

The Battle of Britain



**Fast play game of
air combat over
England on
August 8th, 1940**

David Child-Dennis



Battle of Britain

Game Overview

The game portrays the events of one day in the Battle of Britain, the 8th August 1940 and is centred on the concept of RAF Sector Stations within 11 Group RAF Fighter Command, as they existed in August 1940. There are five such Sector Stations, Biggin Hill, Kenley, Tangmere, Hornchurch and Northolt. To each of these sector stations were attached satellite airfields, most of which were quite primitive in terms of repair and maintenance facilities. One player will take the RAF and control all the sector stations, allocating defending fighters to attack the Luftwaffe raids as they occur. Where possible, each sector station should be controlled by a single player, thereby giving the game the element of tension that developed within 11 Group as fighter squadrons were removed as non-operational and replacements were increasingly difficult to get.

There are three German Luftflotte commands split between Luftflotte 3 (Cherbourg) and Luftflotte 2 (at Cap Blanc Nez and Ghent). Again, it is preferable that there is a player for each of these headquarters.

The Luftwaffe player(s) open

the game play by placing their raid plot markers facing the RAF player on the opposite side of the board, in the grey 'Luftflotte' raid assembly squares. In the event of an RDF site being destroyed, the marker will be placed so that the RAF player cannot see the raid details on the marker.

The RAF player will set up their squadrons on the appropriate 'Squadron Readiness Board' with a squadron on each of the categories. One squadron, per airfield, will always be on 'Alert' at the beginning of the game. There were no standing patrols at this time.

Each raid marker will move through each of the boxes on their specific raid track, marked on the map, until they reach their target, are destroyed by RAF fighters or turn back. Once any of these events occur, the raid marker is immediately removed from play; it being assumed the Luftwaffe has beaten a hasty retreat, unhampered by bomb loads. An unloaded Do.17Z, slightly nose down, could outrun a Hurricane on a good day!

Players will see that the raid tracks are interlinked in some

areas. The Luftwaffe player may follow any of these interlinks as he sees the situation develop. This is to give the Luftwaffe player a reasonable degree of tactical manoeuvre, which is historically correct. However, London is the final destination of all raids and once this is reached, the Luftwaffe returns home and all raid markers on London are automatically removed. It should be remembered that the London metropolitan area was not, at this time, the target, but there were significant industrial targets that were attacked on the outskirts. For the purposes of the game, these targets are not identified.

Each Luftflotte HQ can mount three raids per day – one each at morning, midday and afternoon. To simplify play, all morning raid markers must be out of play before the midday raids commence. The midday raids must be complete before the afternoon raids are launched. Once the three raids are complete, the game is finished. Each raid should take no more than about 15 minutes playing time, so a complete game should take no more than an hour at most.

Contents

Sequence of play	3
Generating Raids	4
Air Combat	4
Attacking Targets	6
Victory Conditions	7
Advanced rules	8
Background	11

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Sequence of Play

Each turn in Battle of Britain follows the sequence listed below. Players of both sides go through the list in order, performing each part as described before going on to the next item.

1. The Luftwaffe player rolls 2D6 adding the total of the dice together to establish the number of aircraft in a raid. Each Luftflotte HQ, rolls for three raid cards. One in the morning, at midday and the afternoon of the 8th August. This makes for a total of nine Luftwaffe raids during the game. Set up all RAF squadron markers on the 'Readiness Board' at their listed airfields with one squadron at each being placed at 'Standby' or '5 Minutes readiness'. There are no RAF standing patrols.
2. Move all aircraft markers one square along the raid track or between any adjacent objective markers linked by a raid line. The Luftwaffe player always moves first. Move any squadron markers on the 'readiness board' up one level of readiness
3. Attempt to intercept enemy raids with RAF fighters that occupy the same square or objective marker. RAF Fighter squadrons may not attempt to deliberately by-pass enemy raids in the same square. Fighters that fail an interception test immediately return to base.
4. Resolve combat between intercepting fighters and bombers. Determine casualties.
5. Bombers that have been intercepted and lost the action to the fighters must immediately return to their home base. Fighters engaged in combat immediately return to their home base. Bombers winning the interception combat continue.
6. Check to see if the bombers attack the target box or objective they now occupy. If they don't, they move to the next box or objective on their raid track in step 2. All raid markers reaching London are removed from play once they have delivered their attack, or been driven off by fighter attack.
7. Go to step 2 and continue the raid sequence until all raiders have returned to base.
8. Attempt to repair damage.



Event & Tactical Cards

The game uses two sets of cards that allow players to influence game outcomes. Event cards allow for the repair of facilities, the replacement of casualties in aircrew and aircraft and assistance from adjoining Groups. Tactical cards allow players to add or subtract from the enemy's, or their own, dice rolls during

interception and combat moves. At the beginning of each raid cycle, each side (RAF and Luftwaffe) may select three 'event cards' and two 'tactical cards'. Only one tactical card may be used per round of com-



bat. Once used they are discarded and may not be reused in the current game. Event cards may only be used once per game turn, but may then be returned to the pile for reuse in the next raid cycle.

Generating a Raid & The Raid Track

The German player has eleven raid cards ranging from 120+ through 20 + aircraft. Each of the three Luftflotte players rolls 2 dice and adds the total together to get a number between 2 and 12. The number rolled equals the size of the raid allocate to that Luftflotte. Thus a '12' gives the player the '120+ raid card and so on. If the same number is rolled twice in a row, pick the nearest card to the number available. If there is a choice between numbers, always take the higher.

So, if, an '11' is rolled twice in a selection, the player will take the '120+' raid card that represents a dice roll of '12'.

Once three raid cards have been selected, place one on each of the grey Luftflotte raid assembly squares. If the player rolls and gets a '2', they can opt to use a 'Low Level' attack option involving Do17Z aircraft. This gives the player an added attack advantage against targets.

Each raiding force begins in the Luftflotte box (in grey) and proceeds one

move at a time, to the 'Channel' box, then 'RDF' box, and so on. The raid markers then proceed to the next Sector Station box [S] along the raid track. If there are multiple dotted lines leading from any box, the Luftwaffe player may choose to follow any one of these. However, the final destination must be London. Players will soon realise that the more moves their aircraft take to reach London, the more likely they are to be attacked.

Intercepting a Raid

Nearly 50% of all fighter squadrons failed to intercept the bombers they were vectored against. Divide the bomber raid size by 10. Each fighter unit will be required to roll two dice and score a combined total equal to or LESS than this figure in order to intercept the raid before they can engage it in air combat. Thus,

fighter squadrons attacking a 120+ raid will roll 12 or less with two dice, so cannot fail to locate the raid. If, however, a fighter squadron is attempting to locate a 20+ raid, they will

be required to roll a '2' in order to do so. If the fighters fail to roll the required

total, they fail to intercept and immediately return to base. Interception dice rolls can be modified by tactical cards.



Air Combat (Tally Ho!)

Air Combat can only occur between two forces that have made contact by moving onto the same square or objective marker. The combat is between all the RAF fighters and the entire Luftwaffe raid being intercepted in that square or on that objective. Combat is adjusted in accordance with 'tactical cards' played by either player and the outcome determined by a single six-sided dice roll. It is a matter of calculating an odds ratio between the



numbers of raiding aircraft and intercepting fighters to determine the outcome.

For the purposes of the game we will assume that the attack value of each individual RAF squadron is '10'. That is, each attacking squadron managed to get 10 out of 12 aircraft into combat. This is historically a gross overestimate, with 50% being a normal average at this time. However, '10' is an easy number to work with. The Luftwaffe raid is

treated in the same way, its aircraft strength also being divided by '10'.

The lower number is divided into the higher number and this represents the minimum number that must be rolled (including any adjustments using tactical cards) to force a raid to turn back. If the number is exceeded, then there is a possibility of bomber casualties. If the adjusted number rolled is lower, then the RAF fighters are beaten off by the escort and bomber defensive fire. They are immediately withdrawn, and may suffer fighter losses. The raiders continue on with their mission.

Air Combat Examples

Example 1

A Luftwaffe raid of 120+ is intercepted by 3 RAF squadrons, 30 aircraft.

Luftwaffe combat value = 12: RAF combat value = 3: Therefore 12 divided by 3 = 4.

The RAF would need to roll an adjusted 4, 5 or 6 with a single D6, to have any effect against the raid. The odds of the RAF causing the raid to turn back are 50%, but that was the nature of the Battle. It requires a greater number of RAF

squadrons to intercept such a large raid in order to have a better than equal prospect of success. Hence the 'Event cards' allowing 10 and 12 Groups to offer additional fighter squadrons in support of 11 Group are important to the RAF defenders.

However, should the raid be smaller, say 50 aircraft (including escort) then 3 intercepting RAF squadrons would have decidedly better odds at inflicting serious loss on the raiders...

Example 2

Luftwaffe raid 50: RAF Fighters 30 = 5 divided by 3 = 1.66 rounded up to 2.

It would require any dice roll greater than '1' to force the enemy to turn back and possibly cause loss.

Note that the winner does not take a test for losing aircraft in the attack. While this may appear unrealistic, it must be remembered that RAF losses will occur when they fail to beat an attacking bomber force. And... just how many '1's do you think you can roll (at the wrong time) in a game anyway? Say no more!

Aces, Leaders, & Their Effects

A number of exceptional commanders appeared during the Battle to lead various units. They had an immediate and positive effect on their unit's combat effectiveness. I consider the following individuals as such and when leading their units in combat increase their effectiveness by +1

RAF

Bader	242 H Sqn Duxford
Deere	54 S Sqn Hornchurch
Malan	74 S Sqn Coltishall
Townshend	85 H Sqn Hornchurch
Finucane	65 S Sqn Hornchurch

Luftwaffe

Molders
Fink (Bombers) Luftflotte2
Galland

Note: There may be others that deserve such an accolade, and if you feel they deserve it, feel free to add them to the list. However, a raid or squadron may only include one such named individual. Where possible try and allocate them to their correct squadron.

Aircraft Losses

Compare the required dice roll for a successful combat result with the actual dice roll. If, as above, the dice roll was a '2' or greater to mount a successful attack then any number over this causes loss to the bombers. So, if the RAF player rolls a '6', the difference between the required dice roll of '2' and '6' is 4. The RAF has therefore inflicted 40% loss on the attacking bombers. This represents a loss of 20 aircraft from the total of 50 raiders. But

remember these are only claimed losses and may not represent the actual loss suffered by the bombers. In fact, both sides grossly overestimated their kills. Therefore, as a simple solution to the problem, we will roll for each of the 'claims' and a 4,5,6 will determine it was an actual loss, while a 1,2,3 will determine it as 'a probable'.

If players want to make tally sheets for their squadrons so they can record kills, then by all means do so. As the game has a playing time of around 15 minutes per raid cycle, such 'accounting' will not prove a major impediment to game play. Once an RAF squadron suffers 6 aircraft lost, (either actual or claimed) it is considered 'ineffective' and withdraws from the Battle. It may be replaced using an events card.

Attacking Targets & Damage

The Luftwaffe targets are not selected by the Luftwaffe commanders, rather they are determined by dice roll as the raid passes along the raid track. This has been done to introduce a degree of uncertainty into the bomber target options and what response the RAF needs to make to counter it.

There are two parts to the bombing attack. The first dice roll is to hit the target and the second is to cause damage. The reason for this two-part roll is to take into account the fact that bombing was inaccurate and although a raid might plaster the target area with bombs, it might not cause significant damage.

As the Luftwaffe raid passes over each box or objective, the player will roll a single dice to determine if the raid attacks that specific box or objective, or passes

on to the next objective, where another attack test will be made. Players will note that the first target box bombers will pass over is the RDF station box located on the coast. It requires a '5' or '6' to attack these difficult targets. The airfields, being considered important tactical targets, require only a 4,5, or 6 to attack, while London, which is almost impossible to miss, is a 3,4,5 or 6. Remember that London was not a target at this period of the Battle, rather the industries and docklands situated in the north-west and east end were.

Once the raid has attacked the target, it is time to assess the damage. This is done by rolling a single dice for each ten aircraft in the raid. Therefore a 120+ raid will roll 12 dice to assess damage to a target.

RDF stations require a '6' to put them

out of action. **Satellite airfields** require 5, or 6 to put them out of action. **Sector Station airfields** require a 4,5, or 6 to put them out of action, while **London** requires 3,4,5 or 6 to cause damage. London cannot be knocked out for obvious reasons, however, should five out of the nine possible raids reach London, Dowding will be immediately sacked by Churchill. As if Dowding didn't have enough on his plate!

After a target is attacked, the raid marker will be immediately removed from the game and assumed to have returned home as quickly as possible. Luftwaffe raid markers are always returned to the stack in preparation for the next raid cycle. RAF squadrons attacking a raid or that have failed to locate a raid immediately return to base and are placed on the Readiness Board at 'Available'.

Special Attacks

A number of very low level attacks were made as the weather cleared during August. One particularly dangerous attack occurred on 18th August against Kenley by the 9th Staffel of Kampfgeschwader 76, flying 9 - Do17Z. Although they suffered losses, for a mere nine aircraft they caused considerable damage and havoc. Kenley was a Sector Station

and damage could have resulted in a serious gap in Fighter Command's response. Luftwaffe players drawing raid cards of 20+ aircraft can opt to use them as a low-level attack formation. They cannot be detected until they cross the coast. They receive a +1 bonus to hit the target and damage the target. However, they must take an anti-aircraft fire test as they ap-

proach the target, before they attack, equivalent to 1 squadron of fighters. If the AA fire scores a hit, the same calculation for normal fighter combat losses applies. If the Special Attack raid fails to identify a target it will continue on the same raid track until it finds an alternative target, reaches London, or is turned back by enemy action.

Damage Effects & Repairs

RDF stations knocked out result in the Luftwaffe raid marker being turned away from the RAF player until it crosses the coast. At that point we can assume the R.O.C will have sighted the raid and reported its size, course and altitude to HQ Fighter Command, Stanmore. RDF stations can be repaired in the 'repair seg-

ment' of the game with a single dice roll of '6', or an events card allowing 'installation repair' can be used instead. Only one repair attempt may be made after each raid cycle. This allows for three attempts during the game.

Airfields will remain unavailable for fighter operations until they are repaired.

Repairs can be affected one of two ways. Through the use of event cards or by rolling a '5' or '6' on a single dice. Players must choose which option they are going to attempt BEFORE they do so. As with the RDF stations, only three repair attempts may be made during the game in the repair segments of the game turn.

Victory Conditions

The German and British objectives were considerably different during the Battle of Britain. The German objective was to sufficiently threaten Britain with invasion that she would come to the negotiating table and an armistice or at least a cessation of hostilities arranged. The Luftwaffe was therefore primarily an instrument of political policy. The British objective was simple survival in the face of a very capable enemy air force. I would suggest the following as victory conditions for each side.

The Luftwaffe

Any one of the following conditions must be fulfilled to gain a Luftwaffe victory.

- The destruction of three out of five sector stations in 11 Group. This would leave the air defence of 11 Group almost impossible and require the RAF to withdraw north of London and out of the effective control of the south coast, thus paving the way for invasion.
- The destruction of half of 11 Group's fighter squadrons.
- Five out of nine bomber raids (of at least 50+ strength) reach London. This would have resulted in serious damage to aircraft production and repair facilities, not to mention civilian and political morale.

RAF Fighter Command

Any one of the following conditions will gain an RAF victory

- No raids reach London
- Five out of nine raids crossing the coast turn back before they attack a target
- The losses of Luftwaffe aircraft (claimed and confirmed) exceed those of the RAF by 2:1.

If both sides achieve two of their three objectives, the game is a draw.



Advanced Rules-Luftwaffe

The original rules don't allow the Luftwaffe player(s) to select targets. This is done randomly as the Luftwaffe raids overfly the target. In the advanced rules, the Luftwaffe player(s) may select their targets, but there are limits to their selection.

By the 8th August 1940, the Luftwaffe had been directed to attack RDF sites and airfields. However, the opportunity to attack a convoy (Peewit) in the Channel, diverted most of the Stuka and fighter resources to this task on the 8th. Most of the RAF defence involved aircraft from

10 Group, so this battle falls outside the scope of these rules. Later in the day, Heinkel and Dornier raids occurred in 11 Group areas as fighter units became available to cover the bombers.

The Luftwaffe intelligence assessment had made various erroneous assumptions about the RAF use of RDF and the control system associated with Fighter Command. Specialist Me110C aircraft, carrying a third crew member tasked with radio interception, monitored the RAF radio networks to identify squadrons and command installations and appear to have

been relatively successful in this task. By early August, the Luftwaffe had a reasonable picture of the RAF. What they underestimated was the aircraft production rates and reserve squadron availability.

The Germans, although possessing their own radar (Freya) units based in the Pas de Calais, seem to have believed RDF would tie the RAF to specific areas of response as their controllers attempted to differentiate the various raids being assembled over the French countryside. This erroneous Luftwaffe intelligence had a major effect on the selection of targets.

Rules

1. Luftwaffe players will roll a 1D6 to select a target type and anything but a '1' will result in a sector station being selected as a target. A '1' will result in an RDF site being attacked.
2. Each Luftflotte command may attack any target they can reach in 5 game moves. However, raids may not double-back on their attack track. They may only move sideways or forward. If the target is London, then the raid finishes as soon as London is attacked or the raid is driven off while attempting to do so, the raid is removed from play and returned to the Luftwaffe raid card stack.
3. Luftwaffe players will launch three raids per game, as per the original rules, per Luftflotte HQ. The aircraft strength will be determined in the same manner and the raid marker placed according to the original rules.
4. Luftwaffe players may select various named specialist bomber units to attack targets. These units require a '6' to be rolled in order to obtain them. If the required '6' is not rolled, the Luftwaffe player is allocated a standard, unidentified bomber unit. These specialist attack units are deemed to part of the raid and not acting on their own. The only exception to this is the low level attacks, which were carried out by very small numbers of aircraft.
5. If a unit is required to attack an RDF site, the Luftwaffe player may attempt to obtain a specialist Stuka unit (StG77) by rolling a '6'. Only one dice roll per target allocation is allowed, per game.
6. Weather played an important part in the Battle therefore the Luftwaffe player will make a dice roll for weather conditions at the beginning of each raid sequence – morning, midday and afternoon.

1,2 Weather is heavy cloud – all target location and combat dice rolls –1

3,4 Weather has light cloud – all dice rolls unmodified.

5,6 Weather is clear – all dice rolls for the RAF location and attack +1

Advanced Rules-Luftwaffe (cont.)

WEATHER: as historically recorded for 8th August.

Cloudy in the morning with the possibility of showers in the south-east. Cloudy inland but remaining dry. Cloud cover should break up during the afternoon. Visibility good with cloudy periods with bright intervals in the west.

7. Sector stations have a greater degree of specific damage.

1,2 damages the airfield – each time the airfield is used before its repaired, the player must roll a 4,5,6 in order to get aircraft into the air.

3,4 damages the hangars – all aircraft remain at ‘readiness’ until the installation is repaired.

5,6 damages aircraft repair and fuel installations. If the fuel and repair installations are damaged roll a further dice for a catastrophic explosion (a “6”) causing the airfield to be lost as an operational base for the duration of the game.

RAF Standing Patrols

The original rules don’t allow for standing patrols, even though they were present historically. RAF players may now place 1 squadron on standing patrol in the ‘Channel’ box in the morning period of the game. It attempts to intercept any Luftwaffe raid passing through the box it is allocated to in the same manner as the original rules. If the standing patrol fails to contact the raid, it is withdrawn to its original base and placed in the ‘available’ box. Most of the standing patrols were based at Biggin Hill or Henley, and de-

ployed forward to Manston at dusk ready to begin their patrol at daybreak the following morning. Because Manston remained under constant attack during this period, rearming and refuelling was a major problem. Players may like to consider adding two difficulties experienced by fighter patrols. The Channel weather was often quite different to that further inland. Mist and fog often covered the Dover sector of the Channel, making flying difficult and interception almost impossible. The other was the constant

bombardment Manston suffered from German long range artillery units set up to shell Dover and the coast. I would suggest that players might like to include a local weather dice roll for the Channel area as per the above rules and a single dice roll for attacking Manston with artillery at the beginning of the day using rule 7 above. It requires a ‘5’ or ‘6’ to hit Manston with artillery fire. Only one round of artillery fire may be conducted against Manston in the morning period of the game.

Advanced Rules-RAF

The RAF began the Battle of Britain desperately short of experienced pilots as a result of Churchill’s insistence that it should divert an unsustainable number of aircrews



to the defence of France in May 1940. No one in the British Cabinet expected the French army to collapse so quickly in

May 1940. This resulted in the loss of hundreds of Hurricanes and many Spitfires along with their irreplaceable pilots and ground crew. This loss was to have an almost disastrous effect on the RAF’s ability to defend Britain. After the fall of France, the RAF was extremely fortunate to have a number of

foreign pilots enter the RAF and make good some of these losses. Of particular note were the Polish and Czech pilots that formed their own national squadrons. No303 Polish Sqn based at Croydon flying Hurricanes was the first such squadron, the Canadian No1 (later 404) squadron, based at Northolt, was the second. These two squadrons showed remarkable élan and aggression in the battle. But these squadrons were not to see battle on the 8th August.

Advanced Rules-RAF (cont.)

RAF aircraft availability by squadron as at noon on 8th August

Debden [S]	17 Sqn (19 H)
Martlesham	85 Sqn (21H)
North Weald	151 Sqn (19H)
Hornchurch [S]	65 Sqn (18S), 74 Sqn (17S)
Rochford	56 Sqn (19H)
Gravesend	501 Sqn (19H), 54 Sqn (18S)
Biggin Hill [S]	32 Sqn (17H), 610 Sqn (15S)
Kenley [S]	64 Sqn (15S), 615 Sqn (16H)
Croydon	111 Sqn (18H)
Northolt [S]	1 Sqn (18H), 257 Sqn (18H)
Tangmere [S]	601 Sqn (16H), 43 Sqn (19H)
Westhampnett	145 Sqn (16H)

[S] Sector Stations

(S) Spitfire squadron

(H) Hurricane Squadron



Players may choose to substitute the above squadron lists for those in the original game, which are from a later period in the battle. I have made the squadrons from Debden and Martlesham ‘reserve status’ because of their distance from London and the south coast and because there was an expectation that Luftwaffe attacks would cross the North Sea from Holland and Belgium – which they did. Tangmere and Westhampnett squadrons cannot be used against other than Luftflotte 3 raids due to the ongoing attacks on Channel convoys. Tangmere may place a morning patrol of 1 squadron in the Channel box opposite Luftflotte 3. It may remain on station until the Luftwaffe raid has passed through the Channel box, been driven off, or destroyed, and then is withdrawn to its home base, where it is placed at ‘available’ on the squadron readiness table.

RAF Morale (Optional)

There is no doubt that at the beginning of the Battle the RAF morale was high. The RAF believed itself to be the equal of the Luftwaffe, especially when it came to the Spitfire. By the beginning of August, after the debacle of France that had resulted in such heavy losses in aircrew, the average squadron pilot realised the battle that lay ahead was not going to be easy. It is always difficult to assess how the loss

of friends and colleagues affect the survivors in a squadron. However, the territorial air force pilots were different. Most of them were firm friends, some over many years, and it must have been particularly difficult to lose someone with whom you have known for a long time and endured the rigours of battle. In the light of these considerations, I suggest the following optional rule:

- RAF squadrons are ‘exhausted’ and must be withdrawn once they reach an aircraft strength of 6. Given that the game only lasts one actual day, there is no time for reinforcement pilots or aircraft to arrive. I therefore suggest that they are stood down as ‘ineffective’ until the end of the game.

Historical Overview of the Battle

What is so interesting about this battle?

The Battle over British skies during the period July through early September 1940, was at that time, the most unique battle in the history of warfare. It was the first time that airpower was to be the only determining factor in the outcome of a battle.

Bleriot had crossed the English Channel in July 1909, a matter of about 22 miles, in approximately 37 minutes. The fact that his aircraft engine was able to sustain such a long period of continuous running was considered to be a technical marvel at that time. By 1936, less than thirty years later, aircraft had been developed that would cross the world in a week and carry 5,000 pounds of cargo as well. Canvas wing coverings had been supplanted by aluminium skins and the science of electronics had invented radar and radio aids that greatly increased safety levels. Engine technology, probably the most important contribution to aviation's success, had produced an engine of nearly 1,000 HP by the mid 1930's, a far cry from Bleriot's 25 HP Azani engine.

The sky is a different medium in which to fight

The sky is a completely different medium in which to conduct war. Unlike a land or sea battle, it has a three dimensional aspect in that height becomes an important third factor. Commanders and pilots needed to be aware that as the battle got higher, the problems associated with combat at altitude became greater. Oxygen was essential above 10,000 feet and even in the height of summer, temperatures dropped to -20°C at 20,000 feet. One of the greatest difficulties with the Spitfire and Me109E was their very cramped cockpits prevented pilots wearing heavy jackets to keep warm. Hurricanes were considerably roomier and thus allowed the wearing of sheepskin jackets. This not only protected the pilot against the cold, it provided extra protection against shrapnel and the greatest peril of all; fire.

There was yet another important factor in air war... speed. By 1939, the average fighter had

reached a maximum speed of around 350 mph, bombers around 270 mph. This meant that an aircraft crossing the English coast near Dover could arrive over London in about 15 minutes. It took a Spitfire 13 minutes to reach 20,000 feet and the Hurricane about 17, which was the average altitude Luftwaffe raids arrived over London. Reaction times of the defending RAF fighter squadrons became vital. The RAF had given this matter some thought before the war and with the help of some very talented GPO personnel, managed to construct an efficient fighter command and control system, before the battle began. This system was the core of the RAF's ability to react to Luftwaffe raids.

RDF – Radar

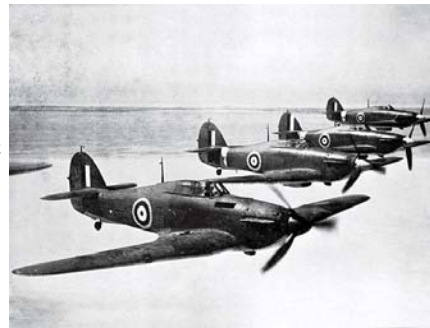
Radio Direction Finding (RDF – later to become radar) was only in its infancy, yet allowed the RAF the vital advantage of detecting Luftwaffe raids as they formed up over France. This gave the RAF an extension of the time needed to get airborne, something that was to prove critical to the outcome of the battle. However, we must remember that RDF in 1940 was not nearly as accurate as it was later in the war. On average, only 50% of all squadrons managed to intercept the raids they were sent

against. There were a number of reasons, but the most common was the speed with which a raid moved and the inherent inaccuracies in radar plotting. A pilot only needed to be 2 miles away from his intended target and he was unlikely to see it. If he was below it, then it became even more difficult. Cloud was another factor. Flying through heavy cloud presented a real danger of collision, especially when opposing aircraft had not sighted one another.

Armament – will the controversy ever be settled?

The Luftwaffe had opted for a cannon and machinegun armament combination in the Me109E and Me110C. It allowed the use of explosive shells in the 20mm cannon, which were primarily intended for use in the ground support role, the principle purpose for which the Luftwaffe was designed. The RAF opted for six, then eight .303 calibre machineguns as the basic armament of both the Spitfire and Hurricane, believing they would be more than adequate to bring down any bomber then in service. In this assumption they made a number of errors.

One of the principle reasons the RAF elected to use a rifle calibre bullet, as opposed to the US .50 calibre heavy machinegun or 20mm cannon, was that early trials with both these weapons had indicated that under high "G" loads, they tended to jam. The .303 machinegun had shown the least tendency to do this, by a large margin. However, it was not the weight of fire that proved to be decisive, but the range and therefore the accuracy with which fire could be delivered.



As a result of the extensive analysis of gun-camera film taken during the Dieppe raid, British scientists were able to calculate that most pilots fired from beyond the effective range of the .303 machinegun. When interviewed about this problem, many pilots simply had no idea how far they were

from the target. When many pilots thought they were firing at 700 yards range, they were actually firing from beyond 1,000 yards and thus had no chance of hitting the target. But during the Battle, they had no idea this was the case, so the .303 calibre machinegun was unjustly blamed for failing to score enough hits to bring down a bomber. True, there were instances where bombers managed to survive incredible numbers of hits, but they were rare. It was the naturally talented shooters that managed to rack up the high kill rates because they were (cont. on p. 12)

Historical Overview of the Battle (cont.)

skilled in assessing target lead and range.

Cannons anyone?

While the cannon shell was extremely destructive to an aircraft, it being estimated that just three 20mm hits were capable of bringing down a B17 bomber, they presented their own set of problems. The first was what is known as 'drop of shot'. Because the cannon shell is heavier and travels at a slower velocity than the machinegun bullet, it follows a markedly curved trajectory. This makes it inaccurate at longer ranges. Yet, once the range has closed with the target, the cannon becomes decisive, hence the huge numbers of B17's lost in daylight raids against cannon armed fighters prepared to press an attack. In 1940, the Me109E was in fighter-to-fighter combat and cannon were not as effective against the opposing fighters. Certainly, once a hit was scored, the opponent was almost certainly doomed. It was getting the hit that was the problem.

The Hurricane V Spitfire

Both aircraft came about through entirely different design and construction philosophies. Cam at Hawker, was well aware that if they were to mass-produce a fighter aircraft in a very short space of time, they would need to rely on the existing industrial skill base available in 1935. That meant wood and craftsmen joiners, of which Britain had plenty. Mitchell, at Vickers, decided to risk all and develop an entirely revolutionary aircraft, using a new set of skills. This divergence contributed heavily to the difference in production and repair rates between the two aircraft.

However, there were more important differences. The Hurricane had a slower top speed by about 50 mph. It was supposed to attain 325 mph in a straight line at around 15,000 feet. According to Keith Park, he never managed to get more than

305 mph from his own personal Hurricane. This difference could be accounted for because Park may not have been issued with a Hurricane using 100-octane fuel, something that would have made a considerable difference at altitude. However, it was the wide spacing of the undercarriage that made a significant difference to the ground handling, and thus the safety of inexperienced pilots. On balance, the Hurricane was easier to handle by the novice pilot. This made a very significant difference to aircraft serviceability rates, when they were most needed.

Initially, it was decided that Hurricanes would attack the bombers and Spitfires the escort. Fine in theory, but it didn't work in practice. There is no doubt that being 50 mph slower than your opposing Me109E presented a serious handicap to all but the most experienced pilots. Yet, the Hurricane appears to have acquitted itself very well in 1940. By 1941, with the introduction of the Fw190 and Me109F series, the Hurricane was hopelessly outclassed, as the fighting over Malta proved. The Spitfire, on the other hand was capable of being improved and re-developed so that by 1946 a Mark XXIV had been developed that bore little relationship to Mitchell's original design. However, there is little doubt that had it not been for the Hurricane, the Battle of Britain might have turned out very differently.

Personnel

Both air forces were professional to the core, even though the RAF contained a large number of 'volunteer - Reserve' squadrons. It was these 'territorial' that formed the backbone of the

of experience. It had been given the very best of everything and expected excellence from their aircrew. Oberst Fink, Commodore KG2, at age 50, was leading his Do17Z Gruppe over England from almost the first day of the campaign; such a commitment to lead their airmen into battle was expected of Luftwaffe officers. It was only after the Luftwaffe command began to become concerned at the mounting casualty rate among irreplaceable senior officers that Fink was ordered from flying duties

The RAF volunteer reservists proved to be as flamboyant as their Luftwaffe opposite numbers, if not more so. Many of them had red linings added to their service jackets, much to the disquiet of their more conservative regular airforce colleagues. Yet in battle, they proved more than equal to the task. Their fighting spirit was forever perpetuated by the hunting call, 'Tally Ho' when the enemy was engaged. It became such a universal RAF battle call that even squadrons that had lost their VR members continued its use.

But, as in all war, victory will go to the better prepared or the side that makes the fewer mistakes. Both forces were exhausted by the end of August, with casualties rising at an alarming rate and men so tired that they could barely fly. What was not readily appreciated at the time was the enormous strain pilots were under, both physical and mental. Altitude saps energy very quickly, especially if you are involved in violent manoeuvres in combat. The enormous 'G' loads inflicted on pilots, caused exhaustion that was not recognised. Pilots would come back to their airfields and literally fall asleep almost as soon as they got out of the aircraft, even though they may have been in the air for only an hour. Sitting in an aircraft in dispersal for hours on end didn't help matters either. They were often as not, tired before they took off. By the end of August the battle had become an almost endless grind for both sides, with no end in sight. Whoever blinked first was going to lose.



RAF, the regular air force being too small to carry the burden of the Battle. The Luftwaffe was an all-regular force, having already fought in Spain and Poland, from which it gained a great deal



DAVID CHILD-DENNIS

We meet every other Friday night in the Salt Lake City, Utah area. We currently game Age of Reason, Age of Discovery, Age of Eagles, The Sword and the Flame, Battles for Empire, Wild West, Blitzkrieg Commander, Sharp Practice, and many, many more periods and games.

Email questions to:
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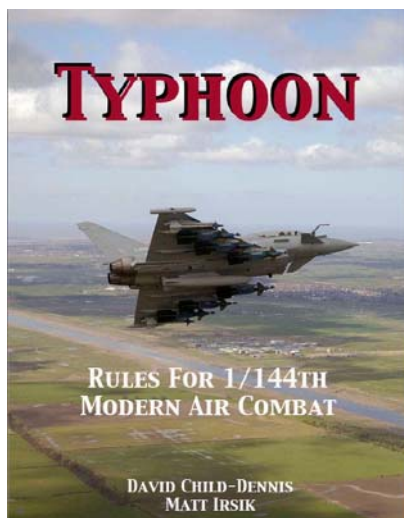
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There has never been a point in the wargaming hobby where there are so many options for the air combat gamer! Not only are there dozens of well made 1/300th scale models, but there are also 1/600th and 1/144th versions for almost any period. There are also a wide range of air combat rules, but *Battle of Britain, August 8th, 1940* is not a set that you would traditionally see as it focuses on this one critical day of combat over England. The game is operational in nature and does not focus on the usual one on one dogfighting seen in most rules. Instead, you get a quick snapshot of a one day massive battle with squadrons of aircraft. This is ideal for conventions or large groups where you can run multiple games or for the times when you have gamers who are interested in air combat, but not to the point of having to learn an entire book of rules. If you like this set of rules we encourage you to try *Typhoon* for quick game of modern air to air combat or take it to the next level with *Phantoms/Intruders*.



Other Air Combat Miniatures Rules

If you've enjoyed *Battle of Britain* there are several other sets of air combat rules that can be downloaded for free. Go to the Downloads section at www.wfhgs.com to learn more.



Quick play rules for modern air combat using 1/144th scale aircraft.



Vietnam era jet combat using any scale of miniatures. Based off of the popular Mustangs rules by Avalon Hill, the system features three dimensional movement and is suitable for large groups.



The air to ground supplement for Phantoms featuring a mission generator, AAA, SAMs, and lots of ordinance.

Battle of Britain

Event Cards - Weather

<p>Event card</p> <p>Weather</p> <p>Heavy Cloud</p> <p>-1 to all target location and combat dice rolls</p> <p>The card is remain in force for the duration of the raid</p>	<p>Event card</p> <p>Weather</p> <p>Heavy Cloud</p> <p>-1 to all target location combat dice rolls</p> <p>The card is remain in force for the duration of the raid</p>	<p>Event card</p> <p>Weather</p> <p>Heavy Cloud</p> <p>-1 to all target location and combat dice rolls</p> <p>The card is remain in force for the duration of the raid</p>
<p>Event card</p> <p>Weather</p> <p>Light Cloud</p> <p>No adjustment to location or combat dice rolls.</p> <p>The card is remain in force for the duration of the raid</p>	<p>Event card</p> <p>Weather</p> <p>Light Cloud</p> <p>No adjustment to location or combat dice rolls.</p> <p>The card is remain in force for the duration of the raid</p>	<p>Event card</p> <p>Weather</p> <p>Light Cloud</p> <p>No adjustment to location or combat dice rolls.</p> <p>The card is remain in force for the duration of the raid</p>
<p>Event card</p> <p>Weather</p> <p>Clear</p> <p>Location or RAF combat dice rolls +1.</p> <p>The card is remain in force for the duration of the raid</p>	<p>Event card</p> <p>Weather</p> <p>Clear</p> <p>Location or RAF combat dice rolls +1.</p> <p>The card is remain in force for the duration of the raid</p>	<p>Event card</p> <p>Weather</p> <p>Clear</p> <p>Location or RAF combat dice rolls +1.</p> <p>The card is remain in force for the duration of the raid</p>

Battle of Britain

Damage cards

Event card

Bomb Damage

Airfield cratered

Player must roll 4,5,6 to get aircraft in the air until airfield is repaired

Event card

Bomb Damage

Airfield cratered

Player must roll 4,5,6 to get aircraft in the air until airfield is repaired

Event card

Bomb Damage

Airfield cratered

Player must roll 4,5,6 to get aircraft in the air until airfield is repaired

Event card

Bomb Damage

Hangars Damaged

Aircraft must remain at readiness until airfield is repaired. No aircraft may take off.

Event card

Bomb Damage

Hangars Damaged

Aircraft must remain at readiness until airfield is repaired. No aircraft may take off.

Event card

Bomb Damage

Hangars Damaged

Aircraft must remain at readiness until airfield is repaired. No aircraft may take off.

Event card

Bomb Damage

Aircraft refuelling and repair facilities destroyed.

No aircraft may use the airfield until it is repaired.
All aircraft begin at 'Available' once airfield is repaired

Event card

Bomb Damage

Aircraft refuelling and repair facilities destroyed.

No aircraft may use the airfield until it is repaired.
All aircraft begin at 'Available' once airfield is repaired

Event card

Bomb Damage

Aircraft refuelling and repair facilities destroyed.

No aircraft may use the airfield until it is repaired.
All aircraft begin at 'Available' once airfield is repaired

Battle of Britain
Event Cards Page 2

<p>Event card</p> <p>RDF Repairs</p> <p>Any single RDF station put out of action may be repaired with this card.</p> <p>The card is discarded immediately after use.</p>	<p>Event card</p> <p>RDF Repairs</p> <p>Any single RDF station put out of action may be repaired with this card.</p> <p>The card is discarded immediately after use.</p>	<p>Event card</p> <p>RDF Repairs</p> <p>Any single RDF station put out of action may be repaired with this card.</p> <p>The card is discarded immediately after use.</p>
<p>Event card</p> <p>Replacement Squadron</p> <p>73 Hurricane Squadron transferred from 12 Group to replace a non-operational squadron.</p> <p>The card is discarded immediately after use.</p>	<p>Event card</p> <p>Replacement Squadron</p> <p>504 Hurricane Squadron transferred from 13 Group to replace a non-operational squadron.</p> <p>The card is discarded immediately after use.</p>	<p>Event card</p> <p>Replacement Squadron</p> <p>611 Spitfire Squadron transferred from 13 Group to replace a non-operational squadron.</p> <p>The card is discarded immediately after use.</p>
<p>Event card</p> <p>10 Group Lends a hand</p> <p>609 Spitfire Squadron scrambles from Middle Wallop.</p> <p>The card is discarded immediately after use.</p>	<p>Event card</p> <p>10 Group Lends a hand</p> <p>238 Hurricane Squadron scrambles from Middle Wallop.</p> <p>The card is discarded immediately after use.</p>	<p>Event card</p> <p>12 Group Lends a hand</p> <p>1D6 roll of 4,5,6 scramble 242 (H) and 54 (S) Sqns from Duxford. Roll 1,2,3 and only 242 (H) available.</p> <p>The card is discarded immediately after use.</p>

Battle of Britain
Event Cards Page 1

Event card

Airfield Repairs

Any single airfield put out of action may be repaired with this card.

The card is discarded immediately after use.

Event card

Airfield Repairs

Any single airfield put out of action may be repaired with this card.

The card is discarded immediately after use.

Event card

Airfield Repairs

Any single airfield put out of action may be repaired with this card.

The card is discarded immediately after use.

Event card

Heavy AA Barrage

The latest 3.7" AA guns join the London Barrage. All bombers must roll a '6' to hit a London target.

The card is discarded immediately after use.

Event card

Heavy AA Barrage

The latest 3.7" AA guns join the London Barrage. All bombers must roll a '6' to hit a London target.

The card is discarded immediately after use.

Event card

Heavy AA Barrage

The latest 3.7" AA guns join the London Barrage. All bombers must roll a '6' to hit a London target.

The card is discarded immediately after use.

Event card

Balloon Barrage

RAF Balloon Command joins the London AA defences. All bombers must roll a '6' to hit a London target.

The card is discarded immediately after use.

Event card

Balloon Barrage

RAF Balloon Command joins the London AA defences. All bombers must roll a '6' to hit a London target.

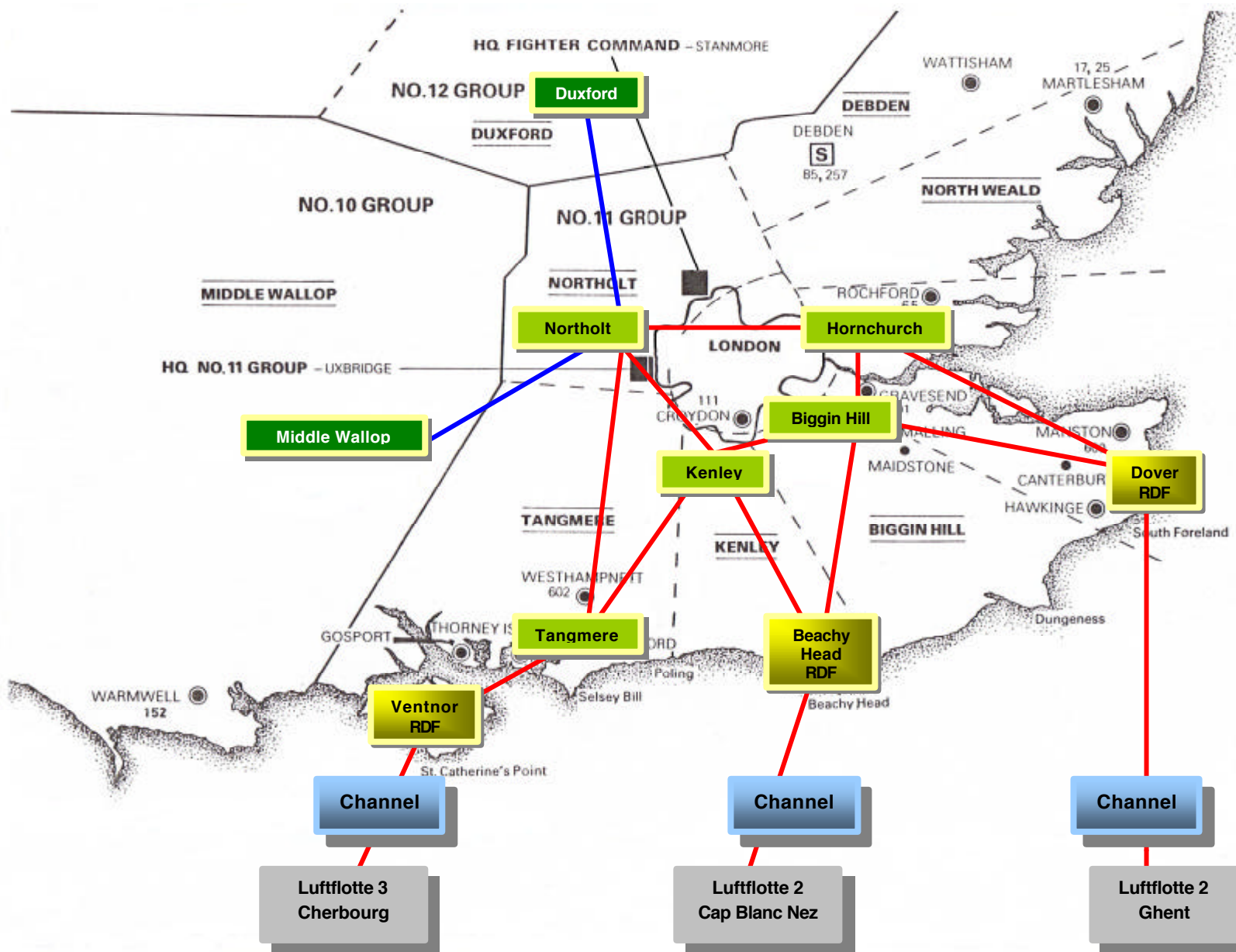
The card is discarded immediately after use.

Event card

Balloon Barrage

RAF Balloon Command joins the London AA defences. All bombers must roll a '6' to hit a London target.

The card is discarded immediately after use.



Battle of Britain
Tactical Cards – Page 1

Tactical card

Achtung Spitfeur!

Any one Spitfire squadron involved in an attack gains Plus 1 to their dice roll

The card is discarded immediately after use.

Tactical card

Achtung Spitfeur!

Any one Spitfire squadron involved in an attack gains Plus 1 to their dice roll

The card is discarded immediately after use.

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The card is discarded immediately after use.

Tactical card

Achtung Spitfeur!

Any one Spitfire squadron involved in an attack gains Plus 1 to their dice roll

The card is discarded immediately after use.

Tactical card

Bounced by Escort!

Any one RAF squadron involved in an attack Loses -1 to their dice roll.

The card is discarded immediately after use.

Tactical card

Bounced by Escort!

Any one RAF squadron involved in an attack Loses -1 to their dice roll.

The card is discarded immediately after use.

Tactical card

Bounced by Escort!

Any one RAF squadron involved in an attack Loses -1 to their dice roll.

The card is discarded immediately after use.

Battle of Britain
Tactical Cards Page 2

Tactical card

Buster!

Any one RAF squadron may make an extra move to intercept a raid this turn.

The card is discarded immediately after use.

Tactical card

Buster!

Any one RAF squadron may make an extra move to intercept a raid this turn.

The card is discarded immediately after use.

Tactical card

Buster!

Any one RAF squadron may make an extra move to intercept a raid this turn.

The card is discarded immediately after use.

Tactical card

Height Advantage!

Any one RAF squadron may add +1 to the attacking dice roll this turn only

The card is discarded immediately after use.

Tactical card

Height Advantage!

Any one RAF squadron may add +1 to the attacking dice roll this turn only

The card is discarded immediately after use.

Tactical card

Height Advantage!

Any one RAF squadron may add +1 to the attacking dice roll this turn only

The card is discarded immediately after use.

Tactical card

Cloud Cover!

One raid of Luftwaffe Bombers manages to hide in cloud... -1 to the RAF interception dice roll this turn only.

The card is discarded immediately after use.

Tactical card

Cloud Cover!

One raid of Luftwaffe Bombers manages to hide in cloud... -1 to the RAF interception dice roll this turn only.

The card is discarded immediately after use.

Tactical card

Cloud Cover!

One raid of Luftwaffe Bombers manages to hide in cloud... -1 to the RAF interception dice roll this turn only.

The card is discarded immediately after use.

Battle of Britain

Raid Cards

021	022	023	024	025	026
40+	50+	60+	70+	80+	90+
15000	15000	15000	15000	15000	15000

027	028	029	030	031	032
90+	100+	110+	120+	20+	30+
15000	15000	15000	15000	1000	15000

033	034	035	036	037	038
30+	40+	50+	60+	70+	80+
12000	12000	12000	12000	12000	12000

013	015	016	017	018	019
80+	90+	100+	110+	120+	20+
21000	21000	21000	21000	21000	2000

001	002	003	004	005	006
20+	30+	40+	50+	60+	70+
2000	15000	15000	15000	15000	15000

Use only one set of raid cards numbered from 20+ through 120+ aircraft, when setting up a game. The extra cards are provided as spares.

Squadron Readiness Board

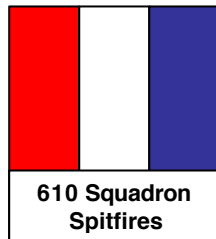
11 Group Sector Stations

Northolt	Hornchurch	Biggin Hill	Kenley	Tangmere
Alert	Alert	Alert	Alert	Alert
5 Minutes Readiness	5 Minutes Readiness	5 Minutes Readiness	5 Minutes Readiness	5 Minutes Readiness
Available	Available	Available	Available	Available

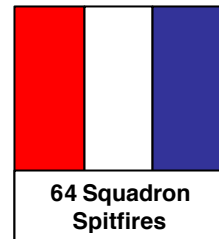
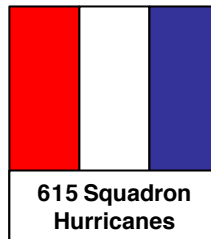
RAF Squadrons

8th August 1940

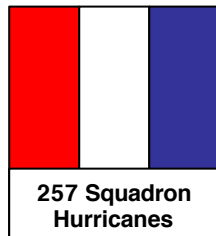
Biggin Hill



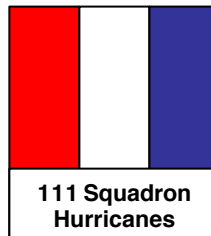
Kenley



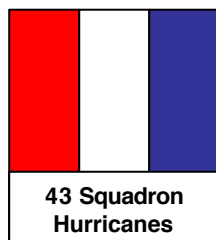
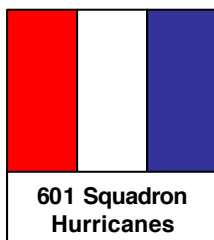
Northolt



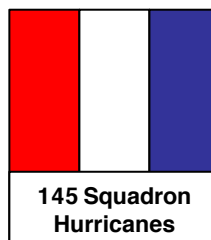
Croydon



Tangmere



Westhampnett

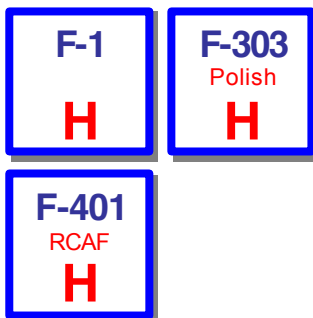


Battle of Britain - 11 Group - RAF
11th – 18th August 1940

Hornchurch



Northholt



Graves End



Kenley



Biggin Hill



West Malling



Tangmere



Westhampnett



RAF Squadron reinforcements

12 Group

Duxford

F-242	F-54
H	S

10 Group

Hornchurch

F-65
S

Debden

F-85
H

13 Group

Middle Wallop

F-609	F-238
S	H

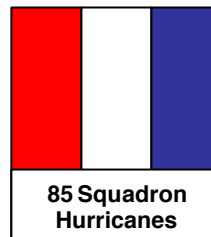
11 Group
RAF Squadrons
8th August 1940

Reserve Squadrons

Debden



Martlesham

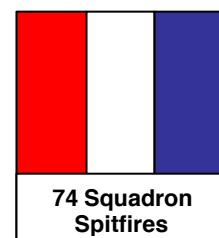
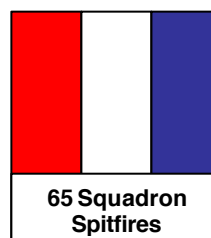


Active Squadrons 'at readiness'

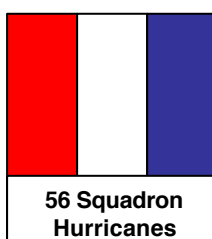
North Weald



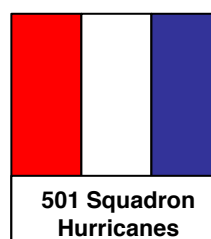
Hornchurch



Rochford



Gravesend



Battle of Britain
RAF Aces and Leaders cards



Al Deere

54 Spitfire Squadron



Peter Townshend

85 Hurricane Squadron



Douglas Bader

242 Hurricane Squadron



'Paddy' Finucane

65 Spitfire Squadron



'Sailor' Malan

74 Spitfire Squadron

Luftwaffe

Elite strike units



LUFTWAFFE 9th Staffel - KG 76

Elite Do17Z low-level strike force.

May only be used with a 20+ raid card. This card need only be revealed as it crosses from the Channel box onto the RDF box.

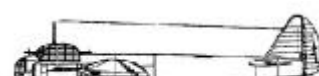


LUFTWAFFE KG 27

Elite He111 precision bombing.

ADD +1

To HIT and DAMAGE dice roll

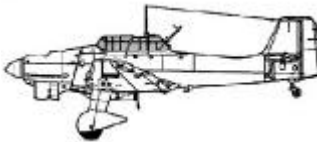


LUFTWAFFE KG51

Elite Ju88 strike force.

ADD +1

To HIT and DAMAGE dice roll



LUFTWAFFE Gruppe III/ StG 77

Elite Ju87 precision dive-bombing.

ADD +1

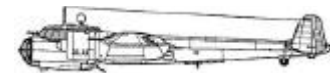
To dice roll to hit target.



LUFTWAFFE

Me110C special intelligence and radio intercept unit.

Raider gains warning of interception. RAF attacker(s) interception dice roll reduced by -1



LUFTWAFFE Gruppe I/KG 3

Elite Do17Z low-level strike force.

May only be used with a 20+ raid card. This card need only be revealed as it crosses from the Channel box onto the RDF box.

Battle of Britain
Luftwaffe Aces and Leader's Cards



Johannes Fink



Adolf Galland



'Jopp' Jopien



Werner Molders



Helmut Wik