TECHNICAL SUPPLEMENT

CONTENTS

Your Flying Fortress package should contain a manual, a poster, this technical/flight supplement, five 5.25" high density disks or four 3.5" high density disks, and a registration card.

REQUIRED EQUIPMENT

Computer: The simulation requires an IBM PC, AT, PS/2, or a computer 100% compatible with one of those models. The computer must have a high-density floppy-disk drive and a hard disk. The simulation will run on a 80286 microprocessor but an 80386 or better is recommended, with at least 640K of RAM.

Controls: The simulation can be run entirely from the keyboard, or from a joystick. Most sections also support mouse control.

Display: The simulation requires a color monitor with a VGA/MCGA graphics system. If you are using a compatible graphics card/monitor, it must be 100% hardware compatible to one of the above.

Disk Drives: Flying Fortress must be installed onto a hard disk.

DOS: You must have IBM PC-DOS or Microsoft MS-DOS version 3.0 or higher but DOS version 5.0 is recommended.
COPY PROTECTION

*Flying Fortress* has no disk copy protection. This means that you can install the simulation files from the original disks to a hard disk. However, the program asks you a simulation related question. Use the manual to answer the question. MicroProse regrets that continuing casual and organized software piracy requires that we retain this minimal form of copy protection.

INSTALLATION

A program called "INSTALL" is included on the *Flying Fortress* "Disk A". Insert "Disk A" into your floppy drive (Drive A or B) and designate that drive (by typing "A: [Return]" or "B: [Return]").

When the new prompt appears, type: "INSTALL [Return]"

Please follow the on-screen text which appears. Configure the installation program for your computer.

The simulation supports the following sound cards:

**IBM Sound:** This option supports the internal speaker standard on most IBM and compatible computers.

**AdLib/Soundblaster Sound:** Only use this option if you have an AdLib/Soundblaster or 100% compatible sound board installed in your computer.

**Roland MT-32 Sound:** Only use this option if you have a Roland MT-32 sound board installed in your computer.

SIMULATION ENHANCEMENTS & LAST MINUTE INFORMATION

The Pilot’s Control Column Icon

The Pilot’s Control Column Icon is the lower of the two icons on the Pilot’s Compartment Screen and not the top icon, as stated in the manual (Page 28). The top Control Column Icon will light up when you select the Co-Pilot. You will begin every mission in the Pilot’s seat (left-hand looking out of cockpit window).
The Mission Briefing Map

The Yellow Line shows the Waypoints to the initial point.

The Red Line shows the initial point to the Primary Target, and the Orange Line to the Secondary Targets.

The White Line shows the Waypoints to home base.

Viewing Crew Positions Keys F1-F10

There is no need to assign the ten crew positions when you first enter the B-17 as stated in the Flying Fortress Manual. All crew are in their correct position and can be viewed immediately by pressing Function Keys F1 to F10. If you choose to move any crew member out of position then the relevant key will show you the appropriate Compartment Screen.

Skip Time Alt/T

By pressing Alt / T you will jump to the next Waypoint, or to a point where something is happening. (eg. an attack by enemy fighters.)

Navigator’s Views

If you access the Navigator’s external view Key E (Flying Fortress Manual page 80) you may return to Map View by pressing Key T.

Read Me File

Before loading Flying Fortress you should read the "Read Me" file for last minute information and enhancements to the gameplay. The documentation for Flying Fortress was completed in advance of the software, due to the size and complexity of the manual, but the "Read Me" file will detail all changes made after its printing.

Loading Instructions

Boot your machine, if necessary and wait until the "C>" prompt appears.

Type "CD B17 [Return]" and then type "B17 [Return]."

The simulation will begin to load.

Please note, if you have installed the program to another directory you must type “CD [Name of your directory]” first.

Operating Difficulties and Loading Problems

In the vast majority of cases a loading problem is not because of faulty software, but either incorrect loading procedure or hardware fault.
Please ensure that the loading instructions have been correctly executed. Alternatively, a virus may have transferred into your hardware from another piece of software. Pirated copies of games are an incredibly common source of viruses. It always pays to own original software.

MicroProse Customer Service is ready to help with software difficulties. If possible, please be in front of your computer and have a paper and pencil handy when calling.

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(410) 771-1151
Monday-Friday 9am to 5pm Eastern Time

FLIGHT SUPPLEMENT

THE TRAINING BASE

By selecting "Crew Training" from the Main Bomber Screen you will access a menu allowing you to choose a variety of Training Options, including those which allow you to practise take-off and landing. You should study the text which appears carefully once you have made your selection. It gives details of the Training situation which follows.

THE FLIGHT SIMULATOR

To access all flight controls you must choose the Pilot [F3] or Co-Pilot [F4]. If you have just begun a mission you will automatically be in the Pilot's seat looking out of the cockpit window.

By pressing Key 1 (open square brackets) you can move the view left and by pressing Key 2 (close square brackets) you can move the view right. You may also access more selective views from within the cockpit by pressing the Pad keys PgUp, PgDn, Ins and Delete.

To view the B-17 Pilot’s Instrument Panel press Key 1.
The B-17 has numerous dials and switches which you should become familiar with. Study the Pilot’s Instrument Panel Diagram.

Press Key [1] (open square brackets) to move your view left and Key [3] (close square brackets) to move your view right, while viewing the instrument panel.

You can easily raise your view away from the Instrument Panel by selecting Key [W].

Press Key [E] to return to Instrument Panel View.

**THE PILOT'S INSTRUMENT PANEL**

**The Radio Compass**
This dial will show you your heading. A heading of 0° is North, 90° is East, 180° is South and 270° is West.

**The Directional Gyro**
This dial will also show you your heading. A heading of 0° is North, 90° is East, 180° is South and 270° is West.

**The Flight Indicator**
A gyro stabilized artificial horizon indicating degree of turn from 0° to 90°.

**The Tachometers**
Two dials with two indicators on each dial to show the rpm of each engine. Do not run the engines at the maximum of 2500 rpm for long periods or they will overheat. Throttle back to 2300 rpm to cruise.

**The Manifold Pressure Gauges**
Two dials with two indicators on each dial to show the manifold pressure on air intakes to engines.

**The Fuel Pressure Gauges**
If fuel pressure falls due to damage, power will fail to the engine. Reducing revs may help.

**The Oil Pressure Gauges**
If oil pressure drops, the engine will overheat and may seize up. Throttle back immediately!

**The Fuel Quantity Gauge**
Your Flying Fortress carries enough fuel for all missions, unless the fuel tanks begin to leak as a result of damage. Reducing power to the engines will conserve fuel.
THE PILOT'S INSTRUMENT PANEL

Study the diagram of the Pilot's Instrument Panel. It's important that you are familiar with the location of all dials.
The Oxygen Flow Indicators
If the values fall on the flow indicators, you must drop to below 10,000 feet, where there is sufficient oxygen for the crew to survive without oxygen masks.

The Altimeter
This dial shows height above sea level. The long dial shows hundreds of feet and the shorter dial thousands of feet. The inset window shows tens of thousands of feet in figures. Always be aware of your flying height!

The Airspeed Indicator
This dial shows the speed of the aircraft through the air in Miles Per Hour from 0 to 500.

The Turn and Bank Indicator
The banking rate of the plane is indicated by the central dot moving away to the right or left.

The Landing Gear Indicator Lock
A visual indicator that the main Landing Gear has been raised or lowered. In event of damage you may have to operate the gear manually.

The Rate of Climb Indicator
A visual indication of climb/dive angle shown as hundreds of feet per minute. Pointer on 0 means level flight.

The Brake Light
Illuminated when the wheel brake is engaged.

The Tail Wheel Lock
A visual indicator that the Tail Landing Gear has been raised or lowered.

The Flap Position Indicator
Flaps are the trailing edge of the wings that when lowered, enable the aircraft to get extra lift at take off and slow down for landing.

The Cylinder Head and Oil Temperature Gauges
They will run a little hot if the engine is run at maximum RPMs or losing oil for any period of time. If they do, throttle back.
THE PILOT'S CONTROL COLUMN

A Joystick Controller is recommended for flying the B-17 but you may also fly it using a Keyboard Controller.

Ailerons are lateral control flaps at the rear of the airplane main wing tips. When raised or lowered, by moving the Control Column left/right, they will make the plane turn to the left or right.

Elevators are the horizontal portions of the tail. When pushed up/down by pushing the Control Column up/down, they will make the plane dive or climb.

Rudder left/right ▼ ▶

Rudder controls left/right will swing the nose of the plane left/right by moving the trailing edge vertical segment of the tail left/right.

THE FOUR ENGINES

The Flying Fortress is a large four-engined bomber and this simulation provides separate controls for each of the four engines. Engine number 1 is the left outboard engine from the Pilot's View followed by 2,3,4 in sequence.

All numeric keys are on the top row of the main computer keyboard.

<table>
<thead>
<tr>
<th>Key</th>
<th>Pneumatics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4</td>
<td>Increase power on individual engines 1-4</td>
</tr>
<tr>
<td>Shift /</td>
<td>Maximum power on engines 1-4</td>
</tr>
<tr>
<td>5 6 7 8</td>
<td>Decrease power on individual engines 1-4</td>
</tr>
<tr>
<td>Shift /</td>
<td>Minimum power on engines 1-4</td>
</tr>
<tr>
<td>+</td>
<td>Increase power on all engines</td>
</tr>
<tr>
<td>Shift /</td>
<td>Maximum power on all engines</td>
</tr>
<tr>
<td>-</td>
<td>Decrease power on all engines</td>
</tr>
<tr>
<td>Shift /</td>
<td>Minimum power on all engines</td>
</tr>
<tr>
<td>Ctrl /</td>
<td>Start/Stop (feather) engines 1-4</td>
</tr>
<tr>
<td>Alt /</td>
<td>Extinguish Fire on engines 1-4</td>
</tr>
</tbody>
</table>

10 TECHNICAL AND FLIGHT SUPPLEMENT
The Navigator

C Compartment / Crew Position View
E External View
T Map View
B Mission Briefing Details

Mouse, ↑↓→← Controller -point and click to set estimated position.

The Radio Operator and Intercom Systems

C Compartment / Crew Position View

Mouse, ↑↓→← Controller -point and click on various Icons/Messages.

The Crew

Viewing the Ten Crew Positions.

F1 Bombardier
F2 Navigator
F3 Pilot
F4 Co-Pilot
F5 Engineer/Top Turret Gunner
F6 Radio Operator
F7 Ball Turret Gunner
F8 Left Waist Gunner
F9 Right Waist Gunner
F10 Tail Gunner

The Gunners: Defending the B-17

Controller ↑↓→← /Joystick Move turret/gun

Shift Fine tracking on target

Joystick Button / Spacebar / Return Fire

U Unjam gun (manual control)

Bombay

Views (only accessible if crew man taken to compartment)

C A crew man's view of the bombs
E External view
W Return to bomb bay view
PC COMPATIBLE Y GUIDE

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CREW POSITION KEY:
- Navigator  ✧ Gunners
- Bombardier  ✭ Radio
- Pilot/Co-Pilot Operator

Keys marked with the above symbols will only work if player is in relevant crew position.

- Navigator
  Move Navigation Marker Over Map
  [Home] Key: Set Estimated Position
- Bombardier
  Bombsight Motor Tracking Speeds
  Plus [Shift] - Fine Tracking
- Pilot/Co-Pilot
  Control Column Simulation Elevators / Ailerons
- Gunners
  Move Turret / Gun ([Shift] - Fine Tracking)
- Radio Operator
  Choose Icon / Message
  ([Home] Key: Select Message)
**THE CONTROLLER**

The simulation can be controlled using a Joystick, or the Keyboard and, to a limited extent, a Mouse.

**THE SELECTOR**

The Joystick Fire Button, the Mouse Button or Cursor Keys for movement and for left/right buttons.

**AIRCRAFT SELECTION**

X Next Aircraft

Z Previous Aircraft

**GENERAL AIRCRAFT VIEWS**

3D views from current aircraft:

- Shift / F1 Forward View
- Shift / F2 Rear View
- Shift / F3 Left View
- Shift / F4 Right View
- Shift / F5 Up View
- Shift / F6 Down View

External views that depend on context. (From the aircraft, its targets, bombs, airbase control tower etc.):

- Shift / F7 Tactical View
- Shift / F8 Reverse Tactical View

External view from notional chase plane:

- Shift / F8 Chase View

External views from remote camera:

- Shift / F10 External View

Moving the remote camera:

- PgUp Pitch Up
- PgDn Pitch Down
- Ins Rotate Left
- Del Rotate Right

**Pad Key**

S Centers / Resets 3D Views

+ Zoom In

- Zoom Out

**GENERAL CONTROLS**

A Aircraft Status/Damage View

C Compartment View/Action View Toggle

F Instrument Panel View (Bombardier, Navigator and Pilot/Co-Pilot only)

W Window View (3D view through aircraft window)

E External View (3D view from remote camera)

M Toggle Manual/Computer Control

Alt / C Configuration Screen

Alt / A Accelerate Time

Alt / T Skip Time

Alt / D Adjust Detail Level (cycle through)

Alt / M Film Director Mode Toggle

Alt / P Pause Game/Resume Game

Ctrl / G Quit to DOS

Alt / S Sound Levels

Alt / B Hide Game

**PILOT/CO-PILOT**

Joystick, Control Column (elevator, ailerons)

< Rudder left/right

> View to the left (Cockpit View/Pilot’s Instrument Panel)

[ View to the right (Cockpit View/Pilot’s Instrument Panel)

1 2 3 4 Increase power on individual engines 1-4
Other Pilot Controls

G  Landing Gear Up/Down (starts motors)
F  Flaps Up/Down Toggle
B  Brakes On/Off
D  Bomb Bay Doors Open/Closed
   (starts motors)

Please note that any control that starts a motor will take time to function.

The Take Off

You will begin every mission in the pilot's seat under player control. Your Flying Fortress will be at its starting point on the airfield. Ahead of you, the two other B-17s in your 'V' will be preparing to take-off.

You must take-off, join the other two planes, and then assemble in a flight of 6 or 9 Fortresses (depending on the formation to be flown).

On your first mission, you may find it easier to watch while the computer takes control. To activate computer control, press the "M" key. Repress the "M" key to regain control. If you set the plane under computer control, you can jump around any of the views or screens to watch the take-off.

The following pages describe how to take-off manually.

Starting Engines

Start all four engines in the sequence Ctrl 1 2 3 4
Increase the Engine Throttle Controls 1 2 3 4
Release the Brake B
The B-17 will now begin to move.

Check that you can easily flip from Pilot's Instrument Panel to Window View to see flight information.
Taxiing and Steering

Steer the B-17 by using your Controller. Gentle left/right will produce a slow turn in the chosen direction.

Stay on the correct path. Do not stray onto the grass.

Steer the bomber carefully to the edge of the take off runway. Try to line up the B-17 along the white dotted line.

Flaps  Check that Flaps are Down [F].

Taking Off

Apply maximum power to all four engines [Shift] / [ ]. Do not try to pull the plane into the air. Normally, when you reach an Airspeed of 110-115 mph a gentle ‘pulling back’ on the Controller will allow the plane to lift itself off the ground. The B-17 controls may feel sluggish compared to other flight simulators, but remember that this is a big, heavy airplane.

After the airplane has left the ground, and you are sure that you have sufficient flying speed, raise the Landing Gear [G]. Check that this has happened with any appropriate Outside View, then change flaps Up [F].

After reaching an airspeed of 130-150 mph, adopt a normal climb attitude with the Rate of Climb Indicator pointer at 200 feet per minute and watch the Altimeter rise gently.

Climbing and Cruising

Make your climb at 130-150 mph. Steady smooth flying is important. This will cut fuel consumption, increase rate of climb and reduce engine wear. Always check your instruments. They are there to tell you how your plane is performing.

You will find the first two planes with which you must join up circling the airfield at about 1000 feet.

Form a group of 3 in a ‘v’ formation. You must then follow the group to join up with the other groups at about 2000 feet before flying off towards the target. Once cruising, throttle back to keep pace.
If you experience difficulty in finding the other planes, switch to computer control.

Once you have joined the other planes of your squadron in formation, the flight will strike out towards the first Waypoint. You are not the leader of the formation so if you choose to drop out of formation, for whatever reason, the others will not follow you.

**LANDINGS**

When you are near the English base, you will receive a signal over the intercom system giving you a heading to land on. The other planes in the formation, and yours if under computer control, will begin to move into their final traffic pattern (a flight path in which they circle the airfield in a rectangular pattern at approximately 1000 feet).

If you do not wish to land the plane manually, switch to computer control by pressing [M] and sit back and watch.

Your B-17 will be the first to land. The other planes will continue to circle until you have done so.

You should leave the rectangular formation to make your final approach. Lower your Flaps F and drop your Landing Gear G. Keep engine rpm's to 2000 at about 130 mph.

**Final Approach**

The approach is basically a controlled glide, with flaps down, and in which power is used to maintain an accurate landing position.

Reduce power gradually — until the desired airspeed (about 100-120 mph) and rate of descent have been established. Touch down gently trying to land all wheels on the runway at the same time. Drop to minimum throttle.

**Landing Roll**

When you have landed make sure you use the entire runway for the landing roll. Do not apply the brakes too early. Apply the brakes B when you see the plane slowing down from its roll. The B-17 should then slow down and stop.
Icon Summary

- Pilot’s/Co-Pilot’s Control Column Icon
- Navigation Icon
- Radio Operator Icon
- Bombardier Icon
- Gun position Icon
- Turret Repair Icon
- First Aid Icon
- All Crew Bail Out Icon
- Crew File Icon
- Fight Fire Icon
- Unjam Guns Icon
- Move Crewman Left Icon
- Move Crewman Right Icon
- Manually Lower Gear Icon
- Manually Raise Gear Icon
- Manually Open Bomb Bay Icon
- Manually Close Bomb Bay Icon
- Manually release bombs Icon
<table>
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<th>MOUSE</th>
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<tr>
<td>Release Bombs</td>
<td>Left Hand Button</td>
<td>Fire Button</td>
<td>Space Bar/Return/Enter</td>
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<td>Bombsight Tracking</td>
<td></td>
<td>Left/Right/Up/Down</td>
<td>Cursor Keys</td>
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<tr>
<td>Pilot/Co-Pilot</td>
<td></td>
<td>Left/Right/Up/Down</td>
<td>Cursor Keys</td>
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<td>Control Column</td>
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<td>Simulation</td>
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<tr>
<td>Gunners</td>
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<td>Left/Right/Up/Down</td>
<td>Cursor Keys</td>
</tr>
<tr>
<td>Move Turret/Gun</td>
<td></td>
<td>Left/Right/Up/Down</td>
<td>Space Bar/Return/Enter</td>
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<tr>
<td>Fire Guns</td>
<td></td>
<td>Fire Button</td>
<td></td>
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<tr>
<td>Navigator</td>
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<td>Move Navigation</td>
<td>Move Mouse Pointer</td>
<td>Left/Right/Up/Down</td>
<td>Cursor Keys</td>
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<td>Marker</td>
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<td>Fix Estimated</td>
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<tr>
<td>Position</td>
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<td>Radio Operator</td>
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<td></td>
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</tr>
<tr>
<td>Choose Icon/Message</td>
<td>Move Mouse Pointer</td>
<td>Left/Right/Up/Down</td>
<td>Cursor Keys</td>
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<td></td>
<td></td>
<td>Down</td>
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<tr>
<td>Select Icon/Transmit</td>
<td>Left-Hand Button</td>
<td>Move Pointer</td>
<td>Pad Home Key</td>
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<tr>
<td>Message</td>
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</tbody>
</table>
**TARGET APPENDIX**

Locations specified are the locations where the shots were taken, other targets of the same type are very similar.

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<thead>
<tr>
<th>VI/V2 ROCKET SITE - FRANCE</th>
<th>DRY DOCKS - NANTES</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="VI/V2 ROCKET SITE" /></td>
<td><img src="image" alt="DRY DOCKS - NANTES" /></td>
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</table>

<table>
<thead>
<tr>
<th>OIL REFINERY - ASCHAFFENBURG</th>
<th>FACTORY COMPLEX - BERLIN</th>
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<tbody>
<tr>
<td><img src="image" alt="OIL REFINERY - ASCHAFFENBURG" /></td>
<td><img src="image" alt="FACTORY COMPLEX - BERLIN" /></td>
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<table>
<thead>
<tr>
<th>ARMY DEPOT - AACHEN</th>
<th>FACTORY COMPLEX - AUGSBURG</th>
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<td><img src="image" alt="ARMY DEPOT - AACHEN" /></td>
<td><img src="image" alt="FACTORY COMPLEX - AUGSBURG" /></td>
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<thead>
<tr>
<th>DRY DOCKS - CUXHAVEN</th>
<th>FACTORY COMPLEX - EINDHOVEN</th>
</tr>
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<tbody>
<tr>
<td><img src="image" alt="DRY DOCKS - CUXHAVEN" /></td>
<td><img src="image" alt="FACTORY COMPLEX - EINDHOVEN" /></td>
</tr>
</tbody>
</table>
RAILYARD - ABBEYVILLE

SHIPYARD - BREMEN

S.S. HEADQUARTERS - BERLIN

VI ROCKET SITE - CHERBOURG

S.S. HEADQUARTERS - LEIPZIG

STEELWORKS - BOCHUM

22 TECHNICAL AND FLIGHT SUPPLEMENT
MicroProse Customer Service is ready to help with software difficulties. If possible, please be in front of your computer and have a paper and pencil handy when calling.

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Monday-Friday 9am to 5pm Eastern Time

ON-LINE SUPPORT: MicroProse maintains a bulletin board service (MPS * BBS) for modem users. The phone line is (410) 785-1841, with settings of 8,N,1 and speeds up to 9600 baud. You can post messages and questions here, or get demos and updates, 24 hours a day, 7 days a week.

Modem users can also use various on-line services for technical support, updates and general information. As of spring 1992, this includes America Online, CompuServe, Delphi, GEnie, Internet, MCI Mail, PC-Link, Prodigy, Promenade, and Q-Link.
# MODEM ON-LINE SERVICE


**COMPUSERVE**: Game Publishers Forum, "Go GAMPUB", Address: 76004,2223.

**DELPHI**: GameSig, Address: MicroProse

**GENIE**: Scorpia RT, Keyword: "Scorpia", Address: MicroProse.

**INTERNET**: Address: 76004,2223@CompuServe.Com.

**MCI MAIL**: Address: MicroProse.


**PRODIGY**: Computer Club: Other Games, Keyword: "MicroProse", Address: XHFK15D.


**Q-LINK**: Computer Forum, MicroProse Section, Address: MPSLabs.