WINGING IT
Flight Simulator

Fly your own private plane in this excellently visualized simulator. But after you've mastered flying, the excitement isn't over — three different games test your skill. Ground map and weather indicator chart your position on a randomized earth simulacrum. For 1 player.

TI BASIC · NO PERIPHERALS
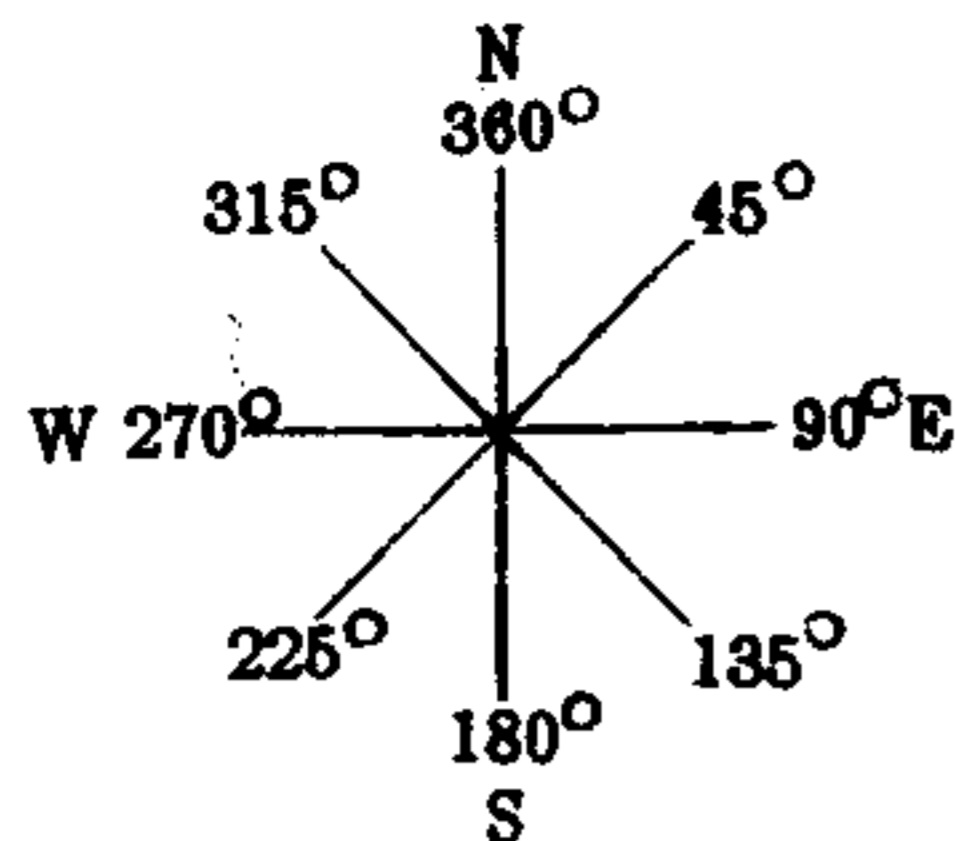
GAMES FOR // TI 99/4(A)

.....To run this program, your TI 99/4 or 99/4A must have a disk drive (obviously). To load it, note the name of the program which is printed on the disk label, insert the disk into the disk drive, close the door, and type in OLD,the program name, and hit the ENTER key. When the cursor returns, type in RUN and hit the ENTER key. Your computer will then begin execution of the game program.

.....While playing this game, the ALPHA LOCK key must be in the down position unless otherwise stated in the instructions. Improper inputs during game play may result in error messages and loss of game. Please read the instruction booklet carefully.

.....If for any reason this program does not load, please return it along with a photocopy of your sales receipts, to Not-Polyoptics, P.O. Box 4443, Woodbridge, VA 22194. We will do our best to make sure that you are satisfied.

.....This program is copyrighted by Not-Polyoptics. All rights are reserved. **WARNING:** Unauthorized duplication and/or sale (including rental) of this program may result in imprisonment or fines up to $10,000. Infringers may also be subject to civil liability.

.....Thank you for purchasing this Not-Polyoptics product. If you have any problems or questions concerning this program, please write to us at the above address. We are continually looking for ways to improve our programs, and any suggestions you may have would be appreciated.
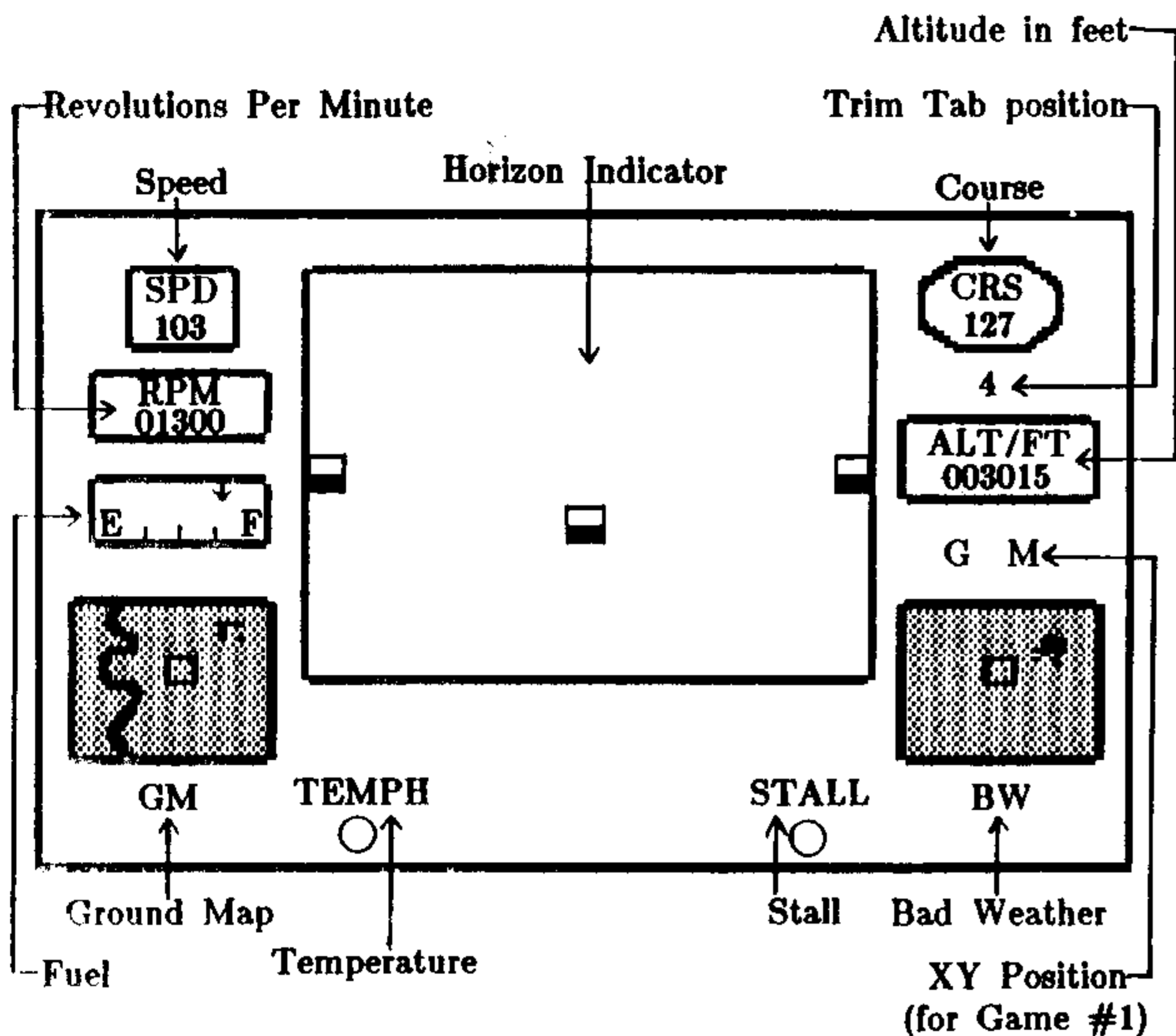
N
360°
315°   45°
W 270° ———+——— 90° E
225°   135°
180°
S

Earth
↓

You are in the plane

nose down

nose up

roll clockwise

nose down/
roll clockwise

nose straight down

nose straight up

inverted

90° roll clockwise

WINGING IT / Mk. II
TI Basic Flight Simulator
by Not—Polyoptics

You gun the 125 hp Menasco C—4 engine and your Arrow monoplane begins to move slowly along the runway. The plane taxies faster and faster, and the air is rushing into the open cockpit. 30 knots, 60 knots, 90 knots — carefully you pull back on the stick and your stomach seems to drop. The horizon indicator sinks, and the altitude gauge reads 10 feet. You're flying!
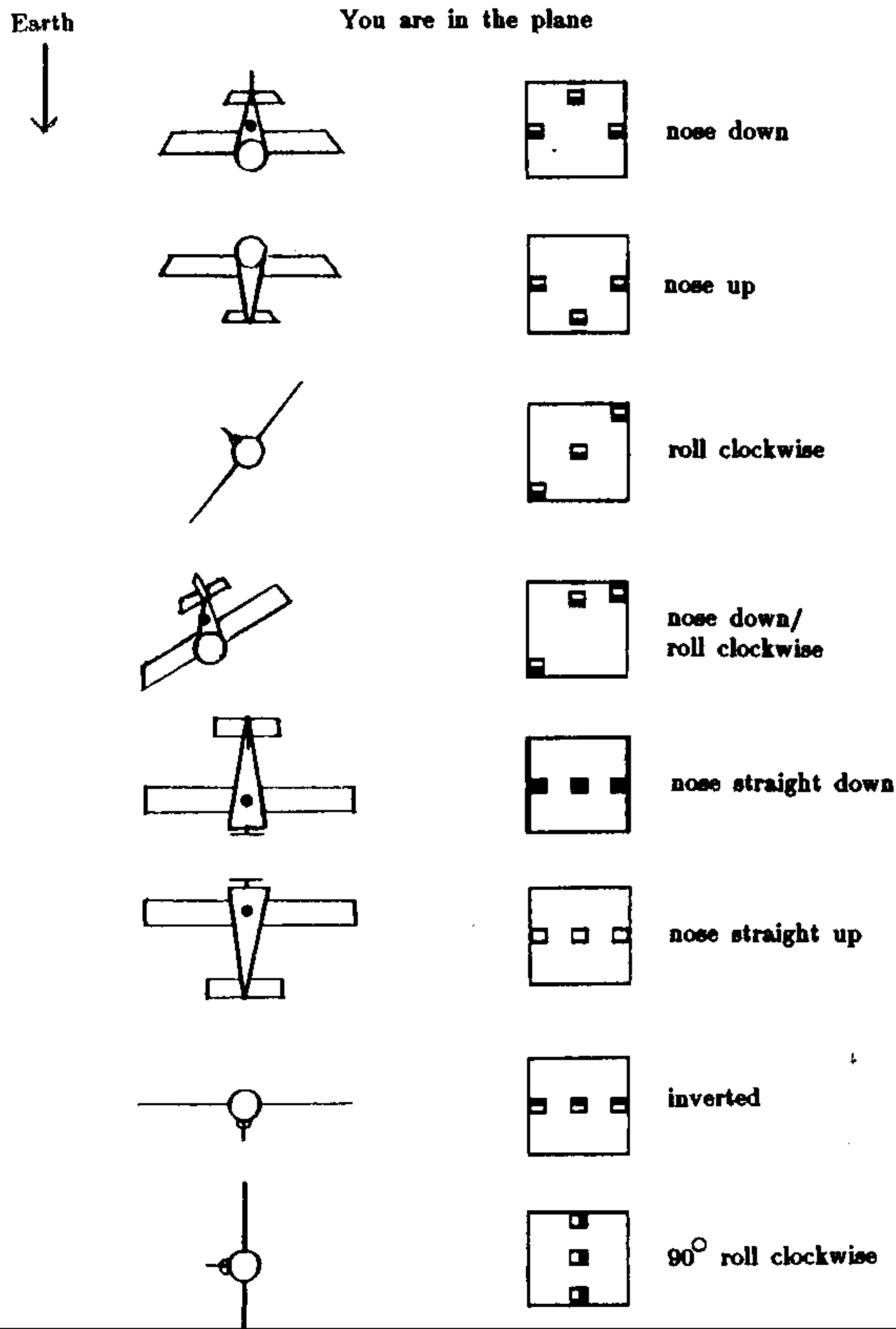
Winging It is Not—Polyoptics' inexpensive flight simulator written for the unexpanded TI 99/4A computer. It was written in TI Basic, which at times is a slow and inefficient language. Two problems result — first, the execution of the program is rather slow; and, second, the computer will only recognize key input at certain points in the program. In order to minimize the effect of the first problem, the simulation has been designed to compensate by recalculating the plane's position at the several second intervals that the display takes to be updated. Thus, a "real time" experience is preserved. The second problem means that a command key must be held down until it takes effect, generally speaking, about one—half the recalculation cycle. A change in the engine noise will usually mean that the program has passed through a key input recognition statement. *Winging It* may be played in Extended Basic to enhance its performance.

1. Screen Display — The principal instrument on your screen is the Horizon Indicator or Ball Horizon. This consists of the large square in the center of the screen with three green/blue lights across its midline. When on the ground or in perfectly level flight, they will bisect the indicator. Blue means sky and green means earth. The center marker shows the plane's relative pitch (nose up or down) and the two outside markers show roll (wing position relative to the horizon). Refer to the chart on page 1 for more of a feeling of how the Horizon Indicator works. Remember that this instrument is showing the position of the horizon and NOT the position of the plane. When the middle marker is going down, the plane's nose is going up. When the outer markers are moving clockwise, the plane's wings are moving counter—clockwise. The Ball Horizon instrument, of which this is a simulation, is similar in some ways to a carpenter's level. The best way to visualize what's happening is to imagine that you are looking at the actual horizon.

Altitude in feet

Trim Tab position

Revolutions Per Minute

Speed   Horizon Indicator   Course

SPD
103

CRS
127

4

RPM
01300

ALT/FT
003015

E   F

G   M

GM   TEMPH   STALL   BW

Ground Map   Stall   Bad Weather

Fuel   Temperature   XY Position
(for Game #1)

THUNDERSTORM
turbulence, some ice

COLD SPOT
icing

COLD FRONT
turbulence, icing

HURRICANE
high turbulence

CLEAR AIR
TURBULENCE

AIRPORT ONE   AIRPORT TWO   AIRPORT THREE   MOUNTAIN
must be above 2000
feet   RIVER BORDER

METEORITE   FLYING SAUCER   ENEMY PLANE   YOUR LOCATION

There are eleven additional instruments displayed on the screen to aid you in flying your Arrow. Two of these have no counterpart in a real airplane of the 1930's, but are included to substitute for the pilots view out of the cockpit. A picture of the screen appears on the page opposite.

Notes

>Speed is in knots, and altitude is in feet.

>The RPM displays the number of revolutions per minute of the propeller.

>The trim tab is used to dampen the effect of the elevator, from 1 to 9. Five is the middle position of this device. Use a position less than 5 for maximum efficiency when climbing, greater than 5 when diving.

>Course is in degrees read clockwise from due north. See diagram on page 1.

>When the stall light comes on, your plane has lost the necessary speed to stay aloft. Maintain speed when climbing or you may lose control of the plane.

>The Ground Map and Bad Weather indicator are two map-like representations of your immediate vicinity. Both are disabled if simple practice is desired. The Ground Map displays ground features and the location of objects involved in game flying. The BW shows weather features that cause turbulence and/or icing. If a weather symbol is visible on the BW, it is affecting the plane. The small squares in the centers of the GM and BW show the position of the plane.
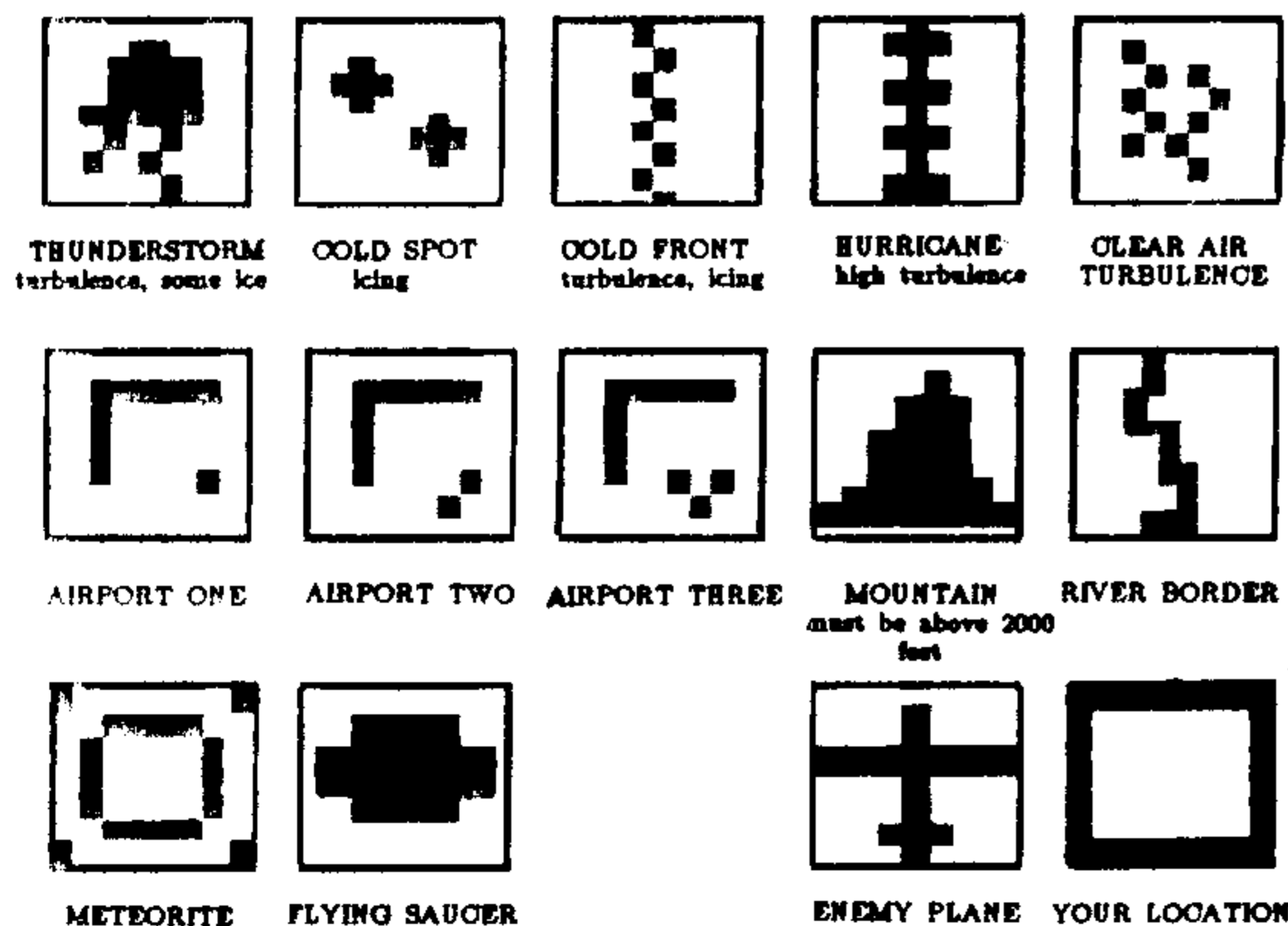
2. Controls - The controls are activated by pressing keys on your computer keyboard. The stick controls are located on the right side of the keyboard and the remaining controls are found on the left. Two key inputs can be made from the keyboard simultaneously, one from the left and one from the right. See the chart on page 5 for exact key meanings.

The stick is used to move the elevator and ailerons of the plane, and thus broadly control the movements of air that affect the progress of the plane through the sky. To fully understand the complex relationship between the control surfaces of the airplane and the air passing across them, the novice flyer is encouraged to read any good introductory text on flying. Experimenting with the controls, however, will give you a feel for what they do in a quicker and more intuitive way. Remember that you are flying a simulator, and a crash will damage nothing more

WINGING IT

Stick Control

Throttle

Trim Tab

Rudder
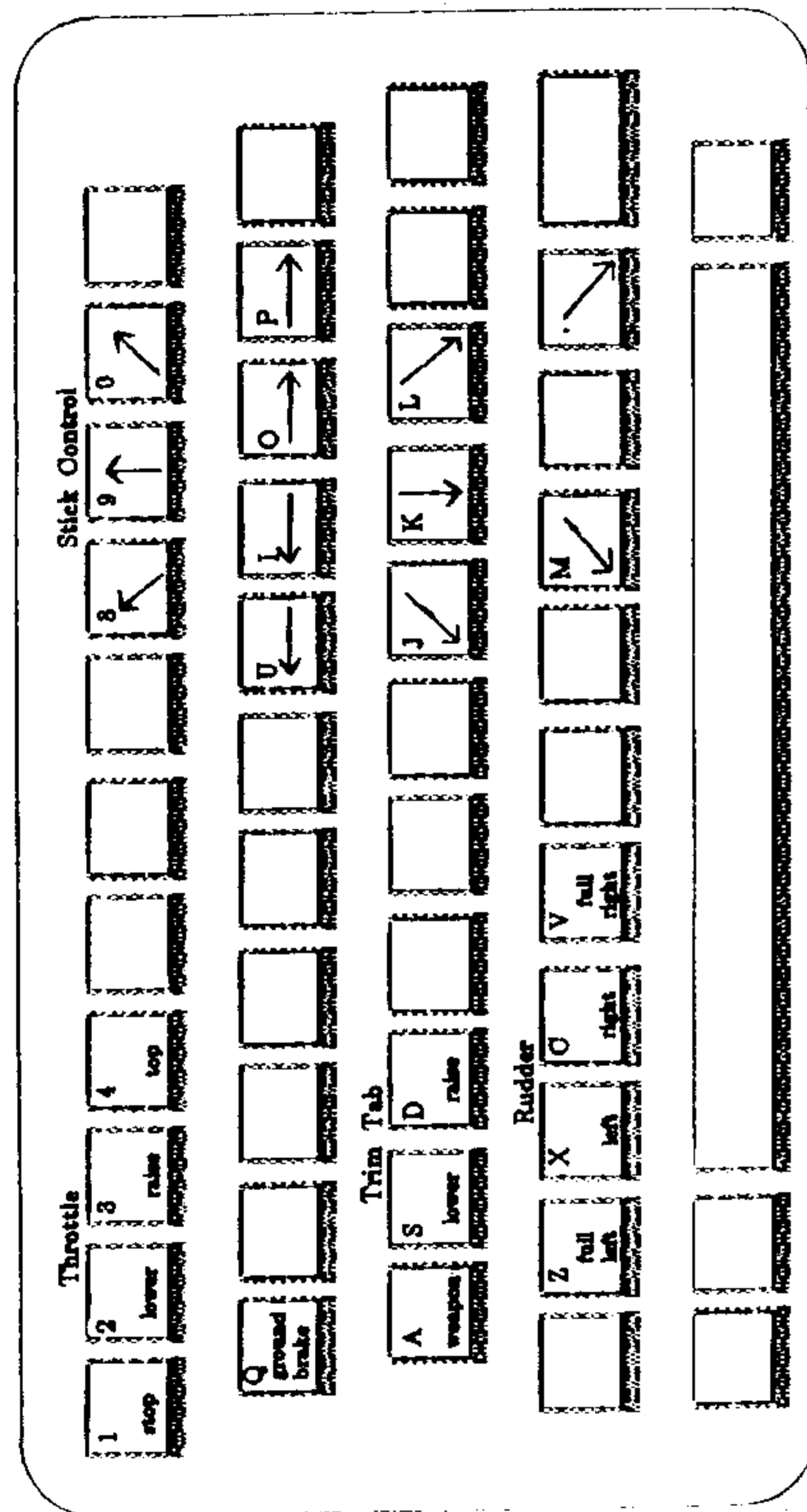
Alpha Lock key must be down to play this game.

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than your pride. The stick works in a way that is somewhat counter—intuitive. Pulling back on the stick makes the nose rise and the plane climb. Moving the stick to the left causes the plane to bank left, and moving it to the right makes it go right.

In addition to the stick, there are five additional console controls: trim tab, throttle, ground brake, rudder, and weapon.

Notes

>Trim tabs raise or lower tab 1 point when pressed.

>Throttle has four positions, from off (1) to top speed (4). Gas consumption increases greatly with higher throttle speeds.

>Rudder controls can be used to change heading, and used simultaneously with the stick are effective for quick course changes.

>Ground break is used to avoid running off the end of a runway.

>Weapon is used in game play.

3. <u>Weather</u> — The weather built into *Winging It* is specifically designed to add difficulty to the simulation. There are fair days in Planeburg but they are few and far between. Turbulence is the principal problem in summer and icing causes the most trouble in winter. The most likely time to encounter good weather is spring. If weather symbols are visible on the BW indicator, they are affecting you. Most weather occupies one space but fronts and hurricanes extend many spaces. The main effect of turbulence is to cause your plane to do unexpected things — changing course, speed, and wing position. In the strongest turbulence your plane will become almost uncontrollable, and the only recourse is to get out of the vicinity of its cause. Icing can be even more deadline because its effects are not so obvious. The plane gets heavier and heavier, and its control surfaces become blunted. At first the plane becomes unresponsive and eventually it will stall. Again, get out of there, or land!

4. <u>Games</u> — At the beginning of the program, you are asked which game you wish to play. There are three games for the more experienced flyer, increasing in difficulty from 1 to 3. Input the number of the game you wish to play at the opening prompt to play that

game. Pressing '0' at both beginning prompts will disable weather and allow the novice to practice the basics of flying.

Notes

>Game 1 is an aerial search for a magnetic meteorite. The object of the game is to locate this meteorite and fly over it. Two numbers are displayed under the altitude instrument which represent a cryptic type of Geiger counter. The registers of the counter show ASCII characters related to the X–Y position of the meteorite. If both registers show the letter 'O' you are above the object, which will be visible on the ground map.

>Game 2 is more difficult. A flying saucer appears on the ground map moving in a random way. The object of the game is to chase this UFO and, when you are directly above it, press your weapon key 'A'. If the saucer flies out of the Ground Map's view, the pilot must rely on dead reckoning to find it again.

>Game 3 is the most difficult of all, and was designed for only the most proficient pilots. The challenge is to cross the river border to the west before a faster enemy plane catches up and shoots you down. When the enemy has overtaken you, it is very difficult to escape his aim, and only by wild maneuvering can you avoid a gas tank hit. Dive, climb, and turn to avoid losing your fuel. If the plane is high enough, it may be able to glide across the border, but the game isn't over until you've landed.

5. <u>Hints</u> — To take off, press '4' until you hear the engine. When the speed reaches 70, pull back on the stick (K) until you are airborne. Be careful to level off quickly or you may stall. You can use the rudder instead of the ailerons to make small adjustments to the roll position of the plane. In order to perform difficult maneuvers, including loops and rolls, a speed of 100+ knots is necessary. Diving can be used to gain speed. If you are in an uncontrollable dive, top the throttle and pull back hard on the stick (M or .) in the opposite direction of the spin. If you are upside down, controls have the opposite effect. To land, trim tabs to 5, reduce throttle to 600 RPM (2), go to 100 feet and 70 knots, level of the plane, and land. You don't have to land at an airport, but it is better to.
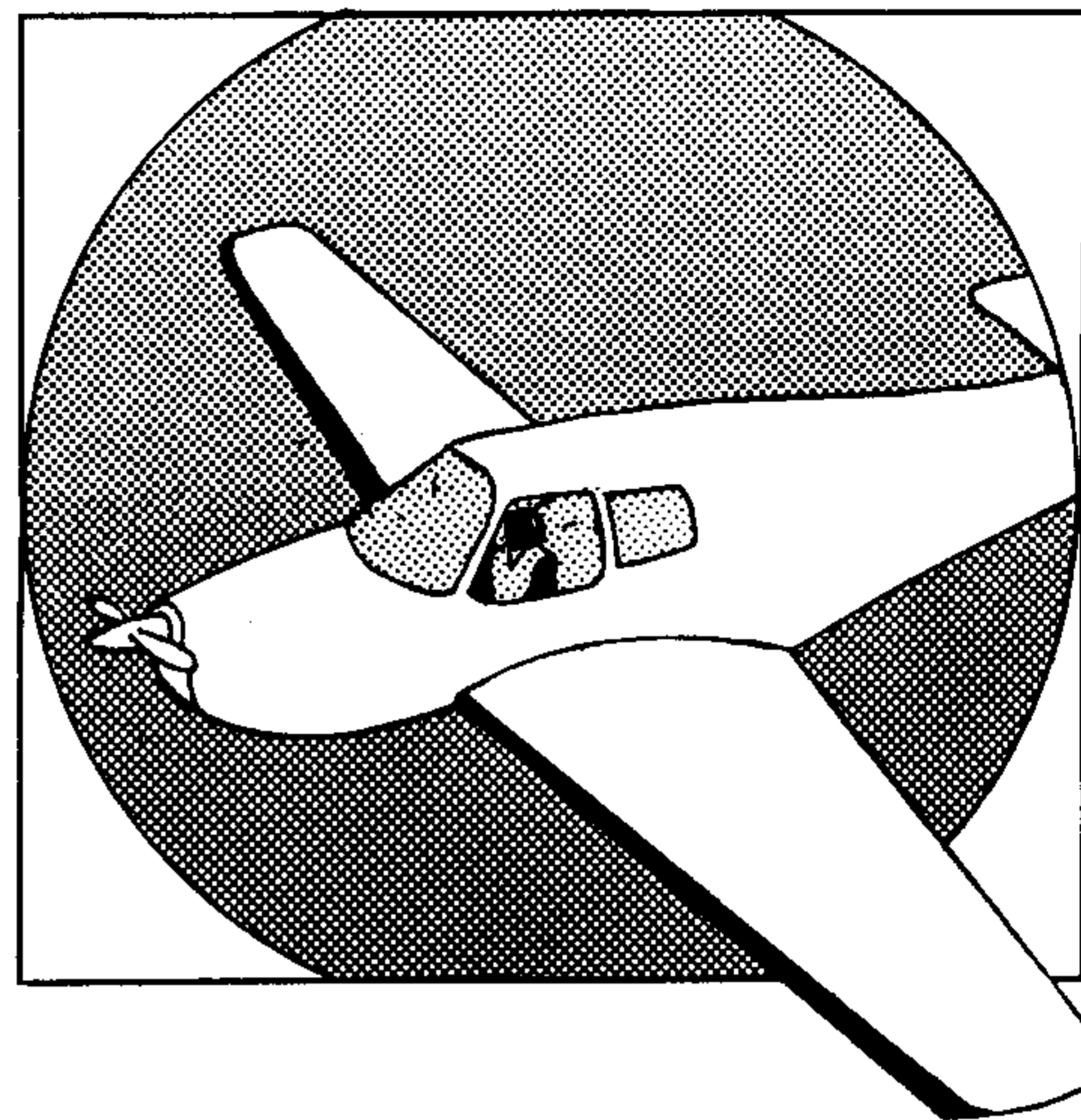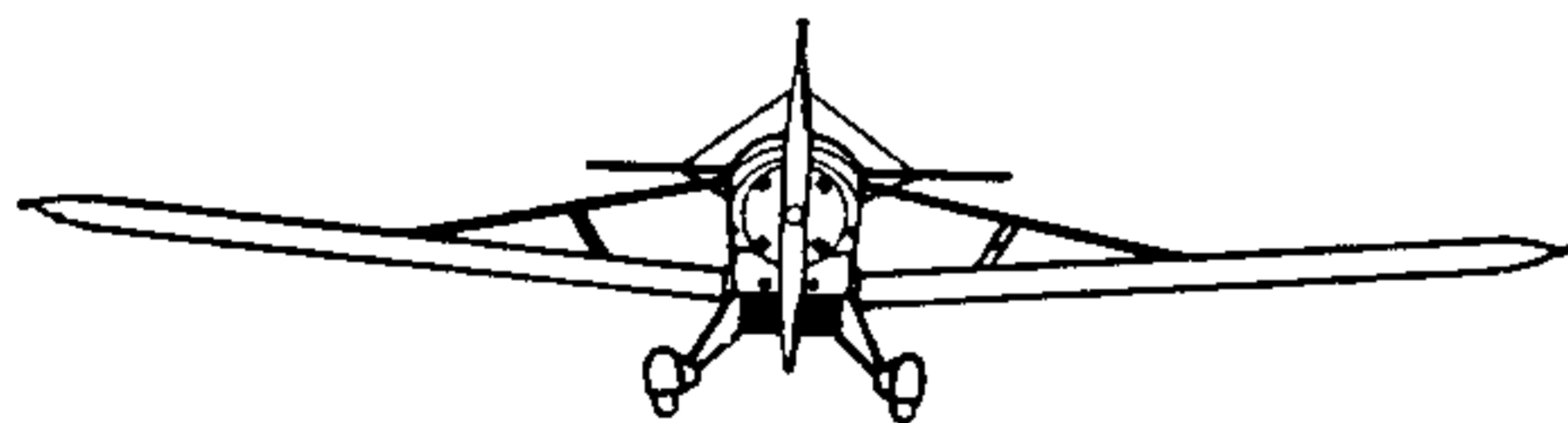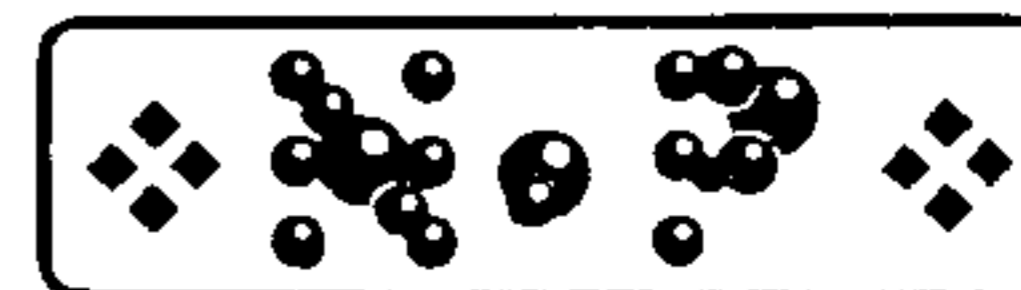
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INSTRUCTION MANUAL

TI BASIC - NO PERIPHERALS

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