QUICK   REFERENCE   CARD

SUB MISSION

Hardware Requirements

IBM   PC, XT or PCjr;   256K; color graphics adaptor

Loading Instructions

There are two ways to load the program into your computer from a floppy drive.

A. You can use the DOS disk to toad the game each time you want to use it.

1. **Boot the system from a DOS disk (2.0 or higher1 or hard disk drive.**
2. **Enter the date and time at the prompts.**
3. **Remove the DOS disk from Drive A. insert your Sub Mission disk in Drive A.**
4. **At the A> prompt, type** MAIN. **Press Enter. The program will load.**

B. To make the game load and run automatically when you turn on your computer, follow the steps listed below the first time you use your Sub Mission disk. Each subsequent time you use your Sub Mission disk, simply insert the disk into the drive and turn on the computer The game will load automatically.

One Disk Drive System

1. **Boot the system from a DOS disk.**
2. **Enter the date and time at the prompts.**
3. **Remove the DOS disk.**
4. **Insert your Sub Mission disk in Drive A.**
5. **At the A> prompt, type** INSTALL1.   Press **Enter**
6. **Follow the instructions on screen.**

Two Disk Drive System

1. **Insert a DOS disk in Drive A.**
2. **Turn on the computer**
3. **Enter the time and date at the prompts.**
4. **Remove the DOS disk from Drive A and insert it in Drive B. Insert your Sub Mission disk in Drive A.**
5. **At the A> prompt, type** INSTALL2.   **Press Enter**
6. **Follow the instructions on screen.**

Installing **Sub** Mission on a Hard Disk

Sub Mission can be installed on and run from a hard (or fixed1 disk. After you complete the procedure outlined below, Sub Mission will run entirely from your hard disk; you will not need to use the floppy Sub Mission disk. Note: Sub Mission can be copied once and only once to a hard disk, and only by the procedure described below.

The procedure will create a directory on the hard disk and load all relevant files to it. You will be asked to provide a name for the new directory. If you want to use an existing directory, just enter the name of that directory in Step 3, and ignorethe message about being unable to create the directory.

Follow the steps below to install Sub Mission on your hard disk.

1. **Turn on the computer with the door in Drive A open. [This assumes that you usually boot from your hard disk]**
2. **When you see the C> prompt, insert the Sub Mission disk in Drive A, and close the drive door**
3. **Type** A:SETFIXED NAME **where** NAME **is the name you have chosen for the new directory. The name must not be longer than eight characters.**
4. **When you press Enter, Sub Mission will install itself on the hard disk. The program will now run from your hard disk but not from the floppy.**

The system must be rebooted after this install. To do this, press Ctrl, Alt, and Del at the same time. To run Sub Mission after booting, type CD\NAME **where** NAME **is the new directory name. Press Enter Then type** MAIN **and press Enter.**

To uninstall Sub Mission from your hard disk, follow these steps:

1. **Insert the Sub Mission floppy disk in Drive A. At the A> prompt, type** FIXIN/U **to uninstall the program.**
2. **When the process is complete, Sub Mission will be uninstalled from your hard disk and will be executable from the floppy disk.**

Getting   Started

1. **Listen to the "Introduction" on the audio cassette tape for a detailed briefing of your mission. [If no tape player is available, read the transcript of the "Introduction" in the manual.1**
2. **Learn to pilot the submarine and play war games by following the "Tutorial" on the other side of the cassette tape. [Or see the transcript of the Tutorial in the manual.] To run the Tutorial, simply start up the Sub Mission program an your computer. First you'll see the Warlord at his head-quarters; then you'll see another screen showing your Control Room —
a room filled with monitors, a sonar scope, speed and air meters, and other gadgets. Start the tape when you see the Control Room. The Tutorial will tell you to "hit the Enter key now:' Follow along from there.**

THE SUBMARINE'S CONTROLS:
[Any numbers should be typed using the upper keys, not the keypad keys.]

DIRECTION:

→ Turns sub to right 5 degrees.

<-- Turns sub to the left 5 degrees.

N   S   E   W Turns sub north, south, east, or west.

H180 <ENTER>   Turns the sub 180 degrees.

T Turns the sub around (180 degrees).

DEPTH;

D20 <ENTER>   Sends the sub down to a depth of 20 fathoms.

V (upper case) Vents the sub's ballast tank (1 time only).

SPEED:

F10 Sends the sub forward at a speed of 10 knots.

B10 Sends sub backward at a speed of 10 knots.

K   Quickly kills any speed forward or backward.

YOUR HARPOON:

Z   Turns harpoon gun to left of center.

C   Turns harpoon gun to right of center.

X   Fire a harpoon (with several seconds needed to reload).

SENDING MESSAGES TO THE WARLORD'S SUB:

❑   Sends the message "All clear. Go ahead and light up your warning area."

❑   Sends the message "Please wait! My sub is still in your warning area."

OTHER KEYS:

M   Sets off warning area from one of your 5 on-board mines.

DELETE   Erases a command from the back of the pilot's chair.

E   (upper case) Eavesdrops on competing sub.

I   Ignites your mine warning area.

U   Updates your chart if it becomes cluttered,

R   Gives you reserve battery power (1 time each game).

SPACE BAR   Freezes a game and restarts a frozen game.

The function keys on yaur computer can be used to set depth and forward speed quickly.

Set Depth	**Set Forward Speed**
F1 = 0 fathoms	F2 = 5 knots
F3 = 10 fathoms	F4 = 1 0 knots
F5 = 20 fathoms	F6 = 15 knots
F7 = 30 fathoms	F8 = 20 knots
F9 = 40 Fathoms	F10 = 25 knots

If you press F5 and F6, for example, your sub will *move* forward at 15 knots and *dive* to a depth of 20 fathoms.

MINDSCAPE, INC. 3444 Dundee Rd. Northbrook, IL 60062

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EMERGENCY INSTRUCTIONS

Use these instructions if and only if Sigourny and/or Peter dies
during a submarine war game. This procedure will bring Sigourny
back to life once and bring Peter back to life once.

Apple@ II family computers

1. Load the program. You will see the Warlord, then the title
screen, then your Control Room. At the bottom of the Control
Room screen is a menu that shows you which crew members-
the robot, Sigourny, Peter-are available to you.

2. To revive Sigourny, press the Ctrl and S keys at the same time
from the Control Room screen. You will see S = Sigourny on
the menu, indicating that Sigourny is alive again and can be
selected as the crew. To revive Peter, press the Ctrl and P keys
at the same time from the Control Room screen. You will then
see P = Peter on the menu, indicating that Peter is alive
again and available to take out in the sub.

IBM@ PC/PCjr computers

1. Load the program.

2. In a moment, you will see the title screen, with "Sub Mission"
displayed at the top.

3. To revive Sigourny, type SIG from the title screen.
To revive Peter, type PETE from the title screen.

4. When you load the Sub Mission program again, you will find
Sigourny or Peter alive again, but still a prisoner of the Warlord.

C o n t e n t s

OFFICE OF THE SPACE COMMISSIONER

OFFICIAL MEMO

Re: Sub Mission, Code name-Operation Warlord

Attached please find your Operation Warlord briefing. Along with the enclosed cassette, this contains the information you will need to carry out the mission. (A transcript of the cassette is included in this manual.)

No point in mincing words, Captain: this will be a battle of strategy and nerves with an unpredictable and dangerous enemy – unpredictable because he is irascible and unstable, and dangerous because he holds two Earthlings, Sigourny Slye and Peter Frey; captive and hasn't the slightest interest in releasing them.

Keep in mind, Captain, that the lives of Sigourny Slye and Peter Frey depend on you. And remember that I have more than a passing interest in this matter since Sigourny Slye is my daughter. So, Captain, don't even think about returning to Earth without Sigourny (and Peter, too). You see, the Commissioner's Office appreciates the difficulties inherent in this mission, but appreciates success even more. Quite simple, really

Good luck, Captain, and don't forget to come up for air.

Sanford Slye

Briefing

The Mission

Summary: Your mission is to free two Earthlings, Peter and Sigourny, from the control of a Warlord who holds them prisoners on a distant planet. The Warlord has dictated the special requirements for their release:

1. You must first win submarine war games against the Warlord, a fierce competitor who hates to lose. You control one sub by remote control from shore, and you use a robot, Sigourny, or Peter to pilot the sub. The Warlord controls the other sub by remote control.
2. To win a war game, you must find and harpoon the single deep mine in the bay before the Warlord does.
3. After you win a war game, you can lead Sigourny and Peter to freedom, if you have them on board your sub and if you have discovered the escape route.

If you can't lead Sigourny, Peter, and yourself to freedom, then your rescue mission ends in submission to the Warlord.

Special Dangers

Don't forget that Sigourny and Peter are human and can die if on board your submarine if it runs out of air Since you control the sub, it is your responsibility to make sure the sub never runs out of air with one of them on board. If one of them dies, he or she is erased from *your disk* and lost forever Well, not quite forever..

Emergency Procedures

If Sigourny or Peter dies during a war game, you can resurrect each of them one time *on/y* The "Emergency Instructions" envelope included with this package contains a special command that allows you to bring each of them back to life once. Use it only if you have to.

If you lose Sigourny and/or Peter a second time, they will be permanently erased from your disk. But there is one last resort. You may send your disk to the Space Commissioner the aeronautical authority that sent you on the "Operation Warlord" mission in the first place-and petition the Commissioner for clearance to start Operation Warlord again. If the petition is granted, you will receive a new disk with Sigourny and Peter alive again but still prisoners of the Warlord. See the special petition at the end of this manual.

Intelligence Report

1. If you behave respectfully toward the Warlord during the war games, he will behave respectfully toward you. For example, after you harpoon a mine, it's a good idea to give the Warlord time to get his sub out of the warning area before igniting the mine. If you ignite a mine when the Warlord's sub is in the area, it will stun the Warlord: his sub will be temporarily immobilized. Although this tactic gives you a temporary advantage because you can move toward the deep mine while the Warlord is stunned, it will anger the Warlord, and Warlords are very nasty when they are angry.

2. If you act aggressively or violently toward the Warlord, he will react violently toward you. There are two ways to anger the Warlord [besides beating him in a war game):

   a. ignite a mine while the Warlord is in the warning area, which will stun his sub; and

   b. hit the Warlord's sub with a harpoon, which will also stun his sub.

3. Only Sigourny and Peter can give you'clues about the escape location. And they can only give you clues when you take them on board your sub during a war game.

4. All mines except the Deep Mine are at a depth of approximately 25 fathoms. If you get closer than 10 fathoms to a mine, it may detonate and stun your sub.

5. The location of the Deep Mine changes each time you play a new game

6. The Warlord tends to avoid the southern bay. If the action gets too hot in the main bay and you want to practice without constant interference from the Warlord, go to the southern bay.

Tape Transcript: Introduction

Hmmm. Operation Warlord. They never want to tell you what the mission is about until you're strapped into the rescue ship, shooting through deep space. Oh well, it's too late to change my mind now. Let's see the orders.

Operation Warlord RESCOM Directive LX 1506, dated 21/25/8/16. And it reads:

"Captain, your mission is to proceed to the uncolonized planet located at grid coordinates T65729414 Delta 19 and confront the Warlord. [Refer to on-board computer.)"

Yep, I remember the Warlord. He was my roommate back at the Military Space Academy. Boy, that was years ago. And even then he was mentally unstable But smart. No wonder they asked me to fly this mission. I was the only one that could beat him at those war games we played. And then of course in our senior year his mind snapped from the pressure, I guess, and he left the academy; disappeared. I wondered what had happened to him. Well, let's see what the brief says:

"Because of your familiarity with the Warlord and his style, you have been chosen to confront him as the first stage of this rescue mission. (Please refer to on-board reference computer)"

Rescue? Hmmm. OK, on-board computer, let's find out what's going on.

"Hello, Captain. The person known to you as the Warlord has established a base on planet T657 with the help of several robots. He has spent many years developing a sophisticated war game scenario which uses submarines that can be piloted by robots or humans?

So that's where he's disappeared to! But why is RESCOM worried about the Warlord? It sounds like a harmless situation..

"It was harmless until over a year ago when the crew of a spaceship near the planet T657 came down with a deadly virus. On board was the Space Commissioner's daughter. Sigourny Slye. To protect her from the virus, she was sent down to the surface of the planet, In a landing craft. The Captain radioed a call for help along with an explanation of what had happened to Sigourny. He intended to pick her up again later when the sickness had passed. His ship hasn't been heard from since. The Space Commissioner was able to convince the Academy to send a young cadet named Peter Frey nn a mission to find and rescue his daughter Peter landed on the planet, but within hours all contact with him was lost. It was at this point that the Space Commissioner realized the probable connection hetween the Warlord and the two missing people."

You mean that the Warlord has kept these two people from communicating with the Commissioner?

"Worse than that hc has kept them apart from each other, Sigourny was held in an isolation bubble for almost a year because the Warlord was afraid that she had been infected with the deadly space virus. He discovered that she was healthy at

about the same time that Peter landed and was captured. Peter and Sigourny have only seen each other once: across the room at the Warlord's infirmary:'

But what does the Warlord want with those two? I would think that he'd be glad to send them back.

"The Warlord is obsessed with playing his strategic war games. For years his robots had been his only competition. And since he's far craftier than a robot, he had gotten bored!'

I see-until Peter and Sigourny showed up

"Yes. Although they are no match for him, they are human, and therefore unpredictable. So he forces them to compete with him in these underwater strategic maneuvers:'

I'm beginning to see why I've been chosen for this mission. As far as I know, I'm the only one who has ever beaten the Warlord in these games. But that was years ago, and I'm badly out of practice. How am I going to help Sigourny and Peter?

"First, you must land and let yourself be captured by the Warlord. He will jump at the chance to play against the one person who is a real challenge to his skill. The Space Commissioner has discovered the Warlord's rules of play. In this game, mines have been placed underwater in a bank. Both you and the Warlord have a remote-controlled submarine. You must find the one deep mine and neutralize it without being stunned by the opposing submarine. The way that you control your sub is through an on-board pilot. You can choose to use a robot, or you can choose to use Peter or Sigourny as your pilot. If you choose the robot, then you can play the game and sharpen your skills without risking any human lives. If you use Sigourny or Peter then you must keep careful track of how much air is left in the sub. If a human is on board and you run out of air, he dies."

Wait a minute! I don't need those two kids to help me beat the Warlord! Why should I risk their lives when I can pilot through a remote robot?

"Sigourny and Peter are held under very tight security. The only opportunity they have to talk to you is when one or the other is on your sub. Then they will be able to give you clues to help you find the one escape route out of the bay. If you find it with one of them on board your sub, then that person is free from the Warlord's control. When you have found the way out of the bay for both Sigourny and Peter, then you will all be free and your mission will be complete."

Well, it sounds possible, but explain one thing: Why play the war game at all? Why not just put Sigourny or Peter in the sub and go looking for the escape route?

"The Warlord is obsessed, Captain. More than anything else he wants to be challenged by a worthy opponent If you don't make the attempt to win games by being the first to find and harpoon the deep mine, then the Warlord won't let you put Sigourny or Peter on your sub If that happens, then you can't get any clues to help you find the escape route. So you see, Captain, to save them, you have to play the game, and play to win! After you have won several games and you feel that you have enough information to find the escape route, then you can ignore the mine search and try to make your excape."

OK. That's all for now. Power off.

"Always glad to.. ." (power goes off)

I see how it works. I must challenge the Warlord. But you know, I'm looking forward to it. I could beat him years ago, and I think I can beat him again.

Oh! There's the landing alarm. Ten minutes to touchdown. I'll run through the check-list. Reverse thrusters, gyro..

Tape Transcript: Tutorial

You and Sigourny and Peter are prisoners of a Warlord who entertains himself by inviting you to play a game with him. You play the game with the Warlord in hopes of finding some way of escaping during a game. You, the pilot, sit here on the shore controlling a sub while your crew member, inside the sub, drives around the bay, avoids mines scattered just under the surface, and looks for one special mine that has been sent to the bottom of the bay. If you and your crew find this special deep mine before the Warlord finds this deep mine, you will win.

Today, the one-person crew who will actually be inside the sub will be a robot. Later, if you become more skilled, you will be allowed to send either of your friends, Sigourny or Peter, as a crew member. But there are, of course, dangers for a human aboard the sub. Because you care for your friends, you don't want to take chances with them until you are a skilled pilot. Also, for today's exercise, the Warlord's sub will not bother you. Not this time

Hit the "ENTER" key, now. ("Return" on some computers.)

The small video monitor on the control panel will show you a picture of your crew, who happens to be the robot this time. Any trme your crew speaks to you during the game, you will see their face on the video monitor You will then see your sub moving out into the bay. And the game has begun

I will start by describing the meters in front of you which give you Information about your sub and crew. Let's start with the battery power meter in the bottom right corner of the control panel. The meter is a long thin tube with a bubble in it that indicates that your sub now has about two-thirds of the battery power that it can hold. The battery is used to drove your sub forward or backward.

In the bottom left corner is a similar meter that measures the amount of air in your sub. The bubble in the air meter tube is now at the far right, indicating that the air tank is full. If the sub were to dive beneath the surface, as we shall do in a short while, the air would begin to run out. You would then have to return to the surface where the air tank would automatically refill Itself.

Above the air meter is a speed meter that tells you how fast your sub is moving forward or backward. Right now, the needle on the speed meter indicates that your sub is not moving at all. The fastest that your sub can move is 45 knots. At that speed, the needle would be lying right down on its side. At that speed, you would consume a huge amount of your battery's power

In the top left-hand corner you will find the sonar-scope that looks like a half-circle on top of a vertical, rectangular box. This sonarscope will display any objects that are in front of your sub, and it will also tell you how far that object is from the surface. Right now, for example, the scope shows that there is a mine, shown as a blinking, square symbol in front of your sub. It also shows that the mine is 21 fathoms below the surface Other types of objects that the sonar-scope might show you are rocks, the Warlord's sub, etc.

In the top middle of the screen is the electronic chart of the bay, which displays the coastline, peninsulas, etc. The blinking dot on the chart shows where your sub is located. To the south and west of your position is a power marker that looks like a circle with a cross Inside. That marker is where you must go to replenish your battery's power. It will move around the bay as the game progresses.

To the right of the chart is a compass that tells you the direction in which your sub is heading. The compass now shows that your sub is facing to the east, or 90 degrees.

Finally, on the right side of the control panel is the depth meter, which I shall describe later in detail when we dive below the surface. For now, simply notice that the top of the depth meter shows that your sub, shown as a white diamond shape, is sitting at the surface at a depth of one fathom, and the bottom of the bay is 51 fathoms from the surface.

We will now try using some of the controls that move the sub Once you begin to move the sub, you must follow my instructions very carefully. If you don't keep up with me, you will be sailing around the bay on your own

Find the left-right arrow keys. On some computers the left-right arrows are found on the number pad. Press either of those keys now while watching the compass. You will see that you can change the heading of your sub. You will also notice on the sonar scope on the top left-hand corner of the screen that the blinking mine symbol moves when you turn the sub. Experiment with the left-right arrows to see their effect on the compass and on the display of the sonarscope

Now, press the key "T" which tells your sub to turn around and face in the opposite direction. While watching the compass, press the key "E" now. You will notice that the sub will spin to face the east. The final way to give your sub a new direction is to give a special number command. To type numbers, use the upper number keys, not the keypad keys on the right.

Type "H220" now. using the upper number keys You will see the letters and numbers "H220" printed on the back of the pilot's chair If you make a mistake. hitting the Delete key once will erase the entire command. If you have typed correctly, you will see t-1220 on the back of the pilot's chair. Press Enter now to enter this command. The command will disappear from the back of the chair This command has told the sub to head in the direction of 220 degrees Notice on the chart that moving 220 degrees points our sub directly toward the power marker the circle with the cross in it.

Now you will tell the sub to start moving forward at a speed of three knots. Press the Delete key once to make certain that the number command on the back of the chair is clear, and then type "F3," then Enter. The needle on the speed meter should move to the right a bit to show that you are moving forward slowly. As the sub starts to move through the water, the depth meter on the right side of the control panel will show the bottom of the bay changing depth.

On the sonar-scope on the upper left-hand corner of your panel, you will see echos of land, since we are passing very close to the shore. The land shows up as clusters of small dim shapes. The sonar-scope also indicates a mine in front of you and below you. A mine shows up as a blinking square. Since your sub is now at a depth of only one fathom, any mines you might see will be too deep to be of concern. Notice on the chart that your sub, the blinking dot, is slowly approaching the power marker. Soon you should be able to see the actual power marker showing up on the sonar-scope since it will be directly in front of your sub. It will look like a cross or a large white plus sign.

When you see the symbol of the power marker, stop your sub immediately by pressing "K." "K" instantly kills any speed. Notice that the needle on the speed meter shows that you have stopped. In order to get the benefit of the power marker, you will take your sub right up to the marker If the sonar-scope does not show the marker directly in front of your sub, that is, the middle of your sonar-scope dial, you should use the left and right arrow keys on the keypad to point your sub right at the marker. Your sub is pointing directly at the marker when the marker is in the middle of the sonar-scope. Use the left-right arrow keys now to point your sub at the marker on the sonar-scope.

When the sub is pointed at the marker. give it some forward speed by typing "F5" and Enter. When the sub touches the power marker, you will notice that your bat tery power meter shows more electricity. A report will also scroll in from your crew telling you that you have hit the marker As soon as the message scrolls out from the bottom of your screen telling you that your sub has refueled, you should kill any forward speed by pressing "K."

At this time, your sub should be refueled and stopped. Turn your sub in an easterly direction by typing "E." The compass will spin as your sub turns to face the east. We will now prepare to dive below the surface so that we can get down to the depth of the mines The mines are all at a depth of about 25 fathoms. All the mines except for the deep one, that is.

We must first take a look at the depth meter at the right of the control panel. At the top of the tube, the white diamond shape represents your sub's depth of 1 fathom. The bottom of the tube shows that the bottom of the bay is currently many fathoms below the surface The needle on the left of the tube indicates chat your sub is perfectly level in the water.

You will now tell the sub to point down at a depth of 25 fathoms. Type "D25," and if the command looks correct at the back of the chair, press Enter

The needle on the depth meter shows that the sub is pointing downward. But also notice that the diamond shape shows that the sub is not yet actually getting deeper in the water. The sub will not descend into the water until it is moving forward. It will not just drop down into the water; it must be driven down into the water by Its pro-

pellers.   You may or may not be able to see a mine ahead of you on the sonar-scope, but I know for a fact that it's out there not too far away. It's at 21 fathoms and we're going to dive down closer to it so we can fire one of our harpoons at it. We have to be within 10 fathoms of a mine, above or below, to have our harpoon hit the mine.

We will run our sub more slowly than usual now since this is a test run and pretty much of a tricky maneuver. What we're trying to do is to get down close to the depth of the mine without getting so close to it that it stuns us before we can harpoon it.

Follow these instructions closely. Type "F2" and then Enter now to send your sub forward and down. This is a very slow speed. You will notice on the depth meter on the right side of the screen that the diamond shaped sub indicator is beginning to drop. When your sub's depth gets to 12 fathoms, press "K" immediately to kill the forward motion.

Since your sub is not within 10 fathoms of the mine on your sonar scope, you will be within range to hit it with a harpoon. And also within range to be stunned by the mine. You will now learn the final and most important lesson on the sub. We will fire a harpoon at the mine.

Firing   a harpoon at the mine will do two things for you. It will deactivate the mine for a short while so that it will not be dangerous to your sub, and it will release a huge
warning area around the mine. You will see the warning area on the chart when you harpoon a mine. Before I explain the reason for this warning area, we should harpoon the mine.

Place the fingers of your left hand on the "Z," "X," and "C" keys. Hit the "Z" key several times,   and you will see the harpoon cannon on the sonarscope turn to the left. Hit the "C" key several times, and the cannon will turn to the right. When the cannon is pointing directly at a mine, hit "X" to fire the harpoon. You will see the harpoon travel from your sub toward the mine. You may shoot more than once if your aim was too far off.

If the harpoon hits a mine, several things will happen. A huge warning area will show up around the mine on your chart. You will hear a continuous beeping sound telling you that you are consuming a lot of power to keep that warning area up. The warning is for the Warlord's sub, which will try quickly and desperately to get out of the warn-ing area before you decide to ignite that warning area. Press "I," which will ignite the warning area. The beeping sound will stop and the warning area will ignite bright white for an instant, and then it will disappear Your sub has just poured a lot of energy into that area. You may actually have just stunned the Warlord's sub if it was inside the area you just ignited.

Now press the space bar once. This pauses the game. You will see the word "pause" on the bottom of your chart of the bay. We paused here so that we can discuss what we did without having to worry about our air supply, which you can see is getting low. Why did we ignite this area? We harpooned a mine to ignite the area as a way of locating the deep mine that we are looking for Since the deep mine was in the area we just ignited,   you were told of its presence by your crew, who heard its echo.

Notice also that there is now an outline of the area on your overhead chart. By finding several of these overlapping circles that contain the deep mine,   you will pinpoint it. Noitce that the square symbol for a mine on the sonar-scope has changed to a square with a line through it. This symbol now indicates a mine whose charge has

been used up. This mine will start recharging and could become active again at any time. You should now drive your sub to the surface to refresh your air tank.

Press the space bar now to start the game again. Type "D 1" and Enter now to point your sub to a depth of 1 fathom. Now type "F20" and Enter to move quickly to the surface. When your sub gets to a depth of 1 fathom, as you can tell from the depth meter on the right, press "K" to kill your speed. The air tank will refill itself automatically at a depth of 1 fathom.

Your sub should now be stopped on the surface. Find the five lighted indicators along the side of your chart. They tell you that your sub is carrying its own supply of 5 on-board mines that behave just like regular mines. You would use one of these on-board mines if you were beginning to zero in on the deep mine and wanted to check out a few small areas.

Press "M" to activate one of your on-board mines. There are now only 4 indicators lit. You will see a small warning area around your boat on the chart, and you will hear the continuous beeping that you heard before when you put up a warning area by hitting a mine with a harpoon. Press "I" to ignite that area now. If the deep mine is within that lighted area, you will again be told by your crew and you will see the outline of that small area drawn on your chart of the bay. In fact, this time the deep mine was not within that area.

Anytime you feel your chart is becoming cluttered with old or useless information, you can use the "U" button to update the chart. Press "U" now. If you had exactly located the deep mine with several large overlapping circles, and perhaps with a small circle from your on-board mines too, you would be ready to go to the bottom to find that deep mine and win the game. The easiest way to get your sub to the bottom, when you know where the deep mine is, is to position your sub not quite directly over the mine, so you don't land right on top of it, and then blow the sub's ballast tanks to make your sub heavier than water Don't do it now, but you would push upper-case "V," or "Shift" "V," which stands for "venting" the ballast tanks. Your sub would begin to drop. You would see nothing for many fathoms. Then hopefully, as your sonar-scope came into range of the deep mine that you hope will be there, you would see the mine on the scope. Hit the mine with a harpoon, and you have won the game. You could then take a human crew out the next time. If the Warlord's sub harpoons the deep mine before you, he has won the game.

Finally, I will teach you how to concede a game to save the life of your crew. Imagine this situation: your sub is many fathoms below the surface. Your crew is a human. Your sub is nearly out of air Your crew will die unless you get air You drive toward the surface to get air, but your batteries are low and you might get stuck underwater It's time to concede. You will do it now to practice this vital lesson, even though today you are not really in danger While watching the battery meter press the key "R." You will see the battery level jump, and an "R" will appear above the meter telling you that you have been given your reserve power You will get no more reserve power during this game. Use this reserve electricity to drive yourself to the surface where in fact your sub already is now, and then head for the shore. In other words, type "W" to head your sub to the west where the shore is closest now. Then type "F20" and then Enter to move your sub forward to the shore. When you are within sonar range of the shore, you will begin to see many shore echos on the sonar-scope. When you hit the shore, you will automatically concede the game. You could also dive down

to hit the bottom as a way of conceding the game. Any rock that you hit, any part of the shore that you hit, will concede the game and save your crew.

This maneuver might be the only way to save a human crew. If a crew member dies for lack of air aboard your sub, you will obviously never hear the end of their story You will never hear their ideas about escape from the bay. And incidentally, their memory will be erased from your diskette. Don't play a game with humans   these stakes seem too high. That's what robots are for.