

B-17

Queen of the Skies

MANUAL · VERSION 1.8.1

A solitaire bomber mission game of the Eighth Air Force, November 1942 to December 1943. Tronsoft Games.

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1. The tour

You command one B-17 and its crew of ten — pilot, co-pilot, bombardier, navigator, engineer (top turret), radio operator, ball turret gunner, two waist gunners and the tail gunner. The tour is **25 credited missions** for your pilot. A mission is credited only if the bombs are dropped on the target or on a target of opportunity. The tour ends when the pilot completes it, or is killed, missing, captured, evades and is sent home, or is invalidated home.

Tour		Dates		
Winter-Spring 1942-43		Nov 1942 – May 1943 (first mission 17 Nov 1942)		
Summer-Autumn 1943		Jun – Dec 1943 (first mission 22 Jun 1943)		

Difficulty	Waves	Hits	Landing
Recruit	-1	-1	+1 fewer fighters, gentler hits, easier landings
Regular (default)	0	0	0 the tables as they are
Veteran	+1	0	0 more fighters in every zone

Lost aircraft are replaced; lost men are replaced by **green** replacements who shoot +1 for their first three missions. A man with fifteen missions is a **veteran** and shoots -1, as does an **ace** with five kills.

2. A mission, step by step

1. **Briefing.** Target, zones (3–10), target and base weather, target flak, your squadron and slot, the bomb load. The orders code fixes the whole plan: two machines with one code fly one raid.
2. **Take-off.** A worn ship may have an early return (no credit). Its chance rises with patches and missions.
3. **Each zone.** Crossing the enemy coast draws a round of coast flak. Then the fighter-wave roll; each wave is fought in turn; escorts may break a wave up first. Leaving the zone: fuel, oil, fires, frostbite, anoxia, first aid, bleeding.
4. **The target.** Three rounds of flak (approach, run, rally), then the bomb run. Under solid cloud, choose to bomb through it, divert to a target of opportunity, or bring the bombs home.

5. **Home** zone by zone, then **landing**, then the **debrief**.

FIGHTER WAVES

Each zone rolls one die for waves, modified: sea -2; Germany within two zones of the target +1; the target zone +1; low squadron tail-end +1; straggling +2; difficulty. Total 4 or less: no fighters; 5–6: one wave; 7: two; 8 or more: three. Each wave holds one to three fighters.

ESCORTS

From	Escort	Reach from base	Breaks up a wave on
Nov 1942	Spitfires	250 km	1–2
8 Apr 1943	P-47 Thunderbolts	330 km	1–3
28 Jul 1943	P-47s with drop tanks	420 km	1–4
15 Oct 1943	P-38 Lightnings	540 km	1–4

In a contrail zone the escort finds the box more easily: +1 to the number that breaks up a wave.

3. Fighters

Type	Attack	Positions
Me 109G		0 any position
FW 190A		+1 any position
Me 110G		+1 never attacks from the nose
Me 410A		+1 any position
Ju 88C		+1 never attacks from the nose

Each fighter appears at a clock position — 12, 1:30, 3, 6, 9 or 10:30, high, level or low — or in a vertical dive or climb. The **sun** doubles and a half the chance of the position it stands in, and gunners firing into it need one more. From 20 Jul 1943 many twin-engine fighters (and some FW 190s) carry **rockets**: they fire from 6 o'clock out of range of everything but the tail guns and top turret. Now and then a wave is led by one of the **Experten**: one harder to hit and one better at hitting you. After each pass a surviving fighter comes round again on 5–6 (a damaged one on 6), up to three passes, setting up at a new position from the position table — or where the German player puts it.

POSITIONS, THE ROLL TO HIT, AND THE GUNS THAT BEAR

Position	Sector	Base 2d6	Guns that bear
12 high	nose	10	Nose .50, Top turret
12 level	nose	11	Nose .50, Top turret
12 low	nose	10	Nose .50, Ball turret
1:30 high	nose	10	Cheek .50, Top turret
1:30 level	nose	10	Nose .50, Cheek .50, Top turret, Right waist .50
1:30 low	nose	10	Nose .50, Cheek .50, Ball turret
10:30 high	nose	10	Cheek .50, Top turret
10:30 level	nose	10	Nose .50, Cheek .50, Top turret, Left waist .50
10:30 low	nose	10	Nose .50, Cheek .50, Ball turret
3 high	beam	10	Top turret, Radio room .50, Right waist .50

3 level	beam	9	Cheek .50, Top turret, Ball turret, Right waist .50
3 low	beam	10	Ball turret, Right waist .50
9 high	beam	10	Top turret, Radio room .50, Left waist .50
9 level	beam	9	Cheek .50, Top turret, Ball turret, Left waist .50
9 low	beam	10	Ball turret, Left waist .50
6 high	tail	9	Top turret, Radio room .50, Tail guns
6 level	tail	8	Top turret, Ball turret, Left waist .50, Right waist .50, Tail guns
6 low	tail	9	Ball turret, Tail guns
Vertical dive	top	11	Top turret, Radio room .50
6 o'clock, out of range (rockets)	tail	12	Top turret, Tail guns
Vertical climb	belly	11	Ball turret

4. Guns and defensive fire

Gun	Normally manned by	Bursts	Modifier
Nose .50	Bombardier	10	+1
Cheek .50	Navigator	10	+1
Top turret (twin)	Engineer / top turret	16	-1
Radio room .50	Radio operator	10	+1
Ball turret (twin)	Ball turret	16	-1
Left waist .50	Left waist	12	0
Right waist .50	Right waist	12	0
Tail guns (twin)	Tail gunner	16	-1

From 13 Sep 1943 new aircraft are B-17Gs with a twin chin turret (−1, 16 bursts) in place of the nose gun. The roll to hit is the position's base plus the gun's modifier and these: +1 out of the sun; +1 an officer on a gun other than the nose or cheek; +1 green, −1 veteran or ace; +1 lightly wounded; +1 frostbite; +1 no oxygen in his compartment; +1 an Experte; +1 flak-happy; +1 a fighter from six o'clock in contrails; −1 a damaged fighter. Each burst spends one box of ammunition.

A hit damages, drives off or destroys the fighter. Then the formation's crossfire drives some off: middle of the box 1–2, lead or tail 1, one more from summer 1943, one less when your squadron has lost two ships, nothing for a straggler.

5. Damage

Each fighter that attacks rolls for shell hits (FW 190s, Me 110s, 410s and Ju 88s hit harder). Each hit rolls a location by the direction of the attack, then a result on that area's table.

From	Location weights
nose	nose 3 · pilot compartment 3 · wing 4 · bomb bay 1 · fuselage 1
beam	nose 1 · pilot compartment 1 · wing 4 · bomb bay 1 · radio room 2 · waist 3 · fuselage 1
tail	wing 3 · radio room 1 · waist 3 · tail 4 · bomb bay 1 · fuselage 1
top	pilot compartment 3 · wing 3 · radio room 2 · bomb bay 1 · waist 1 · tail 1 · fuselage 1
belly	bomb bay 3 · waist 2 · wing 3 · radio room 1 · nose 1 · fuselage 1
flak	nose 1 · pilot compartment 1 · wing 4 · bomb bay 2 · radio room 1 · waist 2 · tail 1 · fuselage 2

Results include engines hit, leaking oil, on fire or out; wing tanks holed, draining or burning; control cables cut; oxygen and heating out; guns knocked out; the bombsight, doors, release, radio, instruments, flaps, tyres and hydraulics damaged; wing roots and the tail plane weakened (three hits break them); fires in the compartments; men wounded lightly or seriously, or killed. Two engines out or two cables cut and you straggle. Three engines out: about three zones of glide.

6. The target

Flak: one die plus the target's flak (light 1, medium 2, heavy 3), +1 straggling: 4 or less wide, 5–6 one burst, 7–8 two, 9 or more three. Bursts on the approach and the run spoil the aim.

BOMBING

2d6 plus modifiers: clear +1; bombing through cloud –3 (H2S radar in a lead-crew ship from 13 Oct 1943: –1); broken cloud at a target of opportunity –1; bombardier out –1 (–3 in a lead ship) or wounded –1; bombsight damaged –1 (–2 lead); doors jammed –2; hand release –1; straggling –2; flak on the run –1 or –2; veteran lead bombardier +1; lead-crew training +1; flak-happy bombardier –1.

Total	≤2	3-4	5	6	7	8	9	10	11+
% within 1,000 ft	0	10	20	30	40	50	60	75	90

The group's pattern mixes its own roll with yours — your bombs weigh most when you lead. Damage to the target builds over raids and is repaired at about 1.2 points a day. A raid that puts 60% of the group's bombs in the target area and takes the target past 80% earns a **Distinguished Unit Citation**.

BOMB LOADS

Load	Available	Zones of fuel	Effect on pens · yards · factories · ports
500-lb general purpose	always	0	$\times 0.35 \cdot \times 1 \cdot \times 0.9 \cdot \times 0.9$
Incendiary clusters	always	0	$\times 0.1 \cdot \times 0.8 \cdot \times 1.3 \cdot \times 1.2$
1,000-lb bombs	always	–1	$\times 0.7 \cdot \times 1.1 \cdot \times 1 \cdot \times 1$
GP load and Tokyo tanks	from 5 Jul 1943	+3	$\times 0.3 \cdot \times 0.85 \cdot \times 0.8 \cdot \times 0.8$

7. Home

Each zone burns fuel; holed tanks drain it faster unless the transfer pumps work. Landing: 2d6 plus modifiers (difficulty, veteran pilot +1, wounded pilot –1, flak-happy pilot –1, co-pilot –1, anyone else –4, instruments, tyre, flaps, hydraulics, tail wheel, windmilling prop, engines out, cables cut, forced landing –2, poor weather –1, fog –2): 3+ safe, 1–2 belly landing, 0 or less a crash. Down over the sea you may **ditch** (2d6: 8+ clean, 5–7 hard, 4– she breaks up; one rescue roll, better with the radio working and near England) or bail out, every man alone.

8. The crew

POSTS AND FIRST AID

Between zones any fit man but the pilots can take over a gun nobody is manning; his own falls silent. A man can leave his post to give first aid to a seriously wounded man in the same or the next compartment; it takes the next zone, and a bandaged man no longer risks bleeding to death.

NERVES

Every mission adds strain to every man who flew it — about one point plus a share for each fighter wave, hit, and ship seen going down, more for a crash landing, a ditching or a man lost, and two more for a man wounded — and three points ease between missions. A man who sits a mission out eases by two.

At 5 he is strained and may be sent to the **flak house** for 2 missions. At 8 he is **flak-happy**: +1 to hit, -1 bombing, -1 landing. At 12 the flight surgeon grounds him for 2 missions. Every 6 missions the crew may take a **48-hour pass**: three points off everyone.

LEAD CREWS

When your pilot has 8 missions and your bombardier and navigator 6 each, the group offers lead-crew training. A lead crew flies at the head of the lead squadron with the box around it (formation fire as in the middle), bombs +1, and leads the group's pattern. Putting the group on the target (60%+) earns the pilot, bombardier and navigator the Distinguished Flying Cross.

DECORATIONS

Air Medal every five missions; Purple Heart for a wound; Silver Star for three kills in one mission; Distinguished Flying Cross for completing the tour; Distinguished Unit Citation for the group.

9. The formation

The group flies eighteen ships in three squadrons of six (lead, high, low; a lead ship, three in the middle and two at the tail). Other ships go down as waves come through, over the target and on the coast; two ships lost from your squadron thins its crossfire. At the tail you may close up into a gap ahead. **Contrails** stream in some zones, more often in the cold months (before 17 Mar 1943 and after 13 Oct 1943): fighters coming from six o'clock are +1 to hit, escorts +1 to find you.

10. Two players and flying in formation

In a two-player tour the second player commands the German fighters: whenever fighters win their return roll the German player chooses where each sets up for its next pass, or breaks it off. "Suggest positions" makes the choices the solitaire game would. Two players on separate machines can fly the same raid in formation by typing the same orders code at the briefing: the target, weather, sun, contrails and every fighter wave are the same.

11. Controls, settings, saving

Key	Does
SpaceEnter	the main action
F	auto-fly on or off
A	auto-assign guns
M	route map, combat board, aircraft sheet
arrows, + - 0	pan, zoom and fit the route map
TabEscape	move between controls; close a dialog

Mouse and touch: press any button; drag the map to pan; wheel or pinch to zoom. Settings: larger text, high contrast, sound, effects volume, intercom voice and its volume, reduce motion, first-time tips.

The game saves in the browser after every action, in one of three slots chosen on the title screen. Menu returns to the title screen: Resume continues, New tour starts over (with a confirmation before a tour in progress is replaced). The logbook keeps every mission, the crew, the target folder, charts and after-action map replays; it can be downloaded as text. The Hall of Fame keeps the best twenty finished tours.

12. Targets

Target	Kind	Flak	Zones	From
Antwerp — aircraft repair works	factory	medium	4	Nov 1942
Brest naval base	port and shipyards	medium	7	Nov 1942
Lille — Fives steel & locomotive works	factory	medium	3	Nov 1942
Lorient U-boat base	U-boat pens (reinforced concrete)	heavy	7	Nov 1942
Rotterdam shipyards	port and shipyards	medium	4	Nov 1942
Rouen-Sotteville marshalling yards	rail yards	light	4	Nov 1942
St-Nazaire U-boat pens	U-boat pens (reinforced concrete)	heavy	7	Nov 1942
Romilly-sur-Seine air depot	factory	light	6	17 Dec 1942
Emden port & rail yards	port and shipyards	medium	7	26 Jan 1943
Wilhelmshaven naval yards	port and shipyards	heavy	7	26 Jan 1943
Hamm marshalling yards	rail yards	medium	7	2 Mar 1943
Vegesack U-boat yards	port and shipyards	heavy	8	15 Mar 1943
Paris — motor works, Billancourt	factory	medium	5	1 Apr 1943
Bremen — aircraft plant	factory	heavy	8	14 Apr 1943
Kiel shipyards	port and shipyards	heavy	9	8 May 1943
Hüls synthetic rubber works	factory	heavy	6	20 Jun 1943
Kassel — aircraft engine works	factory	heavy	9	10 Jul 1943
Regensburg — Messerschmitt works	factory	heavy	10	16 Aug 1943
Schweinfurt ball-bearing plants	factory	heavy	10	16 Aug 1943
Stuttgart — magneto and instrument works	factory	heavy	10	3 Sep 1943
Nantes port and shipyards	port and shipyards	medium	7	13 Sep 1943
Münster rail yards	rail yards	heavy	7	8 Oct 1943
Anklam aircraft works	factory	medium	10	10 Oct 1943
Marienburg aircraft plant	factory	light	10	10 Oct 1943
Ludwigshafen chemical works	factory	heavy	8	12 Nov 1943
Solingen steel works	factory	heavy	6	17 Nov 1943

B-17: Queen of the Skies v1.8.1 · Tronsoft Games · an original implementation inspired by the board game by Glen Frank (On Target Games 1981; The Avalon Hill Game Company 1983). Names of aircraft, crew and German aces are invented.