

BIG BOX

30 MEGA GAMES

**INSTRUCTIONS FOR
SPECTRUM 48/128K/+
AMSTRAD CPC
COMMODORE 64/128**

ENGLISH

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LOADING

SPECTRUM 48/128K/+

Type LOAD "" and ENTER. Then start the tape.

AMSTRAD CPC

Cassette:

CASSETTE BASED COMPUTER (ie CPC-464)

– Press 'CTRL' and the small 'ENTER' keys simultaneously.

DISC BASED COMPUTER WITH ADDITIONAL

CASSETTE PLAYER (ie CPC-6128)

– Type ! TAPE and press 'RETURN' then press 'CTRL' and the small 'ENTER' keys simultaneously.

Disk:

Please see disk label.

COMMODORE 64/128

Cassette:

Press 'SHIFT' and 'RUN/STOP' keys simultaneously and press 'PLAY' on your cassette recorder.

Disk:

Please see disk label.

Please ignore instructions which appear on screen during the games which ask you to turn over the tape.

The crew have set-up the Mobile Tactical Operations Bay (MTOB) in the Armoured Personnel Carrier, just outside the colony base. You will remain here and direct the other crew members around the base using the MTOB to monitor their progress. Technical specs. of the MTOB follow:

1. **Video Screen.** Receives signal from portable video camera strapped to the helmet of the selected crew member. Display may be moved left or right by moving Smart Gun sights. Enables you to see in real time what the selected crew member is experiencing.
2. **Smart Gun Sights.** May be moved left, right, up or down. Each crew member has 1 Smart Gun, which is a computer aimed, video targetted automatic weapon. Ideal for blasting any bio-mechanical growth, locks, doors or other objects you may encounter as you explore the base. Use Smart Gun cautiously, as each crew member only carries a limited amount of ammunition for their Smart Gun.
3. **Selected Crew Member Portrait.** The name of the selected crew member is displayed above their portrait.
4. **Bio-Functions Trace.** Mechanism that plots the critical health status of the selected crew member – including heart rate, breathing etc.
5. **Ammunition Level.** The amount of ammunition being carried by the selected crew member. This may be automatically tapped up by entering the Armoury room.
6. **Personnel I.D.** Name of a crew member that you may select.
7. **Room Number.** The location within the base of this crew member. If there is no number, the crew member is dead and has become an Alien!

8. **Bio-Monitor Bar.** Linked to the Bio-Function Trace, the monitor serves two functions:

- 1) **Life Status:** A Green bar indicates a healthy crew member. A Yellow bar indicates a crew member that has been captured by the Aliens and is being impregnated. A Purple or Pink bar indicates that the selected crew member has been impregnated by the Aliens, and can no longer be saved. No bar indicates that this crew member is dead, and has become an Alien!
- 2) **Stamina:** Every move tires the crew member, and this bar will reduce in size accordingly. Rest restores the stamina. If the bar begins to flash, this crew member is almost exhausted – select a different crew member in order that this one may rest. An exhausted crew member cannot respond to your commands.

9. **Credit Points:** The bonus you will be paid by the Company if your mission is successful. Aim to get this as high as possible.

STARTING THE MISSION:

Firstly, you will need to activate the MTOB. (Spectrum users press the 0 key, Amstrad users press the SHIFT key). When the MTOB is activated, you will see that the crew members have already blasted their way into the base, at room 1. If you direct the crew members outside the base from now on, they will be unable to breathe, so it's not a good idea!

Spectrum users can now select the control method they require – keyboard or joystick – by pressing the C key, and selecting accordingly.

Amstrad users can play by either keyboard or joystick at any time during the game.

COMMANDING THE CREW MEMBERS:

Selecting a Crew Member

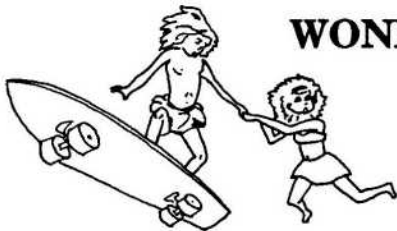
RIPLEY.....	R
GORMAN.....	G
HICKS.....	H
BISHOP.....	I
VASQUEZ.....	V
BURKE.....	B

Directing

The selected crew member can be told to move up to 9 rooms at once in a given direction. To do this, *type any number from 1 to 9, then immediately type a direction – key N (North), S (South), E (East), W (West).* Now select a different crew member. This member will now move as instructed. Note that if the crew member reaches a dead end, a locked door, acid blood or gets exhausted then they will stop.

You may also move a crew member through rooms by aiming the Smart Guns Sights over the door, then pressing the **SPACE BAR**.

WONDER BOY



Smart Gun control

Control the Smart Gun as follows:

Action	Spectrum
-----	-----
	Key

Gun UP	: Cursor UP (7)	:
Gun DOWN	: Cursor DOWN (6)	:
Gun LEFT	: Cursor LEFT (5)	:
Gun RIGHT	: Cursor RIGHT (8)	:
FIRE Gun	: 0 (number key)	:

Amstrad CPC	Joystick
-----	-----
Key	

UP Arrow	:	Push Forward
DOWN Arrow	:	Pull Back
LEFT Arrow	:	Push Left
RIGHT Arrow	:	Push Right
SHIFT	:	Fire Button

Pause Game

To pause the game at any time, press the *P* key. Blast shutters will now cover the Video Screen of the MTOB. The total number of Aliens you have destroyed will be displayed now, together with the Alien Attack Wave number. To restart the game, press the *P* key twice.

Suicide Key/Restart Game

If the pressure gets to much, press *M* key.

STARTING THE MISSION:

COMMODORE 64

Firstly, you will need to activate the MTOB. Press the FIRE BUTTON on your joystick.

CONTROLS Commodore 64

F1	- ONE PLAYER GAME	X	- RIGHT
F3	- TWO PLAYER GAME	=	- JUMP
F5	- TOGGLE MUSIC ON/OFF	SPACE	- RUN FASTER/JUMP HIGHER/THROW AXE
F7	- PAUSE		
Z	- LEFT		

CONTROLS Spectrum

1	- ONE PLAYER GAME
2	- TWO PLAYER GAME
ENTER	- PAUSE
0	- LEFT
P	- RIGHT
Q	- JUMP

Any key on the bottom row of keyboard - run faster/jump higher/throw axe.

SYMBOL SHIFT and BREAK - Reset the game.

The program automatically scans for Sinclair and Kempston joysticks.

CONTROLS AMSTRAD/SCHNEIDER

Action:	Keyboard:	Joystick:
1 PLAYER GAME	1	
2 PLAYER GAME	2	
PAUSE GAME	ESC	
MUSIC ON/OFF	DEL	
JUMP	Q or J	JOYSTICK UP
RUN RIGHT	[or X	JOYSTICK RIGHT
RUN LEFT	@ or Z	JOYSTICK LEFT
THROW STONE/AXE	SPACE BAR or SHIFT	JOYSTICK BUTTON
RUN FASTER	SPACE BAR or SHIFT	JOYSTICK BUTTON
HIGH JUMP	SPACE BAR or SHIFT	JOYSTICK BUTTON

ISS

INCREDIBLE • SHRINKING • SPHERE

CONTROLS

COMMODORE 64

The game uses either joystick or keyboard for fighter sphere control, the joystick plugs into port 2 (rear port) the direction of the joystick movement can be selected as normal North or Isometric North according to preference. (See below).

KEYBOARD

PAUSE RUN/STOP (Move joystick or hit keys to restart)
QUIT RUN/STOP when press "Q"
F1/F7 Change Joystick Directional Control
(Arrow on title screen shows Joystick NORTH)

As an alternative to the Joystick the following keys may be used:

FIRE RETURN (Also used for placing ammo dumps)
NORTH ;
SOUTH /
WEST X
EAST C

The SPACE BAR is used to EXIT from the PLACE AMMO DUMPS screen.

SPECTRUM/AMSTRAD CPC

The game uses either joystick or keyboard for fighter sphere control, the joystick on the Spectrum can be either Sinclair 1 or Kempston. (See below).

KEYBOARD

On Title Screen press SPACE BAR to START.

Joystick Selected with "J" = SINCLAIR (Spectrum Only)
"K" = KEMPSTON (Spectrum Only)

PAUSE P
QUIT Q (When the game is already paused)
FIRE ENTER/RETURN (Also used to place ammo dumps)
NORTH K
SOUTH M
WEST Z
EAST X

SPACE BAR used to go through the plates for ammo dump placement and the "S" Key is used to start the game.

ATARI ST AND AMIGA

JOYSTICK AND TV OR COLOUR MONITOR REQUIRED.

The game uses JOYSTICK ONLY for fighter sphere control, the joystick plugs into port 2. The direction of the joystick movement can be selected as normal North or Isometric North according to preference. This option is only given on first loading of the game.

KEYBOARD

PAUSE F10 (Toggle pause on Atari ST)
UNPAUSE F9 (Amiga only)
QUIT Escape Key
SPACE BAR Exit Ammo Dump Placement Screen

HOW TO PLAY – NO FRILLS!

For those who don't like reading long instructions before playing!

PLACING AMMUNITION DUMPS

At the beginning of the game, or on reaching a new level, the player has the option of placing ammo dumps almost anywhere within the current level.

There are four PLATE maps to each level, you can install up to 4 ammunition dumps on EMPTY tiles throughout the level.

1. Move Joystick UP/DOWN to CHOOSE PLATE and press FIRE or use the keyboard as mentioned.
2. A cursor appears over the mini map for that PLATE. Move cursor to required position over an unoccupied tile and press FIRE to place AMMO DUMPS. The letter "A" will appear on the map if you have chosen an allowable tile. (Amiga and ST has the option of deleting a dump by pressing fire over a placed dump).
3. Place cursor on any SIDE EDGE of the PLATE MAP and press FIRE to return to the CHOOSE PLATE option.
4. PRESS SPACE to EXIT into DEATH RUN at any time.



GHOSTBUSTERS FRANCHISE

To begin your Ghostbusters franchise, you will need to go through a series of screens selecting the equipment for the franchise. When you leave the title screen by pressing **F1** or **F3**, you will enter the first franchise selection screen. The computer will print out a message in English, when it first stops, you should enter your name, last name first, and press **RETURN**. The computer will then ask you in English if you have an account.

If you have an account:

Enter the letter **Y**, and press **RETURN**. At this point the computer will ask you what your account number is, and you should enter that number. The computer will then go on to the vehicle selection screen, and the amount you have in your account will be displayed in white numbers on the screen.

If you do not have an account:

Enter the letter **N** and press **RETURN**. At this point the computer gives you \$10,000 as a start-up account, and you proceed to the vehicle selection screen.

GHOSTBUSTING VEHICLE SELECTION

You now are presented with the option of four different vehicles to use during the game. You may either view any of the cars by pressing the space bar on your C64, pressing the number of the car you wish to view, and pressing **RETURN**; or you may purchase any of the cars simply by pressing the number of the car you choose, and pressing **RETURN**.

The four cars which are available are as follows:

1. The compact, with a cost of \$2,000, carries 5 items of cargo and has a top speed of 75 miles per hour.
2. The 1963 hearse costs \$4,800, carries 9 items of cargo, and has a top speed of 90 miles per hour.
3. The station wagon costs \$6,000, carries 11 items of cargo, and has a top speed of 110 miles per hour.
4. The high performance car costs \$15,000, carries 7 items of cargo, and has a top speed of 160 miles per hour.

When you have decided which car you want, and have purchased it, you will move on to the equipment selection screens.

- **GHOST VACUUM** sucks up itinerant ghouls (called "Roamers") as you travel the streets of the city.
- **GHOST TRAPS** are what you use to catch and store Slimer. Each trap holds one Slimer. Without them, you cannot earn money.
- **GHOST BAIT** attracts Roamers, which periodically gather to form the Marshmallow Man. Without **BAIT**, you cannot stop him. (See **IMPORTANT SAFETY TIPS** below.) You get five dollars of bait when purchased.
- **PORTABLE LASER CONFINEMENT SYSTEM** stores ten Slimers in your vehicle. Saves travel time back to GHQ for more traps.

MAP SCREEN

A map of the city appears, with Zuul's horrible temple in the center and GHQ at the bottom. Red flashing buildings indicate the presence of a Slimer.

- Guide your vehicle to red flashing buildings leaving as short a trail as possible to reach building. As you do this, freeze any Roamers that are moving to Zuul by touching them.
- To position yourself at buildings directly above the street, push the button. To position yourself at buildings below the street, pull back Joystick and push the button.

THE STREETS

Steer the vehicle at passing Roamers (if you have frozen any) and push the button to vacuum them up. This keeps them from getting to the Temple of Zuul. The city's PK energy reading jumps 100 for each Roamer that gets to Zuul.

BUSTING GHOSTS

When you arrive at the site of the disturbance, take the following steps with the Joystick:

- Direct the first Ghostbuster toward the center of the building and push the button to deposit the trap. Then move him to the far left of the screen, turn him towards the trap, and push the button again.
- The second Ghostbuster appears. Direct him to the far right of the screen, turn him towards the trap, and push the button. Both Ghostbusters will power on their negative ionizer backpacks.
- Move your Ghostbusters inward to trap the Slimer between the streams. But do not—repeat, **DO NOT**—cross the streams.
- When you have the Slimer over the trap, push the button. The trap will pull him in. (Be precise. If you miss, you know what will happen.)

EQUIPMENT SELECTION SCREENS

Screen 1: Monitoring Equipment

In this screen, you can purchase the PK energy detector, image intensifier, and marshmallow sensor. The amount of money you have remaining, after purchasing your car, is displayed in the upper right corner of the screen in white numbers. Each of the items on this screen has a cost displayed in the right-hand column; as you purchase items, the cost of these items will be deducted from the amount of money you had remaining.

Use the joystick to control the forklift and place the items you want in your car. To move on to the next equipment screen, type the number **2**.

Screen 2: Capture Equipment

The items which can be purchased from this screen are Ghost bait, Traps, and the Ghost vacuum. Note that traps are required, so you must purchase at least one trap. The procedure for purchasing items from this screen is the same as for the monitoring equipment screen. To move on to the final equipment screen, type the number **3**, and press **RETURN**.

Screen 3: Storage Equipment

On this screen you can purchase the portable laser confinement system at a cost of \$8,000. (Be sure you have enough cash remaining in order to buy it!)

When you have purchased all the items you want for your franchise, type **E** and you will go to the city map portion of the game.

BUILDING A FRANCHISE

Follow instructions on the screen to buy and outfit your vehicle, to pick up and release supplies with the forklift, press the Joystick button. Keep an eye on credit available (upper right corner).

- **PK ENERGY DETECTOR** warns of an approaching ghost, called a "Slimer," by turning a building pink when you pass it.
- **IMAGE INTENSIFIER** makes Slimers easier to see when you are trying to catch them.
- **MARSHMALLOW SENSOR** warns you of the impending approach of the dreaded Marshmallow Man by turning a building white when you're by it.

IMPORTANT SAFETY TIPS

- Hit the **SPACE BAR** during the game for a status report.
- Every escaped Slimer adds 300 to the city's PK energy level.
- Beware that monolith of marshmallow monstrosity. When a **MARSHMALLOW ALERT** flashes at the bottom of the screen, the Roamers will quickly run to form him. You must immediately hit the "B" key on the keyboard to drop a dollop of bait before he stomps any buildings.

END OF GAME: THE TEMPLE OF ZUUL

The game ends one of three ways:

1. The Gatekeeper and Keymaster join forces at the Temple of Zuul and you have **not** earned more money than you originally started with.
2. Once the Gatekeeper and Keymaster have joined forces at Zuul, and you **do** have sufficient credit, you are not able to sneak two of your three Ghostbusters into the entrance of Zuul.
3. You successfully reach the top of the Temple of Zuul by sneaking two Ghostbusters into its entrance.

GHOSTBUSTERS

CONTROLS (Amstrad)

Joystick or the cursor keys, COPY to fire.

(Spectrum)

H toggles pause

To return to Controller menu press SYMBOL SHIFT and ENTER.

Press SPACE for a status report.

Spindizzy

INSTRUCTIONS

CONTROLS

Use the joystick to control GERALD; pressing the fire button gives extra speed.

Alternatively, use the numeric keyboard:

F1 F2 F3 F4 F5 F6 F7 F8 F9

Use the SHIFT KEY for extra speed.

Pressing the SPACE BAR will stop your craft on any frictional surface.

MAP

Press "M" to display the map. Unexplored areas are marked in red. Visited areas in yellow. Any area where a jewel was seen but not collected is marked with a blue "J".

Press "ESC" to return to the game.

SCORE

Press "S" to display your current score at any time during the game.

VIEWPOINT

The cursor arrow keys will alter your viewpoint. The compass in the lower right hand corner of the screen points North at all times to help with orientation.

ABORT MISSION

Hold the SPACE BAR down until your time runs out.

COLOUR

Press "C" to toggle between colour and monochrome display mode.

PAUSE

Press "P" to pause the game. Whilst paused the border will flash. Any other key will restart the game.

EYE STRAIN

Press "I" to alter GERALD'S shape.

CREDITS

Pressing "ESC" from the title page will display the credit message.

STATUS DISPLAY

On the left hand side of the screen, the time left to play, the areas left to visit and the number of jewels collected are displayed.

The box at the bottom shows you which switches are activated.

HINTS

Due east of the starting screen is a beginners section. In this area are simple demonstrations of some playing techniques. Time will run slowly in this section allowing you time to experiment.

Some screens will give a clue as to a switch to activate. This will cause some features to appear or disappear. Occasionally two switches may need to be used together. The clue appears in the bottom left hand corner of the screen.

Lifts may be used but may need to be switched on. Ice is slippery and trampolines are bouncy! Make a map; it will help you to find short-cuts (there are quite a few).

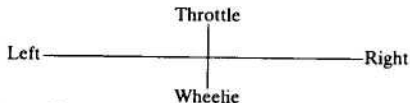
ENOURORACER

CONTROLS: COMMODORE 64

KEY	EFFECT
A	Increase Throttle
Z	Pull a Wheelie
.	Turn Left
,	Turn Right
Space Key	Apply Brakes

H Run/Stop	Pause Game
R F7	Reset Game

If you are using a Joystick then the controls are:



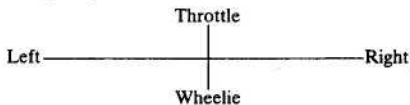
Fire Button: Brakes.

CONTROLS: AMSTRAD/SCHNEIDER SPECTRUM

KEY	EFFECT
Q	Increase Throttle
A	Pull a Wheelie
O	Turn Left
P	Turn Right
Space Key	Apply Brakes

H	Pause Game
R	Reset Game

If you are using a Joystick then the controls are:



RAMPAGE

GAME DETAILS

Up to three people can play, each controlling a different monster. In a desperate battle for survival, you climb the skyscrapers and smash the walls with your fists, searching for edibles - anything from goldfish bowls to the occasional tasty human - that appear behind the shattered windows. Grabbing inedibles such as toasters, TVs, and potted cacti will inflict some damage on you, though. Each player's stamina is indicated by the energy bars at the top of the screen.

Damaged buildings will eventually collapse into rubble, but leap off when the foundations start to give way - getting trapped in the falling masonry will weaken you. The nation's military might is also bent on your destruction, so try to avoid (or punch) the troops who fire from the windows, and the gunship helicopters that are constantly circling overhead. You can also punch - and be punched by - your fellow monsters.

GAME CONTROLS

Players with joysticks use the four stick directions and the fire button to control their monster. See the table below for the keyboard equivalents. LEFT and RIGHT cause the monster to walk along the street, or across the top of buildings. UP and DOWN are used to climb up and down the sides of buildings. Pressing FIRE on its own makes the monster jump. Pressing FIRE while pressing a direction key, then FIRE, throws a punch or makes a grab in the chosen direction. All versions are designed for three players.

Commodore Users: One on keyboard, two on joysticks.

Spectrum Users: Any combination of keyboard and/or joystick.

Amstrad Users: One on joystick, two on keyboards.

LEFT	RIGHT	UP	DOWN	FIRE
------	-------	----	------	------

COMMODORE 64/128

1 PLAYER

<	?	@	:	=
---	---	---	---	---

SPECTRUM

PLAYER 1

Q	W	O	K	P
---	---	---	---	---

PLAYER 2

DEFINABLE

PLAYER 3

DEFINABLE

AMSTRAD

1 PLAYER

C	V	A	Z	COPY
---	---	---	---	------

2 PLAYER

←	→	↑	↓	SMALL
---	---	---	---	-------

(These are the CURSOR KEYS)

ENTER
KEY

GALACTIC GAMES

OPTIONS

EVENT SELECTION

When the preliminary program has loaded, players leave the title screen and open the Games by pressing any key. The opening ceremony involves the lighting of the Galactic Games Flame by a plasma bomb, ferried by warp cruiser to the host planet from the legendary site of the first Games.

Galactic Games™ is a multitload program - there are five different events, and an option of entering the Galactic Games Championship in which the player enters all events.

Cassette users should first reset their tape counters to zero at the start of the cassette; then play the five events in order, noting down the counter readings at the start of each program segment in the boxes provided below. On subsequent occasions you will be able to rewind or fast-forward to any required event.

TAPE START	0000
100m SLITHER	
SPACE HOCKEY	
PSYCHIC JUDO	
HEAD THROWING	
METAMORPH MARATHON	

Disk users will be prompted if it is necessary to turn the disk over.

NUMBER OF PLAYERS

Events 1-4 can be played either head-to-head against another player, or against a computer-controlled opponent. Event 5 is a one-player game.

In games 1-3, the computer takes control if it detects that the same FIRE control has been pressed in response to both 'PLAYER READY?' questions.

In game 4, the computer takes control if, when player 2 is asked to press FIRE, you do nothing.

GAME CONTROLS

Throughout the instructions, the controls are referred to as UP, DOWN, LEFT, RIGHT, FIRE and QUIT. For joysticks, the first five controls are self-explanatory. For keyboard equivalents and the key used for QUIT, Consult the tables below.

	UP	DOWN	LEFT	RIGHT	FIRE	QUIT
SPECTRUM						
Cursor	6 or 0	7 or 0	5 or 2	8 or 1	0	
Player 1 keys	Q	A	Z	X	C	T
Player 2 keys	O	K	B	N	P	
AMSTRAD CPC	N.B: Space/Fire to select 1/2 Player on Amstrad					
Player 1 keys	JOYSTICK					
Player 2 keys	J	/	X	Z	SPACE	ESC
COMMODORE 64/128						
Player 2 Keys	(n)	:	K	H	↑	RUN STOP

QUITTING AN EVENT

Players may end an event at any time by pressing the QUIT key. An on-screen prompt then offers the choice of continuing with a new game in the current event, or returning to the event selection menu.

1. 100m SLITHER

Players control specially-bred racing worms, which move by bunching up the central body and then sliding forward (similar to the motion of a caterpillar). A single movement cycle begins by pressing DOWN, which locks the head and bunches the body, drawing the tail forward. Pressing UP now extends the body so flat and causes the worm to slide forward. Repeating this action at speed drives the worm forward along the track, although for maximum speed you must find the right rhythm for the up and down strokes. Press DOWN and then RIGHT for a 'super-slither'.

To lubricate its passage along the ground, the worm exudes slime from a gland when FIRE is pressed. If the slime gland runs dry, the worm will start to overheat. Unless the player slows down to allow the gland to recharge, the excessive friction will eventually make the worm burst into flames. The slime level and temperature of the two worms are displayed on meters at the top of the screen.

2. SPACE HOCKEY

Player control is simply by means of the UP, DOWN, LEFT and RIGHT controls, with FIRE acting as a brake. The brake is essential for players to retain control because, being spheres themselves, the players will rebound from the puck, and each other, on impact.

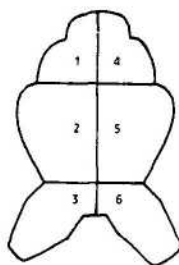
3. PSYCHIC JUDO

The left-hand window of the split-screen shows Player 1's view of Player 2, while the right-hand window shows Player 2's view of Player 1. The two players, whose over-developed brains are located in their stomachs, belch bolts of psychic energy at each other and defend themselves with mental shields.

To attack, press FIRE to transfer psychic energy from your reserve (upper bar) to your bolt (lower bar). When the bolt is at the required strength, release FIRE to launch the bolt. You will see it travel away from you, and towards your opponent. Steer the bolt using LEFT, RIGHT, UP and DOWN, trying to avoid any shields your opponent may have erected.

There can only be one psychic bolt travelling at a time, so if your opponent gets his attack in first, you are forced into defensive mode. Here, you control the erection of mental shields in front of selected areas of your body in an attempt to catch the on-coming bolt. The larger the shield and the longer you hold it, the more energy is drained from your reserves - however, if you catch the bolt a portion of its energy is transferred to your reserves. The joystick controls the erection of shields as follows:

1	UP and LEFT
2	LEFT
3	DOWN and LEFT
4	UP and RIGHT
5	RIGHT
6	DOWN and RIGHT
1+4	FIRE and UP
2+5	FIRE
3+6	FIRE and DOWN
1+2+3	FIRE and LEFT
4+5+6	FIRE and RIGHT



During defence, the drain on the psychic energy reserve depends on the size of shield and the time for which it is held. You can alter the shield pattern during the flight of the bolt if the attacker uses evasive manoeuvres.

The shield appears as a dark area over the selected area of the body. If the bolt hits the shield, the shield flickers and the energy reserve increases; if it hits the unprotected areas, the player flickers, and energy is lost.

4. HEAD THROWING

The participants in this event have detachable heads: the object is for players to throw their own heads as far as possible down the field. The throw has several stages.

First the combined head and body make a run up to the throwing line, by alternately pressing the LEFT and RIGHT controls - the faster the 'waggle', the faster the Hruntan runs. The speed is displayed by a moving bar in the left-hand box at the top of the screen.

Just before crossing the line, the players must press and hold FIRE. This freezes the action, while the second display box shows the head rotating up from the horizontal to the vertical. This is the angle at which the head will be thrown when FIRE is released: for maximum distance, you should get it as close to 45 degrees as possible.

When you release FIRE, the head is thrown and the second box now displays the length of throw. Once the head straightens out into level flight, some extra distance can be gained by pressing UP and DOWN alternately - this waggles the ears to generate lift.

Finally, the throw only counts if the nose sticks in the ground on impact, so before landing, the player must press FIRE again to make the head rotate. Pressing FIRE too early means the head will topple right over; too late, and the head will not tip enough to stick in and be counted.

5. METAMORPH MARATHON

In this event, the player has to negotiate an obstacle course against the clock. The creature tackling the marathon is a Metamorph, capable of altering its body shape to suit the terrain. The player must decide which form is most appropriate to the current section of the course.

At the top of the screen are five displays, which have the following functions:

The box at top left is the speed/power meter and indicator, either the speed (when running) or power (when attacking).

2. SPACE HOCKEY

Player CONTROL is simply by means of the UP, DOWN, LEFT and RIGHT controls, with FIRE acting as a brake. The brake is essential for players to retain control because, being spheres themselves, the players will rebound from the puck, and each other, on impact.

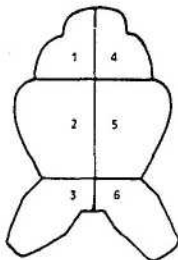
3. PSYCHIC JUDO

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3	DOWN and LEFT
4	UP and RIGHT
5	RIGHT
6	DOWN and RIGHT
1+4	FIRE and UP
2+5	FIRE
3+6	FIRE and DOWN
1+2+3	FIRE and LEFT
4+5+6	FIRE and RIGHT



During defence, the drain on the psychic energy reserve depends on the size of shield and the time for which it is held. You can alter the shield pattern during the flight of the bolt if the attacker uses evasive manoeuvres.

The shield appears as a dark area over the selected area of the body. If the bolt hits the shield, the shield flickers and the energy reserve increases; if it hits the unprotected areas, the player flickers, and energy is lost.

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In this event, the player has to negotiate an obstacle course against the clock. The creature tackling the marathon is a Metamorph, capable of altering its body shape to suit the terrain. The player must decide which form is most appropriate to the current section of the course.

At the top of the screen are five displays, which have the following functions:

The box at top left is the speed/power meter and indicates either the speed (when running or flying) or the stored jump energy (for jumping). The box below it shows how much of the course the player has covered so far.

The third box displays four red bars which represent the total energy left. Movement and heavy impacts cause more rapid energy loss, finding power pills restores energy. The marathon ends if the metamorph runs out of energy.

The fourth box displays the elapsed time in minutes and seconds, while the final box displays the active control keys for the currently selected body shape.

The metamorph has five forms available, as follows:

REST STATE

At the start of the marathon, the metamorph is in its rest state, depicted as a pulsing blob of unstable cells. Pressing LEFT, RIGHT, UP and DOWN while in the rest state will transform the metamorph into one of its four mobile forms. Conversely, while in one of the mobile forms, the rest state may be achieved by pressing FIRE. To convert from one mobile form to another the metamorph must first return to the rest state.

RUNNER

This form is acquired by pressing RIGHT. The metamorph sprouts legs and will run towards the right if the LEFT and RIGHT controls are pressed alternately. The metamorph's speed depends on the rate of 'waggle'. This form can only travel over level ground. Hitting a wall at speed costs energy.

BURROWER

This form is acquired by pressing LEFT. The metamorph converts to a smooth, streamlined bell-shape which can pass horizontally through certain obstacles (to the right only). This movement continues as long as the UP control is pressed. The burrower can also move over level ground but at an increased energy drain.

JUMPER

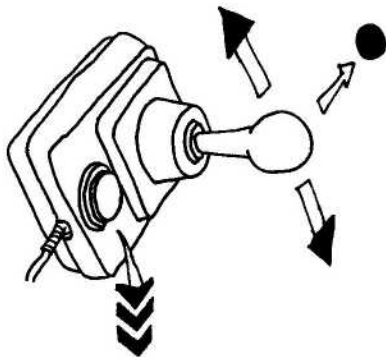
This form is acquired by pressing DOWN. The metamorph grows a spring-like piston, enabling it to jump to great heights (falling a great distance in any form other than the jumper will cause excessive energy loss on impact). Pressing DOWN tensions the spring (the time that DOWN is held determines the strength of jump, as indicated on the speed/power meter).

Also, simultaneously holding either the LEFT or RIGHT control stores a left or right bias to the jump. When the controls are released and the metamorph is on the ground then the piston is triggered, causing the metamorph to jump straight up, to the left or to the right. A series of consecutive bounces can build up the jumping height.

FLYER

This form is acquired by pressing UP. The metamorph sprouts helicopter blades which allow it to fly either vertically, or diagonally up and to the right. The blades are spun up to speed by pressing LEFT and RIGHT alternately - the speed/power meter indicates the flying speed.

Once the metamorph lifts off, the player can either continue 'wagging' to rise vertically, or pressing UP (without wagging) to fly across the course at the speed stored during the 'waggle' phase. Releasing the controls causes the flyer to lose its aerial verocity and drop from the sky until it lands, or you 'waggle' back up to flying velocity again.



SEE GAME FOR KEYBOARD CONTROL



KARNOV

ICONS AND HOW TO USE THEM

There are 11 items to be collected:

- K's:** 50 of these are needed to gain an extra life
- Apples:** These will give you much needed extra fire power.
- The remaining nine items are icons that may be collected and saved for use later in the game. When collected, they will appear in windows at the bottom of the screen. The first five icons in the inventory will highlight alternately as you move Karnov left or right. If you wish to select a specific icon you must adjust Karnov's position on screen until the one you want is highlighted. Then press the 'Y' key (all versions).
- Boots:** These double Karnov's jumping power and help him run faster.
- Bombs:** Don't just use them to destroy Ryu's Monsters! These can also be used to destroy obstacles, like walls. They can also be stockpiled - but don't stand too close when you use one. You could blow yourself up!
- Ladders:** Use these to collect 'out of reach' icons.
- Boomerangs:** These give Karnov extra attacking power. Jump up to catch it so you can use it again!
- Flames:** These give Karnov superior firepower for a limited time. The last four icons will become available to you at the appropriate time.

They are as follows:

- Wings:** for flying!!!
- Swimming**
- Helmet:** Allows you to swim faster.
- Mask of Perception:** This will flash when invisible icons are on screen. Pressing 'Y' will make them visible.
- Trolley:** Use this for downhill travel. It kills all monsters in its path.

Remember many items will be out of view, so explore your surrounding and choose your route with great care, because now you are on your own.

QUICK CONTROL GUIDE

- Spectrum, Spectrum +, Spectrum 128, Spectrum +2, Spectrum +3.
Jump/Climb Up = Q
Down/Climb Down - A
Left - O
Right - P
Fire - Space
Use selected icon - Y
Pause - Enter
Reset Game - Symbol Shift # & Break
Or Kempston Joystick.
Sinclair Joystick also works on +2.
- Commodore 64/128
Jump/Climb Up ;
Down/Climb Down -/
Left - Z
Right - X
Use selected icon -Y
Pause - RUN/STOP
Reset Game - RUN/STOP & RESTORE
Fire - Space
Or Joystick, Port 2.
- Amstrad CPC 464/664/6128
Jump/Climb Up -Q
Down/Climb Down -A
Left -O
Right -P
Fire -Space or Copy
Use selected icon -Y
Pause -Esc
Reset Game -Shift & Ctrl & Esc
Or joystick 1, or Cursor Keys.

SUPER HANGON™

<i>Bike Control</i>	<i>Keyboard Key</i> <i>Spectrum Amstrad</i>	<i>Joystick</i>
Accelerate	Q to R	Q Joystick FORWARD
Brake	A to F	A Joystick BACKWARD
Turn LEFT	I or O	O Joystick LEFT
Turn RIGHT	P	P Joystick RIGHT
Turbo	ANY OF BOTTOM ROW SPACE	FIRE BUTTON
Game Functions	Spectrum Amstrad	Commodore 64
Pause	H	ESC
Continue	ANY KEY EXCEPT A	ENTER
Restart	PRESS H THEN A	PRESS ESC THEN CLR

REAL GHOSTBUSTERS

CONTROL KEYS (Amstrad and Spectrum versions)

	AMSTRAD		SPECTRUM	
	Player 1	Player 2	Player 1	Player 2
UP		Q	Q	P
DOWN		A	A	L
LEFT	-	Z	Z	N
RIGHT	-	X	X	M
GUN	C	(decimal point on keypad)	D	H
PAUSE	ESC		ENTER	

Control of Atari ST, Amiga and C64 versions is by joystick.
Hold down gun and release to produce beam.
NB: Spectrum player 1 also use joystick 1.

Gea Bee AIR RALLY®

QUICK CONTROL GUIDE

On all versions, once the game has loaded you will be presented with a menu screen (not on C64/128) which allows you to start the game, select a joystick or keyboard, or redefine the control keys.

If you are playing on a Spectrum, Spectrum 128, Spectrum +, Spectrum +2, or Spectrum +3 and intend to use keyboard controls, you must redefine the control keys . . .

Start-O

Redefine Keys-R

Select Joystick-J (Sinclair of Kempston or keyboard)

If you are playing on an Amstrad CPC/464, 664 or 6128 . . .

Start-S

Redefine Keys-R

Select Joystick-J

Up-Q

Down-A

Left-O

Right-P

Throttle-SPACE

Pause-U

Resume Game-Any key

FIRETRAP

FIRETRAP PLAY OPTIONS...

When the game has loaded into your computer, the screen will display a Menu with the available play options. Type the number listed next to your desired option.

The characters are armed with both guns and Proton Beams. Creatures can be shot with either weapon to transform them into ghosts. The ghosts can then be zapped with the proton beam to store them in the players' backpack. Ammunition for the gun is unlimited; the proton beam has a limited charge which is displayed at the top of the screen. Also displayed are the number of lives remaining and the number of ghosts collected.



HISTORY AND BRIEFING

When the first part of the game has loaded into your computer, the screen will display a menu consisting of five options. Use UP and DOWN controls to highlight an option, and press FIRE to select that option.

To exit a screen, highlight the RETURN option and press FIRE. Otherwise select CONTINUE to access all of the available information.

1. ARCHIVES

Selecting this screen will display a brief background to the Corporation and your mission.

2. MISSION BRIEFING

This screen will advise you of your mission, and provide you with technical data of the asteroid.

3. REFINERY SPECIFICATIONS

This screen provides technical data on your Mobile Refinery Unit. All operations are controlled remotely from the Refinery.

4. M.R.U. SPECIFICATIONS

Mobile Robotic Units (MRUs) are specialised remotely controlled vehicles which you will use to survey the asteroid, mine any valuable materials, transport the spoils, and defend your interests against rivals.

These screens provide information on the types of MRUs available to you, a description of their functions and the speed of the vehicle.

5. CONTINUE

Selecting this option will load in the next part of the game from cassette or disk.

M.R.U. SELECTION SCREEN

From this screen you will be able to select a 1 or 2 player game and the duration of the game.

Enter the name of player 1, then press RETURN. You will then be prompted to enter a previous mission code. If this is the first time you have played CORPORATION press RETURN.

Enter the name of player 2, or just press RETURN to play against the computer.

You may now select from a simulated 12, 24 or 36 hour game by pressing 1, 2 or 3 on the keyboard.

SELECTING MRUs

The screen is split into two halves, with player 1 on the left and player 2 on the right. On each side are displayed the mission name, the player's name and credit rating, the amount of crystals recovered and the time remaining before the asteroid's destruction. Your credit rating indicates how many MRUs you can acquire.

In the lower portion of the screen is a list of available types of MRUs. The columns to the right of the MRUs indicate the number of MRUs you have purchased. There are 2 columns marked 'S' for solar and 'F' for fusion, denoting the MRU's power source.

Select MRUs by using UP and DOWN to highlight the vehicle of your choice, then LEFT and RIGHT to select either solar or fusion drive. Pressing fire will enable you to buy or sell the selected type of unit by using UP or DOWN controls. Your credit rating will be adjusted automatically. If you do not have the necessary credit to purchase the selected MRU you will be prevented from doing so. Pressing FIRE will return you to normal selection mode, allowing you to choose a different MRU.

Each player should continue to select MRUs until all credit is used up. After both players have selected the CONTINUE option, the main game will load into your computer.

THE GAME

When your refinery has landed on the asteroid your mission begins. The screen displays a computer simulated grid plan of the surface of the asteroid, with the position of your refinery marked as a red square. The shaded area of the grid represents the part of the asteroid which is in darkness. This area will move around the asteroid as the game progresses. Below this grid is a list of the MRUs available for the mission. Select an MRU as in previous menus by highlighting the name of the vehicle using UP and DOWN, and the power source type using LEFT and RIGHT.

Pressing FIRE will select a vehicle of that type, and the screen display will change to an enlarged grid depicting the surface of the asteroid. This enlarged grid corresponds to one small highlighted square on the asteroid grid at the top of the screen.

SELECTION AND MOVEMENT OF MRUs

To select an MRU on the surface of the asteroid, place your cursor over the selected MRU icon and press FIRE. A 'ghost' icon will appear which you can then move over the surface of the asteroid. As you move from one enlarged grid to another the grid will be redrawn. You may move from the top of the asteroid grid to the bottom, or from one side to the other. You may program up to two MRUs in this manner up to a range of 20 grid squares. If you do not wish to move the full range of the MRU press FIRE. The computer will now direct the movements of the MRU, allowing you to plan your next move.

Pressing FIRE while the cursor is over an empty grid square will move the cursor to the asteroid grid, enabling you to scan any square from this grid. Pressing FIRE when the cursor is over the refinery on the enlarged grid will return you to the main refinery menu.

PAUSE

The game may be paused by either player by selecting the HOLD GAME option on the refinery menu screen. Restart the game by selecting CONTINUE.

SURVEYING AND MINING

It is known that certain parts of the surface of the asteroid are unstable, and would probably not support the weight of surface vehicles. Luckily, your survey craft can not only detect crystal deposits but also unstable ground. As your survey craft moves across the asteroid it will leave beacons. A yellow beacon signifies a deposit of crystal, and a blue beacon marks unstable ground. Any vehicle other than the booster powered survey craft should avoid unstable areas!

Once a deposit of crystal has been discovered it may be mined by moving a mining unit over the grid square. The mined materials are left on the surface of the asteroid ready for transportation to the refinery. The beacon will change to purple once crystals have been mined.

Containers of crystal may be loaded into truck units by moving the unit over a purple beacon. Each truck may carry up to ten containers. To unload a truck at the refinery the MRU must be moved to an adjacent grid square. The load will be transferred automatically.

HOSTILITY AND DEFENCE

As the Commander of mining operations you must be aware of the fierce rivalry between Corporations. Some would stop at nothing in order to fulfill their quota and maintain their credit limit! In order to defend the interest of the Corporation, you may also purchase cloaking units and missile launching units.

Cloaking units can protect your operations from enemy radar and visual scanning systems. They are effective up to a three grid square radius, cloaking both their own presence and that of any units within their range. Detection by the opposing force is only possible if one of their MRUs is within 1 grid square of a cloaked unit.

Rocket launchers are equipped with highly accurate energy-seeking missiles which are capable of penetrating most shield defences. The gun decks are armed with smaller, less powerful 'Dart' missiles. In order to launch a missile you must first access the visual display screen. Place the cursor over an MRU icon and press FIRE twice in rapid succession. The screen will change to a view of the surface of the asteroid and the MRUs status display. To exit this screen, move the cursor to the bottom of the visual display and press FIRE. Note that you will be unable to obtain a visual scan from an MRU which is shutdown through damage or lack of energy.

The status display consists of a radar screen showing the proximity of other MRUs. To the left of the radar is a blue bar indicating the unit's shield strength, and to the right a red bar showing the unit's energy level!

You may pan the surface view by moving the cursor LEFT and RIGHT. If any objects are identified on the asteroid's surface the cursor will change colour. Pressing FIRE will enable you to zoom in on the object, providing you with a visual display of it.

To arm the rocket launcher or gun deck, move the cursor to the top of the visual display and press FIRE. The cursor will change to a cross-hair sight, allowing you to aim at an object on the surface. Press FIRE to launch a missile.

METEORITES

Due to the lack of a protective layer of atmosphere, there is a great probability of strikes by meteorites. Commanders should maintain regular visual checks on all units and be prepared to move them out of danger whenever possible.

SUCCESSFUL MISSIONS

If you succeed in completing your mission and mining the required quota of crystals, you will be given a mission code. Write down this code for future use. When prompted at the beginning of a game for your mission code you can obtain a higher credit rating which will allow you to buy more MRUs, though naturally the Corporation may decide to increase the target quota of crystals!

KNIGHTMARE

I place you somewhere in time, in a land where strangers are not welcome. Survival is your aim, knowledge is your target. Search the dungeons and rooms of Damonia Castle for the objects which may help free you from the clutches of the dark castle and it's fantastical inhabitants.

Your advisors are two oracles, who act as clue givers. One oracle is good, and often gives correct clues in the form of riddles etc. The bad oracle will do everything it can to throw the knight into certain danger, and death. The knight may consult the oracles, but only one will answer, and may not be cross-examined by the knight. By carefully studying the contents of both oracles' statements, valuable clues may be learned.

Your life force is represented by a candle at the edge of the page. It will decrease throughout the game. Life force is further decreased each time the player is hit by a guard, for example, and life force never increases.

Each page of the book details some place within the castle, into which life is breathed when you direct the knight into it. The dungeon master and oracles watch over all of the knight's actions and each may appear from time to time to offer comment.

To perform specific functions within the castle. You may use one or two word commands.

Select the first word of your required command by pressing the first letter of that word. If the speech bubble at the top of the screen does not display the word you require, press the shift key. This will show you the next available word.

Certain commands, such as Load, Save or Quit are one word commands.

To see your inventory (the things you are carrying) press the 'I' key.

To use a spell, you must select the word SPELL as the first word, then the name of the spell as the second word, then press Enter or the Life button to execute that spell. Note! You first have to find the spells!

ANVIL: This is a large, cast-iron anvil, which hovers at the top of the screen, causing evils to be squashed into the ground.

CASPAR: Caspar the key. May be used on certain doors within the castle.

ALCHEMY: Turns characters to a solid gold sphere. Most objects turned to gold may then be collected by the knight as treasure.

ICE: A rain cloud will form and freeze everything. As soon as the cloud vapourizes the characters will come back to life.

TOAD: Turns characters into 'warty' toads.

METAMORPH: Turns characters into different characters.

FIGHTING

In order to fight you will need to find a weapon, such as a sword, then by moving next to the character you wish to fight and pressing the fire function repeatedly you will be able to engage in combat.

You may also pick up bricks to throw at other characters. To do this you may either use the instructions to tell your knight to 'Throw Bricks' or you may set the first command word to 'Throw' and then use the fire function to trigger the throwing.

SAVING AND LOADING

If you choose the command 'Save' this will save your current position for future usage. You may return to this position by selecting 'Load'. Please note, this is a **RAMSAVE**, and is not saved to cassette or diskette, and so if your switch your computer off you lose your original position.

Function	Keyboard Key			Joystick
	Spectrum	C64	CPC	
Fire	0 or 5	=	DELETE	Fire Button
Move Left	6 or 1	<	<	Left
Move Right	7 or 2	>	>	Right
Move Down	8 or 3	?	<	Down
Move Up	9 or 4	:	>	Up
Pause Game	BREAK	F1	ESC	
Resume Game		Use 'Fire' function		
Quit Game	Q then Y	Q then Y	Q then Y	
Start Game		Hold down 'Fire' function key		
View Words	SHIFT	SHIFT	SHIFT	
Enter Word	ENTER	RETURN	ENTER/RETURN	



Section 2 - ZIEGLER II FIGHTER:

'Deliverance' was initially equipped with a complement of 7 Ziegler II Assault Craft (ZAC) but dogfights and accidents have reduced this number to 3. They are not as agile or fast as the opposition's interceptors but are far better armed and defended. Capable of carrying 8 long range 'Fire & Forget' Fissile Missiles, 8 Rear launching point defence missiles and 4 fusion bombs they can have extra Hi-Shielding added and a Rapid Recharger fitted to the Anti Matter torpedo system.

Fighter controls are as follows:

For UP/DOWN, LEFT/RIGHT and FIRE, use joystick 2 on the C64 and either KEMPSTON, SINCLAIR or KEYBOARD (Q.A.O.P.SPACE) on the spectrum.

'FIRE' either fires the pulse cannon OR the selected weapon.

'L' arms the long range missile.

'R' arms and fires the rear launched missile.

'T' arms the AntiMatter Torpedo.

'+' increases fighter speed.

'-' decreases fighter speed.

'M' initialises Auto Pilot and returns fighter to 'Deliverance'.

'N' plots a course for the nearest planet and manoeuvres the fighter onto course.

'W' toggles between the Scanner and Weapons Status display.

When you come within warp range of a planet the auto pilot overrides control and heads straight for the planet, thus avoiding ground-based defence lasers which would rip your ZAC to pieces in seconds.

When in orbit around a planet 'B' arms the bomb aiming system. An arrow appears next to the clock display showing the direction to the nearest enemy ground base, when you are directly on course this changes to an UpArrow. As soon as the base comes within range the scanner changes to a bomb sight and displays the target moving at high speed towards you. (On the Commodore version the targetting graticule changes and displays the target site). Press 'FIRE' when this is in the centre of the sight and you will score a direct hit. Pressing 'FIRE' before this will cause a premature bomb release.

ALPHA
BETA
GAMMA

The colonised sector of galaxy M1771 contains 32 star systems with 3 to 4 inhabitable planets in each, making a total of 118 colonies. Starting in orbit around Star Phi Xi-8 planet 4 (PhiXi-8/4) you must liberate every planet from the oppressive enemy forces. At the same time, rebels left on the planets before the occupation may attack the enemy bases or even be successful in defeating the hostiles and recapturing their own planet.

DELTA
Epsilon
ZETA

There are 2 distinct sections to ACE 2088.

Section 1 - 'Deliverance':

The panel which represents the 'Deliverance' command console has 3 main displays.

1.1 - CRT display. This gives a graphical representation of the data being processed by the main computer.

1.2 - OPTION selector. This display is located in the bottom right of the panel and can be changed by moving the input device up/down. Press FIRE to select the current option. All of the options are self-explanatory and easy to use.

(Note: EXIT returns to the main OPTIONS directory.)

1.3 - LOCATION display. This can be seen in the top right of the panel and shows the current star system and planet number.

Two other displays are also present.

ANCILLARY Data. This display is middle right on the panel and shows textual data not displayed on the CRT.

ETA
THETA
IOTA
KAPPA
AMBIKA
MU

MESSAGE line. Shows any in-coming messages and status changes.

GUADALCANAL

GAME SCENARIOS

On the disc (or cassette) are a number of scenarios. These are selected from the menu which appears on-screen when the game has loaded. Simply move the joystick to highlight the required game and press the fire button. The selected scenario will now load.

SCENARIO 1: A short three-day battle in which the player takes the American side. This is intended for gaining battle experience only.

SCENARIO 2: The full Guadalcanal campaign, with the player commanding the American side.

SCENARIO 3: Once again the complete campaign, but with the player in the control of the Japanese forces.

SAVED GAME: A facility to allow the player to load and play a previously saved game position. You are prompted to enter a filename (up to eight letters) followed by ENTER, after which the required data will load. Pressing ESC during filename entry will abort the operation.

GETTING STARTED

Your disc or cassette already contains a saved game (SIDE A: GAME, SIDE B: SCENARIOS) for a special scenario which gives you a few US units but no enemy. This is designed for learning the game and its controls. If you have the cassette version then this is the first block on the Scenarios side. From the loading screen select 'SAVED GAME' and type in TRAINER. Special note - Amstrad CPC cassette and disc users; unplug the joystick before typing the filename. There are no victories in this scenario, so to finish it you must use the SCRAP GAME master icon. Most of the references to game play will now assume you have this scenario loaded and you are reading the manual.

THE SCREEN

The game display is divided into two halves. In the top half are the master icons and information on all the general features of game (anything not concerned with units): the control icons and information for the units themselves are in the lower half.

To the top right you will see a clock face and a box showing the date and digital time. This runs at a speed of 1 minute for every 10 seconds of real time. The clock NEVER stops, although it may be speeded up.

Beside the digital clock is the 'phase' indicator which has four different positions: dawn, daylight, dusk and night. This is used mostly for aircraft timing, as they may not be launched at night and any air capability will be cancelled at dusk.

The flag in the top right corner simply shows you which side you are commanding (a useful reminder for saved games.)

Above the clocks are ten icons - the MASTER ICONS. Each has a

specific purpose which is explained in detail later in the manual. A master icon is selected by moving the joystick until the chosen icon is highlighted and has the small arrow pointing to it. Pressing the fire button will then activate that function. The first icon shows a miniature map. Pressing fire on this will put you in control of the lower half of the screen.

The long, narrow map below the master icons is the STRATEGIC MAP, and represents the overall battle zone. The large land mass along the bottom of this map is Guadalcanal Island. To the east are American-controlled waters, while the Japanese waters are on the west. You will notice several flashing markers on the strategic map. These indicate the position of any active units. However, the markers do not distinguish between friend and foe, or the units type.

The main feature of the strategic map is the large white rectangle. Directly beneath the overall map, in the lower game area, is an expanded view of the area enclosed by this rectangle. This 'window' is the BATTLE MAP: it shows the features and units of the smaller area in detail, and may be moved to any position in order to examine or control your units.

In the lower right of the display is the REPORT BOX, which shows all the information on your forces.

Finally, at the very top of the screen is the RADIO, where all incoming messages are displayed.

MASTER ICONS

On the main display, just above the clocks, are ten squares. These are the MASTER ICONS and control aspects of the game not concerned with units themselves but with the game generally.

To select any icon, simply move the joystick until the required square is highlighted and has a small arrow pointing to it. Pressing the fire button will now execute that function.

MAP TOGGLE

Toggles between the battle map and the master icons. If this icon is highlighted and fire is pressed, then control will be passed to the battle map cursor. If the battle map cursor is NOT over any unit and fire is pressed, control will return to the master icons.

CLOCK WINDER

While the fire button is held down, the clock will advance at great speed. Simply release the button to return to the normal game speed.

Be careful with this function. You are advised not to advance the clock while there are incoming messages until you are certain of their importance.





SCOUT SELECTION

A list of your six scouts is displayed, along with their current condition. To activate any scout, move the joystick until the desired rank is highlighted and press the fire button. The scout will now show ACTIVE. Press the fire button once more to return to the master icons. Only one scout may be active at any time and will appear next to your base on Guadalcanal.



INTELLIGENCE

Two boxes are displayed – one marked ESPIONAGE, the other COUNTER ESPIONAGE. Each box has a figure in its centre, which represents the percentage of personnel assigned to each. Move the joystick left and right to adjust these figures, or press fire to return to the master icons. For a full description of its effect see the INTELLIGENCE section.



STATUS

This displays three columns showing the active fleets, land units and air units (if any) along with a colour-coded condition, as follows:

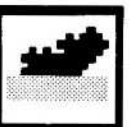
- Green – OK.
- Yellow – Weak or in need of attention:
- Red – Critical.
- Flashing – Currently in combat or under attack.

Press fire again to return to master icons.



WEATHER

The simplest of all, this icon displays the current weather conditions: GOOD, POOR or STORMY (see WEATHER EFFECTS).



NAVAL LOSSES

Any ships larger than a destroyer which have been sunk during the battle will be displayed here in chronological order. Only your losses are shown.



HOLD

The clocks are stopped and any movements or battles are frozen, although any backlog of messages are still decoded to the radio display. Simply press fire again to restart the clocks.

SAVE GAME

May be selected at any time during the game. Type in the filename you wish to call your position (up to eight characters) and press ENTER. Special note – Amstrad CPC cassette and disc users: unplug the joystick before typing the filename. The complete state of the game is saved, but you will lose any message currently being decoded to the display. Once saved, the display will reset and place the master icon to MAPTOGGLE. (Pressing the ESC key will abort this function if selected in error).



SCRAP GAME

Should you wish to load another scenario or a previously saved game, this will return you to the main menu. The current game will be lost unless you have saved it. There is a delay of two or three seconds built into this icon in case it is selected by accident. You need to hold the fire button down until the main menu appears.



UNITS

There are six types of unit for each of the opposing forces: Fleets, Land Units, Aircraft, Seaplanes, Bases and Scouts. Units are represented on the strategic map by small flashing dots, and on the battle map by square symbols. In the symbol descriptions that follow, references to "colour" mean white for the Americans, red for the Japanese.

FLEETS

Naval Task groups are split into three categories – Escort groups, Carrier groups and Transport groups. Each has its own characteristics and requires the correct tactics for its most effective use. The map symbol is a black anchor on a coloured background.

ESCORT GROUPS consist mainly of heavy gunships and are best used as naval cover for other groups, land bombardment, scouting and so on.

A CARRIER GROUP will contain at least one aircraft carrier, which makes a strong, protective escort with its own Combat Air Patrol (CAP).

TRANSPORT GROUPS are your army's lifeline.

LAND UNITS

Each unit suffers from malaria according to the length of time it has spent on the island: this can have a devastating effect on the fighting ability of the unit, no matter how well equipped it is. Malaria levels may be decreased only by the issue of medical supplies. Finally, morale plays a large part of the unit's combat fitness. The longer a unit is in battle, the more its morale drops, taking the strength with it. However, while not in battle, morale will slowly rise. General supplies will have a more immediate effect on morale.

Marine units have an extra ability not available to the Japanese infantry. DIGGING-IN almost doubles the unit's fighting strength but may only be used as a defensive measure. Once 'dug-in' the unit becomes unable to move until ordered to 'move-out', an operation taking some time to execute.

AIRCRAFT

Air units may be based either on a carrier or at Henderson Field – they are represented by a coloured airplane on a black background. The units based at Henderson will arrive at appropriate times during the battle. The use of these aircraft is limited by the number of points you have stored of aviation fuel at the base – no fuel, no takeoffs. There are no such restrictions to the carrier units, but any damage incurred by the carriers will affect the launching ability of the aircraft. If the deck itself becomes damaged then no launching or landing of aircraft will be possible until it is repaired. Damage to Henderson Field will also prevent aircraft activity but the engineers on the island will inform you of how long the repairs will take. The airfield is only a clearing, and repairs are a simple case of filling in the holes...

All air units based on a carrier are followed by an identifying letter. For example, all those based on the Enterprise are called Unit 1E, 2E and so on. The American code name for Guadalcanal Island during the battle was Cactus. Aircraft based at Henderson Field thus became known as the 'Cactus Air Force'. Any air unit which is based at Henderson is labelled CAF1, CAF2 etc. It is important to remember where their home base is when returning aircraft to refuel. The carrier they came from may not be there when they return!

You should also note that carrier air units may land on any other carrier or even at Henderson Field. CAF UNITS MAY ONLY LAND ON HENDERSON. They will not be given permission to land on carriers – the capacity of aircraft carriers was limited and they had only sufficient crews to deal with their own aircraft.

SEAPLANE

All enemy forces will remain unseen unless they move within range of your fleets, bases or land units. The seaplane, however, may fly over any sea region in search of enemy shipping.

BASES

There are three bases on Guadalcanal. Two of these are Japanese and are simply supply dumps – they are shown in red. The third is Henderson Field, which has an air capability of its own and is also the supply dump for the US troops. It is indicated on the map in white.

Just above each base is a coloured anchor on a blue background, which represents the safe harbour for that base, where transport ships may drop anchor.

THE MAPS – AN INTRODUCTORY TOUR

The upper STRATEGIC MAP is an overall view showing where your forces are and the area you are currently controlling. All control of units is carried out in the lower BATTLE MAP.

To switch control to the battle map, move the joystick until the top left master icon (with the miniature map) is highlighted, and press the fire button. The icon now returns to normal and the arrow disappears. You will notice that a pulsation 'cursor' has now appeared on the battle map. For the time being DO NOT move it. This command cursor controls all your units, and the positioning of the window on the upper map.

If you now press fire again, the cursor will disappear and the first icon will again be highlighted. Control has now returned to the master icons. When the fire button is pressed while the cursor in the battle map is NOT over a unit, control will always return to the master icons.

Now press fire once more, returning to the battle map. Hold the joystick to the right and the cursor will move across the battle map until it reaches the edge. Keep holding to the right and the window will start to scroll. Notice that the white rectangle on the strategic map follows the battle map...

On the far right of the battle map you will see a column of white anchors. Move the cursor over any of them and you will see "SUPPLY PORT" appear on the top of the report box. Whenever the cursor is placed over a unit or map feature this line will show its name.

The line of anchors are the US supply harbours and are NOT units. They may not be moved or altered but are a feature of the map. These will be explained later.

Now fast-scroll to the far left of the map, where you should see a line of red anchors. These are the Japanese supply harbours.

WARSHIP CODES

CV Aircraft Carrier
BB Battleship
CA Heavy Cruiser
CL Light Cruiser
DD Destroyer
AP Transporter

CONTROLLING UNITS

Every unit which is currently active may be examined for its condition, or orders issued to control its activities. Control of units is by means of CONTROL ICONS: most of the icons are self-explanatory, but a complete description is provided in the following section, CONTROL ICONS.

By placing the command cursor over a particular unit and pressing the fire button, the list of the control icons for that unit is displayed in the report box. Each type of unit has a different selection of the control icons.

To activate any control icon, simply move the joystick until the icon is highlighted, and press the fire button. The report box will now display the appropriate information. Pressing the button once more, in most cases, will return you to icon selection. Some icons are a multi-stage function and will give a second list of icons to select. In these cases the EXIT icon will always return control to 'icon selection'.

THE CONTROL ICONS

EXIT



The most common icon. This returns you from the currently selected action, or back to cursor control of the battle map. All units have this icon, even enemy units.

MOVE



A two-stage icon which first allows you to examine the current route which a unit is taking, and then redirect it with the cursor. Then EXIT is selected from the sub-menu, control will return directly to the map and not to the unit. This speeds up commands and avoids confusion.

FORMATION



Only to be found in naval units, this very useful icon displays all ships currently assigned to the unit. The list is divided into two sections. The main list is of up to five major warships with their type and name. You should note here that the ship at the top of the list is the unit's flagship and may not be removed

from the unit. Each major ship is colour-coded as follows:

Green – means no damage and fully operational.

Yellow – some damage has occurred.

Red – the ship is either on fire or sinking.

To find out the condition of any ship, move the joystick back until its name is highlighted, then press fire. The damage currently sustained by the ship and the condition of the fires will be displayed. Pressing the button again will return you to the FORMATION display. Finally, to exit from FORMATION, push the joystick forward until the word FORMATION is highlighted and press fire. You may use this icon on enemy fleets, but it will only show the formation, not the damage inflicted.

After the main list is the size of the naval unit's destroyer screen and the number of transport ships, if any.

STATUS



An icon which appears on three types of unit – air units, land units and Henderson Field. It serves only to give information and has no effect on the unit. On Henderson this will display how much aviation fuel is stored and the condition of the runway. If the runway is closed then the estimated time of repairs will be shown.

COMBAT



A multi-stage option which appears in all fighting units. It allows targetting of the unit's fire power onto any enemy unit, and instant withdrawal from any battle. On selecting this icon, three more control icons will appear, as well as the strength of the unit and its current target. At this point, selecting EXIT will return to the main icon selection and WITHDRAW will instantly cancel any target. ATTACK will put the cursor into 'target select' mode.

ATTACK



When selected, the cursor will change from white to red to indicate that target select mode is in operation. Move the cursor over any enemy unit and press the fire button. If it is valid, the target will be locked in and the battle will begin. If it's not valid, then the target line will read NOTHING. Once the fire button is pressed the cursor will return to white and the joystick will once again control the icon selection. Notice that the cursor may only move as far away from the unit as its firing

range allows. Any move orders currently logged for the unit will be cancelled and must be reissued if movement is to continue. The unit will continue to attack its target until you change its orders or the target moves out of range.

WITHDRAW



Instantly cancels any target which the unit is attacking. Very useful if you wish to redirect an air attack or conserve ammunition against a retreating enemy.

AIR



This controls all aircraft launching. On selection, you will see a list of all units and their readiness for takeoff. Only units which are ON DECK may be launched: all other units are rearming and will move on to the deck in turn when space is available. Only one air unit may be 'on deck' at any one time.

To launch an air unit, select the LAUNCH icon and press fire. The unit currently on the deck (or runway) will now begin to take off. During this time LAUNCHING will flash on the display and will remain until the unit is fully airborne. At this point the unit (except for CAPs) will appear as a marker in its own right on the two maps. Pressing the fire button will exit from the air option (launching continues in real game time). If the air capability is lost then no access will be allowed to any launching facilities.

ANCHOR



This is a special icon which is only to be found in naval groups with transport ships. When first selected, the current state of the unit's anchor will be shown as either up, weighing or anchored. To change the condition you must select the ANCHOR icon once more and press fire. Note that this may only be performed while the unit is in a friendly harbour and will have no effect at sea. Dropping anchor is instantaneous; weighing the anchor, however, will take some time. The unit may only move when the anchor is up.

For a full description of how to use the anchor see the section SUPPLY RUNS.

HOME



All air units have their own original home base, either an aircraft carrier or Henderson Field. This Auto-HOME facility will send the unit directly back to its original base. However, the unit will fly to the position at which the base is when fire is

HIGH FRONTIER

pressed. If the base is a carrier and it has moved by the time the air unit reaches that position, then the unit must be redirected.

This icon may also be used on the transport group. Its purpose here is to send the fleet back to its map edge harbours. The fleet must be moved manually to the island.

TACTIC

Only used by US Marine units. When selected, you may toggle their condition between DIG-IN and MOVE-OUT. While the unit is dug-in, its strength will almost double but any mobility will be lost. Mobility may only be regained by changing its condition back to MOVE-OUT. Digging-in is a tactic which will increase the resistance of US units to Banzai attacks and is purely a defensive measure.

SUPPLY

Unfortunately, there is no brief description which can be applied to this option. It appears in different units with different functions, in different situations—each of which are explained in the sections SUPPLY RUNS and ISSUING SUPPLIES.

TRANSFER

For the experienced player only, this is a very sophisticated tactical function and follows very strict rules.

To produce this option you must first move two naval units together. Only one of the two units will now have the transfer icon in its list. On selecting TRANSFER, you will see a display of the two fleets' formation with the colour-coding as usual. Ships may now be transferred from one unit to the other by moving the joystick until the required warship is highlighted, then pressing the fire button. The ship will transfer itself to the opposite fleet, if there is a vacancy!

There are rules to this operation and it should be used with great care. Too few ships in a unit will leave it wide open to attack and easy pickings for submarine strikes. Rules: Transport ships may not be transferred and do not appear in the list, although they are still there. Aircraft carriers also may not be transferred and pressing the fire button will have no effect on them. Finally, the unit's flagship (see FORMATION) may not be removed. To exit from this option, simply move the joystick forward until Exit is highlighted and press fire. Note that a TRANSFER operation will cancel the movement orders for both units.

GAME SELECTION

After loading, the Game Selection screen appears. This enables the player to alter various factors in the simulation before starting play. You can also LOAD a previously SAVED game, play the main game or go directly to the Orbit section of the game. Note that the simulation is set on loading for the "beginner's" level. It is recommended that you first try running a few simulations without altering these settings to get practice.

1) Set American Leader Type *

The box in this area with the tick in it is the currently selected type of President. If the joystick is moved sideways, the yellow command cursor will move from box to box. Pressing the fire button when the cursor is by the desired box will cause a tick to appear. That President type is now selected.

2) Set Soviet Leader Type

Moving the joystick down will put the command cursor into this area. The type is set as above, but note that you cannot have both a "Dove" President and a "Dove" Soviet leader (hopefully this is not true of the real world).

3) Set Game Level

This has various effects on the game and at first you should leave it set on the "EASY" level. When you have mastered the mechanics of the game you can progress to the harder levels.

4) Action

The various possible actions are chosen in the same way as above, by positioning the command cursor and pressing the fire button. Actions are as follows:

PLAY: This will start the game.

LOAD: Is used to load a previously SAVED game. See the LOAD/SAVE instructions (Section 14).

ORBIT: Selecting this will take you directly to the orbit section of the game.

You can then practice fighting in orbit. See the Orbit Section (Section 15).

BORDER DISPLAY

NOTE. The word SELECT has a special meaning in this manual. It means position the current command cursor below the icon in question and press the joystick fire button. Also note that the numbers in square brackets, for example [C1], refer to the numbers printed on the screen diagrams in this manual.

HIGH FRONTIER is a multi-screen game. All screens (except the orbit screen) have a common BORDER DISPLAY of icons and information panels, at the sides and bottom of the screen. The contents of the central screen window depends on which screen is selected.

The lower command area is composed of boxes containing icons - these are the COMMAND icons [C1-C6]. Below these is a yellow cursor - the COMMAND CURSOR. The command cursor can be moved left or right with the joystick.

- | | |
|-----------------|------------------------------------------------------------|
| [C1] TELEPHONE | - The president's direct line to you. |
| [C2] WORLD | - Shows the world and the BCOM pad and allows time to pass |
| [C3] SHIELD | - SDI Command screen. |
| [C4] CALCULATOR | - Research & Development (R & D) screen. |
| [C5] CAMERA | - Espionage & Reconnaissance screen. |
| [C6] SKULL | - Threat screen. |

If a command icon has a yellow bar across the top, it means that the department wants your attention.

The box at the bottom right [C7] is the Calendar display. This shows the current month and year of the simulation. The bottom red line of this display is used only in the event of a Soviet missile attack: when this happens, the red line will display the Battle Computer's predicted time to impact in minutes and seconds (that is, the time remaining before the first nuclear warheads hit America).

The right side area is the ORBIT DISPLAY [B1-B6]. When any system satellites are placed in orbit, the relevant Orbit Display Box will turn green. The number of system satellites currently in orbit will also be shown. If the display box turns yellow it means that the system satellites are armed or firing.

The left side area is the ATTACK DISPLAY: it will become active in the event of a Soviet nuclear attack. The box colours will change and the numbers of warheads, missiles, and so on, will be displayed. Each box has a different purpose:

- [A1] - The number of Soviet ICBMs heading for America.
- [A2] - The number of ICBMs that your systems have destroyed so far.
- [A3] - The number of Soviet nuclear warheads approaching.
- [A4] - The number of warheads that your systems have destroyed.
- [A5] - The number of nuclear impacts (explosions) on the American mainland.
- [A6] - The number of impacts on urban areas.

Note that this display has a slightly different purpose when the INQUEST screen is displayed.

PRESIDENT'S MESSAGES

To display this screen select the PHONE icon.

The President will ask questions or supply codes and orders via this screen. The "Number of Warheads" question is answered as follows: position the yellow indicator on the percentage scale by moving the joystick left or right. Pressing the fire button will send this value as your answer.

As world tension increases, the President will issue you with the ARM/DISARM codes (push the joystick forward to open the code box), and may eventually order you to arm the system. You do this after selecting the SDI COMMAND screen. If the systems are armed they will automatically attack any Soviet ICBM missiles that are launched.

NOTE: The President will only issue the ARM/DISARM codes once in any game. It follows that it does not pay to ignore the President! Once the President has issued the Arm/Disarm codes AND you have received them, they will be permanently displayed below the President's message pad.

WORLD SCREEN

To enter this screen, select the WORLD icon. The screen displays a view of the Earth taken from a satellite above the North Pole (see Fig. S1). The blue rectangle marked BCOM is the Battle Computer's message pad.

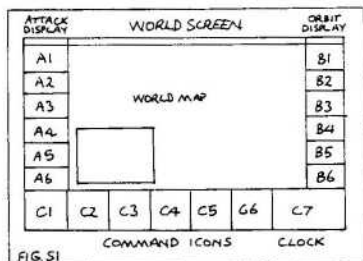


FIG S1

The game starts with the WORLD screen in view (but time frozen). The date is March, Year 1 of the project as shown by the Calendar Display, bottom right. If the WORLD screen is entered, time will pass, the satellites (moving white dots) will move in their orbits and the calendar will change. If the satellites stop moving, the game has paused and is waiting for some action by you. Normally this is because some department is trying to get in touch - the department will signal this by the appearance of a yellow bar over its command icon. After dealing with the interruption (or not - your choice), you restart the calendar by selecting the WORLD icon again.

If you wish to break out of the WORLD screen when the calendar is running, move the joystick left or right.

SDI COMMAND

To enter this screen select the SHIELD icon.

The SDI Command (see Fig. S2) is used to control any systems that you have built using the R & D screen. Note: until a system has been built, the SDI Command has no purpose, and you cannot give any commands.

The top display box [D9] shows a picture of the currently selected system. Below the picture is shown the number of system satellites that are currently on the ground.

The left and right boxes [D6, D8] of the second row are the predicted kills for each satellite of the system. The left box shows the missile kills per satellite, the right box the warhead kills (predictions are not always reliable!).

The centre box [D7] shows the current status of the system. The symbols are the same as the R & D project status symbols, with the following additions:
 CIRCLE WITH DOT - Some or all of the system satellites are in orbit.
 LIGHTNING FLASH - System armed or firing.

The third row of boxes represents the SDI Command Line and enables players to issue command to the system:

[D1] BLUE DOWN ARROW

Is used to exit the SDI Command screen.

[D2] ROCKET

When you have successfully developed an SDI system, you will start to build satellites for that system. Obviously, these will not be in orbit until you have launched them. To place satellites in orbit you must first select the correct SYSTEM DISPLAY on this screen (see [D5]), then select this icon to set a LAUNCH COMMAND. The system satellites will now be launched into orbit, over a period of time, causing the number of system satellites in orbit to be shown in the Orbit Display. When a system has been ordered to launch, the Launch icon will be white. To cancel a launch command, simply select the Launch icon again.

[D3] LIGHTNING FLASH

If a system has been built AND is in orbit, it can be armed or disarmed, provided the player has the correct codes. Selecting the lightning flash icon will cause the Code Enter Device to appear [D10]. Moving the joystick forwards or backwards will alter the code letters and numbers. When you have set the correct code, move to the X at the right of the Code Enter Device: pressing the fire button will enter the code you have selected and return you to the Command Line. If the system ARM icon is white, the system is armed. To disarm the system, simply repeat the above but enter the disarm code.

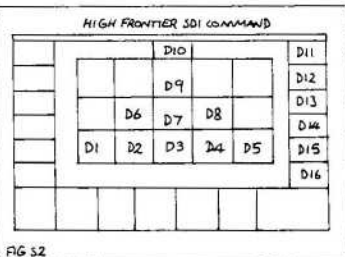


FIG S2

[D4] JOYSTICK

Allows the player to take manual control of a system satellite in orbit (see the ORBIT section of the manual).

[D5] BLUE ARROW

Used to scan all the systems. Put the command cursor under this icon and press the fire button. The screen will change and display the next system. The current system is shown in the top box [D9]. Note also that the system's picture in the Orbit Display will be highlighted in white.

RESEARCH & DEVELOPMENT

To display the R & D screen select the CALCULATOR icon.

The object of the game is to build a defence of SDI systems which will destroy a Soviet missile attack. The R & D screen (see Fig. S3) is used to build and maintain these systems.

The R & D department will want your attention when it receives more money from the Federal budget. You can then decide which SDI systems you wish to try and develop, and assign money and personnel to the projects you are pursuing.

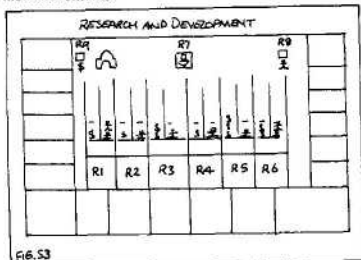
Each system has a project compartment [R1-R6], at the bottom of which is a picture of the system. Above this picture is the System Project Status Area, which is blank if no work has been carried out on the project. (Thus at the start of the game, all these will be blank). The rest of the system compartment is used to hold the money and number of staff assigned to the project. You will notice white horizontal lines in the slots: these show the level of funding and staffing required to complete the next phase of the project.

At the top of the screen is a cursor in the shape of the White House, which can be moved left and right with the joystick. When the cursor is moved over the \$ symbol [R9], pressing the fire button will cause a \$ sign to appear in the White House doorway. (You will have to move the cursor to notice this). Move the White House over the dollar slot of any project: pressing the fire button now will assign money to the project. If the cursor is over the people symbol [R8], you can assign staff in a similar way. The type of each slot (money or people) is shown by the dollar or man symbols along the top of the screen (you can't drop the wrong symbol into the wrong slot anyway).

When a project phase is complete, the money will be spent and the new phase costs shown with the white lines. If the system's project status has changed, this will be shown in the status area. If you have developed a system, the number you are building will be shown below the system picture. The project status symbols are as follows:

- X - Some work has been carried out but no solution as yet.
- TICK - The problems are nearly solved
- ROCKET - The problems are solved. The number you are building (this year) is shown below the system picture.

If the Rocket symbol is shown without a build number, the project is complete. The white lines will now indicate the costs of maintaining the system. People shown in white are government employees; people in colour are not, and you have no direct control over their movements.



To exit the screen, place the White House over the blue down arrow [R7].

NOTE: For details of the various systems, see Section 24, SDI SYSTEMS (IN THE GAME).

ESPIONAGE & RECONNAISSANCE

To display this screen select the CAMERA icon.

The player should use this screen (Fig. S4) to try to find out what the Soviets are doing to defeat their systems. You can achieve this by assigning "espionage" points to various intelligence efforts. When any information has been gathered or further points become available, the department signals you as usual.

The espionage points available are shown in the top box [E5]. The points are assigned by moving the cursor over the desired camera and pressing the fire button. The camera boxes [E2-E4] represent the areas where you may place your intelligence effort. These areas are as follows:

[E2] LEFT CAMERA

Attempts to discover the number of ICBMs (missiles) currently targeted against you. The results of this effort are shown in displays linked to the camera by white lines. The number of land-based ICBMs is shown in [E6]. The number of submarine-based ICBMs is shown in [E7].

[E3] MIDDLE CAMERA

Tries to learn the number of warheads targeted against you. This is shown in [E8].

[E4] RIGHT CAMERA

Monitors any Soviet counter-measures against your systems. These are shown in the displays [E9-E14]. For example, if the Soviets had developed the ability to destroy ten laser system satellites, the number 10 would appear in the [E9] display.

[E1] BLUE DOWN ARROW

Exits the screen.
WARNING: Remember the Soviets will be using counter-espionage against you. This means that the figures you see are not necessarily true. For example, you may be shown that the Soviets are developing counter-measures against your systems, when in reality they have not. Obviously the more "points" you assign to an effort, the more likely it is that you have a true figure.

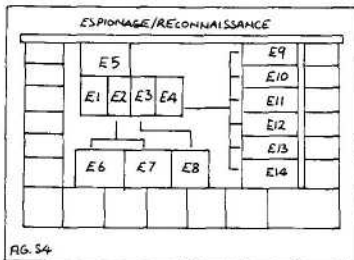


FIG. S4

THREAT SCREEN

To display this screen select the SKULL icon.

The current world position, any changes in the Soviet Military forces, and the threat level are shown on this screen (see Fig. S5). The THREAT LEVEL INDICATOR [T1] has a yellow pointer: the closer this moves to the mushroom cloud, the more likely the possibility of war; the nearer to the heart symbol, the more peaceful.

The symbols and numbers at the lower right are the status of the various Soviet units, as follows:

- [T2] - ICBM silo status.
- [T3] - Status of ICBM-carrying submarines ("Boomers").
- [T4] - Air Force status.
- [T5] - Cruise Missile status.

The flag symbols are concentrations of Soviet Army units. If any new Soviet units are deployed, they will flash for a time when the Threat screen is first viewed. There may also be a message on the message pad.

This screen only provides information: no icons are available and no selection is required.

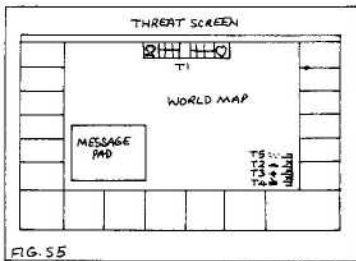


FIG. 55

ATTACK DISPLAY

A Soviet ICBM attack will be displayed on the WORLD screen and will also affect the BORDER DISPLAY.

During normal play, exiting the World screen will "freeze" time and the game calendar will stop. When a Soviet attack occurs, this is no longer the case, and the game will run in a "minutes/seconds" mode regardless of which screen the player selects (except that the attack does "freeze" if you enter the ORBIT screen).

All screens except the R & D screen can be selected as normal. This will enable you to arm the systems if you have not already done so.

The Soviet ICBMs or warheads will appear as dots on the World screen. Any small flashes seen are your systems firing; all your systems coloured yellow in the Orbit Display will fire automatically. The number of Soviet warheads etc. will be shown in the Attack Display. The lower red calendar line will show the time to impact (see Section 4, BORDER DISPLAY).

If the attack looks like penetrating your systems, the President's PHONE icon [C1] will change to a MISSILE icon. This shows that the President is asking you if you can hold off the attack (prevent any warheads falling on America). If you feel that some warheads will get through select the Missile icon (formerly the Phone icon). If you think that your systems will stop the attack, DO NOT select the Missile icon. If you indicate that some warheads will get through, the President will launch the American ICBMs.

These ICBMs cannot all launch within seconds of each other. If you give the President insufficient warning, some or all of the American ICBMs may be caught on the ground. In this case, some or all of the ICBMs may be destroyed.

If an American launch is made, a blue IMPACT BOX will appear on the World screen. This will count the number of nuclear impacts on the Soviet Union. The decision to "approve" a launch or not has a large effect on the player's score.

INQUEST SCREEN

At the end of any nuclear attack or exchange, the game will end and the INQUEST screen will be displayed (see Fig. S6), to assess your performance, and how well America and the SDI systems did. The ATTACK DISPLAY will update and show the following details:

- [A1] - Total number of Soviet ICBMs launched.
- [A2] - Number of Soviet ICBMs destroyed by your systems.
- [A3] - Number of Soviet warheads on the ICBMs at launch.
- [A4] - Number of Soviet warheads destroyed by your systems.
- [A5] - Total number of nuclear impacts on America.
- [A6] - Total of those impacts that fell on urban areas.

The SYSTEM SCORE GRID will show the effectiveness of each of your systems as follows:

- [P1] - Number of ICBMs the system destroyed.
- [P2] - Number of warheads the system destroyed.
- [P3] - Number of system satellites in orbit at the start of the attack (less any losses due to Soviet counter-measures).
- [P4] - Number of system satellites left in orbit.

INQUEST SCREEN		P1	P2	P3	P4
A1	SYS TMS GLDR LDRH COMPLETE				
A2					
A3					
A4					
A5					
A6					
P6	P7				

FIG. 56

NOTE: In the confusion of battle, different systems will sometimes claim the same "kill". Keep this in mind when comparing system performances. The total number of nuclear impacts on the Soviet Union is shown in the lower impact box [P6]. The player's score is displayed lower centre [P7].

To play a new game, press the fire button and the game restart screen is displayed. Press fire again and you will be returned to the Game Selection screen.

QUIT GAME

To quit the game you must first make sure that the command cursor is "active": that is, you must be able to move the command cursor along the command icons. This happens normally when you are selecting different screens. If the command cursor is active, pressing the F key will break out of the game. The screen will clear and a "QUIT OR SAVE?" message will be displayed. Press the Q key and you will "quit" to the GAME SELECTION screen.

GAME SAVE

The game can be saved at any time, before a Soviet attack takes place. The saved position can be reloaded at a later date and the game resumed.

SAVE GAME

Quit the game (see Section 13). The screen will clear and prompt you with "QUIT OR SAVE?". Press S for SAVE.

Cassette: Insert a rewound blank tape into the cassette player, and press RECORD and PLAY on the cassette player.

Disk: Insert a blank, formatted disk into the disk drive label side up.

Now press RETURN and the game will save. After saving, the prompt "QUIT, CONTINUE OR REPEAT" will be shown. If Q is pressed you will quit to the Game Selection screen. If C is pressed you will return to the game you have just saved. Pressing R will repeat the save process. That is, if you now press RETURN the game will save again. **WARNING:** On the disk version, make sure you have another disk to put a second or subsequent copy of the game position on. The game will not save two copies onto the same disk.

LOAD GAME

Enter the Game Selection screen, either by using the QUIT option if already playing the game, or by loading the game program as normal. Remove the program tape or disk and insert the tape or disk containing the previously saved game position. Select the LOAD action. When the screen prompt appears, press RETURN (and press the PLAY key if using a cassette player). The saved game should now load and then start.

ORBIT SCREEN

There are two methods of entering the ORBIT SCREEN.

METHOD A: If you have some system satellites in orbit during a game, enter this screen by selecting the JOYSTICK icon on the SDI Command screen.

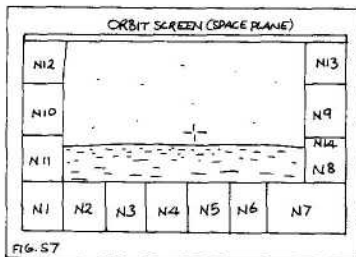


FIG. 57

METHOD B: Select ORBIT when on the Game Selection screen. This enables the player to practice/play the Orbit screen with the game set up in a special way, as follows:

1. Ten satellites of each system are already built and in orbit.
2. All systems are armed.
3. A Soviet attack is taking place.
4. The player starts on the SDI Command screen.

This is a special set-up and a normal game CANNOT be played from this position. When the player exits from the SDI Command screen, the game will restart on the Game Selection screen. Apart from these exceptions, all the subsequent information in this section applies.

Entering the Orbit screen (see Fig. 57) gives you manual control of one satellite of the system you have chosen. In the case of manned systems (ie the Space Plane), it is a view from the cockpit. For all the other systems it is a view of the manual control console at the SDI COMMAND CENTRE on Earth. The central "view" is given by a video camera on board the satellite in orbit.

To be able to go to the Orbit Screen you must have at least one satellite of the system in orbit. In order to fire any weapons on the satellite, the system must be armed. If the Soviets have not launched an attack, there will be nothing to fire at!

The central view shows the Earth below and stars, targets and so on rising from the horizon. The video image is subject to electronic processing before being displayed, so the Earth and stars are faded and the targets are brightened. Targets can also be detected by their changing positions relative to the stars.

The top right display box [N12] is the type of system for which you have manual control. The boxes below this show the number of missiles [N10] and warheads [N11] you have destroyed so far.

The number below the lightning flash symbol [N13] is the fire power remaining in the main weapon.

Below this are the two displays for the Target Type Computer. This uses radar and data from other satellites to give warning of approaching targets. Large targets are classed as missiles and the number of these targets is shown in the Missile Target Display [N9]. Smaller targets are classed as warheads and their number is shown in the Warhead Target Display [N8].

At the bottom of the screen is a row of command icons. You can select these as normal. All systems have the following command icons and display:

[N1] WORLD

When selected, the player is returned to Earth!

[N2] SLAM

Arms the SLAM missiles, of which there are two on the space plane.

[N3] MAIN WEAPON

Selecting this will arm the satellite's main weapon. Note that the main weapon type will vary according to the system you have selected.

[N4] X-RAY LASER

Arms and launches the X-RAY LASER device. The space plane carries only one of these.

[N5] CAMERA

This causes the Optical Image system to compare the image of the target with patterns stored in its memory. It will display the closest match on the Image Display [N6].

[N7] MESSAGE DISPLAY

Displays messages such as "Weapon Armed".

The space plane is unique in that it also has two other types of weapons in addition to the main armament. The extra command icons are:

WEAPON TYPES AND CONTROL

Each type of weapon has different controls. When a weapon is armed, the Aiming Sight will normally appear on the screen. To exit from controlling the weapon, move the sight to the bottom of the view screen and press the fire button. The joystick will then be back in control of the Command Cursor. The one exception to this system is the X-RAY Laser device, which does not have an aiming sight. Control will automatically return to the command cursor after detonation.

NOTE: The weapon graphics [D11-D14] are shown in Fig. 52 (SDI Command screen).

[D11] LASER

A high-energy pulse laser fitted to the Laser system and the Space Plane system. The Laser Satellite system has energy for 220 "shots" - the Space Plane version has 200 "shots". Aim with the sight and press the fire button to fire. Single target capability.

[D12] RAIL GUN

An electromagnetic rail gun with 250 rounds of ammunition. Aim with the sight and press the fire button to fire. Single target capability.

[D13] SLAM

The Satellite Launched Attack Missile is a solid-fuel missile with an advanced laser tracking system, and is a true fire-and-forget weapon. It is unusual as it can kill its target in two distinct ways

After the SLAM system is armed, it will automatically track your aiming sight. If it can "see" a target in the aiming sight, it will launch and attack the target. Once the SLAM ARMED message is displayed, no further presses of the fire button are needed. Single target capability.

[D14] X-RAY LASER

A multiple X-Ray Laser with a nuclear bomb as its power source! This is a fire-and-forget weapon with a manual override. When you select the weapon, it will arm and launch automatically. Then the yellow X-Ray target count display [N14] will appear, which indicates how many targets the laser is currently "locked" onto. This number will change as the device acquires or loses targets. After a set time, the device will detonate and destroy the targets it is locked onto. If, however, the fire button is pressed again after launch, the device will immediately detonate. This is useful if the weapon has locked on to all targets: that is, the number shown in the Target Count Display equals that in the Warhead Target Display [N8] or Missile Target Display [N9]. Multiple target capability.

NOTE: X-RAY LASER WARNING

The device will detonate automatically at a safe distance from the launch craft, but if manual override is used it is possible that the nuclear explosion will destroy the launch craft. If this is an X-Ray Laser armed satellite it doesn't matter, since the launch craft is useless once the device is released. When the launch craft is the Space Plane, it WILL matter!

SDI SYSTEMS (IN THE GAME)

All the SDI systems depicted in the game are being developed, tested or studied, though we admit the SLAM system is a touch more advanced than the proposed one! The system graphics are shown in Fig. 52.

[D10] LASER SYSTEM

This is composed of satellites carrying high-energy lasers. The electric power is provided by [CENSORED] units. During operation, these units produce a ringing sound: giving rise to the system's popular name, "Dead Ringer". Each satellite has a high KC (Kill Capacity) against both missiles and warheads. A complete system will contain 100 satellites.

[D12] ELECTROMAGNETIC RAIL GUN SYSTEM

The satellites are equipped with electromagnetic guns which fire solid "shells" at velocities of over 40 miles per second. Electrical power is taken from explosive charge generators, with vapourising liquid nitrogen used to cool the barrel and feed the ammunition. Each satellite has a low KC against missiles and a normal KC against warheads. The complete system consists of 180 satellites.

[D13] MULTI SLAM SYSTEM

Each satellite of this system carries 64 SLAMs - Satellite Launched Attack Missiles - which incorporate a number of unusual features. The solid fuel motor provides propulsion and generates electrical power, which powers the nose-mounted sensor used for target tracking. While fuel remains in the motor, the missile will attempt to kill the target with a direct hit. Once the fuel is exhausted, the remaining energy is expended to overload the laser, firing a final high energy pulse at the target which may destroy it. The system has a high KC against missiles and a low KC against warheads. The complete system contains 250 satellites.

[D14] X-RAY LASER SYSTEM

The satellites of this system each carry one X-ray laser device. The computer on board the satellite tracks all targets, passing targeting information to the X-ray device via an ultra-high speed data link. Under manual control, these transmissions are fed to the operators at ground stations, to warn that the device is armed and launched. Each device consists of a small nuclear bomb and bundles of fusing rods. Each fusing rod is allowed to "float" between aluminium rings, and is aimed by varying the electrostatic charges on these rings. When the device is detonated, it is destroyed in a millionth of a second; however, the energy produced causes each rod to transmit an X-ray laser pulse before it is vapourised. Although the pulses last for only a few billionths of a second, they carry energy in excess of a trillion watts! Each satellite has a low KC against missiles and a superb KC against warheads. The complete system contains 60 satellites.

[D15] SPACE PLANE SYSTEM

This system's "satellites" are manned vehicles best described as a cross between a mini shuttle and a fighter aircraft. In the "War Mode" the single pilot has an array of weapons to choose from, including lasers, X-ray lasers and SLAMs. The SLAMs and X-ray devices use the standard piston launch technique, where each weapon is ejected in a launch tube. Behind the weapon is a piston, which is moved forward to eject the weapon by vapourising nitrogen to create pressure. In addition, the piston is trapped at the end of the tube and the gas exhausted via a nozzle at the rear of the launch tube: this helps to cancel some of the "launch recoil" which tends to destabilise the launch vehicle. (These pistons are also standard equipment on all SLAM and X-ray systems, and can be noted by their characteristic "hiss" on launching). Each space plane has a low KC against missiles and a normal KC against warheads (this, however, depends on the pilot's ability).

In the "Repair Mode", the space plane can carry a second crew member and other equipment.

[D16] BATTLE MANAGEMENT SYSTEM

This is really a collection of systems which include battle management satellites, computer systems, communication systems and Anti-Ballistic Missile (ABM) systems. The system's KC against both missiles and warheads is poor: however, this is the only system which will attack warheads that have entered the Earth's atmosphere (using the ABMs). The ABMs have a high KC against incoming warheads.

The communication systems are computer-controlled, and messages or commands are very secure from decoding or jamming. This is achieved by various means, one of which is that each message contains a new code to be used for the next message. If the Battle Management system is built, it can be used to control other system. The complete system contains 100 "satellites". This is simply a measure of the system's "completeness" and not, in fact, the number of satellites or ABMs in the system.

TEMPT

To stumble into somebody else's computer system.

To be someplace you're

really not supposed to be.

And to get the

HAC strange feeling that it really does

mat PLE **HACKER**

strange feeling that it really does matter. "LOGON PLEASE:" is all you

ATION.

get to start with. That's it. From there, it's up to you

If you're clever enough and smart enough you could

discover a world you've never before experienced on your computer. Very tempting. Hence

on your computer. Very tempting.

BASKETBALL™

JOYSTICK NOTES

Amstrad CPC owners may use any CPC compatible joystick.

Interfaces that may be used by Spectrum owners are Kempston, Interface II and cursor compatibles.

CONTROLS

All controls and movements allowed are listed throughout the *Players Guide* as *JOYSTICK* controls or *FUNCTIONS*. Players may prefer to use keyboard keys instead for Player 1 whilst Player 2 must always use keyboard. Refer to the table below when playing by keyboard, P1 indicates Player 1, P2 indicates Player 2, and Functions A - C are specific features that may be used.

Keyboard control table for GBA CHAMPIONSHIP BASKETBALL

Player No./Function	Spectrum Key	Amstrad Key
P1 - Joystick FORWARD	Q	Q
P1 - Joystick BACKWARD	A	A
P1 - Joystick LEFT	X	X
P1 - Joystick RIGHT	C	C
P1 - Joystick BUTTON	Z	Z
Function A	ENTER	ENTER/RETURN
Function B	SPACE BAR	SPACE BAR
Function C	CAPS SHIFT & T SIMULTANEOUSLY	ESC
P2 - Joystick FORWARD	U	U
P2 - Joystick BACKWARD	J	J
P2 - Joystick LEFT	O	O
P2 - Joystick RIGHT	P	P
P2 - Joystick BUTTON	M	M

SELECTING YOUR GAME

Select your game by pressing the SPACE BAR until your required play is highlighted.

PRACTICE SESSIONS

Just as in the real sport, Two-on-Two offers you the chance to warm-up before the game. The scoreboard and the time clock are not active and there are no penalties. Use FUNCTION B key to exit the practice sessions.

HEAD-TO-HEAD (2 PLAYER)

|| With this option, two players play against each other, but each has a computer teammate to help, dressed in a similar colour jersey.

TEAMMATES (2 PLAYER)

|| If you choose this option, both players play together as a team, up against a hard-driving computer team.

CHALLENGE (1 PLAYER)

|| Player 1 pairs with a computer-controlled teammate, and challenges a mighty computer duo. Player 1's team will play as the HOME team.

PASSING

To pass the basketball to your teammate, quickly press and *immediately release* the joystick button.

If your teammate has possession of the basketball, you can request they pass it to you by quickly pressing the button. Your teammate will usually pass the ball, but not always - after all, any player can hog the ball now and then! Your teammate may pass the basketball even if you haven't requested it (unless you are moving) as you are open.

To catch the basketball, you must be directly in line with it, otherwise the ball will go out of bounds, or to the opposition.

SHOOTING

When you have possession of the basketball and want to make a shot, first hold down the joystick button. Your player will jump in the air. Release the button when you want your player to make a shot. Timing here is critical - if you release the ball at the top of the jump, you have a better chance of scoring. If you fail to shoot before your player lands, you'll be charged with *travelling*, an offence in Basketball.

[Hook Shots]

To make a hook shot, you must be downcourt near the baseline, with your back to the basket. With a hook shot, the ball is released as the player's arm "hooks" over his head. The advantage of this shot is that it cannot be blocked.

[Slam Dunks]

Probably the most satisfying shot in Basketball - ramming the ball through the hoop! You must be at the baseline as far downcourt as you can go, and you must shoot when you're in one of three areas: under the basket, half a step left of low post left (LPL) or half a step right of low post right (LPR). Finally, there must be no defenders under the basket. If these conditions are met, a slam dunk will always be successful.

[Tip-Ins]

If a player shoots, misses, and then grabs the rebound while directly facing the basket, he'll try again (a tip-in). As long as the player is facing the basket and underneath it, the tip-in will be automatic once the player jumps.

[Rebounds]

A player can rebound only when he's in the area immediately surrounding the basket. To rebound, press the joystick button in the same way you did to make a shot - your player will jump for the ball. Timing the jump is the key to successful rebounding.

[3 Point Shots]

If a player shoots a basket from outside the white 3-point line, that basket is good for 3 points instead of the usual 2! Timing is again critical, and a basket difficult from this distance.

STEALING & BLOCKING

To steal the ball from an opponent, you must "bump" the player *on the side* on which he's dribbling or holding the ball.

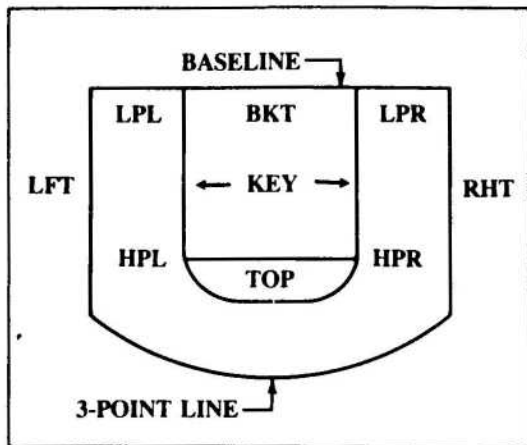
To block a shot, move in close to the player in possession of the basketball and press your button to jump (as if you were shooting). Your success will depend upon your timing and how close you are to the other player.

YOUR COMPUTER-CONTROLLED TEAMMATE

To instruct your computer teammate how to play when play resumes at the other end of the court, use the Playcalling Screen. The scoreboard is replaced for approx. 7 seconds by the Playcalling Screen while the players automatically run down the court and bring the ball back into play. Within this 7 seconds, you must select an offensive and defensive alignment from the Playcalling screen otherwise the computer will choose one for you.

The Playcalling Screen is divided into OFFENSE on the left and DEFENSE on the right. The offense screen shows the abbreviations BKT, RHT, TOP, LFT and SCRNL, which represent the five offensive plays you may select now. The Defense screen is similar, showing you options of LZN, HZN, MMD and MML — the four defensive alignments you can choose from.

Select a play by moving your joystick forward, back, left or right depending upon the play you wish to select. For example, forward for BKT or LZN, back for TOP or HZN, right for RHT or MMD and left for LFT or MML. On offense you can also use the joystick button to select the SCRNL play.



To pause the game use the *FUNCTION B* key on your keyboard. If you merely want to pause the game, just use the *FUNCTION B* when you're ready to resume play.

You can call a timeout when you're on offense. If you want to call a timeout, first use the *FUNCTION B* key, then press the joystick button. Each team is allowed five timeouts per half. On the scoreboard you'll notice five little yellow lights on the HOME and VISITOR sides of the board. Each time you call a timeout, one of these lights will go out.

To quit a game, press *FUNCTION C* key.

PENALTIES

Fouls and other penalties are displayed upon the scoreboard in flashing letters right after they occur. However, if a player is fouled while shooting, the foul won't be displayed on the scoreboard until after the shot has either gone in for a field goal or missed. Fouling the shooter results in one free throw if the basket is good and two free throws if he misses his shot.

GFL CHAMPIONSHIP FOOTBALL

CONTROLS

All controls and movements allowed are listed throughout the *PLAYER'S GUIDE* as JOYSTICK controls or FUNCTIONS. Amstrad and Spectrum players may prefer to use keyboard keys instead for Players 1 and 2, and these are listed against the equivalent feature below. Refer to this table when playing by keyboard. P1 indicates Player 1, P2 indicates Player 2, and Functions A - D are specific features which may be used.

Keyboard control table for GFL CHAMPIONSHIP FOOTBALL

Player No./Function	Spectrum Key	Amstrad Key	Commodore Key
P1 - Joystick	Q	Q	Joystick
FORWARD			FORWARD
P1 - Joystick	A	A	Joystick
BACKWARD			BACKWARD
P1 - Joystick	Z	Z	Joystick
LEFT			LEFT
P1 - Joystick	X	X	Joystick
RIGHT			RIGHT
P1 - Joystick	C	C	Joystick
BUTTON			BUTTON
P2 - Joystick	K	CURSOR UP	Joystick
FORWARD			FORWARD
P2 - Joystick	M	CURSOR DOWN	Joystick
BACKWARD			BACKWARD
P2 - Joystick	B	CURSOR LEFT	Joystick
LEFT			LEFT
P2 - Joystick	N	CURSOR RIGHT	Joystick
RIGHT			RIGHT
P2 - Joystick	L	COPY	Joystick
BUTTON			BUTTON
Feedback disable	F	F	F3
Feedback on	CAPSHIFT	/ESC	RUN/STOP
Re-set	SPACE		

SELECTING YOUR GAME

AMSTRAD USERS NOTE: During game selection press the X key to select.

1 or 2 Player Game

4 and 7 Minute Periods

Drafting a Team

1. Player One begins by selecting the division required (move joystick 1 forward or back to position the football, and press the fire button to register that selection).
2. Player One now selects their team from the chosen division in a similar manner.

3. Player One moves joystick 1 forward or backward to move the football to either the CANCEL or CONTINUE options at the bottom of the screen, and pressing the fire button when the footballs are beside the desired option. If CANCEL is selected, Player One can alter all of the selections already made (and will repeat stages 1-3). If CONTINUE is chosen, all of the selections made will now be registered, and the game will continue.
- [] If a one player game has been selected earlier, Player One now repeats stages 1-3 above using joystick 1 to draft the computer's team, and hence choose the opposition to be played against.
- [] If a two player game has been selected earlier, Player Two now repeats stages 1-3 above but using joystick 2.

GAMESTAR GFL FOOTBALL – RULEBOOK SUMMARY

- [] Gamestar GFL Football is played between two teams; in this case either 1 player -v- the computer, or 1 player -v- another player. Just as in the real sport, each team's objective is to score more points than the other team. Points are scored from touchdowns, "extra" points, and field goals.
- [] Most of the rules you must follow are identical to those in the sport. For instance, while on offense (attacking), you have four plays (or moves) in which you must try to advance 10 yards and get a first down. If you fail, you turn the ball over to your opponent, who then becomes the team on offense. The computer will automatically referee the game, and switch teams between offense and defense accordingly.
- [] A play is over when your ball carrier is successfully tackled, runs out of bounds, or drops a pass.
- [] You score 6 points for touchdown, 3 points for a field goal and 1 for a point after touchdown (PAT).
- [] Other rules apply strictly to GFL Championship Football. For example, once your team is set at the line of scrimmage, you can't pass after calling a running play, nor can you run after calling a passing play or run a pass route into the end zone. Similarly, you can't "fake" a punt or field goal. Once your team is lined up in a kicking position, you'll have to kick the ball away. You still have plenty of opportunity to outsmart your opponent, however.
- [] The scoreboard displays all of the information you'd find at any American Football stadium.
- [] The scoreboard also contains two PLAY SELECTION lists; on the left-hand side are the offensive (attacking) plays, and on the right-hand side are the defensive plays. Each play (name) in each list represents a different specific movement of your team once you are in Game mode, and obviously you must try to use the correct move at the relevant time – selecting a move in this way is known as "Calling a Play".

- [] The colour of each play selection list indicates which team is offensive or defensive at that time respectively, and will alter during the game. Player one can call any of the plays listed in blue, player two can call any of the plays shown in red.
- [] To see all of the play choices available to you, push the joystick forward or backward. As you do, the play choices will scroll past. The one in the middle of the list at any time will be highlighted white – you should ensure that your intended play is the highlighted item. In a two player game, you'll both have 30 seconds in Scoreboard mode to select your next play. In a one player game, your time allowed to select a defensive play reduces with each time period, which adds to the difficulty of the game and speeds up play.
- [] When in Game mode, the scoreboard will disappear and you will see the on-field view of a specific team player, just as if you were that player on the field!

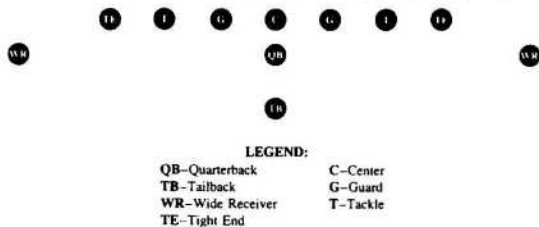
TACTICAL TIPS

Kickoff

The **kicking team** which is controlled by Player Two using joystick 2 (or the computer) are wearing red jerseys. The **receiving team**, controlled by Player One using joystick 1, are wearing blue jerseys and are facing you.

The **kicker** (Player 2) immediately begins his approach to the football and kicks off, with or without assistance from his "coach" (Player 2). Player 2 can help the kicker get maximum distance on the kickoff by pressing the joystick button just as his foot reaches the football.

The Basic Offensive Formation



- [] Once play begins, you'll be called upon to manoeuvre the TB or one of the WR (depending upon your choice of play) with your joystick. Push the joystick forward to run downfield or left or right to move laterally towards the sidelines. Your TB and WR can't run backwards while eluding defenders, but they do have two other special moves: You can make them faster when they are running laterally and you can have them throw a stiff-arm at a defender.

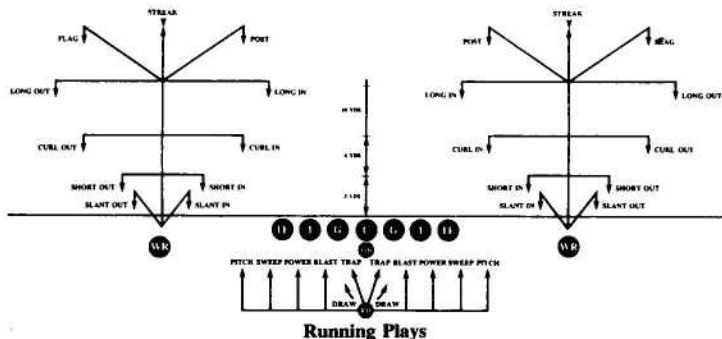
Executing Plays

	STEPS	JOYSTICK DIRECTION
STREAK LEFT	8	1
POST LEFT	4	6
FLAG LEFT	6	6
LONG IN LEFT	4	2
LONG OUT LEFT	4	6
CURL IN LEFT	4	4
CURL OUT LEFT	4	4
SHORT IN LEFT	2	2
SHORT OUT LEFT	2	2
SLANT IN LEFT	2	2
SLANT OUT LEFT	2	2

Pass Routes

← JOY STICK MOVEMENTS FOR PASS ROUTES →

	STEPS	JOYSTICK DIRECTION
STREAK RIGHT	8	1
POST RIGHT	4	6
FLAG RIGHT	6	6
LONG IN RIGHT	4	2
LONG OUT RIGHT	4	6
CURL IN RIGHT	4	4
CURL OUT RIGHT	4	4
SHORT IN RIGHT	2	2
SHORT OUT RIGHT	2	2
SLANT IN RIGHT	2	2
SLANT OUT RIGHT	2	2

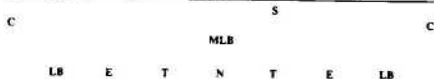


Running Plays

The Defensive Plays

- [] Because the computer – not you – controls the movement of all the defensive players once a play begins, it's extremely important that you set up your defense in the right formation before a play begins.

The Basic Defensive Formation



LEGEND:

MLB—Middle Linebacker	N—Nose Guard
LB—Outside Linebacker	C—Cornerback
E—End	S—Safety
T—Tackle	

PRODIGY

WARDLOCK CREATES ORGANIC LIFE

The Machine Sorcerer Wardlock has created organic life in his mighty Mechlabs.

Wardlock was kind enough to give us a tour of his Mechlabs which are divided into four zones:

Ice Zone. Vegie Zone. Tech Zone. Fire Zone.

Bouncing around these Zones we saw the results of previous less successful experiments, the eerie Globewels and the less threatening Blobberites, until finally we were shown Wardlock's latest arrivals: Nejo, a humanoid baby and Solo the Syntleman, a synthetic humanoid flesh form.

Excerpt from the private diary of Solo the Syntleman:

I do not know how long I have been trapped in this nightmare maze of the Mechlabs but at last another humanoid has arrived to share my incarceration. The new arrival is named Nejo, a baby who follows me about and needs constant supervision; feeding, washing in the showers and protection from the Blobberites and Globewels. Now that I have Nejo I feel an even greater urgency to escape from Wardlock. To this end I have developed a plan to distract Wardlock by feeding spurious data into his terminals and disengaging his security system. I have also discovered that to unlock the doors to the outside world need to collect four Power Keys and place them within the Lockfire.

The Teleport system for travelling between Ice Zone, Vegie Zone, Tech Zone and Fire Zone has started working which may give me the chance I need to get ahead of Wardlock. The Bubblegun I produced is working well so I am now able to keep Wardlock's failed flesh experiments away... Somehow we must get out into space and find other organic life before Wardlock starts experimenting with us...

BIG TROUBLE IN LITTLE CHINA

PLAYING INSTRUCTIONS

You are looking at the Mechlabs from one of Wardlock's monitors. Around the side of the monitor are four Security System indicators (rotating cubes). There are also three indicators along the top of the monitor for Oxygen Supply, Nejo's Food and Nejo's Nappy. These will show you when you need to replenish your oxygen supply, how much milk you have for feeding Nejo and when you need to take Nejo into a shower to clean him up. At the bottom of the screen is a teletype which will type up messages to help you during the game.

To replenish your oxygen supply you must go to the Ice Zone and pop Oxygen Balloons.

To feed Nejo you must find Chef MechDonald and use the Bubblegun.

To disengage Wardlock's Security System you must collect Security Units and Take them to the Computer Control Centre. You are able to control Solo the Syntiemans movements.

Nejo will follow you if you do not walk too fast and wait for him to keep up with you. The controls are:

PRODIGY CONTROLS

LEFT	N
RIGHT	M
UP	A
DOWN	Z
FIRE	COMMA/SPACE
PICK UP	F5
DROP	F7
PAUSE	F1

or use a joystick

JOYSTICK CONTROLS

Fire button not pressed

Left	Move Left
Right	Move right
Up	Jump
Down	Duck

Fire button pressed

Up	High attack (unarmed)
Right	Mid attack (unarmed)
Down	Low attack (unarmed)
Left diagonally up	High attack (armed)
Left	Mid attack (armed)
Left diagonally down	Low attack (armed)

KEYBOARD CONTROLS

Left	I
Right	O
Up	Y
Down	H
Fire	P

SELECTION OF CHARACTERS

Jack Burton	B
Wang Chi	C
Egg Shen	S

The following keys will pause the game:-
Spectrum SPACE/BREAK
Amstrad ESC
Commodore F1

To pick up a weapon or eat food you should just walk over the weapon or food.

JACK BURTON, Fist/Bushmaster Combat

WANG CHI, Karate Combat

EGG SHEN, Zap Combat

SCREEN DISPLAY

At the bottom of the screen you are given indicators to show the status of each of the three characters that you may be controlling. Jack Burton is to the left, Wang Chi in the centre and Egg Shen to the right.

The characters stamina is shown by Yin and Yang signs which slowly disappear and may be topped up by eating food that may be found during the game.

If you find and pick up a weapon, i.e. by walking over it with the character who may use the found weapon, then a picture of the weapon will appear at the bottom of the screen to show you are carrying it.

The weapons are represented by:

Guns for the Gun.
Swords for the Sword.
Bottles of potion for the Magic.

Shown above the weapon picture of each of the characters is a bottle of magic potion. This may be found by the characters during the game and will give them added strength.

At the very bottom of the screen your score is given.

PLAYING INSTRUCTIONS

The game is played with three Characters:

- 1) Jack Burton, the all American hero who is very handy with his "Bushmaster" gun. When controlling Jack Burton the game becomes a "Shoot 'em up".
- 2) Wang Chi, the martial arts expert who is carrying a sword in which case the game becomes a "Hack 'em up".
- 3) Egg Shen the chinese magician who travels on a mystical floating cloud, in which case the game becomes a magical "Zap 'em up".

You may switch between these three characters at any time during the game so that you may choose the best character to deal with each situation. The other two characters will follow the one you are controlling.

CHAMPIONSHIP BASEBALL

CONTROLS

Keyboard control table for GBA CHAMPIONSHIP BASEBALL

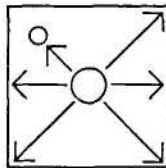
Player NO./Function	Spectrum Key	Amstrad Key	Commodore Key
P1 - Joystick FORWARD	W	W	Joystick FORWARD
P1 - Joystick BACKWARD	X	X	Joystick BACK
P1 - Joystick LEFT	A	A	Joystick LEFT
P1 - Joystick RIGHT	D	D	Joystick RIGHT
P1 - Joystick BUTTON	S	S	Joystick BUTTON
Function A	C64 versions only		F1
Function B	C64 versions only		F3
Function C	P	P	F5
Function D	P	P	F7
P2 - Joystick FORWARD	U	6	Joystick FORWARD
P2 - Joystick BACKWARD	M	5	Joystick BACK
P2 - Joystick LEFT	H	T	Joystick LEFT
P2 - Joystick RIGHT	K	R	Joystick RIGHT
P2 - Joystick BUTTON	J	G	Joystick BUTTON

Dive back into the bag when retreating

Slide into the bag when advancing

Retreat to last base passed

Advance lead runner



Dive back into the bag when retreating

Slide into the bag when advancing

(To obtain any valid diagonal joystick movements from keyboard, press both above keys together so that the diagonal line lies between)

PITCHING AND HOLDING RUNNERS ON BASE

FREEZE!

[] During game play, you can use the FUNCTION C key any time to pause the action. Use FUNCTION D to restart where you left off.

BATTING

- [] As each hitter comes to the plate, his position, ratings (B for BATTING, C for CATCHING, R for RUNNING and T for THROWING), and hitting style are displayed for several moments on the scoreboard strip at the top of the screen.
- [] Particularly when you're fielding, it's important to study the hitter's batting and running ratings and his hitting style. This will help you decide how to pitch to him and if he gets on base - how much of a base-stealing threat he is.
- [] When you're batting, your options are to Bunt or Swing Away.

[The Bunt]

To bunt, press and hold down the joystick button just before the pitcher releases the ball. Release the joystick button before the ball reaches the plate to take the pitch.

[Swing Away]

To swing away, press the joystick button after the pitcher releases the ball.

[Running the Bases]

When you put the ball in play, the batter automatically runs toward first base. Once he reaches the bag on first base, however, you control the rest of his baserunning on the play. You can take a lead, retreat back to the bag, start a runner on the pitch, steal bases and slide.

- [] If there are runners on the base, you control the lead runner, and only the lead runner can steal a base. When the ball is in play, all other runners advance and retreat automatically if forced. As soon as the lead runner scores or is put out, your control shifts immediately to the next lead runner. On a home run, all runners score automatically - you can sit back and savour the moment!

- [] At the start of each half inning and each time the ball is returned to the pitcher following a play or a pitch, the pitcher bends over and looks for a sign from the catcher. (At the end of each play and when a pitch is swung on and missed, press the joystick button twice to return the ball to the pitcher, then twice more to "set" your pitcher.)

To start your delivery, press and hold down the joystick button - the pitcher moves to an upright position and comes set - then move the joystick to control the type and location of each pitch with your joystick, as shown. (Keyboard players press both keys which the diagonal lines between at the same time).

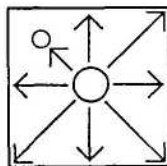
High and inside
knuckleball

Hard knuckler, inside corner

Screwball, inside corner

Fastball

Change-up



Slider, outside corner

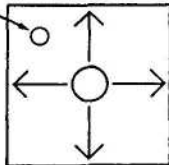
Outside
knuckleball

Curve, outside corner

To pick off a runner - or just hold him close to the bag - release the joystick button before moving the joystick to deliver the pitch. You may then throw to any base as shown.

Press button twice
to throw to pitcher

Home



1st base

3rd base

2nd base

[Fielding and Throwing]

- When the ball is put in play, the player nearest the path of the ball becomes eligible to field it. If the ball has a shadow, it's a fly ball; otherwise it's a grounder.

To throw the ball, press and release the joystick button, then move the joystick as shown to throw to a base or press the button a second time to throw to the pitcher on the mound.

ENHANCEMENTS TO COMMODORE CASSETTE VERSION

The Commodore 64 cassette has several additional features, detailed below, simply refer to the features after loading and then as necessary.

[DRAFTING A NEW TEAM]

NEW TEAM—you first get a chance to name your team. Type in the name you want from the keyboard (up to 12 letters and spaces) then press RETURN.

[FILLING OUT YOUR LINE-UP CARD]

- After you finish drafting a new team you must fill out your line-up card.

- When your **BATTING LINE UP** screen first appears, the name, position and ratings of your first basemen are displayed at the top of a blank line card. Move the joystick right and left to cycle forward and backward through the players on your roster—your eight starters and three possible starting pitchers.

Move the joystick backward and forward to move the baseballs to the spot in the line up where you want the currently listed player to bat, and press the joystick button to place his name there.

- Diskette users will then have a chance to choose the divisions they want to play in. In **EXHIBITION** play you'll be pitted against a randomly selected team from the division you choose. You'll next be prompted to **INSERT GAME DISK AND PRESS BUTTON TO GO ON**. In **LEAGUE** play you'll then see the division standings. Press the joystick button and the game will begin.

GOING TO THE BENCH (C64 ONLY)

- Before each half inning (other than the top of the 1st), there is a 5-second delay during which you can elect to make substitutions in your line-up.
- To make a substitution, player one uses the **FUNCTION A** key during the delay and player two uses the **FUNCTION B** key. For each player (player one first), the leadoff man's position in the batting order, name, fielding position and rating appear on the scoreboard. Below them are the name, position and rating of available reserves. Only the utility infielder may be substitute for infielders, the utility outfielder for outfielders and the relief pitcher for the starting pitcher. Tap the joystick to the left and right to cycle down and up through the line-up.

Star Raiders II™

PLAYING THE GAME

COMMODORE 64/128

GETTING STARTED

Press the Fire button on the joystick and watch your screen. In a few moments you'll be at the controls of your Fighter, the Liberty Star, looking through the Battle Window onto the planet Taris in the Celest IV Star System. Your Pulse Laser Cannon sights (bracketed) appear in the center of the Battle Window as a pack of Zylon Fighters swarms in to attack.

Press [P] to pause the game and identify the elements in the game display.

AMSTRAD

Control of the Liberty Star is mostly from joystick and all instructions throughout this booklet refer to joystick movements. You may choose to use the keyboard for control, as follows:

Joystick Control

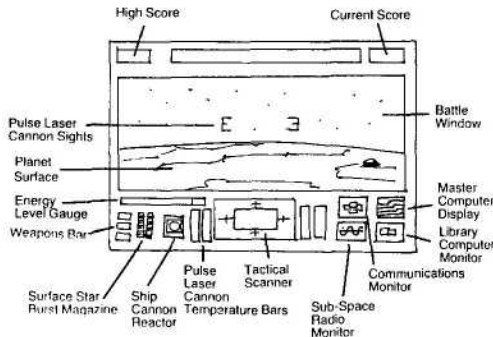
Joystick LEFT
Joystick RIGHT
Joystick FORWARD
Joystick BACKWARD
Joystick BUTTON

Equivalent Keyboard Key

N
M
A
Z
SPACE

When the program has loaded, you should first select the **CONTROL** method you wish to use for controlling the Liberty Star. If you press [J] key several times, you will see that the right hand portion of the Message Window will toggle between the joystick and the keyboard. Ensure that the Message Window displays the control method you require before starting your mission.

Next press the [L] key to alter the **DIFFICULTY LEVEL** (shown on the right hand portion of the Message Window, prior to starting a Mission). Level 1 is the easiest level.



Press [P] to continue the game. You are now computer-locked into orbit above Teris. Fire on the Zylon Fighters as they come into range within your sights by pressing the joystick Fire button. Chase the Fighters by pushing the joystick handle forward to speed up or backward to brake.

Protect the Liberty Star by activating its shields. Press [T] to view the outline of the Liberty Star on your Tactical Scanner. Your shields are activated if a row of dots surrounds the outline. If not, press [S] to activate them.

When your shields are undamaged, you're safe. When you get a message that your shields are damaged, you're in trouble and need to warp to a Space Station for repairs.

Press the [Space Bar]. The System Chart showing the Celos IV Star System appears. Press [P] to pause the game while you examine the elements in the chart.

This System Chart shows the locations of planets and other elements in the Celos IV Star System.

Press the joystick button to continue the game. Move the joystick handle in the direction of another location on the chart, and the hand moves accordingly. When the hand points at a potential destination, a circle appears around it and the Readout Box displays important information about it.

Pressing the Fire Button now will warp you to the new location. You can choose either to warp there or to stay on Teris. Press the [Space Bar] to return to Battle Window action.

Keep checking your Energy Level Gauge and Message Window. When your fuel supply runs low or a Damage Report appears, warp to the nearest Space Station. To do this, press the [Space Bar], point the hand at a Space Station, and press the Fire button on the joystick. At the Space Station, the Liberty Star will automatically dock, refuel, and undergo repairs. When the Energy Level Gauge shows full, warp back to battle.

AMSTRAD

Press the (Return/Enter) key. The System Chart showing Celos IV Star System appears. Press [P] to pause your mission while you study the elements in the chart.

Press (P) to continue the game. Move the joystick handle in the direction of another location on the chart. A Trajectory Line appears to mark your path. When the path reaches a potential destination a circle appears round it and the Readout Box displays important information about it.

Pressing the Fire button now will warp you to the new location. You can choose either to warp there or to stay on Teris. Press the (Return/Enter Key) to return to Battle Window action.

Keep checking your Energy Level Gauge and Message Window. When your fuel supply runs low or a Damage Report appears, warp to the nearest Space Station. Press the (Return/Enter Key) set the Trajectory Line to a Space Station and press the Fire button on the Joystick. At the Space Station, the Liberty Star will automatically dock refuel and undergo repairs. When the Energy Level Gauge shows full, warp back to battle.

WARPING TO PROCYON

Destroying the Zylon Attack Bases is the key to saving the Federation. Until they're eliminated, those bases build enemy starcraft at breakneck speed.

Penetrate the Zylon stronghold by following the steps below:

1. Press the [Space Bar], point the hand at the Procyon Star System, and press the Fire button on the joystick to warp to enemy territory.
2. You're now in orbit over Morkoth. Ignore the attacking enemy fighters. Press [W] to activate your Surface Star Bursts. An "X" – your target sight – appears on the surface of the planet in your Battle Window.
3. Pull the joystick handle back to slow down. You're on a bombing run! Wait for a city to appear in the distance and manoeuvre your ship towards it.
4. That is your target – a Zylon Attack Base! Fire the Surface Star Burst missiles. Manoeuvre the "X" so it's directly over the base when the missiles hit.
5. Destroy Attack Bases on all three planets of the Procyon Star System. Continue your bombing runs until you use up your SSB's or run low on energy. Immediately warp to a Space Station for refueling and repairs.

HANDLING THE JOYSTICK

The joystick controls the Liberty Star and your weapons systems.

- Pushing the joystick handle to the left or right moves the Liberty Star in that direction.
- Pushing the joystick handle forward or backward speeds up or slows down the Liberty Star when in orbit over a planet. When in space, this motion controls up or down movement.
- Pressing the Fire button on the joystick deploys your weapons or initiates warp to another location.

KEYBOARDS COMMANDS

[P] Press once to pause, then press the joystick button to resume action.

[W] Press to switch weapons systems.

[T] Press to switch your Tactical Scanner between Target Mode and Weapons Systems Mode.

[S] Press to activate or deactivate shields.

[Space Bar] Press to switch between the Battle Window and System Chart.

AMSTRAD

[Return/Enter] Press to switch between the Battle Window and System Chart.

[ESC] To end a mission.

SEE PAGE 52 FOR SPECTRUM DETAILS

EXPLORER

Thirty billion light years from the nearest service station and the inertial stabilizers cut out. You make a somewhat cryptic comment about used spaceship dealers. The warranty falls to the floor in the first shudder of turbulence as you hit the upper atmosphere of the emerald planet you are doomed to die on.

OK, you weren't as lucky as you'd hoped — you didn't die, but now you have a problem. The last planet scan before corruption revealed that the planet consisted of forty billion mappable locations. In nine of them are fragments of your craft.

EXPLORING

To find them, and give yourself a chance of returning to civilisation, you kit yourself out with a jet pack, nine radio beacons, nine anti-grav drones for sending bits of space craft to beacons, object sonar, radio direction finder, a compass, a laser pulse gun, and some heavy jungle boots.

To start with, the most sensible thing you can do is take a sounding for the nearest object. This will give you a bearing, and also an idea of the distance, dependant on echo delay. If the object is further than a civilised walk it will say 'out of range'.

You will soon become aware of strange swirling patches of colour in the jungle. If you get close to one of these it will invite you to enter. Once inside you will be asked for a destination. Name the place of your dreams and it will take you there. Any name will do, there are so many places on the planet.

Another navigational aid, the radio beacons, can be popped down anywhere. Your radio sounder will give you bearing and range on beacons, so you can get down to a bit of constructive triangulation.

CONTROLS

Any joystick will steer you through or over the jungle. On the ground pushing the joystick forward will move you in the direction of your compass bearing. Use the fire button or any key to stop. Pushing the joystick left or right will alter your bearing, while pulling it back puts you into a 180 degree turn.

In weapons mode push the fire button to activate your laser pulse gun.

U takes you up about a thousand feet; press it again and you get another thousand. D takes you down again. Watch landing on the trees; they're pointed. Above the planet the joystick will move you north, south, east and west, regardless of your compass bearing.

Key Controls

On the ground

Spectrum	Amstrad
6 turn to the left	5
7 turn to the right	8
8 180 degree turn	6
9 move in the	7
direction of your	
compass bearing	

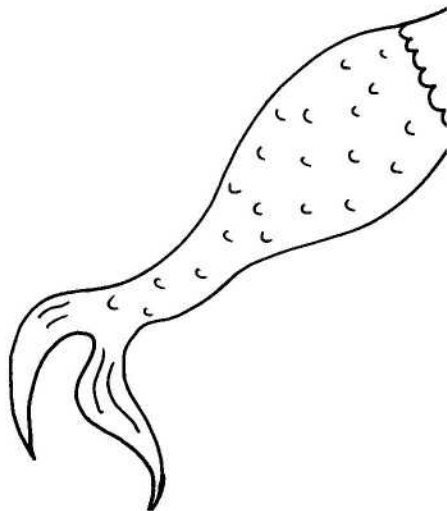
In the air

6 west	7
7 east	6
8 south	5
9 north	8

Pressing break/space brings up a menu on your headup display. Once the menu is up pressing the first letter of any word in the menu will access it. The same is true of the subsequent menus.

Above the planet the joystick will move you north, south...

MERMAID MADNESS



SEE GAME FOR KEYBOARD CONTROL:

UP DOWN LEFT RIGHT FIRE/DROP/USE

PASS OVER OBJECTS TO PICK THEM UP

GENERAL INFORMATION

1.1 INTRODUCTION

This document describes the operational aspects of the Multi-Function Switching Matrix (MFSM). See the companion Maintenance Manual - Volume 2, Part # CIA-M-22544/B for detailed maintenance and troubleshooting information. This document, MFSM Operator's Manual - Volume 1, presents General Information, Functional Description, Controls and Connectors, and Operating Procedures for the MFSM. Installation procedures are covered in a separate publication, MFSM "Mark 5" Unpacking and Installation - Volume 3 (a security clearance of Alpha III, or better is needed to gain access to the installation document).

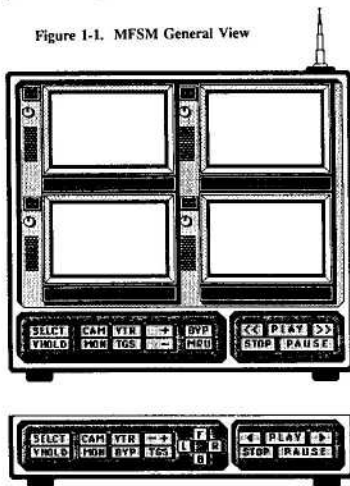
1.2 EQUIPMENT DESCRIPTION

The MFSM is housed in a ruggedized metal casing which is designed for optimal operation in adverse environmental conditions. See Figure 1-1 for a general view illustration of the MFSM. It features a sophisticated power supply, Phordman video matrix, transceivers, a solid-state video recorder, telemetry guidance capabilities, and switching/interface circuits.

1.2.1 Power Supply

Power is supplied by special transformers and adaptors that automatically adjust to voltages utilized at a local site. Because the MFSM is principally used in clandestine operations, its transformer circuitry also detects and masks power line analyzer device signals, rendering its presence

Figure 1-1. MFSM General View



and location electronically invisible to voltage probe probes. Nickel cadmium battery packs are provided for autonomous operation.

1.2.2 Phordman Video Matrix

A Phordman video matrix, consisting of four monitors can display any one of the following system functions: target site security monitors, video tape, telemetry guidance display, and site surveillance cameras.

1.2.3 Long-Range Transceiver

A built-in long-range transceiver transmits and receives encoded signals via a secured satellite uplink system (satellites are in geosynchronous orbit). Highly advanced Adaptive Differential Pulse Coded Modulation (ADPCM) circuitry is used to provide near real-time manipulation of the MFSM subsystems. When coupled with the satellite uplink, the MFSM can be placed anywhere on the earth, and can be controlled from any location. Transmission delays are typically on the order of 10.77 μ sec, due to average atmospheric propagation factors.

1.2.4 Short-Range Transceiver

Another transceiver is used to control a variety of remote equipment from the MFSM. This transceiver, which is part of the on-board Telemetry Guidance System (TGS), features provisions for an interactive synthetic aperture radar display of objects within a 5 square mile radius of the unit. Mobile Remote Units (MRUs), model numbers G-665 or better can be operated, as well as most Subterranean Remote Units (SRUs). See applicable documents for details on interface requirements.

1.2.5 Interfaces

The MFSM has provisions for a variety of video, audio, and digital interfaces (including GPIB and RS-232C). An internal 68000 microprocessor is used to control all MFSM subsystems, either by direct remote commands or by programs, which can be transmitted and stored for future use. Once the MFSM is installed at a remote site, it can be configured to intercept, process, and emulate significant aspects of that site's command and control network. Video systems can be monitored, controlled, and even bypassed with the on-board Video Tape Recorder (VTR). Data buses can be accessed to provide monitoring and control of digital systems. Automatic error detection and encryption circuitry assures accurate, undetected operation.

1.3 RELATIONSHIP OF UNITS

Figure 1-2 shows all elements of the overall system configuration and the operating environment of the MFSM. The MFSM is installed at a remote site to monitor its transmissions and control telemetrically guided devices. Uplink to a secured satellite system transfers data to and from the MFSM to a central processing system, which can be accessed through authorized computers or terminals.

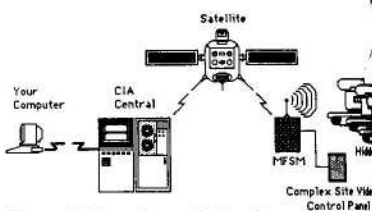


Figure 1-2. Overall System Configuration

SECTION 2

FUNCTIONAL DESCRIPTION

2.1 INTRODUCTION

This section describes only the functional aspects of the MFSM. Refer to Maintenance Manual - Volume II for the accompanying Section 3 - Theory Of Operation. Figure 2-1 presents an overall functional block diagram of the MFSM major subsystems. Bold numbers in the following text correspond to the circled numbers in Figure 2-1.

2.2 SYSTEM CONTROL

The SELECT pushbutton, 1, is part of the System Control circuit (not shown). The pushbutton operates a switch which selects one of four display screens. The screen selected is active for programming until the SELECT pushbutton is pressed again. Only one monitor may be selected for programming at any time. Then the next screen in a left-to-right and top-to-bottom sequence is activated. The V HOLD pushbutton, 10, allows vertical sync of an active screen to be corrected.

2.3 SITE MONITOR FUNCTION

The MFSM is patched into the target site's security system. The MON pushbutton, 2, allows a remote operator to view what the site monitor operators see as they scan their system. Because most installations utilize a dual monitor system, the MFSM monitor circuits can be switched between two separate signals, 3, by either pressing the MON pushbutton again or pressing the +/- pushbutton while in the monitor mode.

2.4 VTR AND BYPASS FUNCTION

Surveillance camera video signals can be overridden with images from the MFSM Video Tape Recorder subsystem. A bypass switch, 4, allows the target site's currently active surveillance camera signal to be substituted with a recorded video signal. The Video Tape Recorder is activated with the VTR pushbutton, 5. The VTR is actually a solid-state device which digitizes video signals on up to 38 separate channels and stores them in a virtual memory. The internal bubble memory has a 5 gigabyte capacity which is refreshed every 24 hours. Operation is identical to that of an analog VTR, and the controls associated with the subsystem are also similar.

Hacker II Volume I (Top Secret) ☺
 Multi-Function Switching Matrix Operator's Manual

CONTROLS AND CONNECTORS

3.1 GENERAL

In this section the location and function of all controls, indicators, displays, and connectors are identified. Note that this portion of the manual does not provide details on theory or operation of the elements identified. See Section 4 of this manual for operating procedures.

3.2 CONTROLS

Refer to Figures 3-1 and 3-2 for an overall view of the MFSM. The major elements of the device are the keypad control panels, the four raster scan display screens, and backpanel connectors.

3.2.1 Keypad Control Panels

Figure 3-3 provides an illustration of two configurations of the keypad control panel. Different keypad arrangements are used, depending on the MFSM model number and the operator's interfacing computer. They are divided into two major groups: system control and VTR control. Table 3-1 describes the elements shown in Figure 3-3.

3.2.2 Display Controls

Display controls are shown in Figure 3-4. Operating procedures and interpretation of these displays are detailed in Section 4.

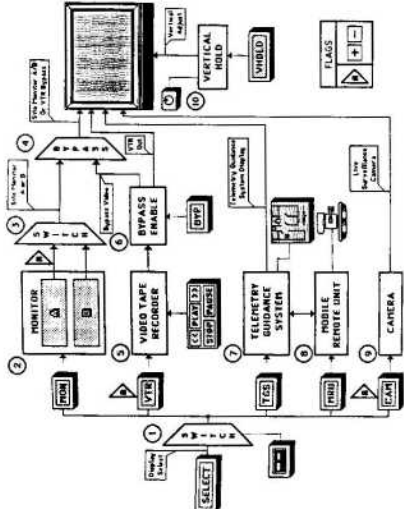


Figure 2-1. Functional Block Diagram

2.6 MOBILE REMOTE UNIT

MRUs can be activated by pressing the MRU pushbutton, 8, or any of the motion control pushbuttons. It is recommended that the TGS is used in conjunction with this operation, since MRU models compatible with most MFSM models do not presently feature an internal camera.

2.7 CAMERA

The output of target site surveillance cameras can be individually viewed. Pressing the CAM pushbutton, 9, intercepts the "live" camera for the corresponding channel selected.

2.5 TELEMETRY GUIDANCE SYSTEM

The Telemetry Guidance System, 7, functions as follows: 1) it provides a passive synthetic aperture radar display of all objects within an immediate range of 5 square miles, and 2) it integrates outputs from a motion detector, the target site digital traffic, and feedback from MRUs. Thus on one monitor a remote operator can simultaneously view a floor plan rendering of the target site, the present location of an MRU, the motion of site security personnel, and a representation of which surveillance cameras are active within the display parameters. Although the maximum range of the TGS is 5 square miles, it displays an immediate range of only 200 square yards at a time. The TGS is automatically linked to the movement of any active MRU, which then causes the display to be scrolled in accordance with the MRU location.

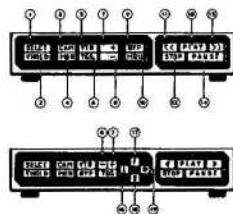


Figure 3-3. Keypad Control Panels

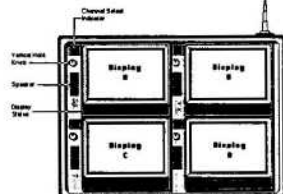
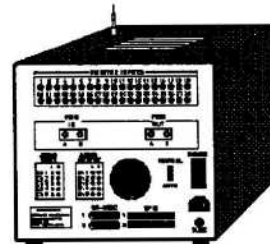
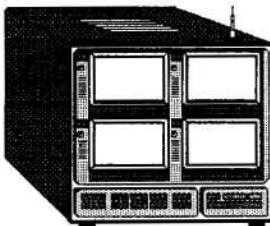


Figure 3-4. Phnordman Video Matrix



Figures 3-1 and 3-2. Overall MFSM Views

TABLE 3-1. Keypad Control Panel Elements

Item No.	Nomenclature	Description
1	SELECT	Used to select screens for activation. Selection occurs in a left-to-right, top-to-bottom, sequence.
2	VHOLD	Vertical hold adjust mode switch.
3	CAM	Selects "live" camera for viewing.
4	MON	Gains access to target site internal closed-circuit security monitors. Two circuits are available for viewing: MON A and MON B.
5	VTR	Activates the Video Tape Recorder.
6	TGS	Activates the Telemetry Guidance System display on the screen selected.
7	+	Increases channels when in CAM and VTR modes. Toggles between site security monitor circuits when in MON mode. Adjusts vertical hold on some models.
8	-	Decrements channels when in CAM and VTR modes. Toggles between site security monitor circuits when in MON mode. Adjusts vertical hold on some models.
9	BYP	Toggles VTR bypass of site monitor channel.

TABLE 3-1. Keypad Control Panel Elements

10	MRU	Activates Mobile Remote Unit (MRU). Only one MRU can be active at any time.
11	<<	Rewinds VTR tape.
12	STOP	Stops VTR tape. Causes screen to show blank until the tape is played. Indicated by highlight on pushbutton.
13	PLAY	Starts VTR tape. Function activation is indicated by highlight on pushbutton.
14	PAUSE	Pauses VTR tape. Function activation is indicated by flashing highlight on pushbutton. PLAY must be pressed again to restart tape.
15	>>	Advances the VTR tape.
16	L	Used in conjunction with MRU mode. Causes MRU to turn left.
17	F	Used in conjunction with MRU mode. Causes MRU to move forward.
18	B	Used in conjunction with MRU mode. Causes MRU to move backwards.
19	R	Used in conjunction with MRU mode. Causes MRU to turn right.

3.3 BACKPANEL CONNECTORS

Backpanel connectors are hardwired on site. All cables and connectors terminate in special adaptors that interface with the target site terminals. Figure 3-5 shows connectors on the backpanel of the MFSM.

3.3.1 Video Inputs/Outputs

Camera inputs are taken directly from taps of a remote site's video control center. Up to 38 channels are provided. The MFSM solid-state recorder bypass output connectors (labelled MON OUTPUTS) are patched back into the remote site switching unit. Bias and phasing mismatches are automatically compensated for. A sync signal from the MFSM control microprocessor is included with every VTR output to allow for precise synchronization with the target system's timing devices.

3.3.2 Audio Inputs/Outputs

Although the BNC connectors for monitor inputs also carry audio signals, the MFSM is equipped with 10 RCA-type stereo input and output jacks. These are used for ancillary debugging purposes. These jacks can also be interfaced with the Digital Audio Synthesizing Unit (DASU[®]), Part # CIA-UYA-007/9, for special highly sophisticated jamming and audio alteration purposes.

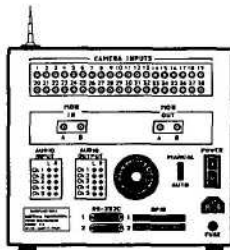


Figure 3-5. Backpanel Connectors

3.3.3 Data Acquisition Connectors

GPIO and RS-232C connectors form the lower part of the backplane panel. The target site's digital traffic is routed through these connectors. In addition, serial-to-parallel probes, signature analyzers, serial interface probes, trace modules, remote control devices, etc. can be connected to these ports. See the companion MFSM Maintenance Manual-Volume 2 for details on connectors.

SECTION 4

OPERATING PROCEDURES

4.1 GENERAL

This section describes detailed operating procedures for the following modes of MFSM operation:

- Monitoring
- VTR
- Bypass
- TGS and MRU

Operating procedures for menus and displays used to control parameters are presented in this section. Initial turn-on procedures, basic programming rules, and operating modes are discussed, respectively.

4.2 TURN-ON PROCEDURES

Gaining access to the MFSM from an unauthorized microcomputer terminal is virtually impossible. Uplinks are possible only when originated from central computer control to offsite terminals.

4.3 BASIC PROGRAMMING RULES

A hand shaped cursor is used to "press" the appropriate pushbuttons on the MFSM front panel. On microcomputers configured with a standard joystick the cursor is positioned with the control column, and the desired pushbutton is activated by pressing the joystick switch (typically #1). On microcomputers configured with a mouse the cursor is positioned by moving the mouse, and the desired

pushbutton is activated by pressing the switch on top of the mouse once.

When a pushbutton has been pressed, the finger of the cursor changes to a down position, and the lettering on the button is highlighted with color to indicate the active status. Depending on the pushbutton pressed (and the function in operation) the highlight may be momentary, it may continue as long as the button is held down, or it may stay on until the pushbutton is pressed a second time.

4.3.1 Selecting Display

To select a display, press the SELECT pushbutton. The channel indicator for next display in a left-to-right, top-to-bottom order will immediately flash. The channel number is changed by pressing the + or - pushbuttons.

4.3.2 Adjusting Vertical Hold

Sometimes the vertical hold must be adjusted on a display. To do this, perform the following procedure:

1. Press the SELECT pushbutton to select the desired display.
2. On systems equipped with a joystick:
 - Move the hand cursor to the VHOLD
 - Press and hold the joystick control button.
 - The VHOLD is highlighted.
 - While still pressing the joystick control button, move the column forward to control the rate of bottom-to-top vertical roll, and back to control the rate of top-to-bottom roll.
3. On systems equipped with a mouse:
 - Press and hold the VHOLD pushbutton.
 - The VHOLD is highlighted.
 - Press the + or - button to control the rate of vertical roll.
 - Press the VHOLD pushbutton again.

4.4 OPERATING MODES

The MFSM Monitoring, VTR, Bypass, and TGS/MRU functions provide extremely powerful and flexible capabilities for sophisticated real-time remote covert activities. In the MON mode, an operator may view a site's internal monitoring system. In CAM mode, the operator may also view individual cameras independent of its monitoring system. The VTR mode allows for playback and analysis of all the site's recorded activities. The BYP mode enables an operator to intercept an internal monitoring system and substitute its current channel with a taped image corresponding to the same channel. Finally, the TGS and MRU modes provide information concerning the relative displacement and disposition of hostile counterintelligence forces, and allows command and control over friendly intelligence elements. Successful use of the MFSM, therefore, depends on the ability of the operator to manipulate all the resources available to carry out the desired mission.

4.4.1 Monitoring

Monitoring takes place in two modes: viewing of a remote site internal video security monitoring circuits, and viewing elements of those circuits independent of the site center control.

4.4.1.1 Viewing Security Monitors. To gain access to internal security monitors, perform the following procedure:

1. Select the desired display monitor on the MFSM.
2. Press the MON pushbutton.
3. The default monitor circuit is "A". Verify that the monitor status display indicates "SECURITY MON A (or B)".
4. To change the current monitor, press the MON pushbutton.
5. Verify that the monitor status display indicates the alternate monitor circuit.

4.4.1.2 Viewing Independent Cameras. Individual surveillance cameras at the site can be isolated for viewing. To view a separate camera, the appropriate channel for that camera must be activated. Perform the following procedure:

1. Select the desired display monitor on the MFSM.
2. Press the CAM pushbutton.
3. Verify that the monitor status display indicates "LIVE".
4. Press the + pushbutton to increment channels and the - pushbutton to decrement channels.

4.4.2 Video Tape Recorder Operation

The Video Tape Recorder mode of operation is useful for display and analysis of pre-recorded activity. Recording is continuously automatic, so there are no provisions for "recording" an independent event, as with a standard VTR. When a channel is set for display, the taped material is transferred from a special buffer.

When a display on the MFSM has been selected and the VTR pushbutton has been pressed, the VTR will then function in a manner similar to normal analog devices. See Section 3 for an explanation of pushbutton functions associated with the VTR. The display status indicates "TAPE" when the VTR is active. To change the current tape channel number, press either the + or - pushbutton.

The synchrony signal that is recorded with the original image is automatically shown during playback. That signal is present on the bottom part of the screen as numbers that correspond to the minute and second of a one hour period. Shuttle search is possible by pressing the PLAY pushbutton and then pressing the >> or << buttons. A speeded image of the recorded material will be shown, along with synchrony numbers at the bottom.

4.4.3 Bypass

The bypass mode allows the recorded image from a VTR channel to replace its corresponding surveillance camera. To perform a monitor bypass, do the following:

1. Use one of the MFSM displays to show the VTR screen.
2. Select the VTR channel to be bypassed (using + or - pushbutton).
3. If necessary, advance or rewind the VTR until the time synchrony values match those shown on a real-time display.
4. Press the PLAY button on the VTR.
5. Press BYP to bypass the surveillance camera signal with tape.
6. Verify that the monitor status display indicates "BYPASS CAMERA".

To disable the bypass, do the following:

1. Select MFSM display showing the bypassed camera.
2. Press the-BYP pushbutton to return to normal VTR function.

WARNING

SOME SECURITY SYSTEMS CAN DETECT WHEN A SYNCHRONIZATION ERROR HAS OCCURRED. BE ABSOLUTELY CERTAIN THAT THE CORRECT TIME SYNCH SIGNAL IS PRESENT ON THE BYPASS CHANNEL.

4.4.4 TGS and MRU Modes

When the Telemetry Guidance System screen is present on any of the MFSM displays, all pertinent information regarding active cameras, site personnel placement, navigational information, and MRU location is provided. To display the TGS screen:

1. Select the desired display monitor on the MFSM.
2. Press the TGS pushbutton.
3. Verify that the monitor status display indicates "TGS - _____". The current direction of the MRU is shown in the space after the dash.

Since location of an active MRU can also be shown relative to its surroundings, it is best to control the MRU in conjunction with the TGS display. Figure 4-1 explains the symbols used on the TGS screen.

4.4.4.1 Controlling MRU Movement. To control an MRU displayed on the TGS, perform the following procedure:

1. On systems equipped with a joystick:
 - a) Move the hand cursor to the MRU pushbutton.
 - b) Press and release the joystick control button.
 - c) The MRU button is highlighted.
 - d) Move the column forward to move the MRU forward, and back to move the MRU backwards.
 - e) Move the column to the left to turn the MRU to the left, and to the right to turn the MRU to the right.
 - f) Note that the TGS status display indicates the direction (EAST, WEST, NORTH, or SOUTH) the MRU is facing.
 - g) Centering the control column stops the MRU in its current position.
 - h) Press the MRU button again to release the MRU function.
 - i) Verify that the MRU button is no longer highlighted.

On systems equipped with a mouse:

- a) Press and hold the F button to move the MRU forward, and the B button to move the MRU backwards.
- b) Press and hold the L button to turn the MRU to the left, and the R button to turn the MRU to the right.
- c) Note that the monitor status display indicates the direction (EAST, WEST, NORTH, or SOUTH) the MRU is facing.

4.5 SECURITY WARNING

The content of this manual is of the highest "TOP SECRET" classification. Do not remove this document from its locked files. Operatives with proper security clearance will receive sealed copies. It is unlawful to copy this MFSM document onto magnetic tape or disk, or by optical, chemical, or mechanical means.

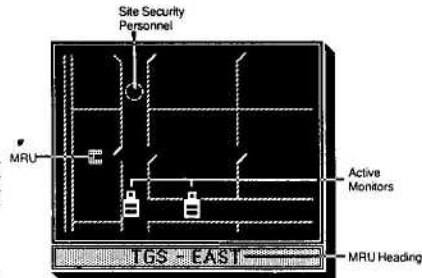


Figure 4-1. TGS Screen

FOR YOUR EYES ONLY

SPACE SHUTTLE

A JOURNEY INTO SPACE™

SHUTTLE CONTROLS

The Visual Console:

On your screen you see the view from two portholes. Beneath them two indicators, one marked "C" the other "T". "C" is your onboard computer indicating the amount of thrust required during lift-off, and "T" shows the actual thrust you are providing.

Below these indicators are three display areas:-

The centre area gives you a variety of readings at each stage of the mission. You need to study and control these carefully.

The left-hand display has three ON/OFF readings, showing the status of SSME (the main Engines ON or OFF), PLBD (the cargo bay doors ON [open] or OFF [closed]) and GEAR (landing gear ON [down] or OFF [up]).

The right-hand display shows the status of RCS (the Reaction Control System, 2 methods of movement whilst in orbit, either TRN or ROT), RVZ (the number of successful rendezvous you have achieved with satellites) and C-W (Correction Warnings – a number relating to a warning or a reason for a mission abort). Below C-W is another window in which messages will appear during flight.

Console Instrument Controls:

Instrument Description Joystick Control Keyboard Control

Pre-flight:
Flight Mode Selector Fire button F (or I on keypad)

Shuttle Launch:
Launch Countdown Key – L
Primary Engines ON/OFF – E
Thrust Fire button COPY
Status Check – SPACE BAR
Pause Flight – F0 (or 0 on keypad)

Movement in Orbit:
Cargo Doors OPEN/CLOSE – C
X AXIS (forward & back) forward or back ↑ or ↓ cursor keys
Y AXIS (left & right) left or right → or ← cursor keys
Z AXIS (up & down) forward or back and Fire Button ↑ or ↓ and COPY

ROTATIONAL Engine – R
TRANSITIONAL Engine – T

Landing:
Landing Gear UP/DOWN – G

FLIGHT EVALUATION:

During the mission your onboard computer will alert you to conditions that could endanger the Shuttle. If an error condition is bad enough, the screen will display a "MISSION ABORT" message from which there is no recovery. Pre-launch errors ("LAUNCH SCRUB") merely cause a re-start of the countdown sequence. Both messages indicate that the mission has failed, and you should try again.

The following numbers can appear during your mission in the C-W display window, or after a mission has aborted. Check these numbers against the cross-reference table below in order to identify the problem areas you experience:-

C-W NUMBER MESSAGE / ACTION NEEDED

Pre-Launch / Non-Abort
0 All clear
4 - 60 Check Engines Shutdown & Cargo Bay Doors Closed

Inflight - Mission Abort
1000 Not lined up with runway on touchdown
1500 Touchdown too early (hit desert)
2000 Touchdown too late (overshot runway)
2500 Crashed back to Earth
3000 Nose gear not down at end of runway
4000 Landing gear not down at touchdown
5000 Cargo bay doors not closed at ascent or re-entry
5500 Pitch greater than +24 on re-entry (skip into space)
6300 Pitch less than +24 on re-entry (burn-up)
6500 Yaw not 0 on re-entry
7000 Altitude too low to sustain orbit (below 195)
7500 Altitude too high (above 255)
8000 Speed too low to sustain orbit (below mach 17.0)
8500 Cargo bay doors not open during orbit (overheat)
9000 Orbit insertion angle incorrect at MECO
9500 Speed/Altitude too low to attain orbit at MECO
9900 Out of fuel

After safely landing
1 - 99 Number of dockings. May also appear as the last digits of a C-W number

RANKING:

Once you have completed this mission and safely landed the Shuttle at Edwards Air Force Base using FLT #3, your performance can be evaluated and your ranking determined by the number of successful dockings & number of fuel units remaining at the end of your flight:-

Ranking	Dockings	Qualifications	
		Minimum Fuel Units	
Commander	6 or more	7500	
Pilot	4 - 5	4500	
Mission Specialist	2 - 3	3500	
Payload Specialist	1		1

PRE-FLIGHT

FLIGHT MODE SELECTION:

Before you begin the countdown to lift-off, you must decide which flight mode you wish to use – FLIGHT 1 is the easiest, FLIGHT 3 the most difficult. Press the FIRE BUTTON on your joystick to select your required Flight Mode, then press the RETURN or ENTER key.

NOTE: Shuttle automatically enters a demonstration mode when first loaded if no flight is selected within 15 seconds. Wait until the demonstration is complete and then select your required Flight Mode.

FLT #1: AUTOFLIGHT:

Flight 1 is a special mission that takes you on a training flight controlled from Earth. Whilst on this flight, you may like to experiment with the movement controls, which at non-crucial stages of flight will override the ground computer – however, any errors you make are usually corrected to ensure your safety. This is a good introduction to flying the Shuttle as it takes you through all stages of the mission.

FLT #2: SIMULATOR:

Flight 2 allows you to control most of the Shuttle's controls. The ground computer controls your fuel consumption, so the time taken to complete a mission is not crucial. Ground control also assists you during flight by compensating for less than perfect piloting skills, and most flight aborts are overridden. This is an excellent flight to choose for experimenting with the controls and gaining experience of Shuttle movement.

FLT #3: STS 101:

Flight 3 is the real thing. You are on your own. The only help you'll get now is from your onboard computer warning you if things begin to go wrong...!

LAUNCHING THE SHUTTLE

Your objective is to launch the Shuttle and arrive as close to the satellite's orbit as possible. The centre display shows the Tracking Screen. The curve indicates the correct trajectory for the Shuttle. The Shuttle will appear as a small, flashing dot near the curve. You must keep the satellite on this curve for a successful launch. Note on the Tracking Screen three numbers – these indicate the launch phases – (1) Solid Rocket Boosters are automatically fired (2) Shuttle reaches maximum acceleration (3) engine shutdown approaches. The "H" symbol indicates MECO (Main Engine Cut-Off). Just below "H" is a small

box – this indicates your PLANE. During launch, you must keep another small dot central within the PLANE box. You will also need to watch closely the "C" and "T" thrust indicators and keep them aligned until you reach orbit.

LAUNCH GUIDE:

1. Select Flight Mode required by pressing the FIRE BUTTON on the joystick and press RETURN or ENTER. (If FLT #1 is selected, the following is controlled automatically)
2. All systems will now become operational, and the Tracking Screen displayed. Press "L" to start the countdown.

3. When the countdown begins, press "E" to activate Main Engine.
4. When the "C" indicator starts to move (at approx. MET -005) you must press the FIRE BUTTON to ignite the Main Engine, and start to build up the thrust. The Shuttle will begin to shake now under the tremendous vibration of these massive engines. The amount of thrust you generate is shown by the "T" indicator.
5. Though your engines are firing, you won't leave the ground until MET +3, as hold down bolts keep the Shuttle on the ground until the engines develop enough thrust to overcome the force of gravity. Use the FIRE BUTTON to keep "C" and "T" aligned until you reach orbit. If "T" flashes, you must adjust your thrust to match "C".
6. Watch the Tracking Screen:
 - * move joystick forward or back to maintain correct trajectory. Try to keep the small dot on or just below the plotted curve.
 - * move joystick left or right to keep another dot centred in the small PLANE box
7. Press the SPACE BAR from time to time during flight to keep a check on your status (Mach speed, FUEL, MET [mission elapsed time] and ALTitude)
8. At approx. ALT 200 press "E" to shut off the Main Engine. The closer you are to the required altitude of 210, the nearer you'll be to the satellite's target orbit.

If the launch scrubs for any reason, press the SPACE BAR and continue carefully from point 2 above.

STABILIZING ORBIT & LANDING SCIENTIFIC SATELLITE

Now that Main Engines have been cut, you must establish a stable orbit as close to ALT 210 as possible. You will see at the bottom of the portholes planet Earth rotating beneath you! Your current speed, altitude and pitch (in degrees) are now displayed together with the Ground Track Screen (the curve on this screen represents one full rotation of the Earth). You have two manoeuvring possibilities in your Shuttle – the ROT (Rotational Engines) for adjusting Yaw and Pitch, and TRN (Transitional Engines) for adjusting X Y and Z axis. You must adjust the pitch to -028, and get the X Y and Z axis as close to zero as possible. Additionally, you must maintain the correct speed for the satellite. Once this has been achieved, the top secret scientific satellite that you are carrying will be launched automatically by the onboard computer. Your first task, however, must be to open the Cargo Bay Doors, a vital operation. Radiators that shed excess heat generated during launch are on the inner surfaces of these doors, and if they remain closed the heat build up within the Shuttle will cause a mission abort within 30 seconds!

ORBIT GUIDE

1. Press "C" to open Cargo Bay Doors
2. Use the ROT and TRN engines to adjust your position. Use as necessary until the onboard computer launches the satellite. Note that you will drift as you travel through space, so check your position regularly.
 - * Press "R" to activate the OMS Rotational Engines. (WARNING: The nose of the Shuttle is now facing down – if you press the FIRE BUTTON now, ALT will decrease but speed will increase. Beware of falling back to Earth!)

- > PITCH: Move joystick forward or back to set pitch to -028
- > YAW: Move joystick left or right to set YAW to 0

Press "T" to activate the RCS Transitional Engines.

- > Z AXIS: Press FIRE BUTTON and move joystick forward or back so Z axis becomes 0. When Z axis is zero, ALT will be 210
- > Y AXIS: Move joystick left or right until Y axis is 0
- > X AXIS: Move joystick forward or back to increase or decrease the Shuttle's speed. The satellite should travel at mach 23.9. The X axis reading indicates the distance from the launch point of the satellite - a negative reading indicates it is behind (hence you will need to decrease speed), a positive means it is ahead (hence an increase in speed is required).

Note: The onboard computer may launch the satellite at a speed close to Mach 23.9 and away from it's desired launch point to save fuel.

MAINTAINING ORBIT & DOCKING WITH SATELLITES

Now you have launched the top secret satellite, you still have one more task to achieve with the Shuttle - to dock with an orbiting satellite. You can dock with as many satellites as you wish - each successful docking earns you extra fuel units (FLT #3) but becomes a little more tricky. The more dockings, the higher your ranking when you get back to Earth. Once you have docked, you must lose visual contact with the satellite before the next satellite can be pursued.

Docking procedures are similar to those you have already used in launching of a satellite. On the Ground Track Screen, you will see an "S" type of curve - this indicates one full rotation of the Earth for both Shuttle and the next satellite with which you are to dock. A blue dot indicates the Shuttle's position, the other dot is the satellite. When you are close to the satellite, two smaller radar screens will be displayed. The left shows your Z axis (up/down) and a wide view of your Y axis (left/right). The right screen, which you'll use more, shows the X axis and micro (close in) Y axis.

DOCKING GUIDE:

1. Using the same instructions in ORBIT GUIDE, obtain a visual contact with satellite, and maintain these readings for 2 seconds:

Pitch: -028, YAW: 0, Z AXIS: 0, Y AXIS: 0, X AXIS: 0, SPEED: Mach 23.9

Switch to ROT engines shortly before visual contact if possible.

2. A "Rendezvous" message indicates a successful docking, and the number of successful dockings you have achieved this mission is shown on the RVZ display.

If you do not achieve a successful docking shortly after visual contact, your controls will be temporarily jammed (a security mechanism) allowing the satellite to escape.

DEORBIT BURN

You must now prepare the Shuttle for leaving orbit. It must be travelling tail first, which helps it decelerate to re-entry speed. If the Z axis and pitch are not set correctly, firing the engines will make the Shuttle climb or dive. After deorbit burn, the Shuttle must be reoriented nose forward to the correct altitude. Entering Earth's atmosphere backwards will cause the Shuttle to burn up! Beware of satellite interference - wait until you see a dramatic change in your X axis after docking - if you don't, your deorbit burn will be unsuccessful and you'll never leave orbit!

DEORBIT GUIDE:

1. Press "T" to activate TRN engines.
2. Adjust Z axis until ALT reads 210.
3. Pull joystick back or push forward to set speed to Mach 23.9
4. Press "R" to activate ROT engines
5. Turn Shuttle around - Move joystick left or right to set Yaw at 128 degrees.
6. Now set Pitch at -004
7. Press FIRE BUTTON until speed is Mach 19.0
8. Turn Shuttle around nose forward by resetting Yaw to 0

RE-ENTRY

This is one of the most critical stages of your mission - successfully re-entering Earth's atmosphere. There are three important stages:-

ENTRY INTERFACE: This is where atmospheric entry officially begins. As the shuttle descends, atmospheric drag dissipates tremendous energy generating a great deal of heat (portions of the Shuttle's exterior can reach 1,540 C!) Pitch and speed must be correct in order to utilize the Shuttle's Thermal Protection System.

TERMINAL AREA ENERGY MANAGEMENT (TAEM): Conserving energy by maintaining correct position, altitude, velocity and heading.

LOSS OF SIGNAL (LOS): During re-entry, the Shuttle superheats the gas of the upper atmosphere creating flashes of colour outside the Shuttle.

Heat strips electrons from the air around the Shuttle enveloping it in a sheath of ionized air that blocks all communication with the ground. This occurs at approx. 160 miles, so you need to keep a close watch on the console at this point; data is likely to be intermittent at this time.

Your console will display the re-entry screen – study it, and you will see that X indicates cut-off of engines after deorbit burn, T indicates TAEM, and L indicates your transition to final landing approach. You must try and keep the small dot (representing the Shuttle) on the curve which represents the correct path. A small box on the left-hand side represents the PLANE, and you must keep a small dot centred within this box at all times.

RE-ENTRY GUIDE:

1. Pull joystick back to set Pitch at +2+ for proper re-entry altitude
2. Close cargo bay doors by pressing "C"
3. Move joystick forward and back to keep small dot on re-entry curve on re-entry screen. Move joystick left and right to keep dot within PLANE box central.

LANDING – TOUCHDOWN AT EDWARDS AIR FORCE BASE

As you leave the re-entry phase and enter your final approach, you'll see the mountains around Edwards Air Force Base. At this point, the Shuttle is a glider. Take care! Watch all instruments on the console very closely as events happen quickly from now. You'll need to keep your nose pulled up to slow descent, while watching altitude and range (RNG) – this is your distance from the runway. When RNG is negative, you're above the runway. You need to centralise yourself above the runway – the right-hand final approach screen in the centre of your console will help you do this. The left-hand screen shows your upper and lower safe limits – keep the dot centralised between the two for safety. You'll hear a beeping noise which will increase the closer you get to the runway. You must remember to put landing gear down, and get ready for a massive bump as you touchdown. Stand by! The mission is nearly complete....

LANDING GUIDE:

1. As soon as you see the mountains, make a right turn. Line up Shuttle on runway using right-hand radar screen
2. Follow final approach course on both radar screens:–
Left Screen: Keep the dot centred between the two arched lines
Right screen: Keep dot centred on straight runway approach line
Push joystick forward to lower nose (quicken descent), pull joystick back to raise nose (slow descent). Push joystick left or right to centralise dots.
3. When range goes negative, press "G" to drop landing gear
4. Push joystick forward to lower nose
5. When Shuttle hits runway the nose will pop up, so keep the joystick pushed forward to keep the nose down!

Welcome Home!

EQUIPMENT CHECK

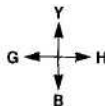
Indicator Switches are keys, **Q, A, S, F** and **M** on the keyboard. Use **Q** to check your stats (see "STAT MESSAGES" for description), **S** to check your speed, **A** to check altitude, **F** to check fuel and **M** to check M.E.T. (mission elapsed time).

Engines. There are three engine groups: The Main Engines, the Orbital Maneuvering System and the Reaction Control System (the latter group will automatically activate when the first two are off). To turn engines on, press **E** on the keyboard; to turn them off, press **X**.

Cargo Doors and Landing Gear are operated from the keyboard. **O** opens Cargo doors; **C** closes them. **U** brings up the landing gear; **D** lowers it.

Joystick Controller. A realistic directional hand controller. Forward and back moves Shuttle forward or back (X axis). Left and right controls your "plane" (left/right movement (Y axis). With red button depressed, forward or back stick movement moves shuttle up or down (Z axis). See "Maneuvering in Space" for further explanation. Also, the red button has other uses in launch, orbit, and entry phases as described in those sections.

If you are using the keyboard only, follow the above paragraph, substituting **G** and **H** for left and right, and **Y** and **B** for up and down.



SYMBOL SHIFT functions as does the Joystick's red button.

FLIGHT SELECTION

There are three separate flight modes. Spend time with training flights #1 and #2 before taking on all the challenge of a real, unassisted Shuttle mission (fl. #3). Press **SYMBOL SHIFT** to select your flight mode. This can only be done before countdown is activated.

Flight #1 Autosimulator Flight mode #1 is a combination demonstration flight and autosimulator. The Shuttle flies an abbreviated mission. You do not use any of the console controls. In this flight mode, most aborts (see "Abort indicator") are ignored. As long as you don't touch any controls, the demonstration will continue. As soon as you operate a control, you will have to follow through, dock with the satellite, and land.

Flight #2 Simulator All astronauts spend thousands of hours practicing in ground-based simulators before flying an actual Shuttle mission. In this mode, experience the challenge and demands of a real mission with a couple of important exceptions: You will never use any fuel units, so take your time to complete a mission. Also, your onboard computers will greatly assist you during flight by compensating for less than perfect piloting skills. Most aborts are overridden, but your flight indicator (stat message) will alert you when you've erred.

Flight #3 STS 101 A full-fledged Shuttle Flight. All aborts are operative and flight conditions are quite realistic. Good luck!

LAUNCH SEQUENCE

1. Primary Engines Shutdown.
2. Cargo Door closed.
3. Landing Gear Up.
4. Activate Countdown (press **ENTER**).
5. At MET - 015 activate Main Engines.
6. At MET - 004 ignite engines by pressing the Joystick button or **SYMBOL SHIFT**. Match "T" arrow with "C" arrow during launch.
7. As Shuttle rises, watch both dots on the computer screen. You must follow the indicated launch trajectory *and* continually correct your "plane" by keeping your Shuttle centered in the small box at right:
 - Move Joystick forward to move dot left, backward to move dot right (or use **Y** and **B** on the keyboard).
 - Move Joystick left or right (or use keys **G** and **H**) to correct plane.
8. At about 205 nautical miles, quickly shutdown engines. The closer you come to the 210 altitude, the closer you'll be to the satellite's orbit.

SEQUENCE TO STABILIZE ORBIT

1. Activate Primary Engines.
2. Push Joystick forward to set 28 pitch (or use **Y** key).
3. Shutdown Primary Engines.
4. Open Cargo Bay Doors.

DOCKING SEQUENCE

Match the position of your Shuttle with that of the satellite's by correcting your Z, Y, and X axes, preferably *in that order*.

1. **Correct Z axis to 0:** Hold down red button and tap Joystick forward (or hold **SYMBOL SHIFT** and tap **Y** on keyboard). A negative number means the satellite is below you, so push the Joystick forward (or press **Y**) to dive. A positive number means the satellite is above you, so pull the Joystick back (or press **B**) to climb.
2. **Correct Y axis to 0:** Tap Joystick to the right (or tap **H**). A positive number means satellite is right of you, so push Joystick right (or press **H**) to line up with it. A negative number means it is left of you. Push Joystick left (or press **G**) to line up with satellite.
3. **Correct X axis:** Tap the Joystick back, or tap **B**. A positive number means the satellite is ahead of you. A negative number means it is behind you. To increase Shuttle speed, push Joystick forward, or press **Y**. To decrease speed, pull Joystick back, or press **B**. Press **S** to check Shuttle speed.
4. **Dock:** All axes must be adjusted to 0, and stabilized for 2 seconds, then you will receive a "Rendezvous" signal, indicating you've docked.

SEQUENCE FOR DEORBIT BURN

1. Check X axis by tapping Joystick back. Wait until $x = 128$ miles *before* proceeding ($x = +128$ or -128).
2. Press **S** on the keyboard to check speed. Move Joystick forward or back (or press **Y** or **B**) to set speed at Mach 23.9.
3. Correct Z axis to 0.
4. Activate Primary Engines.
5. Turn Shuttle around by pushing Joystick left to set yaw at -128 .
6. Pull back or push Joystick forward to set pitch at -004 .
7. Display speed (SP/m), speed in Mach, using **S** on keyboard.
8. Ignite engines by pressing Joystick button or **SYMBOL SHIFT**. Hold down until speed = 19.0.
9. Reset yaw to exactly 0.

REENTRY SEQUENCE

1. Pull back Joystick (or press **B**) to set +24 pitch for proper reentry altitude.
2. Close Cargo Bay Doors.
3. Follow reentry course on computer screen. Move Joystick forward or back to go left or right, respectively (or use **Y** or **B**). Moving your Joystick left or right (or keys **G** or **H**), at this time, centers the plane.

LANDING SEQUENCE

1. As soon as you see the mountains, make a right turn. Line up Shuttle on runway using radar screen.
2. Follow final approach course on both computer screens. Left screen: Keep dot centered between the two arched lines. Right screen: Keep dot centered on straight runway approach line. To lower the nose (quicken descent), push Joystick forward, or press **Y** on keyboard. To raise the nose (slow descent), pull Joystick back, or press **B**. Move Joystick left or right, or use keys **G** or **H** to keep dot centered.
3. Press Joystick button, or **SYMBOL SHIFT**, to display altitude. Release button (or key) to display range.
4. When range goes negative, you're over the runway, just seconds from touchdown, so drop landing gear NOW.
5. Push Joystick forward, or press **Y**, to lower nose.
6. When Shuttle hits runway, its nose will pop up, so keep the Joystick pushed forward (or hold down **Y**) to keep the nose down until you hear the thud of the front landing gear.

MESSAGE NUMBER	MESSAGE OR ACTION NEEDED
(Prelaunch-Non Abort)	
0	All clear.
4	Shutdown Primary Engines.
24	Raise Landing Gear and shutdown Primary Engines.
44	Shutdown Primary Engines and close Cargo Bay Doors.
64	Raise Landing Gear, shutdown Primary Engines and close Cargo Bay Doors.
20	Raise Landing Gear.
40	Close Cargo Bay Doors.
60	Raise Landing Gear and close Cargo Bay Doors.

MESSAGE NUMBER	MESSAGE OR ACTION NEEDED
(Inflight-Mission Abort)	

0	All clear
1000	Not lined up with runway on touchdown
7000	Altitude too low to sustain orbit (below 195)
7500	Altitude too high (255 miles maximum)
9500	Speed/altitude too low to attain orbit at MECO
1500	Touchdown too early (hit desert)
2000	Touchdown too late (run off runway)
3000	Noise gear not down at end of runway
3500	Not on course at beginning of banking turn (Klaxon horn is on)
4000	Landing gear not down at touchdown
8500	Cargo bay doors not open during orbit (overheat)
5000	Cargo bay doors not closed or landing gear down at ascent or entry interface
8000	Speed too low to sustain orbit (below M 17)
5500	Pitch greater than 24 on reentry into atmosphere (skip into space)
6000	Pitch greater than 24 on entry interface (burn up)
6500	Yaw not 0 on entry interface
9000	Orbit insertion angle incorrect at MECO
9900	Out of fuel

STAT MESSAGES

If you're encountering a problem, or just want to check your status, hold your Status Switch down (Q) until "STAT" appears. Then, use the following guide. Operational messages are prelaunch alerts. However, Mission Abort messages mean you've made a catastrophic mistake (Flights #2, #3 only) and must relaunch.

MESSAGE NUMBER	MESSAGE OR ACTION NEEDED
(After safely landing)	
1-99	Number of dockings. Also may appear as the last digit of a Mission Abort stat.



Off to A Running Start

Before you and Howard actually embark on this perilous adventure, there are a few formalities you'll have to address to get you started.

1. Controlling Howard

Howard's movements are listed throughout this Rescuer's Handbook as JOYSTICK controls. Players may prefer to use keyboard keys to control Howard, and these are listed against the equivalent joystick command below. Refer to this table when playing by keyboard. (Not applicable to Amstrad)

Joystick Control

Joystick FORWARD
Joystick BACKWARD
Joystick LEFT
Joystick RIGHT
Joystick BUTTON

Spectrum Key

7 or ↑
6 or ↓
5 or ←
8 or →
O

MSX Key (cursor keys)

↑
↓
←
→
SPACE

2. Adventure Island: Function Keys

The best part about exploring Volcano Island with Howard, is that you have a number of special choices at any time, and these are controlled by specified "Function Keys". These are listed below. Wherever you see a reference to a Function Key, see the list below to check which keyboard key controls that function on your computer.

Function

PAUSE GAME function
QUIT GAME function

Spectrum Key

P
Q

TAB
ESC

MSX Key

STOP
ESC

3. Name Check

Upon your screen will be the words "Howard the Duck", with a line of dots and a list of levels below. Using your computer keyboard, type your NAME. In fact, you can type any name you like, just so long as it's no more than 8 letters long. Then press the RETURN or ENTER key.

4. Difficulty Decision

Beneath your name, you'll see four levels. These are, in order of difficulty, NOVICE, INTERMEDIATE, ADVANCED, EXPERT. Move the joystick forward or backward now, and you'll see that one of the four levels is highlighted in a different colour. Ensure the level you want to play next is highlighted. (If this is your first time on Volcano Island, Howard would prefer you to select NOVICE right now, until the two of you get to know each other a little better).

5. Here's Howard

At last! You get to meet your companion on Volcano Island - Howard. That's him... parachuting down onto the Island and ready for action...

Notice at the bottom of the screen some numbers - that's the Island clock, showing just how much time you've got left before... the Volcano erupts! Right now you must help Howard find his trusty backpack, deal with a flock of mutant thugs and eventually defeat the Dark Overlord and rescue Beverly and Phil from inside the Volcano!

Move Howard up, down, left or right by moving the joystick up, down, left or right. Easy eh? To make him jump, press the joystick button. Good. Now let's find out what this Island is all about...

Negotiating Mutant Slime

Pretty soon on your adventure with Howard, you'll come across some slippery, slimy stuff which Howard can't seem to get over. This is Mutant Slime! It's a gruesome as it sounds, and there is only one way over it - a running jump. Move Howard away from the slime, then move him quickly back toward it. Once at the edge of the slime, press the joystick button. No luck? Try a longer run up. Practice makes perfect. If you're still stuck, try running Howard around in a circle to get up speed.

Snatch That Backpack

You've got to help Howard find his trusty Backpack else he's going to get nowhere even faster. Simply walk over it - that will activate it's scientific camouflage mechanism, which keeps him from being more conspicuous than he already is. Howard needs his backpack as it contains a solar-powered jet pack for crossing channels, an Ultralight Flyer for reaching the top of the volcanic mountain, and a portable Neutron Disintegrator which should help him when he confronts the Dark Overlord. Or so we hope!

Crossing the Channel

By this stage you won't be able to cross the channel unless you've found Howard's backpack as it contains the solar-powered jet pack – ideal for getting across the water. To activate the jet-pack, move Howard to the water's edge – you'll see him shaking as the jet-pack screams into life – then press and release the joystick button repeatedly. This operates the throttle on the pack. If you do this too fast you'll kill the throttle. Too slow, and you'll lose thrust. Beware, the current runs strong through the channel. If you get stuck, try moving Howard up or down, not just left or right.

MUTANT MANIACS

Those staring eyes – in the bushes – watching your every move. Mutants, waiting to pounce. Beware – they actually live underground, and will leap out and attack Howard as he moves around the island. Watch carefully, and you'll see them emerging from mounds in the ground. The best way to deal with them is the old Quack-Fu techniques, and then try to stamp their mounds shut before more can emerge to attack.

Quack FU is the art of the kick and the punch. Kicking a mutant will injure him and make him spin. Once he's spinning, you can knock him off the Island by kicking him again! Make Howard kick by holding the joystick button down, then moving the joystick in the direction you want to kick. You may also need to Punch a mutant – they're pretty tough you know. To punch, move the joystick in the direction you want to punch and press the joystick button.

If you're not fast enough with your Quack-Fu, you may find the Mutants manage to knock Howard off the Island, and send him spinning!

Keep a look out for the little mounds that the Mutants emerge from. Once you've found one, try stamping it closed. Howard can do this by jumping – press the joystick button to make Howard jump.

Cross This Bridge When You Come to It

Once you've successfully crossed the river and eliminated all the mutants on the sandy part of the island, you'll come to a hanging bridge.

Although it looks easy enough to cross, don't get too quacky. Molten rocks will come hurtling towards you from the active volcano.

To dodge the rocks, try to stay to the far right or left side of the bridge.

The last mutant mound. Once you get across the bridge, you'll see yet another mutant mound. But take heart. It's the last one. And if you manage to stomp it out, it'll be the last you'll see of the mutants. Until you play another game.

Flying the Ultralight

Pull back on the joystick to climb, push it forward to dive, and right and left to bank and turn. The winds over Volcano Island are amazingly strong. Avoid flying directly into the thermal riptides by moving the Ultralight up toward the top of the volcano.

Inside the Volcano

You're inside the volcano. And the Dark Overlord couldn't be happier. Because he thinks it's open season for ducks. And maybe it is.

Stalactites and Holes. First you must dodge falling stalactites and the holes they're making.

Energy Bolts. Those long, thin, nasty-looking things coming at you? They're energy bolts. And they're being hurled at you by none other than your good buddy, the Dark Overlord.

Each energy bolt is loaded with enough negative zappage to kill a dragon, let alone a duck.

To avoid energy bolts, move Howard up or down, depending on the position of the energy bolts. And avoid those holes while getting into position to fire at the Dark Overlord.

Putting One Over on the Dark Overlord

Once you get all the way to the right side of the volcanic cavern, you'll be in a perfect position to put the Dark Overlord out of commission.

Face Howard directly to the right, pull out the old Neutron Disintegrator, and fire.

To fire at the Dark Overlord, simultaneously press the joystick button and move the joystick to the right.

Keep those shots coming – if you hit him enough times the evil Overlord will disappear.

You've done it! Well, almost. You still have to shut down the volcano before time runs out.

To shut down the volcano, walk Howard underneath the lever and, by pressing the joystick button, have Howard jump up and pull down on the lever.

If you manage this last move, everything's just ducky. Howard will rush off to rescue Beverly and Phil, and you'll receive your medal and see your score.

If you lose, you'll see that your adventures with Howard are "To Be Continued"—so start over and take another quack at it.

SAILING

FOR THOSE WITHOUT A JOYSTICK

Q = up A = down O = left P = right SPACE = fire

OTHER KEYS

Spectrum: Change Level = Joystick left/right or O or P keys
FX on/off = F
Pause/Unpause = H
Commodore Change Level = F5
Sound on/off = F3
Music on/off = F1
Pause/Unpause = RUN/STOP
Amstrad as Spectrum but with
Music on/off = M

Starting up

From the initial screen of the game you must decide what level to start at and whether you want the sound effects and music (not Spectrum) on or off. The level represents at what stage you enter the competition and how long you have to reach the top.
After deciding on the above conditions, pressing fire moves you to the design screen.

Design

This screen displays a blueprint of your ship design and allows you to modify this to suit the weather conditions (the long-range weather forecast scrolls along the bottom of the screen). After naming your boat (Keyboard) and choosing your country you get down to the serious business of designing the boat. Using joystick or keyboard you can change the Overall Length (LOA), Waterline Length (LWL), Freeboard and Mast Length as well as adding wings to your keel and changing the Hull Material. Choosing the correct design for the weather that you will experience involves careful thought. For instance increasing the length will increase your sail area but decrease your manoeuvrability. Adding wings will increase your stability but also increase your drag through the water.

When the design is to your satisfaction select RACES and press fire to move on to the competition proper.

League Table

At the start of each race you will be presented with a league table showing your present standing highlighted and also your next prospective opponent highlighted. This is because in the lower positions you have the option of challenging up to 2 places above you by moving the cursor up/down. To help you to decide who to challenge you may view a blueprint of your opponent by selecting left/right. Fire then returns you to the league table. This also enables you to observe how different ship designs fare in different weather conditions.

Once you have selected your opposition, pressing fire catapults you into your boat on the starting line abreast of your opponent and heading for the first buoy.

Racing

The display throughout the race is split into 2 halves. The top half shows the view from the boat out over the sea where you can see your opponent (if he is ahead of you). The bottom half contains your gauges which are vital to getting the best from your boat.

On the left are the wind gauges; absolute wind speedometer and the relative wind direction meter which shows the relative incidence of the wind on the sails which needs close monitoring.

In the centre the 2 gauges show your heading and boat speed while on the right the radar shows your position on the course (North is at the top of the screen). Your boat is depicted by a flashing cross while your opponents boat appears as a non-flashing cross. Also on the screen are the 3 buoys with the next buoy for you to round flashing. Buoys must always be rounded anti-clockwise - aim to the right!

The bottom line shows the current status of your spinnaker sail - the big billowing sail that is used to obtain more power with a following wind.

Control is by joystick (C64) or joystick/keyboard (Spectrum/Amstrad) - left/right controls the hand on the tiller and the spinnaker is hoisted/lowered by "winching" it up and down. This is achieved by pressing fire and then rotating the joystick lever anti-clockwise for up and clockwise for down. If playing with a keyboard this means pressing up, right, down, left, up etc. in quick succession for clockwise and the reverse for anti-clockwise - with practice sail changes can be achieved fairly rapidly.

While winding you cannot control the direction and so the quicker you can change the sail the less you will slow off course - the wind is constantly trying to turn the boat one way or the other.

As soon as one boat has successfully completed the course or been disqualified (you may not go outside the bounds of your radar) the game jumps back to the league table. After 5 days of racing you will be given 1 week to re-adjust your rig for the next bout of racing, and at the end of the competition you will be given a score to classify your performance. HAPPY SAILING!

TERMINOLOGY

L.O.A. - Length Overall
L.W.L. - Waterline Length
Freeboard - Height of side of boat from waterline to deck
Wings - A winged keel increases the stability of the boat and enables the boat to capture more power from the wind on a tack.
Spinnaker - the spinnaker is a parachute-like sail which can be carried downwind on a reach - i.e. a leg where the wind is behind you.

BARRY McGUIGAN'S

WORLD CHAMPIONSHIP BOXING

Bulldog: Likes to slug it out toe-to-toe. Can sometimes trap a dancer against the ropes.

Two Player Game

Choosing the TWO PLAYER game takes you straight to the CIRCUIT STATUS menu. Here the players each select a fighter. Player one goes first, using a joystick to point to any of the 18 circuit boxers of World Champ. Press the FIRE BUTTON to confirm your choices. When player two is finished you're ready to see a PROFILE of your two fighters.

One Player Game

Pushing fire will GET a boxer you created earlier. All the boxer's statistics, including his earnings, record and RANK, are saved in memory as long as the computer is left ON.

Choosing the NEW BOXER option will ERASE any boxers you came up with earlier and allow you to CREATE a new boxer.

Now you'll be prompted with the NEW BOXER FEATURES screen. Use joystick to point to the different features. Push fire to step through available choices. When you're happy point to CONTINUE and push FIRE to go on.

When you create a new boxer you are allowed to choose his starting rank. If you select NEW PRO you will start at the bottom of the ladder (rank number 19). If you think you've got what it takes choose CONTENDER, (rank number 10).

This is your fighter's PROFILE SCREEN. When you've analysed the information press your fire button to continue.

Next is the CIRCUIT STATUS screen. You can select the two fighters ranked immediately in front of you or the fighter ranked just below you. Fighting "two ahead" is a quicker way to the top, but it's more dangerous. Move to your section and push fire.

This is your OPPONENT'S PROFILE screen. Study your adversary closely. If you change your mind move to REFUSE and push fire. If you ACCEPT the challenge push fire to send your boxer to TRAINING CAMP.

RINGSIDE

As in real boxing, your goal is to outscore or knock out your opponent in 10 or 12 round bouts. Each round is 3 "minutes" in length.

TRAINING CAMP

Training camp is the most important part of the game next to actually being in the ring. But before you train your fighter, study his attributes and notice how they can affect the outcome of each fight.

Endurance

Endurance is the key to knockdowns. When it's less than ten a knockdown will occur within the next few punches. Because of the THREE KNOCKDOWN RULE, if your fighter winds up kissin' canvas three times in the same round the fight is over. (That's called a TECHNICAL KNOCKOUT). Endurance goes down when you are hit and when you miss!

The scoreboard above the ring constantly displays both fighters' endurance register. Watch these numbers carefully! Endurance is indicated in the corners of the fight screen.

Stamina

The "toughness" register. Stamina may be thought of as a percentage. When a boxer rests between rounds he gets back a percentage of the endurance he lost in the previous round. Also, when a boxer is knocked down (endurance is less than ten) his chances of getting back up are related to his stamina. If his stamina is very high he will always get up but the lower it gets the better chance he will be knocked out. Stamina goes down every time you are hit.

Strength

This register reflects your fighter's power. A strong fighter's punches will do more damage. Every punch you throw — hit or miss — will drain your strength register.

Agility

Agility is the key to your boxer's punching speed. It too goes down with every punch.

You've chosen an opponent, studied his strengths and weaknesses, planned your strategy and now you have from 6-12 weeks to train for the big fight. There are five areas in which you can allocate your time. You don't have to spread your time between the five areas. You can capitalize on one of your strengths or compensate for one of your weaknesses. The choice is up to you! Here are the five training areas and the effects they have on your status registers:

Road Works: Hitting the road has a tremendous impact on your endurance and helps build strength and agility.

Light Bag: The light bag is an agility builder. It also helps produce stamina.

Weights: Pumping iron is a strength-builder. A few weeks of hard work and you'll be amazed.

Spar Time: Practice in the ring will build all your registers but is especially good at boosting your stamina.

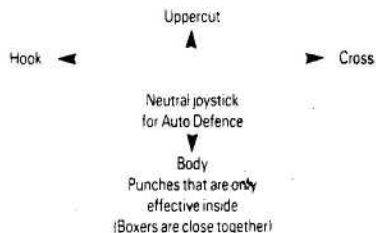
Heavy Bag: Punching the heavy bag is great for your strength but it's also helpful in "toning" your stamina and endurance.

To train your boxer simply move to an area and press fire. Every time you push the button another week will be allocated to that area. You can move to any area and devote up to 9 weeks as long as you don't exceed the total number of weeks left until the fight. When you are finished move to continue and press fire.

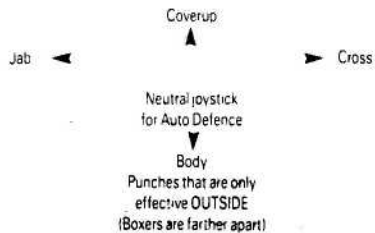
FIGHT TIME

To be successful in the ring you'll have to become an effective puncher. Some punches are only effective INSIDE while others are only effective when the boxers are OUTSIDE. Most important is being in the right range. Study the following chart and the descriptions of the various punches:

Fire
pressed



Fire
released



OFFENCE

Jab: The jab is an efficient point-scorer, a quick punch that doesn't do a lot of damage but isn't very tiring when you miss either.

Hook: The hook is slightly more damaging than the jab. It too is a quick punch and is good for scoring points without tiring the boxer unnecessarily.

Uppercut: The uppercut is an explosive punch from the INSIDE. It's moderately tiring and is a good knockout punch.

Cross: The cross is an explosive punch INSIDE and OUTSIDE. Crosses hit with tremendous impact but are also extremely tiring. Use them cautiously.

Head Shots: Jab, Hook, Uppercut and Cross – will always connect unless blocked by coverup or because the punches were not delivered from the right range.

Body Shots: The body punch is a power punch. It drains an opponent's endurance and his strength. Like the cross, it too is very tiring.

DEFENCE

Coverup: The coverup wards off all blows to the head. Your boxer WILL NOT move while he is covering up, so if you want to move you'll have to release the joystick and go to AUTO-DEFENCE.

Auto-Defence: Leaving the joystick in the neutral position will cause your fighter to go to AUTO-DEFENCE.

SPECTRUM:

KEYS REDEFINABLE. OR USE SINCLAIR, KEMPSTON,
OR PROTEK JOYSTICKS.

AMSTRAD:

KEYS REDIFINABLE. OR USE JOYSTICK.

TOY BIZARRE

SEE GAME FOR KEYBOARD CONTROL:

LEFT RIGHT UP
PRESS FIRE TO JUMP NORMALLY
PRESS FIRE AND UP FOR A HIGHER JUMP

The object of the game is to stop the factory from producing Killer Toys. Each day is split into four hour-long shifts, during which a number of balloons (shown at the top left of the screen) are produced. These balloons will float to the top of the screen and burst, releasing toys. The player must either burst the balloons by jumping into them or destroy the toys in either of two ways. The toys can only be destroyed when vulnerable, indicated by the toys flashing for a short time. This can be achieved by jumping over them, or catching them on the platforms, one of which will be raised. Jumping onto a platform will cause its pair to rise, making any toy upon it vulnerable. To destroy a vulnerable toy simply walk into it. The player must also avoid the mad foreman who will be running around trying to catch him. Bonus items include Extra Men and Coffee Break (all toys will be frozen and vulnerable). Successful destruction of all Balloons/Toys before the end of a shift will give a bonus based on the time remaining. Production of balloons can be delayed by switching off the valves producing them, simply by walking past the valve. Each day there is a special screen, the Safety Check, when the player must turn on all the valves within a time limit.

PARK PATROL

THE GAME

There is trouble down at Papatotoe Park, the old keeper Percy Nutting has had a nervous breakdown and the place has gone to the dogs!
You are invited to take up the challenge of becoming the new man or woman (that's up to you) in charge of the park. As park Ranger you will be equipped with a raft, snake repellent and a few morsels of nourishment. Your task is to clear the litter up, watch for swimmers in distress and keep the park wildlife in line. Papatotoe Park though, is no place for whimps and is full of hazards such as swamps, snakes and swimmers who will sink your raft, river logs and food stealing ants.
Lastly, rangers may savour the fruit of a mysterious plant, located near the supply hut, and experience its strange effects.
Keep your calories up and move on out!

To accelerate Z
To brake CAPS SHIFT
To change up S
To change down A
Left 5
Right 6
or for steering
2. Kempston Joystick
3. Fuller Joystick
4. Cursor Joystick
5. ZX Interface 2, Joystick 1.
6. Steering Wheel - Use a sellotape tin or similar object, about 4 1/2" in diameter and 1" deep, hold it at the top and position it at the centre of the top row of keys so that it nestles against the ridge at the back. Roll it to the left or right with moderate pressure to steer. To begin with, a rocking motion on the wheel may help you get the feel of the car.

CONTROLS (Commodore 64)

Joystick in Port 1. Fire button to start. Fire button to change gear.

Or Keys:

Decelerate

2 - Right

CTRL - Left

SPACE - Change gear.

SPECTRUM 48/128K/+

STAR RAIDERS 2 On the title page press J to select between Kempston, Interface 2 and cursor keys for movement controls. Press L to select level 1, 2 or 3. Press S to start a game.

Game controls as follows:

S - shield on/off

P - pause

SPACE - view warp map - use cursor keys to plot destination and fire to engage warp

T - view ship data

XARQ

SEE GAME FOR KEYBOARD CONTROL