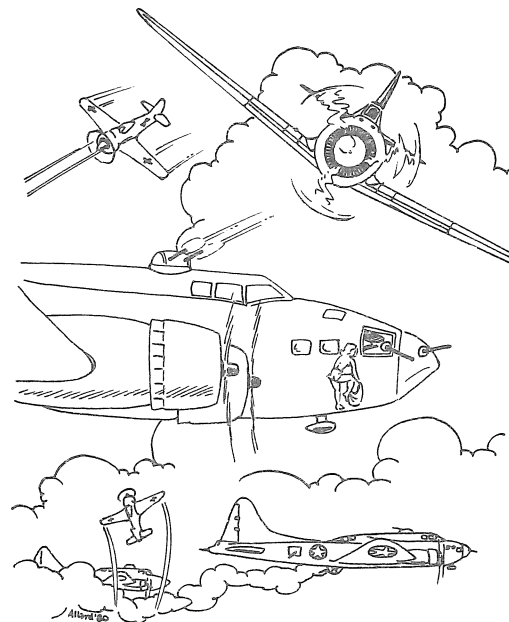


Jagdstaffel was produced by 4D Interactive Systems for Discovery Games. Game Developer: David A. Wesely. Programming: David Wesely and Stephen Goss. Artwork: Raymond Allard. Printing and Typesetting: Galley, Inc. Recording: Tom Jones Studios. **Jagdstaffel** is based on the miniature wargames rules **Bombers and Battleships** by David A. Wesely and Ross W. Maker.

JAGDSTAFFEL



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HISTORICAL BACKGROUND:

The American daylight bomber offensive over Western Europe was the embodiment of several competing theories of strategic warfare developed between the World Wars. The advocates of aerial warfare, Douhet, Mitchell, and Seversky, claimed that future wars would be won entirely by air attacks on enemy cities and factories and that a few hundred bombers could bring "*Victory through Air Power*." Central to their contention were the beliefs that certain specific targets were critical to a modern industrial society, that these targets could be bombed with great precision and that "the bomber would always get through", i.e., no defense was possible.

The first two years of the Second World War cast doubt upon these theories. While German Stukas had materially aided the Blitzkrieg of Poland, Holland, Belgium, and France, none of these nations had been bombed into submission before the German Army overran them on the ground. Eight months of bombing attacks on their cities by the French had failed to bring the Germans to their knees and the German Blitz of London the following year had also left its target "bloodied but unbowed". The latter results might not have been too surprising, for the Luftwaffe had already rejected the strategic bombing school before the war; its bombers were predominantly designed for operational or tactical support of armies in the field and were smaller and less well-armed than those of the Allies.

But, like the French, RAF Bomber Command was wholly dedicated to the concept of strategic bombing and was well equipped with some of the most powerful heavy bombers of the day. Even so, British experience had demonstrated that unescorted bombers could not, in fact elude or ignore the enemy fighters that would oppose them in daylight operations. Faced with unbearable losses, they had switched their strategic bombers over to night missions, where the chance of being intercepted was virtually nil. But night bombing (as the French might have discovered) was so inaccurate that serious damage was rarely done. Clearly, strategic bombing was not winning the war.

When the Americans entered the war late 1941, their Army Air Corps was totally committed to the extreme air power views of

its early spokesman, Billy Mitchell. With a mixture of confidence in Yankee ingenuity, disdain for their Allies' abilities and a blissful ignorance of their opponents', his disciples set out to vindicate their prophet. Since only a fraction of British bombers could find their targets at night, let alone hit them, "clearly" the only solution was a return to day bombing. If this meant being intercepted by large numbers of German fighters, then the bombers must be operated in large formations as well, and be heavily enough armed to fight their way through. If bombing accuracy was still not good enough in daylight, then better bomb-sights must be developed—and if none of these were enough, then start over with new planes, bigger bombs, and more guns.

In the face of this single-minded onslaught, backed by the world's largest industrial power, the Germans were forced to develop a much better system of air defense. Weapons, aircraft, tactics and control all underwent a rapid evolution as a result of the American bomber offensive. Aircraft developed for low-level dogfighting on the eastern front or the stalking of lone British night bombers were of little use against a massed formation of Fortresses or Liberators. Large numbers of specialized aircraft had to be developed and devoted to stopping U.S. air attacks which might otherwise inflict crippling damage on German industry or civilian morale.

Ever-increasing forces were fielded by each side in the ensuing struggle, as German and American technology and productivity were committed to testing the thesis of strategic air bombardment. In the end, it could be said that the Germans won the battle, though they lost the war, for neither their industry nor their society collapsed until Allied ground forces had fought their way into the Reich. But the question of "*Victory through Air Power*" was not so clearly answered. Given the discoveries of post-war analysts it appears that the collapse of German industry might have been achieved had the Allies concentrated on somewhat different targets and there is little doubt that the industrial output of German factories was reduced both by bomb damage and by the diversion of much of its remaining production into forces used solely to oppose American bombers.

In this game, the player will first be confronted by some of the challenges faced by the Luftwaffe at the beginning of this struggle. Given the aircraft used either side in the summer of 1942, the

player will have to discover the correct tactics needed to prevent the bombers from reaching their target. After he has done this, the player will be given a password which will allow him to play at a more advanced level with aircraft appearing later in the war.

AIRCRAFT:

The most famous of the American heavy bombers was the B17 "Flying Fortress". The B17E, employed in the first American strategic air raids was an improvement of the B17C *Fortress I* which had been used earlier (and with little success) by the British. The most significant improvement was the addition of a tail gunner with two .50 caliber machineguns to cover what had been a blind spot in the plane's defenses. Other armament comprised an upper and a lower turret, each with two .50s, one more .50 firing from openings on either side of the rear fuselage and a .30 caliber gun in the nose. In addition to being well armed, the B17E was fast, sturdy and high-flying and carried twice the bombload of its German contemporaries.

The B17E was followed by the B17F which replaced the single .30 caliber nose gun with up to three .50s and added another .50 firing up and to the rear from the radio operators compartment. The final Fortress model, the B17G, further refined the forward armament by the addition of a chin turret with two .50s which could be trained through a much wider field of fire than the single .50 they replaced.

Like the B17E, the first B24 *Liberators* to reach Europe with the USAAC had been improved as a result of British experience with earlier models. The B24D was better armed than the B17E, with eight to ten .50 caliber machineguns disposed as follows: two in the tail turret, two in the top turret, one firing aft and down through the ventral hatch, one on either side of the rear fuselage, and one to three firing from the bombardiers station in the nose. Some of the last B24Ds and the succeeding B24Es replaced the single ventral machinegun with a twin gun retractable turret which greatly improved its defenses. The B24G introduced a twin gun nose turret to replace both the ventral gun and the one to three single .50s of the D and E models, which had suffered from individually narrow fields of fire. This left the belly of the aircraft somewhat exposed, however, and later B24Gs and the B24H

(which appeared in Europe in mid 1943) adopted the lower turret from the B24E. The subsequent B24J, B24L, and B24M were virtually identical to the H-model, with twin .50s in the nose, top, belly and tail turrets and single .50s at either waist position. While faster and longer ranged than the fortress the Liberator lacked its legendary resistance to enemy fire.

A twin-engined medium bomber which stressed sturdiness and speed rather than bombload and range, the B26 *Marauder* was not designed for strategic bombing missions but was often employed on those strategic targets that were in range. This led to a program of upgunning successive models comparable to that seen in heavy bombers.

When the B26B first reached Europe it was armed with one .50 caliber machinegun in the nose, two each in dorsal and tail turrets and two more firing through hatches on the lower sides of the rear fuselage. This armament was increased in the B26C by the addition of five more fixed forward firing guns—useful both for ground strafing and to discourage head on attacks! This overloaded the aircraft somewhat and the B26F which appeared in 1943 deleted one of these nose guns in favor of increased speed. While not as effective a bomber as the B17 or B24, the B26 was faster and sturdier than either and nearly as well armed.

Like the B26 *Marauder*, the B25 *Mitchell* was sometimes pressed into service on strategic missions. It also underwent a progressive up-gunning. The B25C and D carried two .50s in the nose, and two each in the dorsal and ventral turrets, while the B25J had three .50s in the nose, two in the tail, two in the dorsal turret, one on either side of the rear fuselage (replacing the earlier retractable ventral turret) and four more fixed .50s for forward fire. Although not quite as sturdy as the B26, the B25 was somewhat better armed.

One of the first concessions forced upon the Air Power advocates was that the *unescorted* bomber would not, in fact, "get through" very often. No matter how well-armed, lumbering bombers needed nimble escort fighters to break up the enemy interceptor's attacks.

Drop-tank equipped *Spitfire V* fighters were used to demonstrate the advantages of the escort concept at an early date. However, while the *Spitfire V* was an extremely good fighter, being faster-climbing and more maneuverable than the

Germans best contemporary fighter, the *Fw190A*, it could not stay with the German in a dive or on the level. More important, once the Spitfire had released its drop-tank to engage in combat, it would soon have to turn back, if it were going to get home on its internal fuel. This allowed the Germans to strip off the escorts by making a mock attack, then avoid them until they had to go home. As a result, the *Spitfire V* was limited to escorting raids on targets near the German coast.

The American *P38F Lightning* was a much larger aircraft and did have the necessary range to escort bombers well into Germany. Nearly as fast as the *Fw190A*, the *P38F* was hard to shake off once it engaged the German interceptors. However, the twin-engined *P38F* was far less maneuverable than the single engined German fighters and had serious problems in a dogfight with them. Later models of the *Lightning* showed improvements in speed and rate of climb but remained inadequate in this regard.

The best solution to the American escort requirements appeared in July '43. While the *P47C Thunderbolt* utilized drop-tanks for its escort missions, its range on internal fuel alone was much greater than that of the *Spitfire V*, enabling it to remain with the bombers much further after first contact with German defenses. Its eight .50 caliber machineguns made it one of the most heavily armed fighters in the war; it was sturdier and faster than its Luftwaffe contemporaries; and, being single engined, not much less maneuverable—all in all a formidable opponent. The most serious deficiency of the *P47C* was remedied in the *P47D* which had a much better rate of climb. Appearing in late 1943, the D-model became the most heavily produced Allied fighter—a clear tribute to its qualities.

The *P51 Mustang*, while not as common as the *Thunderbolt*, seems to have made a much bigger reputation than its numbers would justify. However, when it appeared in December, 1943 the *P51C* was even longer-ranged and faster than the *P47D*. More important perhaps, was its superior rate of climb, which made it difficult for German interceptors to avoid. Once in a dogfight, the *Mustang* was neither as well-armed nor as sturdy as a *Thunderbolt*, but it was more maneuverable and therefore harder to shoot down. Thus, while not so deadly to the Germans as the *P47*, it was more inconvenient. The *P51D*, which reached Europe in time for D-Day, improved this performance considerably, obtaining a

20% greater rate of climb and 50% increase in firepower at the expense of only a slight drop in maneuverability. These changes made it (and the nearly identical K-model) clearly superior to the *P47D* as an escort fighter.

The primary Luftwaffe fighter at the beginning of the American daylight bomber offensive was the Messerschmidt *Bf-109F*. Developed from the earlier *Bf-109E* it had been optimised for rate of climb and maneuverability as a result of combat experience on the Eastern Front and in the Battle of Britain. This caused the F-model to be more nimble than its predecessor but badly underarmed by comparison.

The succeeding *Bf-109G*, which appeared in 1943, rectified this fault by increasing the armament from one 15mm cannon and two 7.9mm machineguns to three 20mm cannons and two 13mm machineguns. This massive jump in firepower was accompanied by an increased resistance to enemy fire which did much to offset the resulting loss in maneuverability.

With the arrival of the *Thunderbolt* and *Mustang* in German skies, the need for a more agile fighter, which could elude these American escorts, led to the development of the *Bf-109K*. An upengined *Bf-109G*, with a reduced armament of one 30mm and two 15mm cannons, this aircraft had an astonishing rate of climb, extreme maneuverability and a reasonably sturdy construction. While it was not as deadly as its predecessor when making firing passes on bombers, it was spectacular in a dogfight. This model, however, only entered service in 1945.

In spite of its alphabetical designation, the *Bf-109T* was actually an earlier version than the *Bf-109F*. The T stood for "Traeger"—carrier—this model having been developed from the *Bf-109E* for service aboard the *KM Graf Zeppelin*. Although the German aircraft carrier never was completed, seventy *Bf-109Ts* were built and served from land bases starting in 1941. With a larger wing area than the F-model, they were slower, more vulnerable to enemy fire and only slightly more maneuverable. They were, however, better armed, with two 20mm and two 7.9mm guns.

Developed in parallel with the *Bf-109*, the Messerschmidt *Bf-110F* was quite a different aircraft. Designed as a "Zerstörer"—bomber destroyer—the twin engined 110 was vastly inferior to the 109 in speed, maneuverability, or rate of

climb. This was initially of little importance, however, for it was still quite capable of overtaking any Allied bomber and carried the very potent armament of two 20mm and four 7.9mm guns.

The *Me-210A* was the intended replacement for the *Bf-110* series, which was becoming slow and overloaded by late 1942. However, while the 210 was fast enough to "insure" that no new Allied bomber would appear that it could not catch, it was not terribly well armed (two 20mm and two 7.9mm offensive guns) and was mechanically unreliable. One point in its favor as a bomber destroyer, however, was its extremely solid construction—it was very hard to shoot down.

The disappointing performance of the *Me-210A* caused the *Bf-110* to be continued in service. The *Bf-110G*, appearing in early 1943, had twice the armament of the 210—four 20mm and four 7.9mm guns—and was only a little slower than the *Bf-110F*, but was coming dangerously close to the speed of the faster Allied bombers.

Late in 1943, the high-speed replacement for the *Bf-110* finally reached the troops. Armed with two 7.9mm and four 20mm guns, the *Me-410* was better armed, faster, and sturdier than the 210 and did not tend to fall out of the sky spontaneously! Later models increased this armament to six 20mm cannons, making the *Me-410* the most deadly of the *Zerstörer* series. Unfortunately for the Germans, by the time it appeared, significant numbers of escort fighters were accompanying the American bombers. While the twin-engined *Zerstörer*s were fast enough to catch bombers, they were quite incapable of escaping from their escorts and in a dogfight their lack of maneuverability was fatal.

Developed as a replacement for the *Bf-109* series, the *Fw-190A* was seized upon as a single-engined "Zerstörer" early in its career. This was due initially to its combination of solid construction and heavy armament (four 20mm cannons and two 7.9mm machineguns) which made it superior to the contemporary *Bf-109F* and *Bf-110F*. Later, when the *Me-410* might otherwise have replaced it, the increasing numbers of American escort fighters made its continued use essential. While the *Fw-190* was never as maneuverable as the *Bf-109* it was better able to both elude the escorting fighters and to destroy the bombers afterwards. *Fw-190* production never satisfied the demand and the *Bf-109*

series remained in service.

Early in 1944 the *Fw-190D* went into service in significant numbers. By sacrificing two 20mm cannons—a major reduction in firepower—it succeeded in outclimbing the American *P47D*—which had been a major failing of the *Fw-190A* since the *Thunderbolt* had become the predominant bomber escort.

The climbing performance of the *Fw-190* was further improved with the *Ta-152H*, a major redesign of the basic series which finally appeared in 1945. Capable of outclimbing even the *P51D Mustang*, the last member of the *Fw-190* family was armed with one 30mm cannon and two 20mm cannons and obtained high maneuverability and speed by sacrificing strength of construction. Intended for high altitude performance, the *Ta-152H* was a reasonable precaution against the American *B29* and *B32*.

A radical fighter designed to overcome the maneuverability problems normally encountered with twin-engined designs, the *Do-335A* appeared at the very end of the war. Armed with one 30mm and two 15mm cannon, the "Pfeil" (arrow) was neither fast-climbing nor highly maneuverable. It was, however, very sturdy and hard to knock out.

The ultimate in German interceptors was, of course, the *Me-262A* jet fighter. Capable of outrunning any Allied fighter it encountered and of outclimbing most of them as well, it had little difficulty in reaching the American bombers, while its armament of four 30mm cannons and its high resistance to enemy fire made it highly effective in knocking them down. Its only deficiency was an extreme lack of maneuverability, which put it at a disadvantage in a dogfight. Unlike most German superplanes, the *Me-262* appeared in significant numbers well before the end of the war, making individual combat missions in June '44 and squadron-sized operations by October, with nearly 1400 aircraft delivered by April 1945.

Four other German "jets" are not included in this game. The *Me-163B Komet* rocket-engined fighter saw operational service in very small numbers from July 1944 onward—but its extremely short endurance makes it tactically uninteresting as it cannot remain aloft long enough to make more than a few passes on the bomber formation. The *Ba-349B Natter* was an even more extreme case, being armed solely with a one-shot barrage weapon and having been overrun by American tanks on the day it was

scheduled for its first combat mission. The *He-280*, Germany's first jet fighter, might have been ready for combat months earlier than the *Me-262A*, but would probably never have equalled its performance; in any case only one experimental model ever flew with armament installed and none were committed to combat trials. Finally, the *He-162 Salamander*, while a very high performance machine, was plagued with handling problems so severe that even in the Reich's final desperate days pilots were forbidden to take it into combat!

Hypothetical Scenarios

A number of the Germans most impressive aircraft—the *Bf-109K*, *Ta-152H*, and *Do-335A* in particular—saw service only in very limited numbers during the last months of the Third Reich. In fact, many of these aircraft were prototypes, committed to combat only because the wolf was at the door—while equally underdeveloped Allied aircraft were allowed to mature properly and not fielded until after the war. This has given a somewhat inflated reputation to the German aircraft industry for being far more advanced than that of the Allies. This has, in turn, been blown up into a myth that the Luftwaffe was on the brink of regaining air superiority when the war ended.

To dispell this notion, we have added a series of Hypothetical Scenarios to the game, based on the assumption that some Allied error in 1944 has allowed the Third Reich to survive into the summer of 1945, when these advanced aircraft could have been employed in significant quantities. At the same time the Allies are assumed to have committed some of their own advanced aircraft, which were ready historically, but were not needed to obtain victory in Europe. These scenarios can appear randomly, whenever certain advanced German aircraft are selected which would have still been in service by the summer of '45. Players not wanting to dabble in un-historic speculation can simply enter NG as their first command and start over.

Advanced U.S. Aircraft Types

The *B29 Superfortress* first mission was flown in June of 1944 and could easily have been against German targets—but the extreme range of the new bomber dictated that it be employed in

the Pacific. Much better armed than the *B17* and *B24*, it would have been a serious problem for German pilots.

The *B32 Dominator* was a competing design which was placed in production as insurance against the possible failure of the radical *B29*. Strongly resembling a bigger and better *B24* (just as the *B29* was clearly a descendant of the *B17*) the *Dominator* was in many ways better suited to use in Europe, having a bigger bombload, sturdier construction and shorter range. With the success of the *B29*, the priority of the *B32* was reduced and only one group was committed to combat in the Far East. Nevertheless, had it been sent to Europe instead, the big, fast, high-flying bomber would have posed quite a challenge for the Luftwaffe.

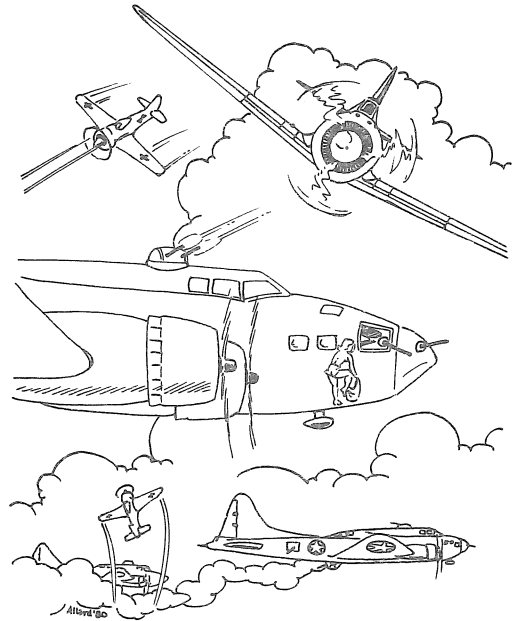
A final version of the Thunderbolt, the *P47N* was too late for service in Europe, but was used in the Pacific in large numbers. Although one of the fastest and deadliest aircraft in the war, it had a very poor rate of climb.

Another development of the *Mustang*, the *P51H* sacrificed some of the sturdiness of the C and D models in order to attain extreme speed and maneuverability. In spite of its weaker armament and lighter construction, the resulting aircraft was almost equal to the *P47N* in a dogfight and superior to it in forcing the enemy to do battle. However, like the *P47N* the *P51H* saw service only in the Pacific.

Eclipsing both of these ultimate developments of conventional fighter designs, the *P80A Shooting Star* was the first successful American jet (the earlier *P59A Airacomet* was also available, but had inferior performance to existing piston-engined aircraft). Although it is commonly believed that the *P80A* was just too late for service in the war, two actually were employed for high-speed reconnaissance missions in Italy just before the German collapse. Faced by a more serious opponent, the U.S. could have fielded limited numbers of these new fighters in the summer of '45. In spite of its fuel-hungry jet engine, the *P80A* had a range on internal fuel and drop-tanks comparable to that of the *P47*. Its speed was well in excess of that of German fighters, even the *Me-262A*, while rate of climb was superior to all but one (the *Bf-109K*). In a dogfight, it was nearly the equal of the redoubtable *P51H*, combining slightly poorer maneuverability and greater resistance to hits with an equal armament of six .50 caliber machineguns.

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