM.82; LeO 451	Yak-6; TB-3; Li-2; C-47; Snche-2
Naval		GST; KM-1; MBR-2; A-20x; DB-3T; Il-4x; IL-2T

The table above lists the main profiles and gives some examples of typical planes in each category.

This information can be found in the editor as indicated above (16.4.6) in the Commander's Report (35.8.2) and on the air group counter.

Note the plane types in this table are not an exhaustive list but intended to indicate how the air profile works in influencing upgrade options.

16.5.2. AUTOMATIC SETTING

If the player toggles the "CHANGE" link from "Manual" to "Automatic ," then in the upgrade sub-segment of the logistics phase, the air group unit may upgrade in accordance with its current aircraft upgrade path as listed in that aircraft model's city production list window (37.14). It may also downgrade to older aircraft (16.5.4).

In the swap sub-segment, the air group unit may change out the existing aircraft model with an aircraft model of the same functional type, but not necessarily along the upgrade/downgrade path. The computer will only swap out aircraft in air group units that have less than 50 percent of maximum aircraft allowed, with the lower the percentage below 50, the higher the chance for an aircraft swap.

All air units in the non-reserve Theatre Boxes will be set to automatic upgrades.

16.5.3. MANUAL SETTING

An interface window to provide information when upgrading aircraft can be accessed from the air group unit detail window when the group is set for Manual Aircraft Change. Select 'Manual'.

The window will display the possible aircraft alternatives and for each, the number of aircraft in the pool, the number of aircraft in air group units, and the number of factories. The player can use the selectable links to navigate back and forth between appropriate information windows. Selecting an aircraft model will also allow the player to compare it with the current aircraft model (35.8.4).

Manual aircraft swaps are not allowed if air base unit to which the air group unit is attached is less than four hexes away from an in supply enemy unit.

AIRCRAFT COMPARE

	LaGG-3	MiG-3
	LaGG-3 FB	MiG-3 F
		
Nation:	Soviet Union	Soviet Union
Type:	Fighter Bomber	Fighter
Start Date:	1-1941	11-1940
End Date:	6-1942	12-1941
Upgrade:	La-5	-
Crew:	1	1
Engines:	1	1
Max Speed:	336	382
Cruise Speed:	258	292
Climb:	2135	2345
Max Alt:	30515	35764
Max Load:	443	443
Endurance:	130	125
Range:	559	608
Reliability:	13	10
Sortie Ammo:	120	70
Sortie Fuel:	904	901
Build Cost:	396	411
Build Limit:	66	72
Armor:	1	1
Durability:	27	28
Maneuver:	29	31
20mm ShVAK Cannon aircraft cannon		12.7mm UBS MG aircraft cannon
Load: 100		Load: 75
Effect: 5		Effect: 3
Range: 5000		Range: 4000
Accuracy: 24		Accuracy: 30
Ceiling: 0		Ceiling: 0
Rate of Fire: 31		Rate of Fire: 26
Blast: 0		Blast: 0
Anti-Air 74		Anti-Air 60
Anti-Soft: 8		Anti-Soft: 4
Anti-Armor: 24		Anti-Armor: 5
Penetration: 3		Penetration: 2
HEAT Pen: 0		HEAT Pen: 0
HVAP Pen: 0		HVAP Pen: 0

16.5.4. ALLOCATION OF OLDER PLANE TYPES

If the air unit was in a Theatre Box (including the reserve) when it changed then the older aircraft are assigned to the transit pool (so it maybe several turns before they can be re-allocated). If the air unit was on the map, then any such planes are moved to the active pool.

16.6. AIR BASES

At the start of the game airbases are created on the map as designed for that scenario. As the game progresses the players can create new airbases or to expand the existing ones Each size of airbase can ideally support a certain number of planes (although this can be exceeded) and up to a maximum of 20 air group units (of any size).

The only units that can be attached to air base units are air group units.

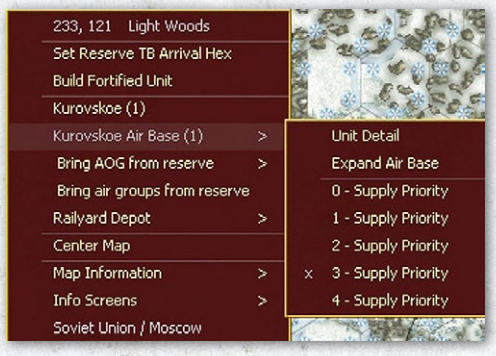
Airbases represent the physical and logistical infrastructure required to support air group units, to include airfields, repair facilities and anti-aircraft defenses. Air base units consist of only two types of ground elements, support and air support squad ground elements and anti-aircraft ground elements.

Air base units are fixed facilities displayed on the map area with a symbol denoting their size, which from smallest to largest is 1, 2, or 3 (examples of each type are shown below).

There are multiple ways to access the air base unit detail window (37.16.2).

As set out in section 6.4 one option is to right click on the hex and then select the named airbase. This will create

further options to go to the airbase unit detail, to order the expansion of the airbase or to change the supply priority.



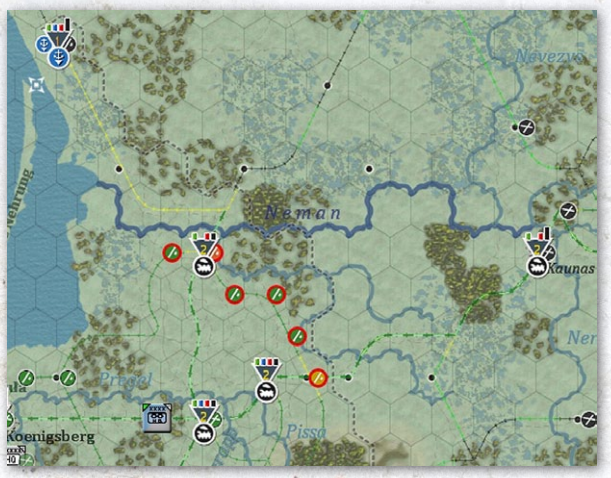
Alternatively, the air base unit detail window can be accessed through the general information and city/airfield box (6.2.2) by either selecting the airfield symbol next to the name of the city or by selecting the city name and then selecting the air base unit name located under the units attached section of the city detail window.

16.6.1. AIRBASE ON MAP DISPLAY

Air bases on the map are coloured in various ways to indicate their current status and this will vary according to the selection of other display tabs.

Friendly airbases, no logistics tab:

- Red – Airbase has air units, but less than 50% of needed support Green – Has air units
- Yellow – Empty but with air units ordered to transfer there
- Black – Empty airbase
- Orange – Under construction airbase not yet size 1
- If an airbase is overloaded it will be circled in red
- Enemy airbases, no logistics tab:
- Green – Has air units and has been covered by reconnaissance flights this turn
- Blue – Had air units when last covered by reconnaissance flights but has not been covered by reconnaissance flights this turn
- Black – Empty when last covered by reconnaissance flights
- Yellow – Has never been covered by reconnaissance flights
- Orange – Under construction airbase not yet size 1
- Friendly airbases, when logistics tab selected:
- Red – Fuel or ammo <=40% of need
- Orange – Fuel or ammo <= 55% of need but neither <=40
- Yellow – Fuel or ammo <= 70% of need but not neither <=55
- Green – Fuel and ammo >70%

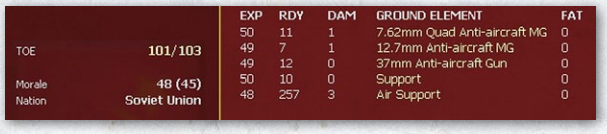


- Enemy airbases, logistics tab selected:
- Black – All

16.6.2. AIRBASE UNIT TOE

Airbases at 100% of their TOE will have 250 Air Support elements to service the aircraft (in some scenarios this number may be exceeded at the start of the game).

The TOE for airbases also includes general support squads (21.2.2) and anti-aircraft guns.



Air bases will seek to acquire the elements needed to match their current ToE to the number of planes at the base. This might see air support and other ground elements moved back to the pools if fewer planes are present or moved from the pool if a base now needs more support.

If you use the manual method to move Air Operational Groups then the presence or lack of support assets will determine if the requested move happens automatically or during the logistics phase.

Air base units created along with a temporary port after a successful amphibious invasion automatically try to fill up the air base unit to 100 percent of TOE at the moment it is created. This uses freight that is offloaded at the temporary port from cargo ships attached to the amphibious HQ unit conducting the invasion.

16.6.3. BUILDING AND EXPANDING AIRBASE UNITS

The building or expansion of an air base unit can be started by the player in either the air planning or action (move) phase. Players can build new air base units in any non-mountain that was friendly controlled at the start of the turn (7.3.1). This restriction is lifted if the hex already contains a depot or named population centre.

To build or expand an airfield the player can either right click on the map and select the appropriate option, select the air field tab at the top of the screen (6.2.1) or select the city name in the general information and city/airfield box and then selects either 'BUILD AIR BASE' or 'EXPAND AIR BASE' as applicable in the city detail window (37.13).

The speed of construction is based on the terrain of the hex, supply state and availability of construction and labour support units. The percentage progress of the construction is shown in the city display window.

The number of turns required to build or expand an airbase unit is based on the number of engineers and labour squads in the construction unit assigned to the construction project. This assignment will be done automatically from any HQ that is within range (21.11.4). In addition you can pay Administrative Points and manually assign extra construction Support Units (21.6.2).

Progress will be slower in worse terrain and bad weather. The amount of expansion done in the turn is affected by the ground weather with the construction value: divided by 2 if light mud, by 3 if heavy mud, by 4 if light snow, by 5 if snow, by 6 if heavy snow. The amount is also affected by the terrain in the hex as follows: rough/ woods/urban/2, swamp/heavy woods/heavy urban/ tundra/sand /3, mountain /4.

In addition, especially to expand from level 1 to 2 or higher, an airbase will require substantial amounts of supply. If this is not available then progress will be slow.

If an air base unit is bombed while being expanded, all damage must be repaired before expansion work can continue.

As a result of a successful amphibious landing, a size two air base unit with 50 percent damage will be automatically created in the target hex if it is clear terrain.

If an airbase is captured while under construction then any work will stop. The creation of a new airbase can be cancelled at any stage (using either the right click on the map or the display window) until the air base reaches size 1.

While under construction, an airbase is treated as having size 0 and will appear with an orange colour on the map.

16.6.4. AI ASSISTANCE AND AIRBASE CREATION OR EXPANSION

If you use the AI-Assistance (17.1) to manage the air war, the AI routines will expand existing airbases if it identifies a lack of capacity. However, the player will need to build new level 1 airbases if they feel this is needed.

16.6.5. AIRBASE SUPPLY PRIORITY

Remember that unlike depots and HQ units, if an airbase is to #0 supply priority it will receive no supply allocation. The supply priority can be changed in the Commanders Report (35.7) or by right clicking on the map hex with the air base or via the general information box (6.2.1).

Airbase supply requirements are set by the number of pilot crews at the airbase not the number of aircraft.

16.6.6. AIRBASE CAPACITY

A maximum of 20 air group units can be assigned to an air base unit.

The number of individual aircraft an air base unit can effectively support is dependent on the air base unit size and type of aircraft. Each aircraft, regardless of its state (ready, damaged, reserve) has a support requirement that reflects the number of engines on the aircraft and the air base unit size as follows:

TYPE	CAPACITY
1	100
2	200
3	300

Capacity is used up by the number of aircraft*engines, as:

- 1 engine plane = 1 unit of capacity;
- 2 engine plane = 2 units of capacity
- 3 engine plane = 2 units of capacity
- 4 engine plane = 3 units of capacity

If the air base unit load percentage exceeds 100 percent, the amount or aviation support available is reduced such that air support will be equal to air support * 100/load percentage. This will slow the rate at which damaged planes are repaired and increase the chance that individual aircraft are treated as being in reserve.

Air base load (capacity) percentage is shown in parentheses on the hex pop-up text for the air base unit after air base unit size. When the air base unit load percentage is over 100, a red ring will be added around the airfield symbol.

If an airbase is overloaded then repair and replacement rates of aircraft will be slowed. In addition, if the airbase is subject to air attack it is more likely that planes will be damaged or destroyed.

16.6.7. AIRBASE SIZE AND POOR WEATHER CONDITIONS

Flights flying from size 1 airfields in poor and average road system hexes with light mud and heavy mud may be cancelled.

When planes fly from size 1 bases they have higher chances for operational damage reflecting the poor facilities (usually a bare ground landing strip).

16.6.8. AIRBASE CAPTURE

Air Base units can be captured and will shift to the phasing player's control. Note that while air base units cannot be destroyed they may be damaged when they change hands. They will need to repair before they are fully functional.

Note that it can take up to several turns (and at least one complete logistics phase) for the associated manpower and support elements at an airbase to be removed if all the planes are transferred. So if you fear your airbases maybe overrun by the enemy, moving out the planes just before capture will still mean any attached ground and support elements will be lost.

If Air Units are on an airbase that is captured any damaged planes will be destroyed. In addition the Air Unit is given a delay of three turns and then will return in the National Reserve.

16.6.9. FROZEN AIRBASES

Some airbases are frozen at the start of a scenario. The air units cannot be transferred to another base until this restriction is lifted.

16.6.10. ASSIGNING AIR UNITS TO AIRBASES

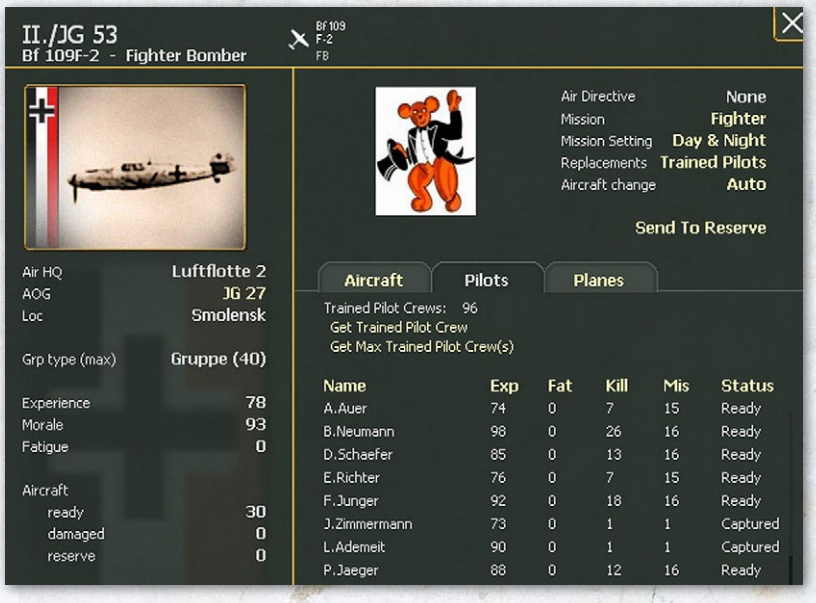
If you use the AI assist routines, then there is no need to directly assign air units from the national reserve to airbases.

If you wish to handle this manually, then one option is to assign an air unit to an airbase and link it to an existing AOG or to create a new one (17.3.1 and 17.3.2).

16.7. PILOTS

Aircraft in an air group unit must have a pilot and associated crew if required to be in a ready status and fly in an air mission. Pilots and any associated air crew are assigned to air group units up to the maximum size of the type of air group unit.

Pilots will remain assigned to an air group unit unless they are either killed in action, the air group unit is disbanded or the air group is sent to the reserve (16.7.3). Wounded pilots will remain with their assigned air group unit and will eventually be healed and return to flying duties. The air group unit detail window (37.16.13) has a



pilot tab for air group units that lists each pilot by pilot number, and shows their experience, fatigue, air kills, missions flown and health status.

Pilots have both morale and experience (also called skill). Experience is gained in relation to their morale, by winning air combats and (if in the reserve) flying training missions (16.7.4).

Pilots gain and lose fatigue, and experience based on the air missions flown by their aircraft and the experience and fatigue of their assigned air group unit is determined by the average of assigned pilot experience and fatigue. Pilot experience is also tracked by aircraft type at the air HQ unit level where the average experience is displayed in the Air Doctrine Screen pilots tab (37.16.9).

If the air group unit is set to rest, or undertakes no air mission, then all accumulated fatigue will be removed. If the unit has taken part in air missions fatigue will be reset to 25% of the total and this will be carried over into the next turn.

If an air group is sent to the national reserve, its named pilots will be removed (16.7.3).

16.7.1. ASSIGNING PILOTS TO ON-MAP AIR GROUP UNITS

When pilots are initially assigned to an air group unit, they are either trained pilots with experience equal to current air national morale or new pilots with experience equal to only half the current air national morale (12.1 and 38.2). The exception is air group units that arrive as reinforcements in the national reserve, whose pilots will have an experience rating based on the average of the air group units' set experience rating. Each nation will receive a certain number of replacement trained pilots each turn and any additional pilot vacancies may be filled by new pilots.

The Commander's Report air tab (35.4.30) has a pilot's section that displays both the total number of pilots and their status and the pilot pool, which displays the number of available trained pilots. The pilot pool and the manpower pool are separate, but even if trained pilots are listed in the pilot pool, they will not be available unless there is sufficient manpower in the manpower pool for the pilot and any required air crew.

For example, to assign an available trained pilot to a Soviet Pe-8 heavy bomber air group unit, eleven manpower would need to be available for both the pilot and the associated air crew. The options are:

OPTION	EFFECT
TPI (Trained Pilots)	Has a priority on receiving both new planes and replacement pilots. Will only take trained pilots from the relevant pool.
PRI (Priority)	Will be allocated planes and pilots after the formations set to TPI have received their allocation. Will take both trained and untrained pilots as needed.
NOR (Normal)	Will be allocated planes and pilots after the TPI and PRI formations have received their allocation. If insufficient trained pilots are in the pool then untrained pilots will be allocated.
RES (Restricted)	Will not be allocated replacement planes or pilots.

NOR (normal) is the default setting.

Note that units set to TPI will also acquire pilots who were previously assigned to an air group but who are now in the pool. These might have relatively low experience levels compared to that of newly trained pilots (16.7.2) especially if the air group was disbanded relatively soon after being formed. On the other hand, such pilots might have high experience levels due to sustained combat experience.

16.7.2. EXPERIENCE LEVELS OF NEW PILOTS

The experience of a trained pilot brought into a freshly raised unit is equal to:
(National Morale x 3/4) + (Average Experience of Group Being Joined x 1/4) + rnd(20) - rnd(20) The experience of an untrained pilot is equal to:
(National Morale x 3/4 x 1/2) + (Average Experience of Group Being Joined x 1/4) + rnd(20) - rnd(20).

16.7.3. PILOTS AND THE NATIONAL RESERVE

When air units are placed in the National Reserve they have no named pilots and instead have an average morale and experience level. This is either determined when the unit is created or reflects their average values before they were transferred.

These values may change over time due to training missions undertaken if the unit has low experience and is not set to rest this turn.

When the unit is returned to the map, a set of named pilots (if enough are available – 16.7.4) are allocated with average morale and experience levels that match the unit value.

16.7.4. PILOT TRAINING

Globally each nation trains a certain number of pilots per turn and these are added to the available pilot pool. These pilots acquire their particular specialism when assigned to an Air Group Unit (16.4).

Air Groups in the National Reserve are considered to undertake training missions. For the Axis, in addition, each turn some units in the Western Europe TB will train.

Training missions can result in an increase in pilot experience and a possible increase in the air group unit morale rating. If pilot experience is higher than that nation's current air national morale, the chances for experience to increase through training are much lower. In addition, pilots with experience ratings over 50 will have less chance to gain experience through training than pilots with experience less than 50.

16.7.5. PILOT SPECIALISM

When first allocated to an air-group, pilots are then allocated a specialization flag so they can only fly certain types of aircraft.

The types are: Fighter (this includes any Fighter Bombers trained as Fighters), Fighter Bomber, Tactical Bomber, Level Bomber, Recon, Transport and Naval Patrol (Naval Only).

Since trained or untrained replacement pilots are not flagged with a specialization until they are assigned to an air group unit, pilot specialization only matters when an existing air group unit is disbanded and the associated pilots are returned to the pilot pool. At that time, they can only be assigned out to an air group unit that meets their specialization criteria. For example, if the Axis player disbands a number of level bomber air group units, the pilots from those air group units will not be available to fill vacancies in fighter air group units.

16.8. ANTI-AIRCRAFT UNITS

Anti-Aircraft Support Units in WiTE2 have a number of functions and types. Some represent fixed emplacements designed to protect cities from strategic bombing while some others represent the mobile AA formations designed to protect ground units and HQs from tactical air attacks.

AA Units attached to combat units and HQs behave like other Support Units (21.5) when entering ground combat and when being moved between HQs and Units. They affect air missions as set out in sections 19.3.4 and 19.3.5.

AA Units attached to cities only affect air missions and there are special rules for the process and cost of moving them between cities or to attach them to HQs (38.1).

Anti-aircraft support units attached to cities will never have a range penalty for being far from their HQ units (15.5.4) during admin checks for resupply.

16.8.1. GERMAN ANTI-AIRCRAFT UNITS

Flak Units include both those that supported mobile operations against the Soviet Union and those that defended the Reich against Allied bombers. Most of the latter will only be found in the various Theatre Boxes or assigned to major cities in the Reich. These Flak Regiments represent the concentrated flak defences organized around defending strategic targets (ports, production centers etc.). These regiments have almost no mobility and were either crewed by the Kriegsmarine or by limited numbers of Luftwaffe personnel. As the war progressed, after 1942, an increasing number of flak units defending the Reich were manned by factory workers, teenagers, local Wehrmacht troops deployed as garrisons, women and even Allied POWs.

The individual flak battalions and companies represent the tactical flak units that were manned by Luftwaffe

personnel and either guarded tactical and/or operational objectives or friendly troops from enemy tactical fighters and bombers and could possibly engage in ground combat. These battalions had the best mobility and can be attached directly to combat units.

Over time you will notice a number of these will disband. Historically the Germans re-organised their mobile units by increasing the amount of organic AA in the divisions at the expense of these individual battalions.

16.8.2. SOVIET ANTI-AIRCRAFT UNITS

The main difference between Soviet Anti-Aircraft units is between those designated as PVO and the rest. PVO (Voyska Protivovozdushnoy Oborony) formations were designed purely for the defence of urban areas. In-game, these all start attached to cities and the costs to re-assign them to other roles are set out in section 9.2. In practice, Soviet AA Support Units are treated as either attached to HQs and combat units (21.5.1 and 21.5.2) or to cities (21.5.3) for their employment and the costs of re-assignment.

Unit Name	Turn	Type	Men	Gun	Afv	Transfer
127th Mixed Flak Battalion	38	AA	1561	57	0	Transfer
Turn 39 15-Mar-1942						
501st Mot. Army Light Flak Battalion	39	AA	200	0	0	Reinforcement
603rd Mot. Army Light Flak Battalion	39	AA	380	36	0	Disband
Turn 41 29-Mar-1942						
276th Army Mot. Army Flak Battalion	41	AA	553	21	0	Disband
274th Army Mot. Army Flak Battalion	41	AA	553	21	0	Disband
273rd Army Mot. Army Flak Battalion	41	AA	557	25	0	Disband
277th Army Mot. Army Flak Battalion	41	AA	553	21	0	Disband
279th Army Mot. Army Flak Battalion	41	AA	562	26	0	Disband
272nd Army Mot. Army Flak Battalion	41	AA	562	26	0	Disband
278th Army Mot. Army Flak Battalion	41	AA	553	21	0	Disband
271st Army Mot. Army Flak Battalion	41	AA	553	21	0	Disband

17. AUTOMATIC AND MANUAL MANAGEMENT OF THE AIR WAR

Focus: This section sets out how to control the air war either by manual control or using the AI-assistance options. It is split into two main sub-sections and discusses the various tools for assigning planes to air directives, redeploying your air force and managing the allocation of planes to support ground commands.

It gives a general description of how to use the Air Operational Groups (AOGs). AOGs are a grouping of air units, using a hierarchy structure of Army, Corps and Low Level (Division/Brigade/Regiment) similar to that used by ground units. They can be managed entirely

manually, or with the help of the AI Air Assist, The AI assist relies on several player inputs to then direct the operations of the AOGs.

17.1. USING THE AUTOMATION OPTIONS

17.1.1. AUTOMATED AI AIR ASSIST SYSTEM

If this option is selected, then the AI air assist will automatically be used during each players' turns. The effect of this is that the 'AI air assist button' well be automatically pressed once when a player ends their air planning phase, and once when they end their ground phase.

In effect, if you do not think you will wish to manually alter any air directives or the deployment of your air units then adopt this option.

If you do not adopt this approach you can still manage your air force using the tools in this section allowing for a mixture of AI-assistance and some manual control of the process. However, in this case during a MP/PBEM game your opponent can opt for full manual control if they so wish.

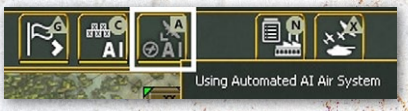
In this case, the players only need to adjust the AOG's Stance, HQ Follow/Naval Ops, Asset Priority, and Supply Priority as below. The player can still build and expand new airbases if they wish (although the AI assist will expand existing airbases if it believes there is a need, it will not build new ones), and the player can decide to set air units to manual or auto upgrade (if manual, they need to do the upgrades themselves).

If you believe you will be operating in a region with few existing airfields then you will need manually to start the construction of at least level 1. Expansion can be left to the AI-Assistance or done manually. A strong piece of advice to Soviet players is to start to expand the airfields behind Moscow from early August 1941 as you will need them as the front line approaches the city. They are also useful to base your longer ranged bombers even if the immediate threat has ended.

Here, a game against the AI has been set up to use the automated AI Air Assist routines.

This cannot be changed in a MP/PBEM game and the choice will apply to both sides.

Once this choice is made, the manual option to trigger the effects of AI Assistance will be disabled.



They may also want to build depots at or near major airfields (unless also using the AI depot management, which will do this for airbases).

17.1.2. AI ASSISTANCE IN OTHER CASES

If you do not select the automate option, you can still use the AI Assistance. You can set stances and priorities according to the rules below.

In this case, you will need to remember to depress the button to trigger AI air assist actions.

You can mix using the AI assistance with manual control of the various functions in this case. However, be careful as pressing the AI-assist button will over-ride any manual changes (deployment, air directives etc.) you have made.

> Using this mixed approach can be effective when you want to carry out a lot of actions such as transferring damaged/depleted air groups to the National Reserve or have few choices as to how to use your air force and find that a mixture of Ground Support and Reconnaissance missions are adequate to your immediate needs.

17.1.3. AI ASSISTANCE AND AIR DOCTRINE SETTINGS

When it creates air directives (or delivers ground support), the AI-assistance routine will use the settings in your air doctrine screen (37.16.9). This will determine factors such as mission height, days of operation, intensity of commitment and the type of weather conditions suitable for the mission.

While the default settings should be adequate, if you are encountering heavier than expected losses or your missions are not operating as you would expect, it may be worthwhile amending some of these settings.

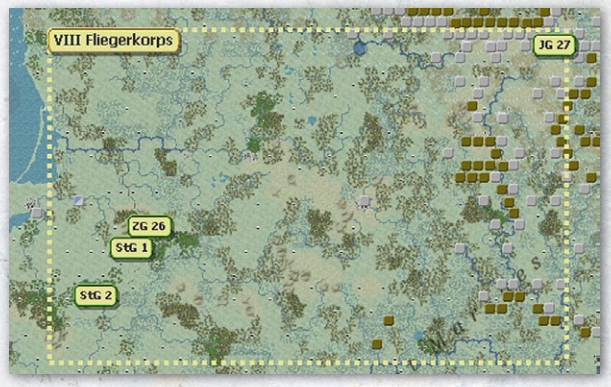
17.1.4. USING THE AI AIR ASSIST TO MOVE AND DIRECT YOUR AIR OPERATIONAL GROUPS

If you want to automate the air war you need to use a combination of the air commands (army level AOGs each with a corresponding ground air command HQ) and lower level AOGs (corps AOGs and low level AOGs like divisions and regiments) to do so. The one page guide in section 4.6.1 sets out the main steps involved in doing this.

Basically you can use either the air commands or the lower AOGs to set the relative allocation of air groups across your front and to tell the AI how, and when during the turn, to deploy those AOGs and generally how and when to move the air groups.

The air command level is used to create a link between the AOGs and a ground HQ. Normally all AOGs will then be assigned to the same HQ. In the case of the Axis side, the Luftwaffe Fliegerkorps can be set to follow a different HQ to the Luftflotte if desired.

To access this function, ensure that the AOGs are shown on the map and then left click on the label (in this case for the VIII Fliegerkorps as set out in section 17.1.5).



That will then bring up this display on the right hand side of the screen:

For all air commands you can use this screen to:

- Assign it to a higher command if appropriate (in this case the Fligerkorps is assigned to Luftflotte 2).
- When to fly air missions (rest, day and night, day only, night only).
- How to accept replacement pilots (16.7), the options are normal, restricted, priority and trained.
- See which ground command it is following (but see the rules in 17.1.6 below for the options).
- Set the AOG to conduct naval operations (but see the rules in 17.1.9 below for the options).
- Whether the range of its assigned air units are shown on the map (Rng Circles).
- How and when you want the air units to move on the map if directed by the AI Air Assist (17.1.6), in this case the options are flexible, hold, retreat or advance. This can be set at any level in the command chain and will over-ride the assignment for lower commands (so if you want one AOG to be different to say the controlling Air Army set this after choosing the Air Army).
- Asset priority which will tell the AI air assist how to determine how many planes are assigned to the command. This ranges from 4 (the highest priority to 0 (no planes will be allocated). This can only be set at

the Army or Corps level in the command chain and will over-ride the assignment for lower commands (so if you want one corps AOG to be different to say from the controlling Air Army set this after choosing the Air Army).

- Supply priority works as the asset priority and determines the supply importance of that HQ. This can only be set at the army AOG level, with all units under the army assuming the same supply priority as the army.
- A list of the assigned air units and their air bases will be shown beneath the unit counter.

Axis-Allied AOGs can only be set to follow HQs of either German or their own nationality (so, for example, a Hungarian AOG can report to a German Luftflotte or its own national commands but not to a Rumanian air command).

The display on the Air Command label will change both according to how zoomed out you have the screen and will reflect the changes above. When zoomed in the label will show the number of fighters, bombers and utility aircraft, and the other information above. In addition, the bar and % on the right hand side will show how many planes are ready for operations out of all those in the relevant air group units.

The icons will change as follows:

STANCE	ICON
Flexible	
Hold	
Retreat	
Advance	

For when to fly:

TIMING	ICON
Rest	
Day and Night	
Night Only	
Day Only	
Mixed (this will be shown for an Air Command where different AOGs have different flying orders)	

Naval air missions and Ground HQ assignment:

TIMING	ICON
Follow set HQ	
Some Naval Air missions	
No HQ set	

17.1.5. DIFFERENCES BETWEEN SOVIET AND AXIS AOG OPTIONS

In addition to the rules above, there are some important differences between how Soviet and Axis AOGs can be assigned to ground HQs or naval operations.

For Soviet AOGs the decision as to which ground HQ to follow and whether or not to conduct naval operations must be made at the Air Army level. Once this choice is made, the same options apply to all subordinate AOGs. In addition the Soviet Long Range Air Command will generate city bombing Air Directives following the priorities set by the player using the air doctrine screen (17.1.3). Note in this case, only the highest priority target will be selected.

Soviet air commands can only be assigned to either Front or Military District (Type 2) ground commands.

For Axis AOGs, only army or corps level AOGs can chose which command to follow and all lower level commands will assume the same option.

There are three exceptions to this rule for the Axis side:

- Any level of AOG can be set to conduct Naval Operations, if this is subsequently cancelled, the AOG will resume following the ground HQ of the relevant army or corps HQ;
- Any transport AOG can be set to follow any ground HQ;
- Any recon AOG can be set to follow any ground HQ.

German Air commands must be set to follow type 2 (Army Group) or type 3 (Army) ground HQs. Axis Allied Air commands can follow either a German or their own national type 2 and type 3 commands and in addition can be set to follow a type 4 (corps) HQ of their own nationality.

17.1.6. SETTING AOG STANCES AND THE IMPLICATIONS

A major part of using the AI assistance is setting the stances of your AOG. Your choices will determine how, and when during the turn, the AOG allocates its assets and whether or not it will move to follow the HQ it is assigned to. There are four stances:

- Flexible
- Hold
- Retreat
- Advance

During the Air Planning Phase (or at the end of it if using Auto AI air assist) an AOG in a flexible stance may:

- Send air groups to the reserve (if they are deemed to be too weak to be capable of combat operations).
- Acquire air groups from the reserve.
- Gain air groups from other AOGs (this is based on asset priority and the transfer can include a complete AOG if that is appropriate).
- Transfer air groups to other AOGs (depending on priorities).
- Follow move, the AOG will redeploy to the location of the HQ they are following.
- Carry out Naval Ops against a port, the AOG will redeploy to better operate against the port.

There are further notes on how to use the stances in section 17.2 but in general use 'Flexible' when the front line is basically stable as this allows air units to adjust their size and deployment but broadly within the current geographical area. Advance and Retreat should be chosen when you are looking for your air force to redeploy as the front line shifts. 'Hold' will keep your air force deployed at their current bases (which can be efficient in terms of the demand for support squads and supply).

During the Air Planning Phase an AOG in a hold stance may:

- Send air groups to the reserve (if they are deemed to be too weak to be capable of combat operations).
- Acquire air groups from the reserve.
- Gain air groups from other AOGs (this is based on asset priority and the transfer can include a complete AOG if that is appropriate).

During the Air Planning Phase an AOG in a retreat or advance stance will undertake no particular actions but will still generate Air Directives as appropriate.

During the Movement Phase (and at the end of the turn if this is automated), an AOG with transport assets in a flexible or hold stance will:

- Air supply units (if following a HQ).
- Air supply airbases (if not assigned to follow a HQ).

During the Movement Phase (and at the end of the turn if this is automated), an AOG in a retreat or advance stance will:

- Send air groups to the reserve (if they are deemed to be too weak to be capable of combat operations)
- Acquire air groups from the reserve.
- Gain air groups from other AOGs (this is based on asset priority and the transfer can include a complete AOG if that is appropriate).
- Transfer air groups to other AOGs (depending on priorities).
- Follow move, the AOG will redeploy to the location of the HQ they are following.
- Air supply units (if following a HQ).
- Air supply airbases (if not assigned to follow a HQ).
- Carry out Naval Ops against a port, the AOG will redeploy to better operate against the port.

17.1.7. CONSTRAINT ON AOG ALLOCATIONS

In addition to the rules above, there are some additional constraints on how AOGs might be used or allocated.

- The AI assist will not re-assign any AOGs from an air command (HQ or Corps AOG) that is set to priority 4 regardless of the relative demand for air groups across the front.
- Reconnaissance AOGs will not be assigned to a higher level AOG that has a different 'follow HQ' order. They can, however, remain attached to one that has a different HQ target (this allows you to adapt your reconnaissance effort without having to re-assign the AOG).

17.1.8. AIR TRANSPORT AOGS.

If using the AI automation /air assist, these will always move to depots with freight so they can then undertake supply missions during the ground phase. If they are following a HQ, they will position themselves to resupply units of that HQ. If they are not following a HQ, they will seek to resupply airbases.

In the example below, the Transport group will resupply airbases rather than support a particular ground command as FHQ is set to 'None'.

17.1.9. TRANSFER DEPLETED AIR GROUPS TO THE RESERVE

The AI-assist will send depleted (16.4.12) air groups to the reserve if they meet any of these requirements:

- U-2 Rcn and R-Z
- All in AOGs set to priority 0

- Any Axis air group with experience below 45 after 7/43
- Any Axis air group that meets the conditions: (depleted or (morale + ready < 50)) and ready a/c < 2 (REST if condition met but ready a/c > 1)
- Any Soviet air group that meets the conditions: (understrength or (morale + ready < 60)) and ready < 4 (REST if condition met but ready a/c > 3)

In this respect, the detailed rules are:

- For the Axis side, an air group is depleted if it has less than 25% of its planes and understrength if this is under 33%;
- For the Soviet side, an air group is depleted if it has less than 33% of its planes and understrength if this is under 50%.

17.1.10. TRANSFER OF AIR OPERATIONAL GROUP UNITS

The component air units will be redeployed as they follow the ground HQ that their Air Operational Group or Air command is assigned to follow, or will move as appropriate to execute their naval ops or transport missions. This will happen when you press the AI-Assistance button unless you are using the Automated Assistance (when it happens at the end of the air or ground phase).

17.1.11. CREATING NAVAL AIR PATROLS

An AOG can follow a HQ or conduct Naval Ops around a port, not both. If set to Navel Ops, the AOG will try to locate itself so it can fly Naval Patrol ADs and AS ADs off the coast of the port, with the intention to gain control of the sea hexes near the port.

In this case, the AOG may have a different focus (naval patrol) to its controlling air HQ.

If you select Naval Ops, a list of the possible targets will be shown as:

Select the port you wish to target (in this case Riga), and the AOG counter will no longer follow the HQ set by its Air Command and will show its focus on Riga:

If you subsequently cancel the naval mission you will need to reset the ground HQ the air command is to follow. If the naval operation was set using an AOG, then it will revert to the HQ being followed by its controlling air command.

17.2. EXAMPLES OF HOW TO USE THE AI ASSIST

This short section tries to place some of the formal rules above into context. In the main the flexible stance is probably the most useful but it may not always give the desired effect.

17.2.1. RETREAT AND ADVANCE STANCES

The 'retreat' stance will be useful for an army conducting a strategic retreat as it will pull the air units back to the area where the HQ being followed is located. For the Soviets, in some instances you may want to link the air groups to a rear area Military District to achieve this in 1941 and 1942.

In turn the advance stance is useful if you carrying out a major offensive and want to keep the air force close to your spearheads. In either advance or retreat, this gives the player an opportunity to move his ground HQs before the AI air assist moves the units toward those HQs in the ground phase.

17.2.2. SPECIALISED SUPPORT

Especially in 1941, the German player may find it useful to assign a Fliegerkorps to each Panzer Army. This will both ensure air support for your key formations and that the air force advances as rapidly as possible. Although it is possible for the Axis to have an air army or corps support an entire Army Group, this is not the recommended method.

For the Axis, it is usually better to have them support a specific army that is bearing the brunt of the fighting. Fighters will always defend against any enemy air attacks or ground support, but given the limited Axis bomber

forces, they are usually best assigned to the main assault armies. Given the number of Armies and Corps AOGs, it is possible to cover many different armies by having some low level AOGs report directly to each Luftflotte if desired.

For the Soviets, there are usually enough air commands/ air armies to attach one to each Front, although in the early war period, it may also be best to concentrate most of the Soviet air force in just a few of the air commands.

17.2.3. BRINGING AIR UNITS FROM THE RESERVE

The automatic system will send and remove air units from the National Reserve. Once they are on the map, they will be assigned to air commands depending on the priorities you have set.

17.2.4. RELATIVE PRIORITY

It is worth bearing in mind that the asset priorities are relative. If you set everything to #4 then the air force will try to be evenly divided across your commands. Especially for the Germans, you will need to ensure your air force is concentrated on specific sectors.

In effect, an AOG set at #4 will try to acquire twice the number of planes as one set at #2. However, the actual number of planes assigned will also be affected by the level of the chosen HQ. So a corps will try to get more than a low level AOG, and armies will be assigned more than a corps at the same priority level.

17.2.5. TRIGGERING REDEPLOYMENT AND REALLOCATION

If you are not using the Automated AI Assist routines then you will need to press the AI assist button at least twice in a game turn (before air execution and before the end of the ground phase).

However, you can do it more often and this might allow you to fine tune both air unit allocation and deployment as you conduct your ground phase (especially if the situation is rapidly changing). Usually this is not advised as it will generate air transfers that take up air miles and reduce the available airpower supporting your ground operations.

If you don't plan on doing any manual intervention in AOG movement or air directive creation, then it is advised you use the Automated AI air assist. If you think you might want to on occasion make manual adjustments, you should turn the automated game option off.

If you do this, you can, for example, press the AI assist during the air planning phase and then tweak some of the air directives that the AI has set up. Just keep in mind that if you press the button again, your changes will be wiped out as the AI clears the slate and creates new air directives.

Note that the game will pause while this action is carried out.

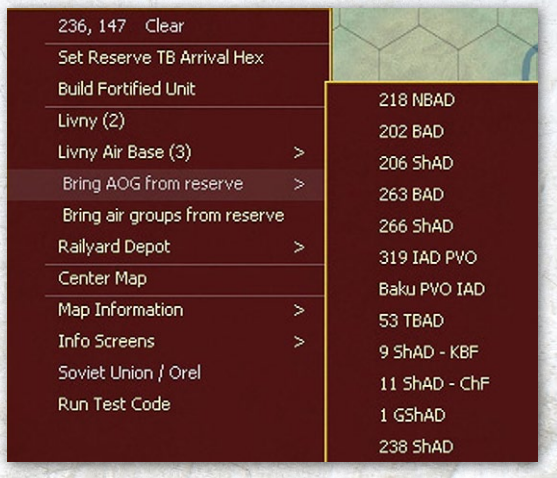
17.3. MANUAL CONTROL

17.3.1. MANUALLY ASSIGNING AIR UNIT GROUPS FROM THE RESERVE

There are two basic ways of doing this.
The first option is to select an airbase and the second is to use the Air Command labels.

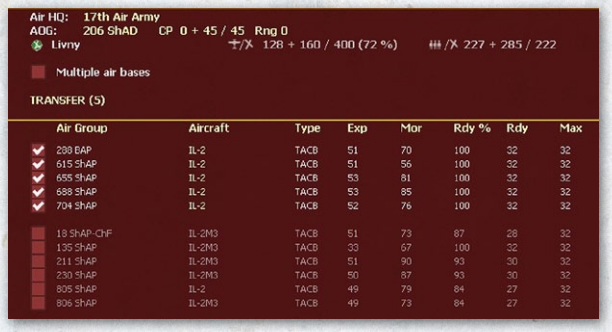
> It may be good practice to review the air groups in the reserve using the Commander's Report before starting to move any to the map. You mostly will want to leave low experience and/or low morale formations in the reserve.

One option is to right click on an airbase on the map and then select the option 'bring AOG/air groups from reserve'. In the example, below, the AOG option has been chosen



Select one (in this case the 206 ShaD) and the list of suggested air groups will be shown as:

By default, this will attach itself to the nearest Air HQ but that can be changed. You can tell it just to use Livny (as shown) or click 'Multiple air bases' and any planes in excess of air base capacity will be deployed nearby.



Air groups will not deploy if the air base is full, if the AOG is full or if the AOG is of a differently nationality.

Finally you can accept the suggested list, remove some (if you do not want to fill up the AOG) or replace them with other suitable air groups. Note that this type of Soviet AOG can only contain ground attack formations.

Once you are content with your choices, click on TRANSFER.

If you chose the option, bring air group from the reserve, you will be taken to a screen that allows you to select any air unit that is currently available. You can filter or sort this tab in various ways to ease identification of the units you want.

Select one or more air groups and click on TRANSFER (before doing so you may want to review the proposed AOG – here the 2nd Air Army – to a more suitable target).

In these cases, you can also open the Air base tab and assign new air groups from there (37.16.2)

Alternatively you can bring new AOGs or Air units to the map from the Air Command label. In this right click on the Air Command and the routine to bring Air groups from the reserve will be shown.

You can alter the screen to link them to an existing AOG, spread over multiple air bases as:

A variant to using new AOGs is to use one already on the map. Right click on any existing AOG and if it has spare capacity it will be shown as the suggested command for that air group. Note what is available may be limited due

to the restrictions on which plane types can be in which AOG (16.4.6).

You can bring up a list of AOGs through the AOG tab on the Commander's Report (35.4.2). This way you can see what air groups are already assigned to a particular AOG, what aircraft they have and how much capacity is available. This is helpful if you want to collect aircraft with similar characteristics under one AOG, of if you want to size your AOGs so that they will fit onto a particular type of airfield (16.6.6).

Here a single fighter air group will be added to the 278 IAD:

17.3.2. SENDING AIR GROUPS TO THE RESERVE

There are several ways you can use to manually send air groups to the national reserve.

You can do so one by one by opening the air unit tab (37.16.3) or in bulk using the Commander's Report (35.4.1).

In addition you can use the AOG on-map label (37.16.4). In this case, right click on AOG label and select "Send/ Rotate Depleted Air Groups".

This will send back all the depleted units in the AOG (and down the chain, if you have selected a higher command) and tries to replace each with an air unit from the reserve with a similar profile. The AI chooses what it thinks is the best unit from the reserve. When you roll over the Send/Rotate option a window will appear showing all the units that will be returned and any units that will come from the reserve for each of these. The player can select the option to return the depleted or the option to rotate in the replacement units (which sends and then rotates in a replacement).

17.3.3. MAXIMUM AIR UNITS FOR EACH AIR OPERATIONAL GROUP

There is a limit to the number of air units in each AOG . Each air units costs a certain number of command points based on its size:

- Group = 9
- Squadron = 3
- Flight(Stab)= 1

AOGs, in turn, have limited command points determined by their type:

- Low level (regiment/brigade/division) = 45 points
- Soviet Corps = 120 points
- Axis Corps = 180 points
- Armies = 600 points

So, a Soviet Division or Axis Regiment AOG will only be allowed to have 5 groups, or 15 squadrons. Soviet corps can have up to 13 groups and the Axis corps 20 groups. An Army will max out at 66.

17.3.4. MANUALLY MOVING AIR OPERATIONAL GROUPS

Using manual control, you can redeploy your air units. You can opt to move them by individual Air Operational Group or the complete command.

To do this, first left click on the desired AOG/Command;

- If you want to keep the same shape then press and hold shift and move the rectangle on the map to the group of airbases you want to assign the AOG to, then right click.
- If you want a different shape, then press and hold cntrl and left click on the map and then draw a shape around the airbases you want to use (a pop up will tell you how many airbases are in the selected box) and then release the left click.

- Once you have selected the target, the plotted move will be shown on the map. If you wish the transfer to occur immediately (as opposed to waiting for the next logistics phase), you can right click on the AOG and then select an immediate transfer. The AOG will now have an > after its name to indicate it is ordered to move.
- If you select the wrong target air base by mistake then you need to cancel that transfer before selecting a new target air base
- To trigger the move, right click on the AOG and tell it to execute the transfer:

If you order 'immediate' transfer this will happen regardless of the situation at the target airfields (so you may find your planes lack supplies and supporting ground crews). If you order 'planned' transfer this might be delayed till the target airbases have sufficient

support squads, supply and fuel to enable operations (usually during the logistics phase). A pop up will tell you how many air units were moved.

In this example, the AOG is now set among the AOGs of the 15 Air Army, Depending on the missions you wish to set, it might be easier to convert it from 1 Air to 15 Air.

If you want to leave some air units on existing bases but to spread out others to new bases then:

- Left click on the desired AOG
- Click on the air base – this will bring up a list of the air units at that base

Here we have the 22 DBAD and its formations at Gorky airbase.

Select the units at the airbase you want to transfer by left clicking on each (or select none in which case all units at the airbase will be ordered to move). In this case, we only want to move the Il-4s, by left clicking on that air group (the display will show a gold box around the chosen formations).

- Press down CNTRL+left mouse to draw a box around the intended target airbases (here the move is ordered to Ivanovo).
- Indicate how you want the transfer to progress.
- Once you have determined the desired redeployment you can order it to happen immediately or only if the target airbases can support the incoming planes. In this case any air groups that could not be moved immediately will redeploy in the logistics phase when the airbase has sufficient support elements.

The move options are now the same as for the transfer routine above.

17.3.5. CREATING NEW AOGS

Technically neither player can create AOGs. They are allocated (and removed) using the reinforcement system. However, if an AOG has no air groups then it will not be shown on the map.

As such it can be brought to the map either as part of transferring new air units from the reserve (as above) or to allow air group units to change their command to a new AOG,

17.4. MANUALLY SETTING AIR DIRECTIVES

If the player wishes to create a completely new air directive the first step is to select the relevant mission filter (F2-F7) and then select the air command you wish to use.

In this case the F3 (ground attack) option was selected and then the Leningrad Air Command label, giving a view such as the screenshot on the right:

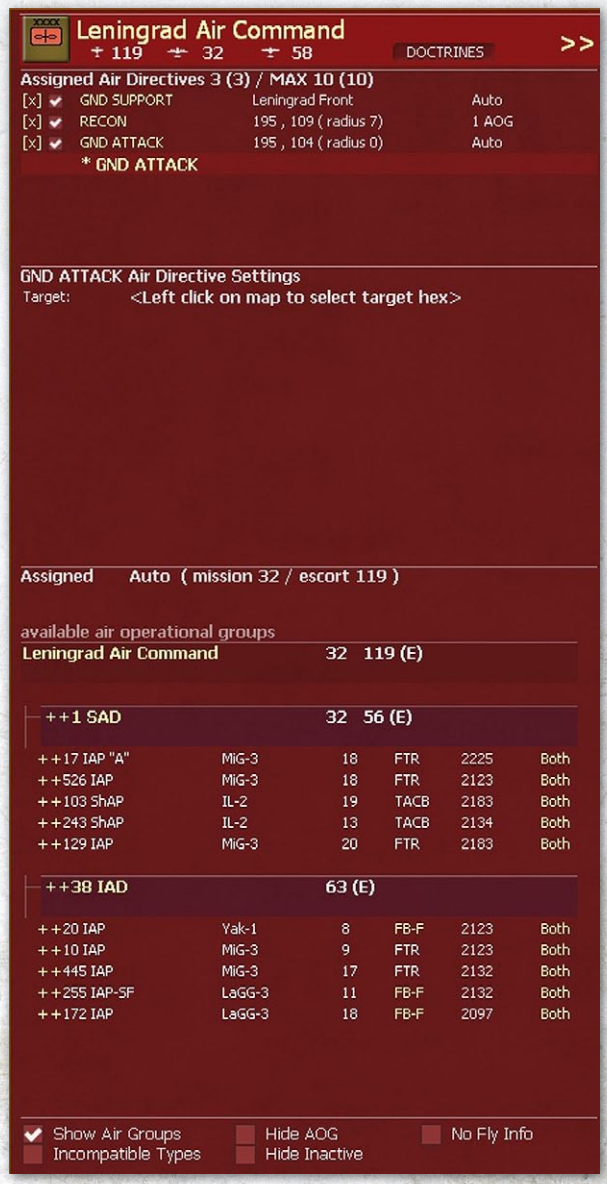
This shows all the existing air missions for that command and the AOGs that report to it.

The focus of each mission is set out in 18.1. Once you have selected a type, and target, assign the relevant air groups and, if needed, adjust the flight path.

17.4.1. MANUAL OPTIONS FOR SETTING UP AN AIR DIRECTIVE

To create a new AD, select 'GND ATTACK' and then click on a hex as the centre of that mission: The map and the display will change to:

You can click on CONFIRM and the mission will take place as shown using the default settings or you can adjust the variables.



Type is set by the air directive you have selected and cannot be modified in this screen.

Target determines the central hex of the mission. Note that for a Ground Support (18.1.3) Air Directive this will be replaced by a display showing all the available HQs that can be the focus of the mission. Note that reconnaissance missions (18.1.6) can only be set up to target an enemy held hex, and naval patrols can only be set up to target water hexes

Staging Base determines the intermediate air base that is used to gather the planes used in the mission.

> Note manually adjusting this can increase or decrease the number and type of planes available to a mission.

Area sets the size of the mission target area around the target hex. If this is set to 0 then only the target hex will be the focus of that air directive.

Day/Night determines if this mission will take place during the day or the night. In turn this might influence the type of planes available depending on if air groups have been set to day or night only missions.

Intensity will determine how aggressively the mission will be conducted (and how quickly pilots will gain fatigue).

Weather is used to set the worst conditions that the mission will take place. Beneath this is an indicator of the current weather conditions for the region selected for the mission.

Schedule will determine which days of the week a mission will take place. Clicking on a day will deselect or select that day for operations.

Strike Num will be either automatically determined using the strike intensity set above or can be manually set by the player. It will set the number of missions that particular air directive will try to carry out during the air execution phase.

Altitude determines the altitude at which planes will fly to the mission area and their altitude when conducting the mission. Remember that fighter bombers and tactical bombers will actually attack at a much lower altitude. It can be adjusted using the (-) or (+) in increments of 1,000 feet.

Priority will determine the order in which missions are flown and this is particularly useful if you use the auto-allocation routine for assigning aircraft. It can be adjusted using the (-) or (+) to alter the priority (from very low to very high).

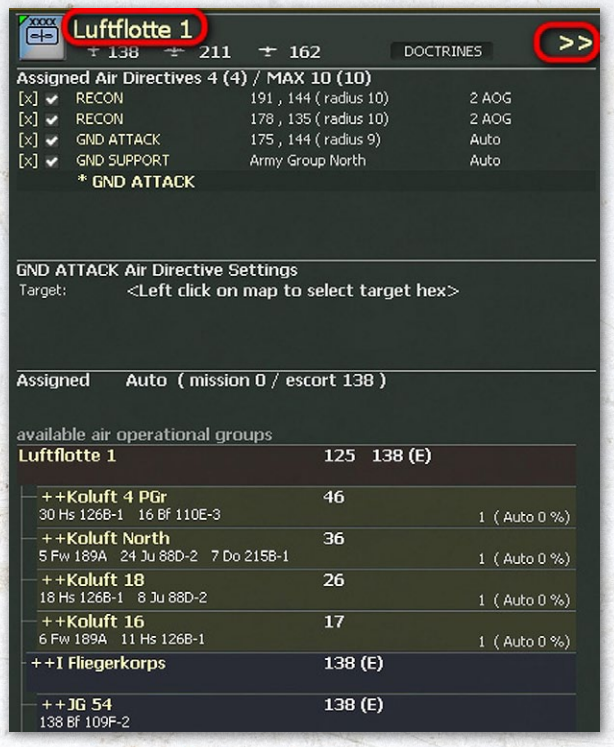
Min AC (ESC) sets the minimum number of bombers/fighter bombers and the minimum number of escorts that must be available in order for a mission to be launched. A text box for each type of aircraft will be displayed sequentially. As long as the minimum is available, a mission will be flown.

Req AC (ESC) sets the requested number of bombers/fighter bombers and the requested number of escorts that the player would like to have fly the mission if available. A text box for each type of aircraft will be displayed sequentially. If no player input, then REQ AC(ESC) will match MIN AC(ESC). If MIN AC(ESC) is available, a mission will be flown.

Follow Path: Toggle Yes or No. When Follow Path is set to Yes, the missions will fly along the flight path until they reach the last waypoint, and then fly from that waypoint to the specific target hex for the mission. When set to No, the mission will fly directly from the staging base to the specific target hex for the mission.

Part ESC: Toggle link to yes or no partial escorts. If set to yes, than escorts that cannot fly all the way to the target are counted as escorts for meeting the minimum and requested number of escorts for the strike. If set to no, then only escorts that can fly to the target will count for these purposes.

To exit from this screen, either click on the air command title or the >> arrows at the top:



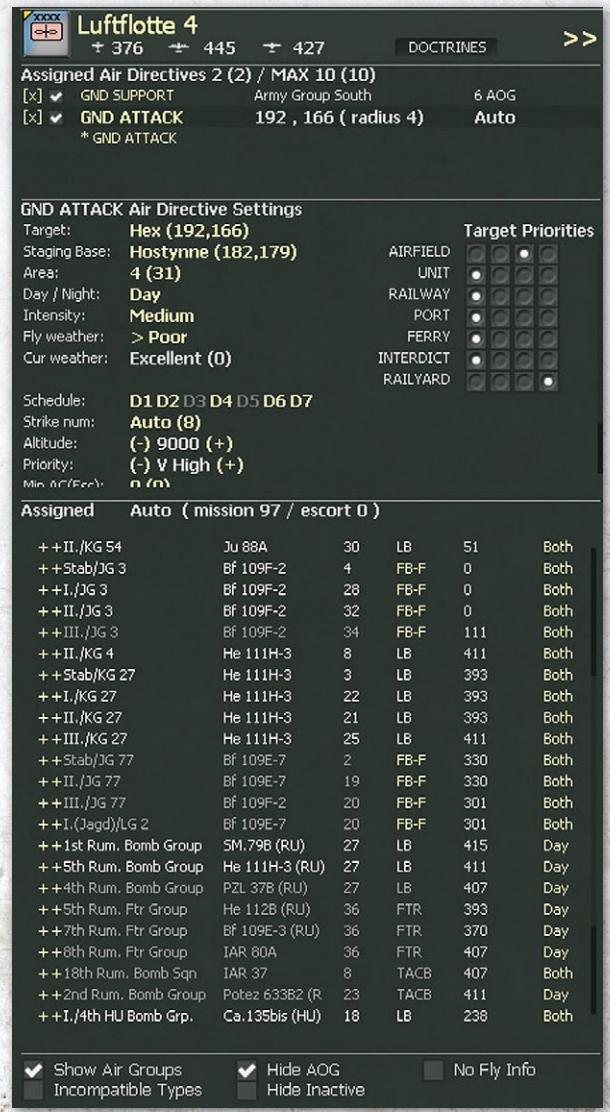
17.4.2. ASSIGNING AIR GROUP UNITS TO AIR DIRECTIVES

Once you have created an air directive you can assign the air groups in various ways. There are three choices in this regard: Automatic; manually using air groups; or, manually using AOGs.

If you manually assign air groups or AOGs to a particular Air Directive they are then not available for any other AD in that turn.

By default this will be set to Auto, here the AI will select appropriate air units from those in the Air Command and use them for this (and other) Air Directives till they have used up all their air mileage for the turn.

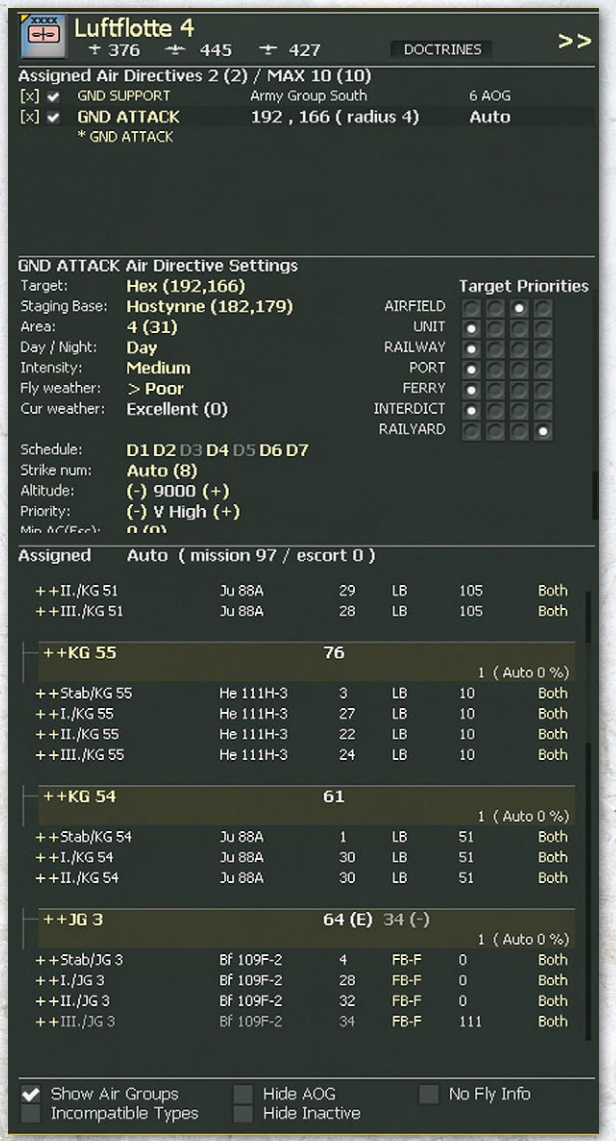
This can actually be a very efficient option as the same planes can take part in both a ground attack mission and fly ground support in the ground movement phase.



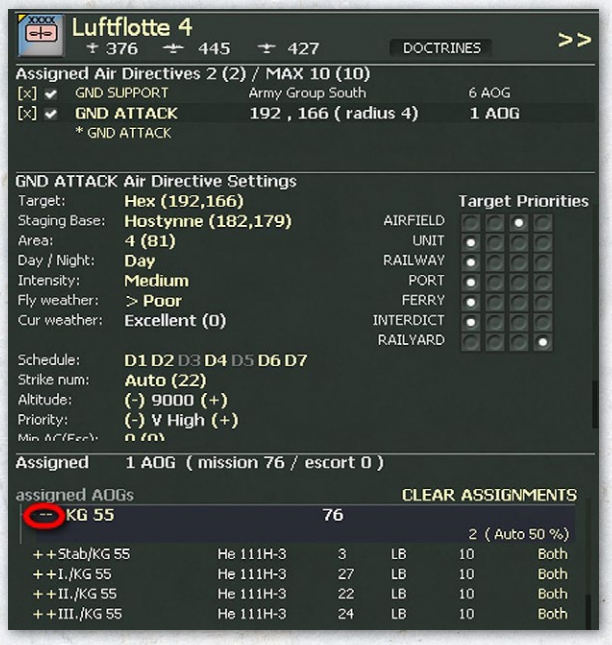
When manually assigning air groups to air directives you have the choice of using the AOG or the Air group (you cannot mix this but you can tell a given AOG to split its assets between missions).

If you want to use the Air group option you can do this from the normal display (just select air groups rather than AOG) or by selecting Hide AOG at the bottom of the screen and all the eligible air groups will be shown. In either case, click on ++ to assign the groups you wish to use:

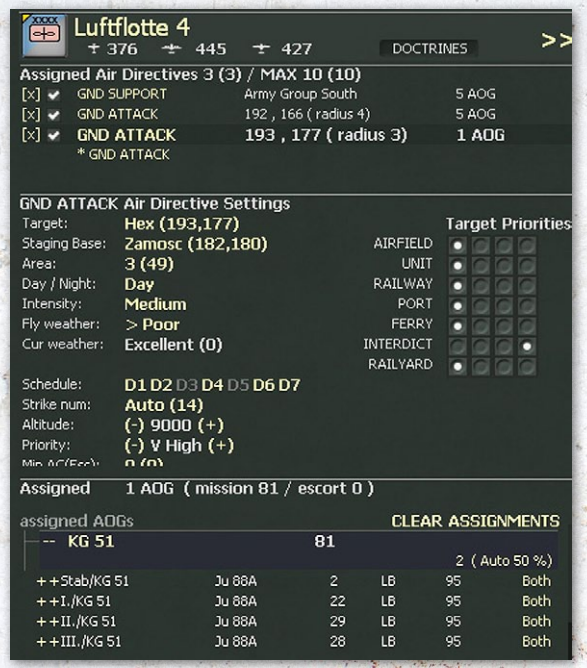
If you display the AOG, then you allocate using the ++ buttons next to the AOG title:



You can alter this by removing air units with the (--) button.

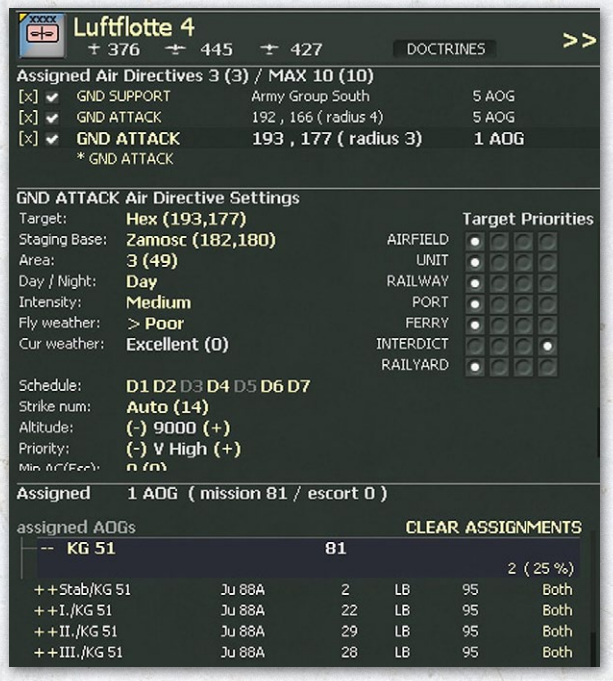


You can assign a given AOG to support more than one air mission. So using the example above if KG51 is now allocated to a new mission, by default it will seek to split its planes 50/50 between the two.



If you want to change this default allocation, click on the text Auto 50% and this dialogue will appear:

In this we want 25% of the planes on this particular AD, so the assignment for KG51 alters to:

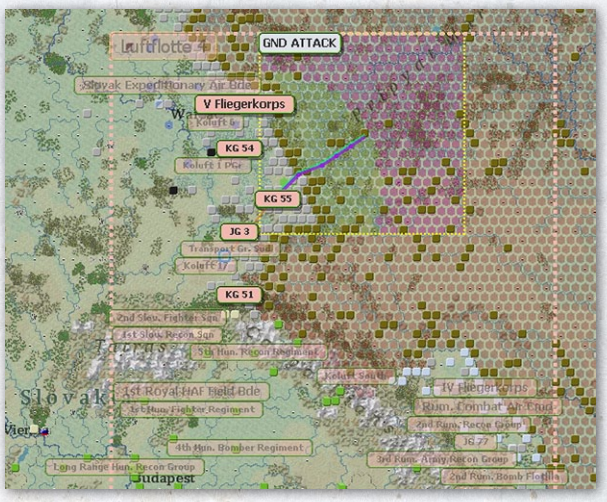


When assigning air units to an AD, you must decide to either do so using the AOG system or by assigning individual air units. If you try to add an individual air unit to an AD populated with AOGs then they will be removed.

On screen the display of an AD will alter according to how it will operate. If either no planes can reach the designated zone, or part of it is out of reach, then it will appear as transparent on the on map.

At certain zoom levels the label in the top left hand corner will expand to show how many AOGs are involved and whether they were manually or automatically assigned and how many eligible planes can reach the target area.

The AOGs that actively contribute to a given AD will be highlighted when that AD is selected and the others become more opaque, as:



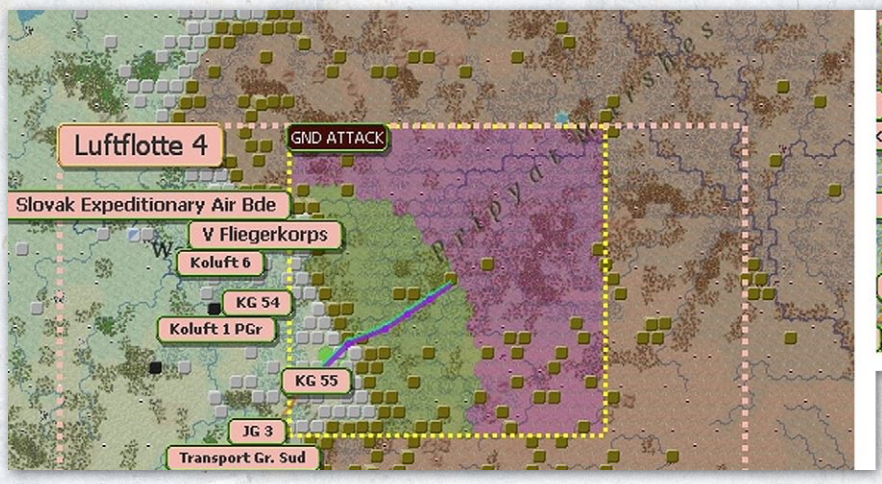
If no planes can reach the set AD, then this background will become reddish.

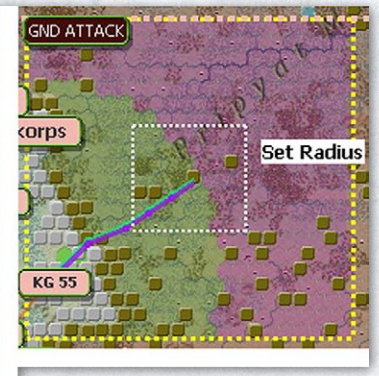
17.4.3. ALTERING EXISTING ADS

You can change existing AD using all the steps above. Such changes can be made to AD created in an earlier turn, those set to be dormant for a turn (or more) or those created in the current air planning phase.

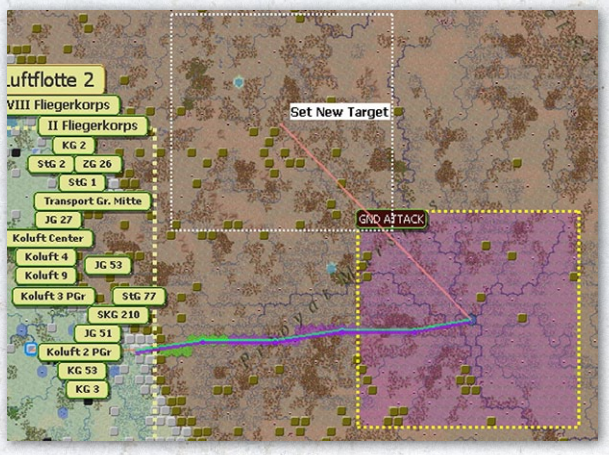
Note that you can amend existing AD either using this screen or the on map display, this can be used to reset the target area or to access the AD screen as above.

Note that you can amend much of the details of an AD from the map as well. If you left click (and hold this down) on the border then you can adjust the size (bigger or smaller) of the target zone for that AD, as:

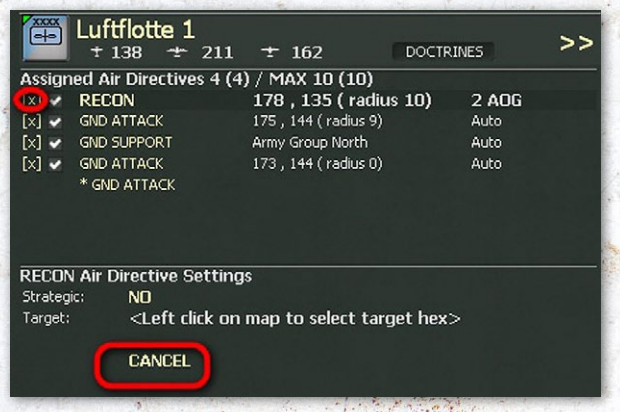




Alternatively, if you left click anywhere within the set area, you can move the AD to a new location, such as:



If you want to remove an existing AD, you can do so using the [x] button on the left hand side. If you start to amend an AD and then wish to stop the CANCEL option will come up (if you have starting by amending the target hex or staging base), as per the bottom left screenshot.



In addition, if you have an AD displayed on the map you can click on the current staging base and drag it to a new location.

17.4.4. AIR DOCTRINE

When you create a new Air directive by default it uses the parameters set in the Air Doctrine screen. You can overwrite these as you see fit.

The Air doctrine can be accessed from the Air Directive box above or from the tabs. If you move from the Air Directive by default it will open with the Air Doctrine screen for that particular Air Command (see figure 17-36 opposite).

It can be used to create the basic rules for how each air command can carry out any air directive. The ground support tab maybe particularly important as that will always follow the criteria set here.

You can amend these variables as you see fit and chose if they will apply just to the current Air Command or all your entire air force.

17.4.5. MANUALLY ADJUSTING THE FLIGHT PATH

The map will display a green line showing the path to the target, and a purple line showing the return path. The green hexes indicate the part of the path protected by escorts, while the purple hexes show hexes without escort on the path to the target. The waypoints on the paths can be adjusted. Left click selects green path waypoint (or both if in the hex) and right click select purple path waypoint. Once a path is selected, left click in hex to move waypoint(s) to the selected hex.

AIR DOCTRINES — Leningrad Air Command - Aleksandr Novikov (6) - 17-36

100 169 176

	GND SUPPORT	BOMB CITY	GND ATTACK (2)	RECON	SUPERIORITY	NAVAL PATROL
Altitude	9000	9000	9000	9000	9000	9000
Day/Night	-	Day	Day	-	-	-
Partial Escorts	-	Yes	Yes	Yes	-	Yes
Follow Path	-	No	No	No	No	No
Friendly Hex Interdict	-	-	No	-	-	-
Minimum Weather	Poor	Poor	Poor	Poor	Poor	Poor
Intensity	-	Medium	Medium	Medium	-	Medium
Schedule	-	D1 D2 D3 D4 D5 D6 D7	D1 D2 D3 D4 D5 D6 D7	D1 D2 D3 D4 D5 D6 D7	D1 D2 D3 D4 D5 D6 D7	D1 D2 D3 D4 D5 D6 D7
Auto Naval Patrols	-	-	-	-	-	No
Percent to fly	20	20	20	20	20	20
Mission AC Pct	100	100	100	100	100	100
Escort AC Pct	100	100	100	100	-	100
Target Priorities		AFV: Normal AIRCRAFT: Normal PORT: Ignore RAILYARD: Ignore MANPOWER: Normal RESOURCE: Ignore OIL: Ignore FUEL: Ignore HI: Ignore VEHICLE: Normal ARMAMENT: Normal	AIRFIELD: Ignore UNIT: Ignore RAILWAY: Ignore PORT: Ignore FERRY: Ignore INTERDICT: High RAILYARD: Ignore			
Apply Air Doctrines	Leningrad ALL	Leningrad ALL	Leningrad ALL	Leningrad ALL	Leningrad ALL	Leningrad ALL

Note that changing the staging base can also adjust the automatically generated flight path.

17.4.6. MANUALLY CANCELLING AND SUSPENDING AIR DIRECTIVES

The player can cancel or suspend an existing air directive. Note this action can also be carried out using the air directive screen.

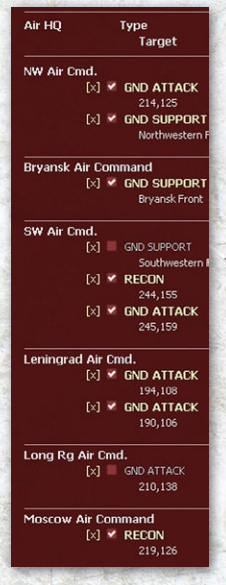
Alternatively it can be done using the air planning screen. In either case, if you click on the [x] this will cancel the air directive and it will be removed from the potential list.

Alternatively if you click on the [√] then the mission will not operate in the current game turn.

The advantage to just suspending the mission is you can easily set up the mission in a later turn without having to create a new Air Directive.

17.4.7. SUMMARY OF THE AIR WAR UI

Much of this exists in section 6, especially 6.8.3 for how Air Directives are shown, 6.8.4 for interpreting the display of AOGs (also covered in 16.3) and airbases (6.4.7). The information on HQs can be found in 6.5.7.



Information on how to use the on-map functions to resize and move AD can be found in section 17.4.3 and on how the map display alters as the air turn is resolved in both Chapter 6 and section 18.4.

Section 37.16 in the appendices covers all the boxes, tabs and displays.

In addition, the two one-page guides are invaluable in covering the key mechanics.

18. CONDUCTING AIR MISSIONS

Focus:

- The role of the different Air Directives
- How to change aircraft loadouts
- How air missions are conducted
- The air war in the Theatre Boxes

18.1. TYPES OF AIR DIRECTIVES

18.1.1. OUTLINE

Most air missions are set up using air directives and carried out in the air execution phase. The exceptions are 'ground support' directives that are created using an air directive but executed during the ground phase; air transport and air drop missions which need no air directive and take place in the ground phase (or in combination with an amphibious landing) and the transfer of air group units between airbases which can take place in either the air planning or the ground phase.

Note that due to doctrinal approaches, not all mission types are available to every air HQ or Air Operational Group.

18.1.2. TARGET PRIORITY

Some Air Directives contain a range of possible targets. These include Reconnaissance, Ground attack and Strategic Bombing. The role of each of these is discussed below. If a given target is set to 'none' then no planes will actively attack that particular target but it may be struck by accident.

It is possible that even if a target is set to 'none' that it may be affected by the mission. For example, tactical reconnaissance missions will improve the detection level of any ground unit in a targeted hex regardless of the focus of the mission. Ground attack missions aimed at 'units' will generate some interdiction and, in reverse, ground attack missions aiming to create interdiction will inflict some losses on units in the target area.

Strategic bombing missions may also see targets set to 'none' hit during an attack. Thus a mission aiming to attack industry or fuel production may also inflict manpower losses.

18.1.3. GROUND SUPPORT

These are created when the F2 key is depressed

In WitE2 this is probably the main focus for both air forces.

Ground Support air directives are created by assigning AOGs or air group units (either manually or automatically) to a particular HQ unit. The mission will then be available to support all the combats of ground units under that command in the ground phase as long as the planes are in range of that combat and have sufficient air miles remaining. You can turn on and off this automatic allocation by using the ground support toggle option.

Ground support missions are used to provide ground formations with direct air support during ground attacks. Air group units assigned to this directive will fly during ground combat in support of ground units that are in the chain of command of the target HQ.

An HQ can only have one air HQ unit set to provide it ground support. If an air HQ unit is assigned to support a ground HQ unit that already has one air HQ unit assigned, the new air directive will take effect and the older directive will be deleted.

A ground HQ with an air HQ unit providing support will not receive ground support from another air HQ unit providing ground support to a higher ground HQ to which they are attached. Ground HQ units without direct support will receive ground support as available from air HQ units directly supporting ground HQ units to which they are attached.

The allocation of planes to a given ground support mission is automatic. These allocations can be influenced depending on how the relevant air doctrine is set (17.4.3) to influence the percentage of bombers and escorts that can be assigned., However, it is unlikely to draw on more than 300 bombers in a given attack regardless of how many are available or how the air doctrine is constructed (see figure 18.3 below).

Related to this, even if the GS mission option has been turned off, relevant fighters will contest an enemy attack even if no friendly bombers can be allocated due to the restriction. This intervention will occur even if no enemy bombers or fighters are actually sent (so is best seen as a precautionary move). The fighters can be drawn from those in the relevant GS AD, those in a different GS AD or those available for automatic interception missions.

> Note that ground support missions can also see substantial air to air combat as both sides commit planes. These can be escorts allocated to that GS directive, fighters that flew AS in that region in the air phase or are available for auto-interception (18.1.10).

Very roughly, the relationship between the status of the fighters and their commitment to flying CAP over ground combat is:

- Fighters in the GS AD, and with GS turned on for the attacking side – maximum possible response.
- Fighters in the GS AD, but with GS turned off for the attacking side – medium response.
- Fighters not assigned to this GS and with GS either on or off – low to medium response.

Note that air leader admin and air values will affect the commitment of air planes to a particular mission and this may well lead to considerable variation in the number of planes assigned.

In addition to direct losses caused by successful bombing attacks, planes allocated to GS will cause some extra disruptions. This reflects the impact on ground movement and co-ordination caused by the need to avoid air attack.

18.1.4. GROUND ATTACK

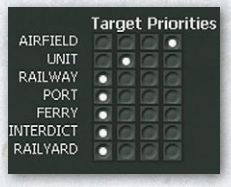
These are created when the F3 tab is selected. Ground attack missions must include some enemy held hexes but the area of the air directive can include friendly hexes (these will be ignored when the mission is conducted).

AIR DOCTRINES 18-3

GND SUPPORT | BOMB CITY | GND ATTACK | RECON | SUPERIORITY | NAVAL PATROL | PILOTS

		Alt	D/N	Part Esc	FPath	FHex	MinWth	Intens	Sched	Pct Fly	Mis Pct	Esc Pct
Luftflotte 1	1/5 AD 298 636 349	9000	-	-	-	-	Poor	-		20	150	25
Luftflotte 2	1/4 AD 138 749 531	9000	-	-	-	-	Poor	-		20	100	50
Luftflotte 4	1/1 AD 417 326 344	9000	-	-	-	-	Poor	-		20	100	50
Hungarian Air Command	2/2 AD 48 60 78	9000	-	-	-	-	Poor	-		20	100	100
Rumanian Air Command	2/2 AD 120 0 0	9000	-	-	-	-	Poor	-		20	100	100

Ground attack missions can be ordered against a range of targets including: Airfield; Unit; Railway; Port; Ferry; Interdiction; or, Railyard. A given mission can be ordered to attack one or more of these targets and the relative priority for each target can be adjusted. At least one option must be set at priority level 4.



Airfield attacks will damage or destroy both planes based at the airfield and the infrastructure of the airfield itself. If the airfield is overloaded, extra damage will be inflicted by an airfield attack.

Unit attacks will try to disrupt, damage or destroy enemy ground elements in the target hex(es). It will also generate some interdiction but much less than the 'interdiction' mission. Such missions may also reduce unit morale and experience.

Railway attacks will slow rail movement (22.4) in the target hex(es) by increasing usage on the rails.

Port attacks will both damage the port (reducing its value as a transport hub) and reduce the level of interdiction it can project into the surrounding sea zones (24.2).

Ferry attacks will increase the cost of using ferry hexes and inflict losses on ground units and freight using those hexes.

Railyard attacks will directly reduce the available rail capacity from that location. This has two primary effects. It reduces the rail capacity on that sector of the rail system increasing the costs of sending units or freight by rail (22.4.4). It also reduces the effectiveness of any depot in the same hex as depot capacity and efficiency is closely related to the size of the co-located railyard (25.7.1).

All the above missions will also generate some interdiction in the selected target hex(es).

If a depot is present in any hex struck by a ground attack (regardless of notional focus) this can result in damage and losses to ground element equipment such as guns as well as affecting the movement of freight into and out of those hexes.

Interdiction attacks will tend to target hexes with a lower movement point cost (i.e. the clearer terrain) and will be spread out across the selected target box but focus on the places where movement is to be expected. Each interdiction attack hits one hex but some interdiction will then be placed in adjacent hexes.

Interdiction will affect any enemy movement in the hex(es). This includes the movement of ground units (including attacks or retreats), the commitment of reserve units to combat, the commitment of support units to combat and the movement of freight.

If ground combat subsequently takes place in a hex that has been affected by interdiction in the air resolution phase then the detailed combat report (37.1) will show the presence of planes (and any damage they cause) even if there was no direct ground support.

The effectiveness of interdiction bombing will be affected by the weaponry used (18.2), the terrain, weather and the detection levels present in the affected hex(es). In addition, the time of year will affect the mission as in winter there is less daylight and thus it is easier for the enemy to move undetected. The interdiction values generated by airstrikes are thus modified by a certain percentage due to the number of hours of daylight based on the month as follows:

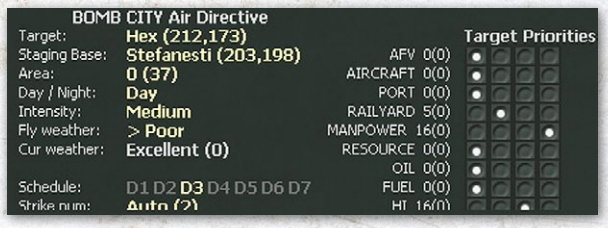
MONTH	JAN/ NOV	FEB/ OCT	MAR/ SEP	APR/ AUG	MAY/ JUL	JUN	DEC
% Modifier	-20	-10	0	+10	+20	+30	-30

In addition to disrupting/damaging or destroying Ground Elements, Interdiction has the effect of raising the Movement cost of each hex once it reaches a certain level (38.7.2).

> Note that any interdiction >0 has the effect of cancelling Administrative Movement (22.2.1) and this also affects the movement of freight.

18.1.5. STRATEGIC BOMBING (BOMB CITY)

These are created when the F4 tab is selected.



Note that two of the potential targets (Port and Railyard) can also be attacked using the Ground Attack missions and the effect is the same regardless of the type of Air Directive selected.

Only two and four engined bombers can be used for Strategic Bombing missions. As with Ground Attack

missions, multiple targets (and hexes) can be selected and the target priority screen can be used to indicate the relative importance. Note that there is a possibility that a mission designed to attack one target may hit another.

In each case the mission will damage the relevant 'factory' that produces that particular item unless a Port or Railyard has been selected.

As with Ground Attack missions, the effectiveness of a given attack is affected by the weather, detection level, skill of the pilots and extent of any anti-aircraft fire.

Note that some strategic bombing attacks on Germany will result from Western Allied raids generated by in-game events (40.5).

18.1.6. AIR RECONNAISSANCE

These are created when the F5 tab is selected. All reconnaissance missions must target enemy held hexes. If the wider target area covers friendly hexes these will be ignored when carrying out the mission.

Air Reconnaissance missions are separated into strategic and tactical missions. Strategic reconnaissance can chose from the range of targets that can be attacked using the Strategic Bombing directive.

The air reconnaissance target priorities are used to determine the targets selected for each mission. For example, if airfields are set to low and units set to medium, when a reconnaissance mission is formed and sent out, it picks its target hex, and there is a good chance it will pick units and a smaller chance it will pick airfields. If airfields were set to none and units to high, only hexes with units would be selected for targets, but the increase of reconnaissance values in the hexes flown over by the tactical reconnaissance flight would raise the detection levels of all possible targets including any airbases.

For tactical reconnaissance, the reconnaissance values in the hexes go up along the flight path to the target hex, which should see the largest increase in reconnaissance value. Any of the target priorities can be selected; however, tactical reconnaissance will only increase the basic reconnaissance level of the hex, which only impacts the detection level of Units, Rails (usage and damage), Depots and Airbases. For example, railyards could be set as the target priority and the reconnaissance mission would fly to a railyard target hex, but the mission would still only increase the detection levels of units, depots, rails, and airfields that the reconnaissance aircraft fly over during the mission.

If you select 'Unit' as your target, the missions will focus on raising the information about already known formations. 'Interdict' will focus on uncovering units that may be in apparently vacant hexes. If the mission has fulfilled its primary purpose it will swap to the other function so a 'unit' mission may show up as 'interdict' in the air reports.

Reconnaissance aircraft automatically change to the altitude that is the best fit for their load out when they reach the target hex(es). In effect, they fly (and generate some detection information) to their target hex(es) at the mission altitude and then adjust automatically so a formation with a low level camera will always adjust to the most effective altitude.

> In the main, only flying reconnaissance missions for 2-3 days a week can be effective. This will give you an idea of the rough situation in the area you are targeting but will limit losses to what are often relatively rare assets.

18.1.7. AIR SUPERIORITY

These are created when the F6 tab is selected

This is designed to ensure that your fighters will seek to engage enemy planes in a particular zone. AS missions can be ordered to take place in both air phases, the friendly air phase or the enemy air phase.

Air Superiority missions will be less vulnerable to flak than other types.

Note that an Air Superiority mission is not the only way to ensure your fighters will seek to intercept and engage enemy aircraft. If a fighter (or fighter-bomber) air unit is at an airbase and not in reserve mode then it will seek to automatically intercept any enemy planes that come within range.

Air Superiority missions are used to gain control of the air so as to minimize enemy air interception of other friendly air missions while degrading the effectiveness of enemy air missions. Air superiority can impact the entire turn, with both sides capable of conducting missions during both player turns. Fighter units will fly to a target area and try to disrupt enemy missions that are flown into that area.

Aircraft assigned air superiority missions can intercept enemy air activity both on the way to and in their target area. Air superiority missions can be used defensively to protect a target area, or offensively as a fighter sweep type mission.

Air superiority flights can gain altitude when intercepting enemy raids or joining defensive battles. In consequence, fighters on an AS mission will often have a tactical advantage over those escorting bombing or reconnaissance missions.

Air groups that are specifically assigned to an Air Superiority air directive, either by the computer or player manual air group unit selection, will have a better chance of flying interception missions during the enemy movement phase in the target area of the air superiority air directive. This allows them to intercept enemy Ground Support and Transport missions. This is because the miles they flew for air superiority missions in the friendly air execution phase are tracked, and these miles are available to be used in the enemy movement phase for these interceptions.

This takes into account the simultaneous nature of real life air missions against the IGO/UGO nature of the game. It is assumed that the air group units were possibly out flying air superiority missions when the enemy ground support or transports came into the area. The chances of this interception being made will be related to the number of 'air miles' the fighters expended in their phase.

No additional fuel or ammo will be expended for these movement phase intercepts as they were already "paid for" during the AS missions during the air phase.

Night Fighters cannot usually be directly assigned to AS missions if they fly at night. The exception to this is if they are allocated to the 'night intruder' mission and ordered to target airbases where enemy night bombers or fighters may be based. Instead Night Fighters rely on auto-interception to engage with enemy air missions.

18.1.8. NAVAL PATROL AND NAVAL INTERDICTION

Naval patrol missions are used to project naval interdiction to exert control over ocean and sea water hexes.

There are two ways in which air group units may fly naval patrol missions. First, air group units may fly naval patrols to an area under direction of an air directive to their Air HQ unit. Second, air group units not set to night only missions will automatically fly naval patrol if they are not assigned to any air directives and their HQ unit's air doctrine for Auto Patrol is set to yes.

Naval only air group units are significantly more effective than other units at flying naval patrol. The bomber and patrol aircraft will attempt to create naval interdiction points in the target area (as well as along the path to the target) while fighters (including those flying air superiority missions) will attempt to prevent enemy aircraft from creating naval interdiction points. These naval interdiction points help to take control of sea hexes. When interdiction is shown, enemy controlled sea hexes are shown in red, neutral are shown darkened, and friendly control is shown normally. Naval air directives are flown during both friendly and enemy air execution phases.

All automatic naval patrol flights, whether bombers or fighters, are limited to 30 hexes from their air base unit.

Naval patrols will be less vulnerable to flak than similar missions over land hexes.

Naval interdiction also acts as tactical air reconnaissance and can increase the detection level of enemy units utilizing naval and amphibious transport that remain in water hexes at the end of their turn (24.5).

18.1.9. AIR TRANSPORTATION

Although not an air directive as such, the air transport of units (22.5.2) and freight (22.5.1) takes place during the ground phase. Air drop of airborne units can take place either in the ground phase or in conjunction with a naval invasion.

Air Transport (including freight, the movement of non-motorized units to a friendly airbase and airborne operations) missions can be accompanied by fighter escorts. For airborne operations, fighters are assigned using the airdrop screen (22.5.3) for transport missions.

If an air transport mission is intercepted, this can lead to losses both among the transport aircraft and the cargo. Aircraft conducting the air transport mission that are aborted will return the ground elements they are carrying to the staging air base unit used to commence the mission.

The detailed rules for air transport missions (all types) can be found in section 22.5.

Also see the rules on auto-interception (18.1.10) for information on when enemy fighters are likely to intercept an air transport mission.

18.1.10. AUTO-INTERCEPTION

Technically this is a not an air directive but another way in which fighters can seek to engage with enemy aircraft. In this case, fighters will try to engage enemy aircraft as long as they are not manually assigned to a particular Air Directive. If the 'auto-assign' routine has been used then any fighters with unused air miles may seek to engage with any enemy incursion in the air phase or during the ground phase (either as a ground support or air transport mission).

For a fighter air group to be eligible for auto intercept the following conditions must be met (and, in addition, leadership dice rolls will have a bearing on if the air group actually intercepts):

- The air group must not be manually assigned to a particular AD (it can be used by an AD using the auto assign routine).
- In order to intercept GS and/or provide CAP to a specific ground battle:
  - It must be assigned to a GS AD itself supporting the ground HQ that controls the battle (23.11).
  - Be in a AS mission the has flown miles over the battle site or that intersects with the enemy air cover moving from their bases.
  - Not be included in any AD apart from the GS mission covering the battle.
- In order to intercept enemy transports, the air group must:
  - Be in an AS mission that has flown miles over the combat/drop hex (or intersects with the enemy planes moving from their bases).
  - Not be allocated to any mission over than the above.

In this case, the mission will use elements of your overall air directives (above) to see if it will fly in the current weather conditions.

The system will now check first to see if there is a GS (ground support) air directive covering the HQ in charge of a ground battle. If so, then all air units attempting to fly auto CAP, Ground Support (escorts and bombers), and auto intercepts of enemy GS will check the GS AD setting for the weather to fly (no matter if they are in the air directive or not)

If there is no GS AD set for the HQ in charge of the battle, then any auto CAP and auto GS intercepts will check the air unit's Air Command's GS air doctrine setting to determine when they are willing to fly.

Note: Auto intercepts in the air phase always check the Air superiority air doctrine of the unit to determine if they are willing to fly in the current weather conditions or have enough planes to meet your chose percentages ready to fly (17.4.4)

18.1.11. INTERACTION BETWEEN VARIOUS AIR DIRECTIVES

Ground attack missions with a focus on interdiction disrupt and reduce MP's in units and damage freight (supplies) moving to and from depots. Remember that any interdiction greater than 0 will also prevent administrative movement (for both troops and supplies) in that hex thus increasing MP costs regardless of the level of actual interdiction generated.

If the ground attack is aimed at 'units' it may also generate some interdiction but will mostly aim to disrupt, damage or destroy ground elements in the target hex(es).

Ground support missions are flown in the ground phase but take place before any ground combat starts (23.8). This means that any losses or disruption imposed by air power are not available to take part in that particular battle and this can be devastating if properly applied. In addition, such disruptions then convert to fatigue after the battle, affecting unit performance across the turn (23.1.1). This is probably the single most useful mission for both sides in WiTE2.

Air reconnaissance can increase the impact of interdiction and it is important to ensure your reconnaissance missions are focussed on the same target type as the bombing missions. Note that 'unit' missions will prioritise raising the detection level of known formations, 'interdict' will focus on detecting unknown formations.

Strategic (city) bombing and ground attack missions against ports and railyards lowers the effective size. Since, in both cases, the size of the facility sets the size (capacity) of any depot (25.7) in that hex this can be a very effective tool to restrict the flow of supplies. In addition such bombing can damage or destroy ground element equipment, including equipment being sent to units as replacements.

Air Superiority missions can be difficult to understand. If flown in your air phase they will seek to attack any enemy air missions flown in their allotted Air directive zone. In addition, they create 'air miles' in that zone that are then

used to determine the chance of intercepting ground support or air transport missions in the following ground phase. To cover a given region in both the friendly and enemy ground phases means you will need to use your AS mission in both the air phases.

18.2. AIRCRAFT LOADOUTS

This will be set automatically by the computer but a player can over-ride this choice and set loadouts manually.

Aircraft have many possible load outs. Load outs with a lot of smaller bombs allow the aircraft to hit more ground elements in units. Depending on the fuel situation at an airbase, an air group may not select drop tanks, thus greatly reducing combat radius. One solution may be to shrink the area that the mission is covering, as this will effectively reduce the range.

> In general matching load out to mission is intuitive but see the discussion in 19.4.5. The better dug in or protected the target, the more effective will be a few heavy bombs, moving units are often best attacked with rockets or light bombs and naval missions are better if the plane can carry torpedoes or mines.

18.2.1. AUTOMATIC SELECTION

In this case the load out screen should be initially set to Auto.

Note there is no need to reset this each turn, as long as the Auto option is selected the computer routines will swap load outs to match available resources and allocated tasks.

Initially the computer will try to select a load out with no drop tanks or with maximum bomb effect. If the destination is not reachable, load outs with drop tanks or fewer bombs will be used instead.

When the setting is Auto it will try to select various load outs depending on the plane type and situation. For example, if the air base is below 50 percent of its fuel need it will choose a load out with minimal sortie fuel value. In case of naval patrol it will try to pick torpedo/mines/bomb. The selection algorithm also goes into two stages. For example for the bombers, first it selects the heaviest bomb load (i.e. that with the heaviest total blast value (19.4.1). If the modified endurance doesn't allow the aircraft to reach the target it picks the bomb load with the least possible endurance modification.

If an Air Group Unit swaps or upgrades its aircraft, the load out selection will be set back to Auto.

18.2.2. MANUAL SELECTION

The player has the ability to manually change air group unit load outs, either individually or by various groupings of multiple air group units of the same model aircraft.

The selection is made using the options in the air group unit tab on the aircraft screen:

Once a given loadout has been selected the player has the option to just use that for that particular Air Group unit to all similar planes at the same airbase, all similar planes in that particular air directive, all similar planes in the same air command or all similar planes in the entire air force.

Note the match must be exact. So a loadout assigned to a Bf-109F-2 will not be applied to a Bf109E-7.

The screen will also show loadouts that are no longer available or will become available later in the war.

18.3. CONDUCT OF AIR MISSIONS

During the air resolution phase the number of planes used in each air directive may be less than the total notionally allocated. This can happen for several reasons including failing leadership checks, air units already using up all their available air miles or losses in an earlier day reducing the number of planes available, or, possibly taking the air group below the minimum % required to conduct missions.

18.3.1. LEADERSHIP CHECKS

The leader air rating is checked and may increase the chances of more planes actually participating in a given mission.

Remember that Air Command HQs must be within 90 hexes of an airbase to provide their leadership score but otherwise the leadership chain works as set out in section (15.5.4) with higher levels of command offering secondary chances to pass a particular check.

18.3.2. MILES FLOWN

There are several factors that determine how many missions and what type a particular air group unit can conduct during a turn.

An air group unit can only fly a certain number of miles per turn based on its cruise speed (37.16.1) and current unit morale and experience.

The miles flown are tracked as a percentage of maximum miles that may be flown. . The miles flown logged by a group is increased substantially when operating in bad weather. In addition, if planes operate over 25,000' then the mileage will increase by 10% for each additional 1,000'.

An air group unit can continue to fly missions if miles travelled are less than cruise speed times the number of aircraft in the air group unit times (10+ (morale/4) + (experience/4))).

> For example, a 10 plane JU-52 air group unit with morale of 20, experience of 40, and a cruise speed of 160 could fly up to 40000 miles in a turn. The actual mileage flown is based on the type of air mission.

Air transfer missions pay the range in miles, transport missions cost three times the range in miles, and all other air missions, which are considered combat missions and include fighter escort of air transport missions, pay four times the range in miles. For example, an air transport mission to a target hex 12 hexes away would expend 360 miles per plane that flew on the mission, or 12 times 3 times 10 miles per hex per plane, for the transport air group unit, but an escorting fighter unit would expend 480 miles per plane.

Note that a reduction in the number of ready aircraft during the turn will result in a reduction of available miles.

18.3.3. MISSION, ESCORT % AND % REQUIRED TO FLY

	GND SUPPORT (1)
Altitude	9000
Day/Night	-
Partial Escorts	-
Follow Path	-
Friendly Hex Interdict	-
Minimum Weather	Poor
Intensity	-
Schedule	-
Auto Naval Patrols	-
Percent to fly	20
Mission AC Pct	100
Escort AC Pct	100

These can all be set using the Air Directive tab (37.16.8).

By default the Mission and Escort % are set to 100. This means that the computer will fly the air directive on days when it has, at least, the number of planes it needs to deliver an effective mission. Reducing the % will lower this number and raising the % will increase this number.

The % required to fly is the minimum number of ready planes in the Air Group Unit on that particular day. If this number is not available then the remaining planes in the Air Group will not fly any missions on that day. Since planes can be damaged, and repaired, during the air execution phase it is possible for Air Groups to cease to be available on some days and return to action later in the week.

18.3.4. MORALE LOSS AND RECOVERY

Air group unit morale may increase due to destruction of enemy aircraft in air to air combat as well as when the air group unit receives supplies. Air group unit morale will decrease due to aircraft being damaged or destroyed in combat.

In the air execution phase, air group units can recover morale during each air maintenance segment if they did not fly a mission during that day. Air Group units set to the rest mission will recover morale at double the normal rate.

See the tables in section 38.2 for the changing basic levels of national morale for the various air forces represented in WiTE2.

18.3.5. GAINING AND LOSING EXPERIENCE

Air group unit experience has a significant impact on combat effectiveness during air missions. Air group units gain experience based on the number of missions they fly. Air group units or individual pilots can fly training missions if in their reserve TB or in the Western Europe TB (13.3) if that has low combat intensity. These training missions will increase the chance of operational losses, resulting in additional damaged or destroyed aircraft from the air group units conducting the training.

Air group units will decrease in experience due to the addition of replacement aircraft pilots. In addition, pilots in air group units can lose experience due to swapping planes but this will only happen when the new plane has a different number of engines or have changed to a different aircraft type (each of these will deduct 2 experience).

18.3.6. FATIGUE AND AIRCRAFT DAMAGE

Air group unit fatigue impacts combat effectiveness, the number of aircraft operational losses and the number of aircraft from that air group unit that will conduct a particular air mission. Air group units gain fatigue as a result of air combat and the amount gained is dependent on the number of air attacks made and the total distance flown.

Air group units can recover from fatigue during the supply segment of the logistics phase. As with ground elements, the amount of fatigue reduction will be determined by the supply situation and available air support squad ground elements at the air base unit the air group unit is attached.

Fatigue will increase if the planes are flying over 25,000 feet.

18.3.7. ATTRITION

Air groups will have aircraft become damaged if the air base unit they are attached to has insufficient supply and/or air support squad ground elements. The airbase unit ground elements will suffer normal attrition and fatigue losses.

18.3.8. IMPACT OF WEATHER

Weather conditions are based on the weather on the way to the target and over the take off base, stage base and target. The weather can be very poor, poor, fair, good, or excellent (8.4).

Whenever an air mission is attempted in bad weather, there is a chance it will be scrubbed and not take place, with the chance of scrubbed missions increasing the worse the weather.

Ground Support air missions will be significantly reduced during bad weather.

As with all air missions, the mileage flown will be modified based on the number of ready aircraft in the air group unit that actually flew, but a weather mileage extra charge will apply, with the worse the weather the greater the extra miles charged against each aircraft that flew.

Air missions can be cancelled by the minimum weather conditions set for the air directive. For example, if the minimum weather conditions for a directive are set to fair, then any mission being created by the air directive will automatically be cancelled if the weather condition is deemed to be very poor or poor at the time the mission would have flown.

Poor weather will substantively increase the operational losses, especially for air groups with low experience.

18.3.9. DAY AND NIGHT MISSIONS

Most air missions are conducted during daylight; however, strategic bombing, ground attack, air transport, and interception air missions can be flown at night by air group units that have night missions enabled in their detail window (37.16.3).

Air group units are generally defaulted to day&night (DN) mission settings which allow them to fly in both day and night missions, although night fighters are generally defaulted to the night only mission setting.

All night interception is conducted automatically as there are no night AS flights.

Note that some planes will only be available for day or night missions. Typical examples of day only planes are the

bulk of reconnaissance planes that were ill-equipped for night missions.

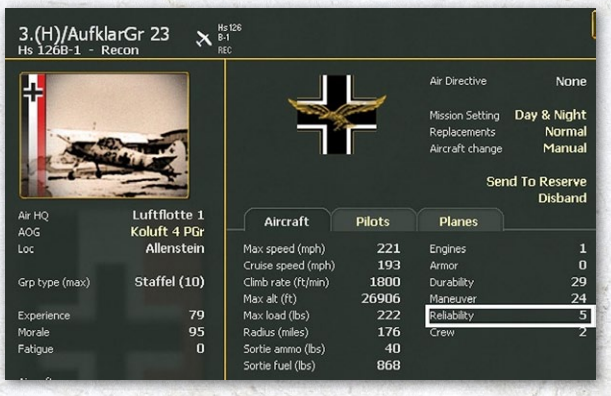
18.3.10. AIRCRAFT RELIABILITY

All aircraft have a reliability rating which ranges from "really good" (lower numbers) to "really bad" (higher numbers).

These reliability ratings are checked when aircraft conduct a mission with those that fail the reliability check becoming damaged.

To reflect initial production "teething" problems, aircraft reliability will be increased by five when they first come into production and then decrease by one each month until they reach their standard reliability rating. The reliability rating of obsolete (out of production) aircraft is treated as higher than their normal reliability rating, which will make them more susceptible to attrition.

The reliability of a plane is shown on the Air Group Unit tab or under the Equipment (aircraft) tab of the Commander's Report (35.8.2).



18.3.11. OPERATIONAL LOSSES

These are more likely to occur when there is poor weather, pilot fatigue, planes with low reliability, formations with low morale or that have taken damage earlier in a turn and planes flying to the limit of their range.

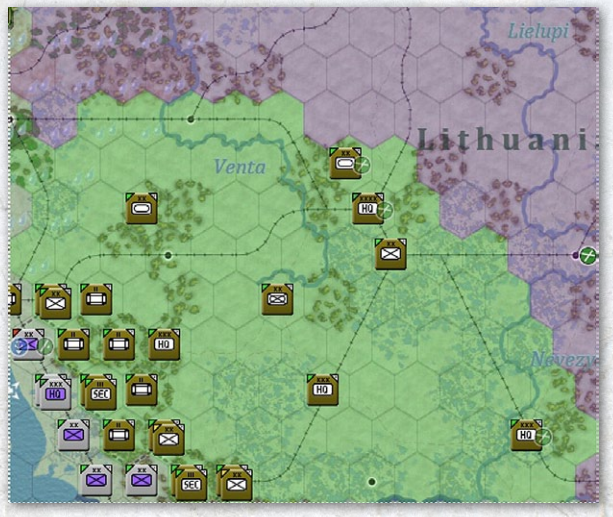
> In effect, the latter can trigger high operational losses even in good weather conditions and may particularly affect the Axis side in 1941 and the Soviets in the later stages. Be careful at setting air directives to the limit of range and, if you do, consider limiting the days such missions fly or the intensity that they operate at.

18.4. GRAPHICAL DEPICTION OF AIR MISSIONS

Air Directives will be displayed on the map when being created with the view depending on the choices made with that drop down option or by right clicking on any hex and selecting AD Targets from the map information options.

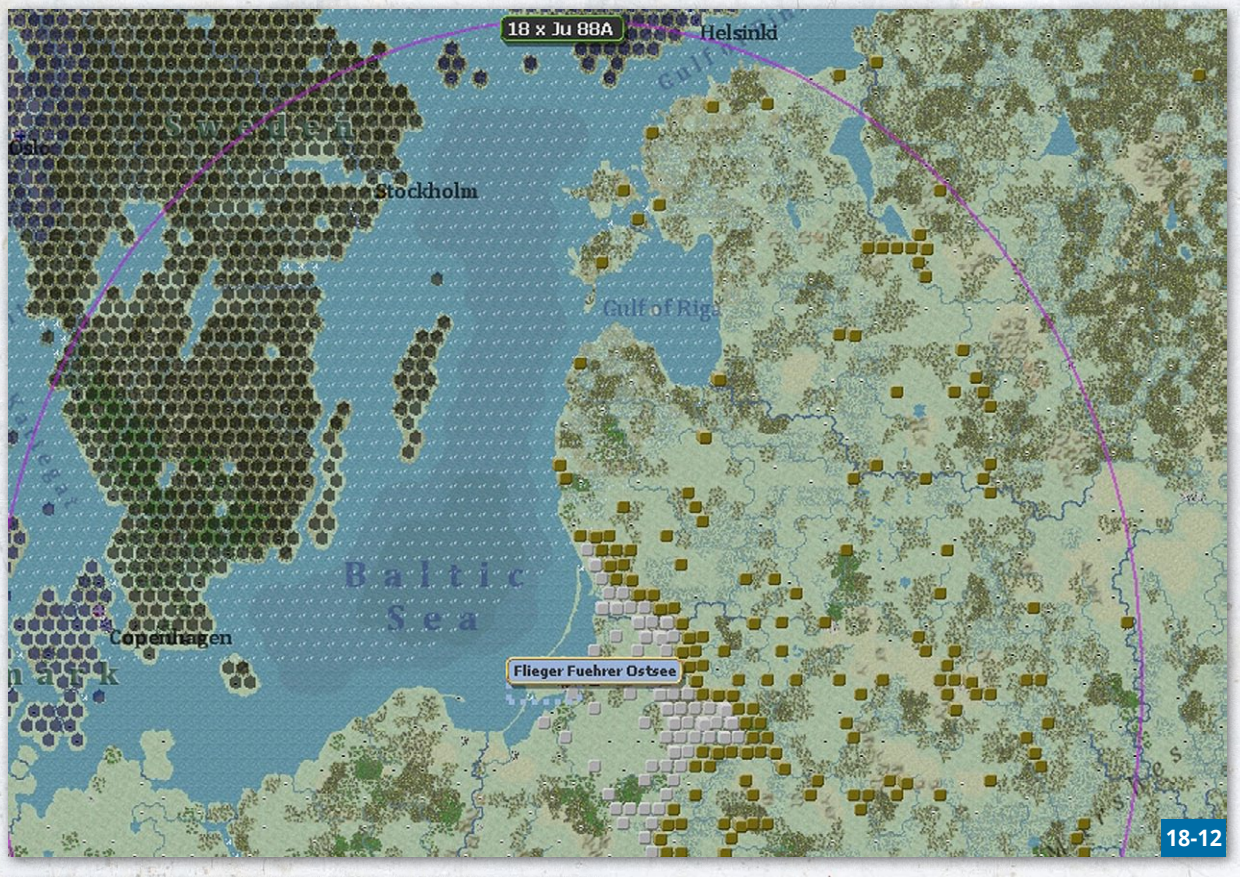
When viewing the target box on the map, or viewing the path of a strike during air directive creation, lavender in a hex in the target box (or along the path) means coverage by the strike planes (bombers, recon or fighters in Air Superiority {AS}). Green hexes means the strike has fighter escorts that can reach the hex.

Since AS doesn't include escorts these hexes won't be green.



In this case, the lower part of the AD is covered by escort fighters and the upper part can only be reached by planes flying the actual mission (bombers or reconnaissance planes).

Air group range circles are shown on the map for air groups. This is the maximum combat range of the aircraft and is shown in purple. Combat range is the distance that aircraft can fly on non-escort missions based on their load out (interception can go out this far too, although there's a low chance of interception at longer ranges).



18-12

18-13

Figure 18-12 shows the combat range for the planes in the German Flieger Fuehrer Ostsee AOG. At the top of the ring are the number and type of planes that can operate at that range.

Figure 18-13 shows the same information for the JG 54 AOG. Note that there are three rings reflecting different plane types and different bases.

Air group units assigned escort missions can only fly out to escort range, not combat range. This represents that escorting aircraft must zig zag when escorting bombers and can't travel their maximum range with the bombers. Escort range is ¾ of combat range, while transfer range is 3 times combat range.

The execution of air missions is graphically depicted on the map using lines with the following colours:

Black – Air group units flying to staging base (not shown during air execution phase).

Red – Air Strike flying from staging base to target.

Green – Enemy air group units flying to target for interception.

18.5. THEATRE BOXES

Air Missions are automatically carried out according to the intensity of air operations in that particular theatre. The level of commitment will influence the number of planes lost and damaged. Planes in the Axis and Soviet Reserve boxes will attempt to train pilots, while some units in the Western Europe box may also train pilots each turn.

Otherwise planes in the theatre boxes will be set to automatically upgrade (16.5.2) as new types become available or if shortages occur.

19. AIR COMBAT

Focus: This section provides background information on how the air combat models work in WiTE2. Most of this is not directly under player control but understanding these issues may help you to plan more effective air operations.

Key Points:

- How Air Superiority and Auto-interception missions work and interact with other air missions
- What affects success during air to air combat
- Impact of Anti-Aircraft fire on air missions
- Air to Ground Combat
- Some likely causes of high operational losses
- How wins and losses are determined

19.1. AIR MISSION SEQUENCE

19.1.1. GENERAL OVERVIEW

The following illustrates the general flow of events during the conduct of an air mission:

A. Air Mission sub-phase

1. Phasing player Air Group units committed for [mission]
2. Phasing player Air Group units rendezvous at staging base and then fly to target hex
3. Non-phasing player Air Group units committed for air intercept resulting in air to air combat (missions can be intercepted en-route to target or on return and can be intercepted multiple times)
4. Anti-Aircraft Defence (any accumulated AA from flak flown over is resolved prior to each air combat, bombing of target and landing of the mission).
5. Air to Ground combat in target hex or transports deliver cargo
6. Phasing player Air Group units return to staging base and then fly independently back to air base unit

Only fighters and fighter-bombers flying escort will drop the tanks when they have used them up during flight as a/c with bombs and drop tanks cannot drop one without dropping the other (so they keep the drop tanks until they drop the bombs). Fighter-bombers that are bombing may jettison their bombs and drop tanks and switch to "sweep" which simply means they are becoming fighters trying to fight in A2A going after enemy fighters. This allows those fighters and fighter bombers to engage enemy interceptors at full effect.

Air groups are broken down into smaller "flights" to resolve air missions, to include air to air combat and bombing runs. Decision by fighters or fighter bombers to drop their drop tanks/bombs is made by each such flight. These flights can consist of 4-12 aircraft So one part of an air group unit can switch to sweep while another keeps

their drop tanks and press on with their escort mission or, for fighter bombers, to bomb the target.

19.1.2. INTERACTION OF AS AND OTHER AIR MISSIONS

The following is a brief overview of the air execution phase and how air superiority missions interact with other air missions:

1. Air execution starts.
2. Execute night air directives.
3. Execute day patrol flights.

a) Launch all AS directives, friendly and enemy.
Number of aircraft participating based on doctrine and target area settings.
Flights are generated with the flight path from the staging air base unit to the center of the target area.
AS flights can be intercepted on the way to the target area.

b) Resolve all AS combat.
If enemy has AS flights in the same target area, i.e. both friendly and enemy AS target areas have common hexes, enemy AS flights have a chance to engage friendly AS flights.

c) Resolve automatic naval patrols.
Existing AS flights which are still active contribute to the naval patrol calculations in the AS area with their fighter values.

4. Execute day air directives. As they run all still active AS flights can intercept and engage in air to air combat

a) Friendly air missions

b) Enemy intercepts (size determined by AS Mis Pct air doctrine setting)

5. Land all air superiority flights and repeat from step 2.

19.2. AIR TO AIR COMBAT

Three groups of factors determine which plane is most likely to destroy or damage its opponent in air to air combat. These are: the characteristics of the pilots; the characteristics of the plane; and, the weapon systems in use.

A Fighter air group unit's ability to engage other air group units will decrease based on the distance flown (in hexes) relative to their range, which is calculated as aircraft radius divided by ten, resulting in fewer enemy aircraft being damaged or destroyed during a lengthy mission.

19.2.1. PILOTS

Pilots are rated according to three characteristics – morale, experience and fatigue. In the Commanders Report (35.4) and the unit screen (37.16.3) these are reported as the average for all the pilots in that particular air unit.

The air unit tab by default shows the average values for experience, morale and fatigue (1), opening the pilots tab (2) will show these values for each pilot in the unit.

In air to air combat low morale pilots may try to break off before combat and are less effective in any exchange. In general, the higher the experience of a pilot, the more likely they are to win an exchange. Finally, fatigue lowers the effectiveness of pilots – as well as creating a situation where it is more likely that an 'operational' loss (19.5.2) will occur.

19.2.2. PLANES

All the planes available in WiTE2 are rated for a number of characteristics including their range, speed, load, maximum altitude, number of engines and the types of weapon systems they can carry (both default and optional).

The image in 19.2.1 shows all this information for a given type of plane. This is also available from the Commander's Report (35.8.2) and it is possible to compare the values of different types of planes.

In air to air combat a number of these are important. Planes that have high manoeuvre values, rate of climb and higher maximum speed will have an advantage in terms

of positioning and possibly attacking first. The armour and durability values will help a plane survive being hit.

Fighter versus bomber combat will be more lethal to the bombers than these raw numbers would imply.

The value for reliability will have an effect in determining if a damaged plane will crash on its return to base (i.e. become an operational loss) or land safely.

Operating beyond the ideal altitude for a plane will see some degradation of its combat efficiency. The ideal altitude for each plane can be found in the editor (41) and the data exported to a spread-sheet.

19.2.3. WEAPON SYSTEMS

While some reconnaissance and transport planes are unarmed, almost all planes in WiTE2 carry some form of weaponry. This is made up of weapons integral to the plane and those related to a given load-out. Note that some load-outs may allow a plane to fly further or carry heavier weapons at a cost in terms of mobility and speed.

Fighters and Fighter Bombers carrying drop tanks and/or bombs will fight less effectively if engaged in air to air combat by enemy interceptors. In such a situation, there is a chance that some of the aircraft will prematurely drop bombs and/or drop tanks to more effectively engage the enemy interceptors.

In air to air combat, each weapon system (35.8.3) is rated for effect (this is only used in the context of A2A combat), range over which it can fire, the accuracy, the rate of fire and its value when used in air-to-air combat (anti-air).

19.3. ANTI-AIRCRAFT DEFENSIVE COMBAT

Anti-Aircraft fire can occur both when the planes reach their target and as they move from their base to the target hex(es).

Flak values can be seen by depressing the relevant tab (6.2), right clicking on a hex or using the hotkey/

Display options are to show no flak, only that in cities or all flak values.

Numbers displayed are between 0 and 9 to indicate intensity of flak, with the left number being low/mid altitude (below 20k feet) and the right number being high altitude (above 20K). With FOW enabled, the accuracy of the flak values will vary depending on the detection level of the AA support units.

19.3.1. ANTI-AIRCRAFT FIRE ON ROUTE TO TARGET

In addition, anti-aircraft guns can target planes flying in adjacent hexes. AA units in cities/airfields will fire at aircraft flying in adjacent hexes if they are 15,000 feet or higher. Any AA attached to combat units or HQs (whether part of the unit TOE or an attached Support Unit) will fire into adjacent hexes if the enemy aircraft is 10,000 feet or higher.

Fire at adjacent hexes has much less effect than fire at aircraft flying directly overhead. For all air missions AA units in the target hex are much more effective. AA units attached directly to cities or airfields (including flak intrinsic to the airfield unit) are more effective, as are self-propelled flak units. These are cumulative benefits, so a self-propelled flak unit in a city that is in the target hex will receive benefits from all three conditions. Flak against air transport and airborne missions is more severe in daytime than at night.

19.3.2. ALTITUDE EFFECTS AND ANTI-AIRCRAFT FIRE

Anti-aircraft guns have two range bands, effective ceiling and maximum ceiling, which is generally 1.4 times the effective ceiling. Fire is allowed up to the maximum ceiling, but any fire above the effective ceiling will be considerably weaker.

When determining the effectiveness of flak, aircraft speed is more important to aircraft flying at lower altitudes. At higher altitudes the effectiveness of flak is most impacted by the altitude itself (i.e. higher is better to avoid being hit by flak).

In air to ground combat (19.4) it is assumed that fighter and tactical bombers with a mission altitude over 5,000' will actually conduct their attacks at 1,000'. This will lead to additional anti-aircraft fire at the lower altitude as non-specialist weapon systems can also be used in an anti-aircraft role.

Air units that fly below 5,000' for their mission will evade most conventional anti-aircraft fire but may be vulnerable to other weapons. In addition, low experience air units flying at this altitude will suffer higher operational losses (19.5.2).

19.3.3. BARRAGE BALLOONS

All ports are assumed to have barrage balloons that will impact any raid that is bombing anything in the port's hex. Aircraft bombing under 3000 feet have a chance of

being destroyed by the barrage balloon equal to two times the size of the port (port 3 means a 6% chance that bombing aircraft will be destroyed). For night missions, the percentage chance is tripled (so port level 3 means that each plane has an 18% chance of being destroyed).

19.3.4. ANTI-AIRCRAFT FIRE AND COMBAT REPORTS

As aircraft fly along their path on a mission, the flak they fly over accumulates until an air battle or a bombing/recon occurs. At this point, all the flak they have flown over fires at the aircraft before the air battle or bombing/recon takes places (and all of the flak is listed as participating in this battle). If no battle takes place on the way home, any flak flown over and the losses caused by this prior to landing are retroactively placed into the last battle site report that had been created by the mission.

19.3.5. ANTI-AIRCRAFT FIRE AND GROUND SUPPORT MISSIONS

If an air mission takes place in the Ground Support phase, planes will be attacked by flak on their route to the battlefield, by any flak in the target hex and by any flak Support Units allocated by a HQ to support the combat.

19.4. AIR TO GROUND COMBAT

Apart from Air Superiority missions (18.1.7), most air missions involve the aircraft attacking targets on the ground .

The impact of this will be determined by the weapons carried by the plane, crew morale, experience and fatigue, the weather (8.4), impact of anti-aircraft fire and the type of mission (18.1).

Broadly there are two types of targets for air to ground combat – physical targets and combat units. The differences (and the types of missions that can be chosen as tactical or strategic bombing) are set out in chapter 18.

19.4.1. WEAPON SYSTEMS

When attacking ground targets each weapon system is rated for its effect (Eff), accuracy (Acc), blast radius (Blast), anti-soft (ASoft) target efficiency, anti-armor (AArm) target efficiency, target penetration (Pen) efficiency, and High Explosive Anti-Tank (HEAT) efficiency.

Effect is an overall measure of the impact of the weapon and a higher value indicates more explosive impact. The values are related to the amount of high explosive in the bomb or other weapon system. Accuracy reflects the chance to hit a target and the lower the value the less likely this is to happen while the blast radius indicates the area it can impact (so an inaccurate large bomb may still do substantial damage).

The anti-soft value is used for attacking soft targets (unarmoured ground units), the anti-armour value is used for attacking armoured ground units. The penetration value is the ability to pierce armour. In addition, some weapon systems such as rockets are rated for HEAT as an alternative method of attacking armoured targets.

19.4.2. AIR CREW

As in air to air combat, the morale, experience and fatigue of the air crew will play a role in determining the effectiveness of a mission. Again low morale crews may break off before actually attacking. Fatigue will reduce effectiveness and increase the chance of a damaged plane crashing during the mission.

19.4.3. WEATHER, ALTITUDE AND ANTI-AIRCRAFT FIRE

All of these can affect the effectiveness of a mission. Poor weather can reduce the accuracy of an attack, especially if it is combined with lower Detection Levels (10.2). Planes bombing at higher altitudes will be less accurate than those operating at lower altitudes. Finally, anti-aircraft fire can have the effect of damaging or destroying attacking aircraft even before they carry out their attack and lower the accuracy of a given air mission.

19.4.4. TERRAIN

The terrain in the target hex will influence the effect of any bombing. Not only will wooded, marsh, hilly or urban terrain reduce the detection level (10.2) thus limiting the effectiveness of any mission, but also such terrain provides additional cover reducing the impact of any attack.

19.4.5. AIR MISSION TYPE AND WEAPON SYSTEM

Matching load out to target is complex but there are some broad guidelines.

For a strategic bombing mission, if the target is solid (a factory, port facility or oil field) then it is usually better to use as heavy a bomb as possible. A 500lb bomb has an effect value of 1100 compared to 550 for a 250lb bomb. In addition, larger bombs have much wider blast areas and are thus less reliant on precise accuracy.

For interdiction missions, usually the most effective combination is either rockets or multiple small bombs.

For ground attack missions aimed at units (18.1.4) or for ground support missions, usually more bombs are better than heavier bombs (but poor terrain or substantial defensive works may alter this judgement). In this case, each bomb attacks a separate ground element and the goal is often to disrupt the enemy rather than inflict direct damage or destruction. If the enemy is well dug in, or defending in urban terrain, it might be more effective to use fewer but heavier bombs.

For naval interdiction missions (17.1.11 and 18.1.8) aircraft flying with torpedoes get a bonus when generating naval interdiction during naval patrols.

19.4.6. DAMAGE TO GROUND ELEMENTS

When ground elements are hit during a ground attack mission they can be destroyed, damaged or disrupted.

Disrupted elements recover before the ground phase but have extra fatigue as a result which can have a substantial impact on their combat performance (23.1.1).

Ground support missions occur as the first phase of a ground battle. Any ground elements disrupted in that phase remain disrupted (i.e. unavailable) throughout the ground phase.

19.5. LOSSES

19.5.1. AIR CREW LOSSES

Aircrews of destroyed planes for the phasing player will have 90 percent of the crew destroyed and 10 percent captured. The non-phasing player aircraft will have 100 percent of their crew KIA if the plane is destroyed.

These casualties count for victory point totals (when appropriate to the scenario) as they are treated no differently than other permanent losses.

19.5.2. OPERATIONAL LOSSES

During air missions, planes will suffer operational losses in addition to combat losses. This will be affected by the weather, the reliability of the planes, crew experience and fatigue and any damage inflicted (by either enemy aircraft or anti-aircraft fire) during the mission.

Planes flying at night will suffer higher operational losses.

Aircraft flying under 5,000 feet can suffer additional operational losses, with the lower they fly the greater the losses. Extremely high experience pilots can avoid most/all of these extra losses.

> Note that flying low has the advantage of evading almost all anti-aircraft fire.

19.6. DETERMINING WIN/LOSS FOR AIR MISSIONS

Victory and defeat for air leaders is judged based on losses in aircraft, and damaged, destroyed and disrupted ground elements. There is the possibility that no victor or loser will be declared if the loss differential is not significant.