

Flight Simulator with Torpedo Attack

for
MSX computers

Program Number: MSX-FSE

Introduction

This program puts you at the controls of a modified Nakajima Tenzan, a World War II torpedo bomber aircraft. The object of the Torpedo Attack game is to take off from your island airbase, torpedo or bomb enemy targets, destroy as many enemy aircraft as possible, and land safely back at the airbase. During the course of the game you will learn the basics of flying an aircraft and experience the thrill of flight.

Before starting the game, you should read the "Flight Instrumentation" section of this manual to familiarize yourself with the aircraft instruments and controls, and take the plane for a test flight as described in "Flying the Aircraft". After flying the combat missions, you may want to read the "Flight Physics" section of the manual to learn more about how a real aircraft flies.

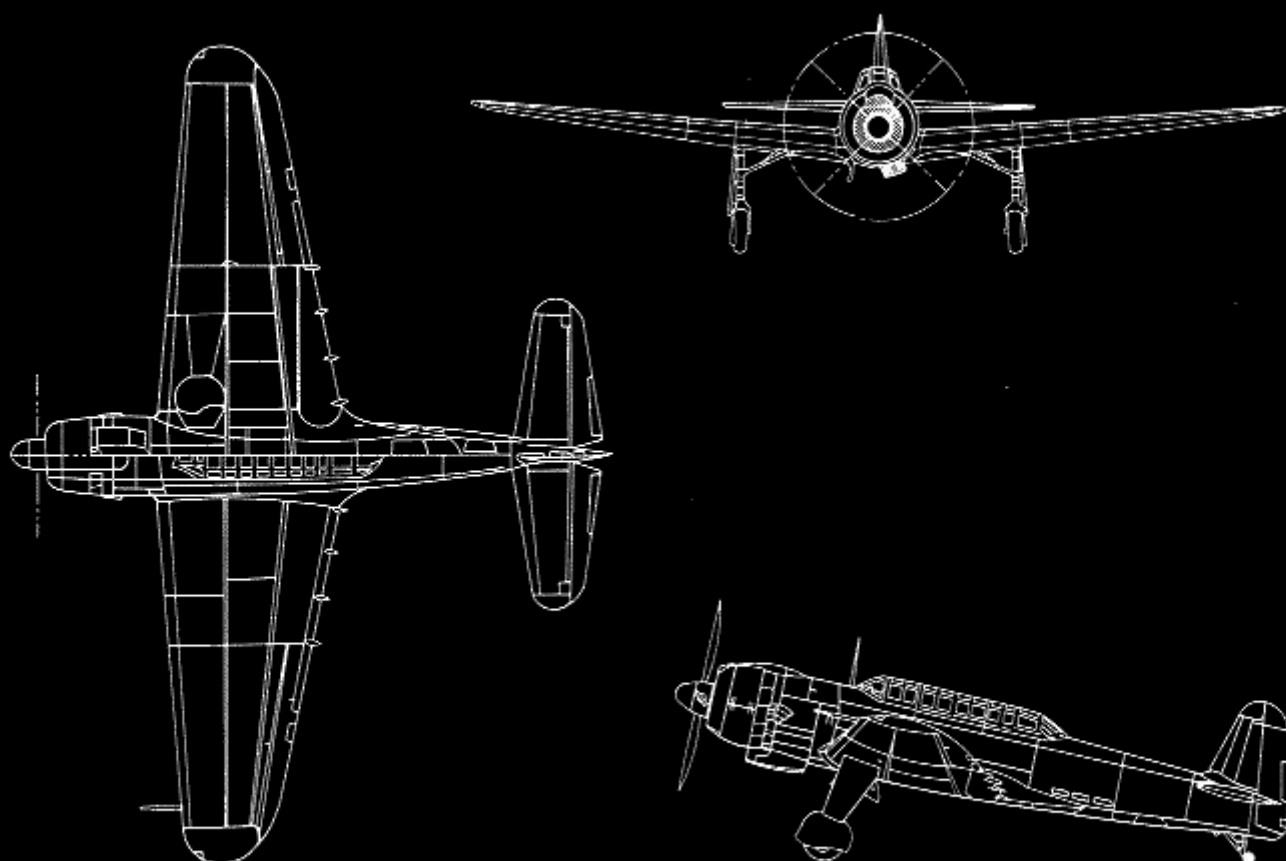
Technical Information

Aircraft Information

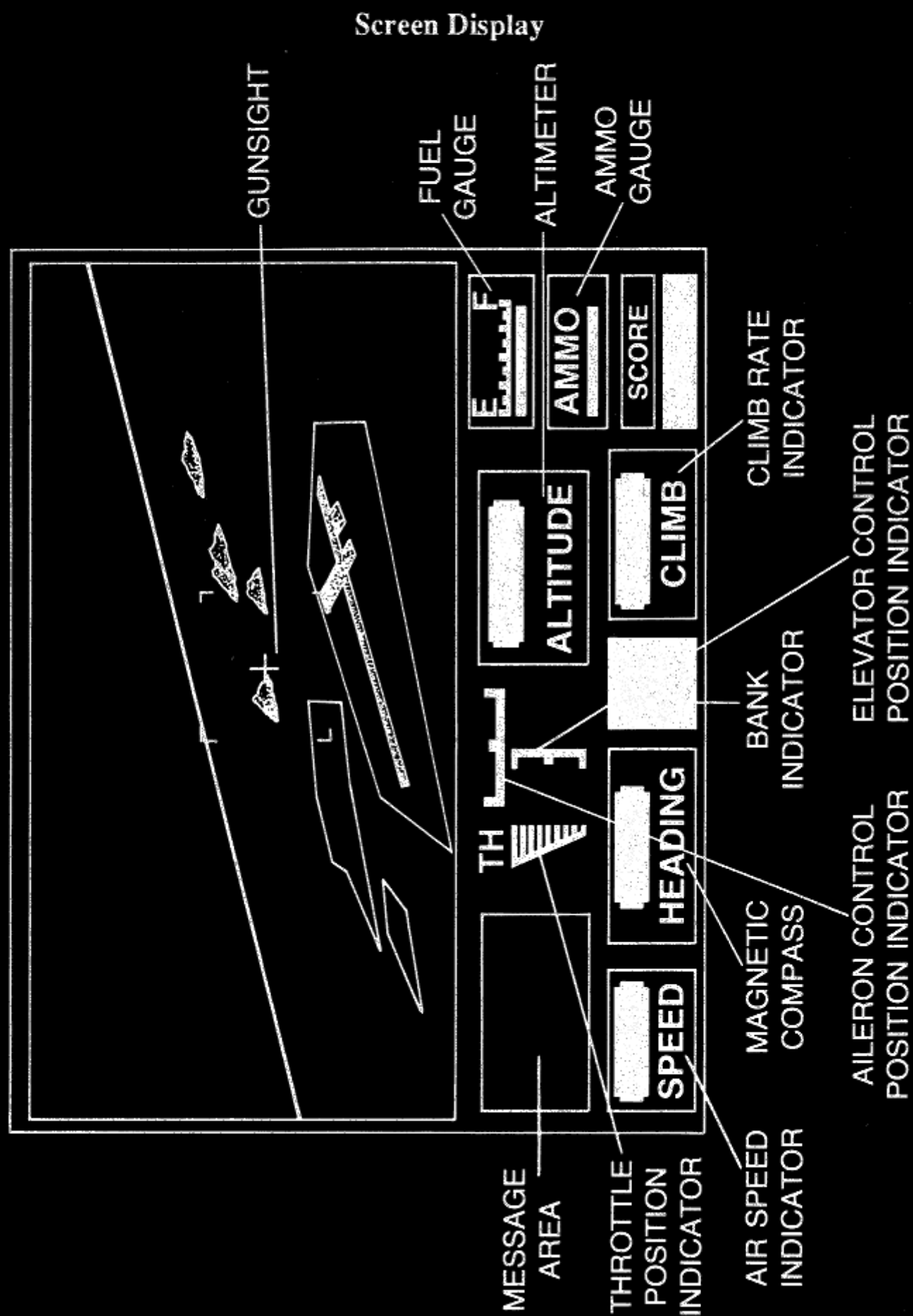
- Plane:** Nakajima Tenzan, carrier-borne, two-seat Reconnaissance and Torpedo/Bomber monoplane, Model 12B, specially modified for this mission.
- Landing Gear:** Dual retractable front gear and tail wheel.
- Power Plant:** Mitsubishi Kasei 25, 14-cylinder, 1500 HP radial air-cooled engine.

Weapons Information

- Machine Gun:** One forward-facing 7.7mm machine gun in each wing. 600 rounds of ammunition each.
- Torpedoes:** Long Lance steam powered torpedoes, approximate range 2000m.
- Bombs:** 600 lbs (272 kg) impact detonation devices.



Flight Instrumentation



Instruments

Your plane has more instrumentation than the original Tenzan did. Additional instruments and indicators are provided to ease the process of learning to fly. These instruments will now be described.

Altimeter

Altitude in feet above sea level is measured. Your altimeter is only accurate to about 10 feet, so be careful when landing. Most runways are about 10 to 15 feet above sea level.

Climb Rate Indicator

This gauge tells you how fast you are climbing or descending. A positive number indicates that you are climbing, a negative number indicates that you are dropping. When you land, your drop rate must be very low or you may damage the airplane and possibly injure yourself.

Airspeed Indicator

This gauge displays your plane's current airspeed. Because of winds, this may not be your true ground speed. Airspeed is displayed in miles per hour.

Magnetic Compass

This gauge displays your current heading in degrees clockwise from magnetic north. During high-rate turns this indicator may lag slightly behind the plane's true heading, but it will catch up quickly when you stop turning.

Bank Indicator

This indicator lets you know which way your wings are tilted relative to the horizon. This can be useful when the plane is at a steep bank angle, to help you determine the fastest way to right the plane.

Fuel Gauge

This gauge displays the amount of fuel remaining in your tanks.

Aileron and Elevator Control Position Indicators

These indicators show the positions of the aircraft's ailerons and elevator. An aileron position indicator box to the left or right of the center mark shows that left or right aileron is applied. An elevator position indicator box above or below center shows that the elevator is

raised or lowered. When the boxes on the indicator bars are aligned with the center marks, the ailerons and elevator are centered.

Throttle Position Indicator

This indicator shows how much throttle is applied. The position indicator box on the indicator bar goes up or down as throttle is increased or decreased.

Ammo Gauge

This gauge displays the amount of machine gun ammunition remaining. Be careful not to run out of ammunition when fighting enemy planes, or you will become an easy target.

Message Area

This window displays various messages during your flight. It informs you about enemy planes firing on you, enemy plane kills, torpedo hits/misses, aircraft stalls, etc. When none of these conditions exist, this area displays your current skill level. When the indicator displays "MISSION COMPLETE" you should return to your island base to refuel and receive new mission orders.

Score Box

Shows your score for the current game. If you crash, get shot down, or lower your skill level, the score is reset to 0.

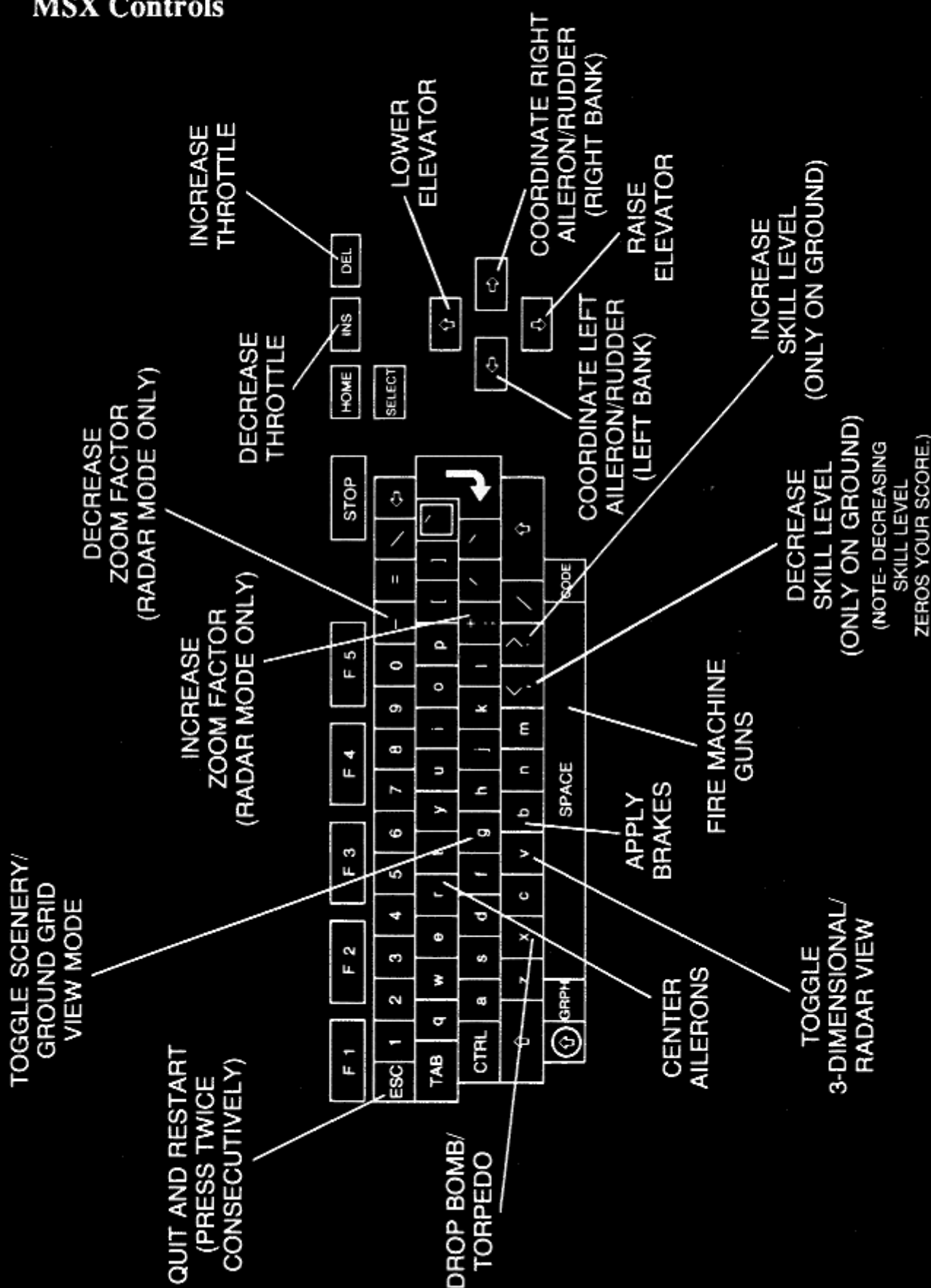
View Modes

This simulation offers three different viewing modes. The default viewing mode shows 3D scenery outside your cockpit window when you start the program. Press the [G] key to toggle between this scenery and a 3D ground grid pattern. Island scenery is not displayed in the ground grid view mode; a 3D grid pattern is plotted on the ground in its place. This grid makes it easier to determine how high above the ground you are, and increases simulation speed.

A radar view is also available. Press the [V] key to toggle between 3D and radar view modes. Radar mode provides a view of the area around your aircraft. The size of this radar view can be adjusted by pressing the [+] or [-] keys to increase or decrease the zoom factor.

Keyboard Controls

MSX Controls



Flying the Aircraft

Takeoff and Test Flight

After loading the Flight Simulator/Torpedo Attack program and exiting the demo mode, you start out on the runway of an island airport where your plane is fueled and ready for takeoff. First, increase throttle to full by pressing and holding the [DEL] key. The plane will begin to accelerate down the runway. Wait for your airspeed indicator to climb to 130 miles per hour, then press the [down arrow] key twice. This will raise the elevator and cause the plane to begin lifting off the ground. You will notice the runway drop away as you lift off, and the climb rate indicator will begin to increase. As soon as it registers 1000 ft/min, press the [up arrow] key twice to center the elevator, decrease your angle of attack, and lower your climb rate. Note that this does not occur immediately, as it takes a while for the plane to stabilize. You should be in stable flight with a level horizon visible.

Now let's try a medium speed turn. First, press the [right arrow] key twice to begin banking the plane to the right. When the horizon is at about a 45-degree angle, press the [R] key to center the ailerons. The heading indicator will change as the plane turns. To increase the turn rate, press the [down arrow] key twice. If you were in level flight this would increase your angle of attack, but since the plane is banked the angle of attack will increase only slightly and the turn rate will increase. To level out of the turn, press the [up arrow] key twice and the [left arrow] key once and wait for the horizon to return to near level. Press the [R] key just before the horizon becomes level. This will center the ailerons and stop the plane from banking any further.

Landing

The hardest aspect of flying an airplane is landing safely. The proper landing procedure is to fly the plane a foot or two above the runway and slow down until the plane stalls and stops flying. As the plane slows down, the nose will want to drop and the plane will try to fly itself into the ground. You must compensate with up elevator to keep the plane at the one- or two-foot level until it stalls. If you fly the plane onto the ground above stall speed, it may bounce or even crash.

As you apply more up elevator, the plane will take a higher and higher nose-up attitude. This is good. When you finally touch down, your elevator should be nearly all the way up. The scenery outside will level off when you touch the ground.

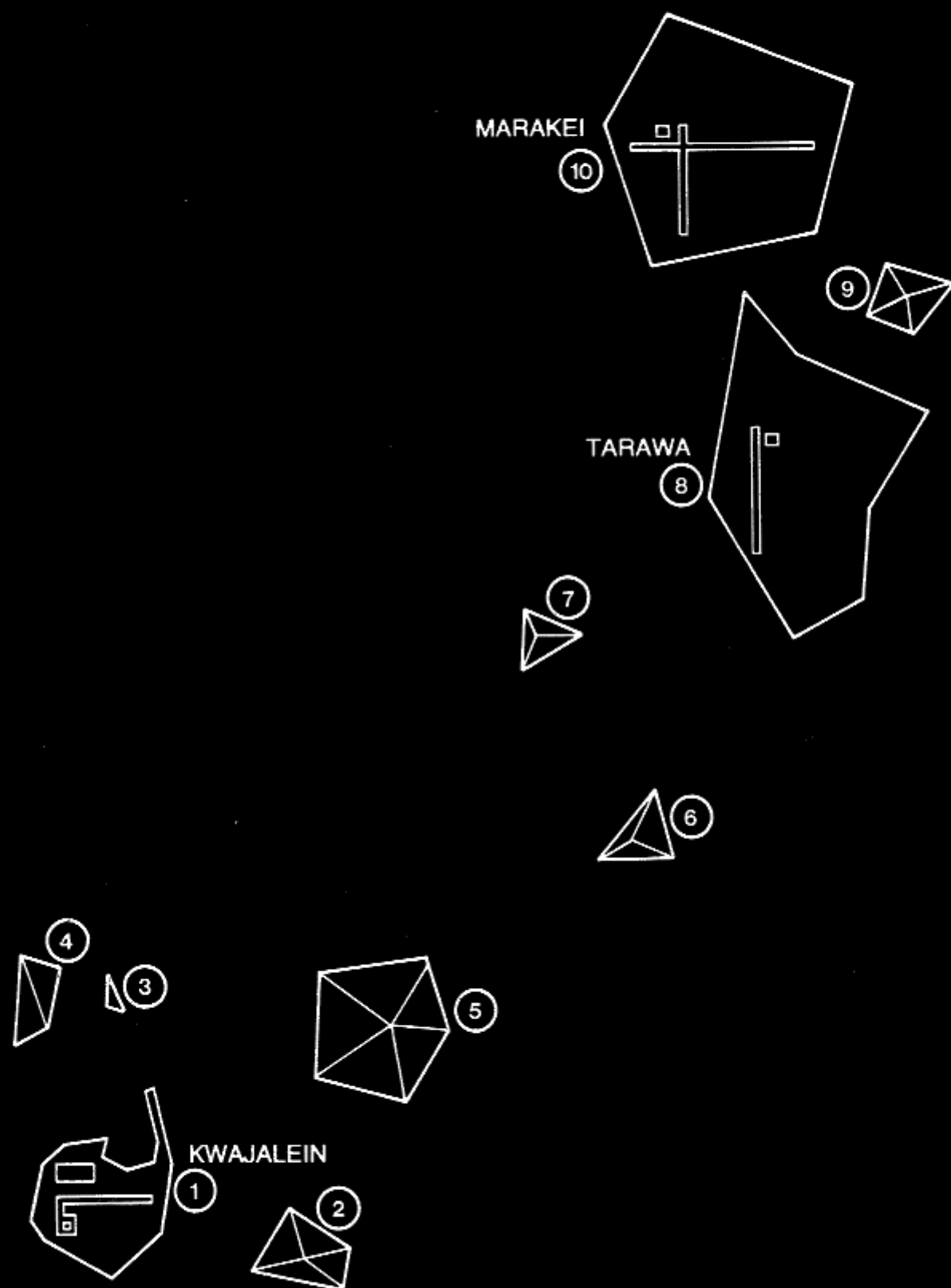
The process of putting yourself into a level flight path slightly above and aligned with the runway takes some practice. Steep glides are preferred as you come in for a landing. An engine failure while in a steep glide will have little effect on where you land, whereas an engine failure on a long shallow power glide at treetop level will drop you into the field half a mile from the airport. You should align yourself with the runway and glide toward it in a steep glide at approach speed (about 130 mph indicated airspeed). You must then break the glide and transition into straight and level, power-off flight a few feet above the runway. This transition is known as the *flare*.

You will use the ailerons/rudder to align yourself with the runway as you come in for a landing, but make sure that the aircraft is straight and the ailerons/rudder are centered when you touch down. If they are not, ground steering will whip you off the runway because your wheels aren't aligned to make the plane go straight. An abrupt turning of the plane on the ground is known as a *ground-loop*, and could severely damage a real aircraft.

Once on the ground, you can use brakes to bleed off extra speed and come to a stop. You will then be ready for your next flight.

Before taking off again, make sure to do a pre-takeoff check. You will usually find that you have to center the elevator which is nearly all the way up from the last landing. Taking off with full up elevator and full throttle can be disastrous.

Scenery Area



Missions

Mission Briefing

Congratulations on completing your flight training. Your first tour of duty will be on Marakei island. You are to travel there immediately and report to the commanding officer.

You have been assigned to fly front-line air support in preparation for an invasion of the enemy base on Kwajalein by your forces. You will fly 10 sorties into enemy territory. If you are successful in these 10 sorties, you will be awarded the Silver Star medal and will be returned home to instruct the next generation of pilots. The enemy is not aware of the long range of our planes, and will not be expecting a single fighter, so the first mission or two should be relatively uneventful. As the enemy learns about our skills and tactics, expect them to send large forces against you in desperation.

Mission #0

As a combat training mission, you are assigned to bomb the enemy base at Kwajalein. Intelligence reports that the enemy currently has only a few planes at the base, most of which are inoperable. You are assigned to destroy as many planes as possible and to bomb the island base. Use your machine guns (fired by pressing the [SPACE BAR]) to destroy the enemy planes. The planes must be close enough to see clearly, and lined up in the center of your out-the-window view. Destroying an enemy plane scores 5 points. To bomb the base, you must fly your plane over the square target indicator on the enemy base radar image and drop a bomb. For this training mission you have an almost unlimited number of bombs. You can tell from your score whether or not you hit the island base. Hitting the base scores 10 points. NOTE - after you accomplish your mission goals, the "SKILL LEVEL 1" display will change to "MISSION COMPLETE". You should then return to your home base to prepare for your next mission. If during the course of the mission you run low on fuel or ammunition, you may return to any of your bases to replenish fuel and/or ammunition. To refuel/resupply, simply land at the air base and come to a complete stop. Your plane will be serviced on the runway.