

FAST ATTACK

Deluxe Training Guide

conceived and written by "LittleFish"

General

The purpose of this posting is to provide some useful information on how to play Sierra's Fast Attack. Fast Attack is more of a simulation than it is a game. A manual is supplied with the game, but it only tells the user about the various features, not how to use them. In my opinion, Fast Attack is a lot of fun and not particularly hard to play, but one must know how. The purpose of this manual is to supply the "how to."

COMPUTER REQUIREMENTS: I have version 1.0 of Fast Attack. I have no knowledge of any of the later versions. I run it on a Packard Bell 486 with a Cirris video chip and Sound Blaster sound card. I use a boot disk to get 617K of memory. I have 23 meg of memory and run Fast Attack under DOS. I have never attempted to run it under Windows 95, but from what I have read on the bulletin boards, it does not appear to be a good idea to do so.

KNOWN CRASHES: I originally tried to run Fast Attack with only 8 Meg of memory, or at the minimum system requirements. I had numerous random crashes. I added 16 more Meg of memory and it cured all of the problems with one exception. The game will still crash about 1 out of 3 times when I attempt to download satellite messages using the periscope at normal speed. It will crash every time if I try to download the messages using the periscope at greater than normal time. The work around is to use the floating wire antenna at normal speed.

SOFTWARE SORCERY SUPPORT: Software Sorcery is the name of the company that actually created Fast Attack. In March of 1997, a person from Software Sorcery posted on a bulletin board a list of 21 frequently asked questions. I regret that I did not copy all of them or note the bulletin board. The only thing I saved were the things of direct interest to me. They are as follows:

Cheats: There are three cheats in Fast Attack. They are enabled with command line switches in DOS. They can be added to the "fast.bat" file or, if you are running in Windows 95, they can be added to the COMMAND LINE field of the PIF. The first cheat enables you to get a perfect tracking solution on a contact. The appropriate switch is "/PLOTSOLN" To use it in the game, go to the PLOT screen. Select the desired contact and then enter "ALT-F5" The game will immediately give you the correct solution. To use it, enter SEND to send it to the BSY-1. Do not use this cheat on something that is not moving, such as a drilling platform, because it will lock up the game. The second cheat will give you the big picture. The command switch is "/TEDISPLAY"

To use it, while in the game, enter "ALT~" On my computer, I enter "ALT" SHIFT and then the tilde key. You will be rewarded with a map showing EVERYTHING; ships, mines, aircraft and missiles (yours and theirs) in motion. The color codes will become obvious. To learn more about an entity than even its mother would want to know, just click on it. I have not been able to figure out how to adjust the scale, but the map is very useful none the less. Do not view this screen at greater than normal time if you have weapons out or you may make them miss. If you use it in the operational scenarios, you will find out that there is a lot going on out there you don't know about. The third cheat is enabled with "/SWSGOD" This switch enables you to play a sequence of operational missions without being penalized for failure. This switch was originally intended to allow testing the medals and promotions aspects of the game without having to plod through every single mission. At the end of a mission, with this switch enabled, you will still be rebuked for not accomplishing the primary objectives, but as soon as the next mission begins, all will be forgiven. It will then proceed as though you had been perfect. It is most useful for getting to a particular mission, such as GUIK-5, mentioned below, without having to play and save the first 4 missions in the battle set.

The Software Sorcery person also provided other useful information. To get credit for plotting a target, it is necessary to identify it on sonar (obviously), but it is also necessary to get a tracking solution accurate within 20% in range, course and speed. The missiles are 88% reliable, and the torpedoes are 95% reliable. An attenuation of 6 dB reduces detection distance across the layer by 50%.

The resupply missions are as follows. Replenishment occurs PRIOR to the start of the indicated missions in the following table.

Campaign	Missions
Persian Gulf	4,7
Sea of Japan	4,7,10,14,18
Adriatic	4
Mediterranean	4,6,9,11,14
GUIK	5,7,9

Another useful "cheat" I have found that is not mentioned anywhere is the sound in the passive sonar display. I played Fast Attack for a long time before I discovered that each class of ship has its own unique sound. As you go through the training (T) missions, you will encounter all of the ship classes you will encounter in the operational missions. Rig the stereo headphones and calibrate your ears for the growl of the patrol craft, the roar of the merchant's diesels, the workman like sound of the warships, and the quiet machinery sound of the submarine as you run the training missions. Naturally, in some of the operational scenarios you can hear the whales sing and the shrimp snap their claws. The advantage of this feature is that you can immediately identify a ship's class at the beginning of a mission, if not the exact one you are looking for. Get an initial range, as described below, and you can safely drive in to a range where you can quickly identify it. This feature saves a lot of time.

Another useful feature is found on the CD in the text directory. Here you will find all of the mission orders that can be read with the DOS EDIT function. This feature, combined with the resupply schedule, makes it possible to perform some advance planning on how to use your weapons. In some of the Sea of Japan patrols, you will barely have enough weapons to get all of the primary targets, much less the secondary targets. Reading the orders in advance will enable

you to make the weapons and the targets come out even.

BOOKS: I received an actual paper copy of the game manual. It was very nicely done and was printed on old communication schematics. Apparently, in later editions of the game, the manual is contained on the CD. I am assuming that they are the same manual. The manual I received is accurate, but, in my opinion, it is woefully incomplete. It does a good job of explaining things are and how they work, but not how to use them. The CD has two files, readme.txt and readme.wri which explain how the sonar range gating functions works. I believe that this is the game programmer's way of showing you the maximum detection of the surface ship doing the pinging. These documents should be studied, but they are only the beginning.

There is a very useful supplementary book mentioned in the references. Tom Clancy (yes, THE Tom Clancy) wrote a book called Submarine a few years ago. Mine is a large paperback that came from a used bookstore for \$5.00. It is a handy supplement to the game manual. I suggest that you try the used bookstores first for this one.

NAVIGATION: The player can avoid a lot of frustration by learning to navigate in Fast Attack. The latitude and Longitude (Lat/Long) of the ship is located on the bottom of the Area of Operations (AO) map. The three numbers represent degrees, minutes and seconds respectively. There are 60 seconds in a minute, and 60 minutes in a degree. A degree of latitude represents 60 nautical miles of distance. From this, we can derive that a minute of latitude represents one nautical mile, or 2025 yards, and that a second is 1/60 of a nautical mile or about 33.75 yards. These statements are also true of longitude, but only at the equator. The Fast Attack programmers took a short cut, and made the lat/long distances equal in all of the scenarios as they are at the equator. Of course, they also made it easy for the non-professional navigator to find his or her way around in Fast Attack world. We calculate the distance and direction between lat/long positions by converting them to seconds, equivalent to converting to the lowest common denominator in fractions, and then determine the appropriate distances and angles using basic trigonometry. For example, a longitude of 54 20 00 degrees East longitude is equal to a 54 19 60E degrees or 54 18 120E. The distance between say 54 20 00E and 54 24 17E is equal to the distance between 54 20 00 and 54 20 257. 257 seconds times 33.75 yards/second is equal to about 8674 yards.

As another example, let's determine the distance and course from 26 07 00N and 54 20 00E to 26 05 15N and 54 24 17E. 26 07 00N is equivalent to 26 05 120N. The difference in latitude is 105 sec times 33.75 yards/sec or about 3544 yards. We calculated the difference in longitude in the above paragraph. The direction is roughly Southeast. 3544 divided by 8674 is equal to 0.4086. Using this number as the arc-tangent gives an angle of about 22 degrees. 22 degrees plus 90 degrees gives a course of 112 degrees. The distance is 9355 yards. It is always best to diagram these little problems out unless you are experienced in solving them.

Another skill the Fast Attack user will need is the ability to solve triangles. In Fast Attack, you will usually have one side and two angles and will need to come up with the rest of the triangle. Consult any algebra book to learn how to do this.

The reader is probably wondering why any of these things matter. The reasons will become apparent when we get to the procedures for finding mines and launching TASM's.

Lastly, under navigation, the depth of the thermal layer will always be exactly 20 feet lower than the number given in the SVP window in the passive sonar display. I don't know if this is a programming error or an attempt to model some feature of the real world. I will always use the real number in the descriptions below.

The user will also need to determine the minimum depth at which he can travel for a given speed without cavitating. This can be done in training mission one (T-1). Pick a speed and gradually go shallow until the propeller cavitates. Your sonarman will advise you and you can hear it on the sound. Start with 32 knots at 380 feet. This information will come in handy when you have to run as fast as possible either just above or below a layer or in shallow water. The game is set up so that if you cavitate, every threat within about 30 miles, including aircraft, will come running.

T-1 is also the place to obtain your operational speeds. For example, the ship will travel at 32 knots at 375 feet without cavitating. To go shallow, however, it is necessary to first slow down, go up to the next depth, and repeat the process. If you are traveling at 500 feet, however, you can enter 1/10 time, enter a depth of 130 feet and a speed of 10 knots, and the ship will travel there without cavitation or any further intervention on your part. You can launch Harpoons or Typhoons at this depth, although I prefer to go shallower. If you enter 4 knots instead of 10 knots, the ship will go right up to 50 feet, or periscope depth without cavitating. Enter 5 knots and 130, and you will be at the optimum condition for deploying the floating wire antenna. 130 feet is also the operational depth for going deeper. If you are stopped at 130 feet, you can enter 32 knots and a depth of 500 feet and the ship will go there without cavitating or further intervention. Keep the ship at 10 knots while descending until the antenna is retracted. You will need to develop similar operational depths for 25, 20, and 15 knots.

Next, you will need to determine things such as the ship's turning radius and the stopping distance from various speeds. Again, the ability to put the ship exactly where you want it, including depth and heading, in the minimum amount of time will come in handy when plotting mines or launching TASM's.

I use 1/10 time for entering maneuvering commands. If you use this procedure, combined with the operational speeds, you will get only the acknowledgment of the command and that the ship is established as directed. It is just that much less to listen to.

ARRAYS: As the documentation states, there are two arrays. The TB-16 is not as sensitive to sound as the TB-23, but on the other hand, it is not as sensitive to turbulence which results from being dragged through the water. It is therefore possible to maintain a contact while traveling fairly fast. The TB-16 is best used for surface ships and for "torpedo circuses."

The TB-23 is much more sensitive to sound, especially at low frequencies. Consequently, it is much better for detecting submarines and distant contacts. Target identifications will also come up much quickly with the 23. Unfortunately, it is also much more sensitive to turbulence noise, which means that it will detect nothing if you are traveling above approximately 12 knots. It also takes much longer to reel the TB-23 out.

Bottom line on arrays. If you are going after surface ships, use the TB-16. If you are going after subs, use the TB-23. If you are going after both, use

the TB-16. If the TB-16 is inadequate, you will have time to put out the TB-23. You should always have an array out. Without an array, you are deaf in a 60 degree arc through the stern.

DEVELOPING TRACKING SOLUTIONS WITH PASSIVE SONAR: There are two ways to do passive tracking in Fast Attack. Unfortunately, neither one of them is adequately described in the game manual. The basic principle of passive tracking is that that we must change the state of the ship (speed/course) at least twice to get a complete solution. If the state of the ship is not changed, it is impossible to determine the solution. It is equivalent to trying to solve 1 equation in three unknowns, range, speed and course. By varying the ship's state twice to get three different states, we have the equivalent of three equations in three unknowns that we solve by trial and error using the BSY-1 display or the plot.

The first and most critical part in developing a solution is to obtain the initial range estimate. It is extremely important to remember that one cannot tell the range to a contact by the intensity of the contact. A faint contact could be a Kilo at 4000 yards wondering what YOU are, or a cruise ship in the next time zone. Once we know the range, we can develop a complete solution using a maximum speed based on the range. I use a speed equal to 1 knot per 1000 yards of range to the contact. Using this procedure, the contact will not be able to detect you using passive sonar. I use a speed of 10 knots to obtain the initial range. 10 knots is fast enough to give a good range estimate on a close contact or determine if it is distant. It is slow enough so that we will hear the launch transient if the contact is indeed a Kilo at 4000 yards.

We will demonstrate passive range finding with the BSY-1 first. Load mission T-1. Click on the contact in the passive sonar display and go to the helm. Select a depth of 130 feet and a speed of 10 knots. Go to the BSY-1 console and let 6-8 dots accumulate. When you have them, stop the ship and let 6-8 more dots accumulate. We have two ship states produced by one speed change, so we can get the approximate range and course. If there was a sharp kink in the row of dots we would straighten it by adjusting the range. The row of dots is basically straight, but aligned off to the left. Center the dots with the course. A kink develops in the line of dots as we do so. Straighten it out with the range control. The line of dots should be straight and centered at about 4000 yds which is the correct range. The course is approximately East. This solution is somewhat difficult to get because the freighter is so close. Use the zoom to decrease the sensitivity to by going to -40. An alternate approach is to move the sub out until the distance to the freighter is about 10000 yards, clear the contact, and repeat as above. The kink will be more obvious. Alternatively, use the default 4 knots and 0 knots.

The second way to get the contact's range passively involves using the plot table. The plot table is used to obtain a tracking solution graphically on a contact. Briefly, the plot table works as follows. The light blue dots represent the location of the contact at 30 second intervals. The line of light blue dots can be maneuvered using the range, speed and course buttons. These three parameters represent your solution. The black lines represent bearings to the contact from the sub at 30 second intervals. The dark blue dots represent the position of the submarine doing the tracking at 30 second intervals. The idea is to enter a course, range and speed such that there is a light blue dot exactly on each bearing line. This procedure is based on the assumption that the course and speed of the contact remain constant. Although it is possible to get an exact tracking solution using the plot table,

it seems to be most useful in Fast Attack for getting initial ranges on distant targets.

We will use the plot table to get range only. Go to T-11. You can get there quickly by starting at T-1 and clicking PREVIOUS 3 times and ACCEPT once. Deploy the TB-23 array and stop the ship just below the layer. Select the two contacts. As before, let 6-8 dots accumulate. It is necessary to get 6-8 dots in order to get a dark line on the plot. Go to the BSY-1 display and determine which way the contact is moving from the B-R (bearing rate) display. In this case, the contacts are moving to the left with bearings of about 056 and 063 degrees true. Therefore, we should keep the contact on the port side of the ship. If the contact was moving from left to right, we would put it on the starboard side. Use a speed of 10 knots as stated above. We will stay above the layer for extra stealth. From our cavitation table that we created in T-1, we see that we can travel at 10 kts at 125 feet which will put us well above the layer which is at 231 feet. Note the time and ring up 10 kts on the default course of 105 degrees or about 30 degrees off bearing. Go up to a depth of about 220 feet. You will lose contact on the two subs, but that is OK. Drive on for 10 minutes, slow to 5 kts, go below the layer and stop. You will regain contact on the two subs. Again, let 6-8 dots accumulate. Go to the plot and select a contact. Vary the plot size and move it around as necessary to where you can see the intersection of the two black lines. Move the line of light blue dots with the range button until they cross the bearing lines where the lines intersect. The range setting where the blue dots intersect the black lines is the minimum range. Use the course button to give the blue dots a course of Northwest to make this intersection easier to see. The distance where the dots cross the black line intersection will be a minimum range to the contact.

The minimum range is based on the assumption that the contact is not moving. By traveling in the opposite direction to the contacts, you will guarantee that the contact will be on the opposite side of the intersection. If you diagram it out, you will see that if the contact is traveling on the reciprocal course at the same speed, the lines will cross halfway between the two. If you and the contact are traveling in the same direction, it is possible that the contact will be closer to the sub than the intersection.

The above procedures provide an initial range only. We used one state change because we are interested in range only.

For a demonstration of the procedures to get a complete passive solution, go again to T-1. As before, increase depth to 130 feet and speed to 10 kts. Accumulate 6-8 dots in the BSY-1. Slow to 5 kts and accumulate 6-8 more dots. Stop the ship and accumulate the last 6-8 dots. We have three states with two changes. As before, center the dots and crank the range to straighten out the kink in the line of dots. Then, increase the speed setting until the line of dots just begin to bend in one direction, then decrease the speed until they just begin to bend in the other direction. I call this procedure, "swinging the (parameter)." The correct speed is the average of the two speeds. If you can't get a bend at minimum speed, use 0 kts in the average. Enter the average speed into the BSY-1. Then, increase the range until the line of dots just begin to bend in one direction. Decrease the range until they just begin to bend in the other direction. The average of the two ranges is the correct range. Enter it and again use the course knob to align the dots. At this point, you will have a good solution. The correct solution in T-1 is 8 kts at a course of 095 degrees. Enter these two quantities into the BSY-1 and swing the range again to see how close you came to the correct

solution. If you like, repeat the mission using 5 kts, 3 kts, and 0 kts. You should get a good solution while traveling this slowly because the freighter is so close.

In the previous example, we altered the ship's state by varying the speed. An alternate approach is to use three different course changes as you close a contact. Thirty degrees to one side, dead on, and thirty degrees to the other side seems to work pretty good. Redo T-1 as above using course changes. Make sure the TB-16 is deployed before you start to maneuver. Head away from the freighter since you start out pretty close. Put the freighter on a 210 degrees relative bearing, dead astern, and 150 degrees relative. Go through the same procedure as described in the previous paragraph. As before, enter the correct speed and range and swing the range to see how you did.

When you are plotting a solution with the BSY-1, keep a mental picture of what you are doing. If the line of dots in the passive display is centered, it means only that the solution you entered is generating a bearing that is matching the contact's actual bearing. If the contact is moving at right angles to the bearing, small changes in speed will keep the dots aligned and the solution will be relatively insensitive to course inputs. If the contact is traveling parallel to the bearing, small changes of course will keep the dots aligned and the solution will be relatively insensitive to speed changes. The best solutions are obtained when you are about 45 degrees from either the bow or stern of the contact. If you are in this position, you will get good variations on both the range and speed swings and should be able to get a good solution. Click on the plus sign on the BSY-1 passive display to make it even more sensitive.

If you have entered the correct solution, it will be immune to ship movements. To see how this works, use ALT-F5 to enter the correct solution for the merchant and SEND it. Maneuver the sub radically such as by performing a figure 8. The maneuver should have little effect on the BSY-1 solution.

This is a good time to experiment with the plot. Clear and re-enter the contact. Continue without changing the ship state. Go to the plot and let 6-8 bearings accumulate. Go to 1/10T. Try to line up the dots with the bearing lines. You will quickly find that there is an infinite number of combinations of speed, course, and range that will put the dots on the black lines. Clear the contact again, put it on the beam and perform the 3 speed sequence as above. The speed changes will give a varying pattern of black lines. This time, there will only be one combination of course, speed and range that will put the dots on the line. If you can't get it, set the course to 095 and speed to 8 kts and adjust the range only. If all else fails, there is always ALT-F5. The best way to learn to use the plot is to play with it as above.

The down side of plotting with the BSY-1 is that accuracy is a function of the amount of apparent angular displacement that you can put into the contact which in turn is a function of distance to the contact. Recall how sharp the angle was on the plot which we used to determine initial ranges in T-11 above even though we traveled for 10 minutes. If a contact is faint, you will lose it if you travel at any speed. If you are traveling slowly and the contact is distant, the contact will only traverse a small relative angular distance in the time it takes to get 8 dots and the resulting solution will not be very accurate. The most efficient procedure is to put the contact on the beam so you can get the maximum amount of angular displacement. Picking the correct side of the ship as indicated above in the plot paragraph will also give you

a better solution with the BSY-1. Another way to remember the proper location for the contact is that the contact should be traveling toward the stern when it is on the beam with the ship stopped. If you are confused at this point, just keep in mind that solutions beyond about 15,000 yards may underestimate the range by a considerable amount. Of course, once you have a good idea of the minimum range, you can then safely close the contact and get a better solution. If you have identified your contact as a patrol craft, use its maximum speed in the solution. This may help, but be suspicious of the accuracy of any apparent solution with a range over 15,000 yards, especially if there are other things on a nearby bearing you don't want to shoot.

It is not really necessary to plot an exact solution. All you really need to know is the range and bearing. The weapons are fairly forgiving. It is necessary to be able to plot solutions accurately in case the target is in a group or you are trying to plot it per orders.

A special case in target tracking is the close contact. Close is defined as within about 5000 yards of the sub. Ideally, you should never let anybody get that close, but sometimes the game will start you out in this situation. Close contacts can be identified by a relatively high B-R and the fact that the identification will come up quickly. If you have such a contact, you do not really need to know the range or try to get an accurate track. Accept any tracking solution that will keep the dots centered so that the fire control system will calculate the lead properly. If using a Harpoon, set the arming distance to 0. If using a torpedo, activate it as soon as it is out of the tube. Clear the fire solution about every 30 game seconds so that you will have an accurate bearing. Keep the torpedo on the line between the contact and the sub, headed out. It will acquire the target fairly quickly. T-3 and T-4 are good places to practice this technique.

It is possible to plot the drilling platforms for reference. They will appear in the low freq. band only on the passive sonar and have a distinctive whine. They will also be automatically identified by the Sonarman if you click on the target ident. Enter the drilling platform into the fire control system and give it a speed of 2 knots, as low as the BSY-1 will go. Since the platform is not moving, the course doesn't matter. Since you have only one parameter to determine, range, you will need only one state change. Swing the range as before and you will have the solution. The drilling platform will also show on Area Operations map in TRKNG MODE. This procedure will also work on stopped ships. Stopped ships will appear on the passive sonar display in the middle band only and will not be automatically identified by the sonarman. They will have the appropriate ship sound for their class.

If you have a good solution and it kinks when you did not change the ship state, it means that the target itself has maneuvered. Look at it in the passive sonar display. If it is brighter or dimmer, it has increased or decreased speed respectively. If brightness is the same, then the contact has only changed course. Change the course in the BSY-1 appropriately and clear the display. The range is still OK, so it will not be necessary to develop a new solution from scratch, especially if you already have a weapon on the way.

Sometimes the BSY-1 passive display will take on the appearance of a braided rope. This display means that the contact is zigzagging around a base course. In this case, treat the braided rope as a single line of dots. Use the same procedures as described above, but, in this case, you will be swinging a braided rope instead of a single line of dots. The Krivak in T-2 will sometimes show

this type of plot.

TORPEDOES

There was a lengthy explanation supplied by the Software Sorcery person of what actually happens when a torpedo shuts down that I won't repeat. It is only necessary to know that if a torpedo reaches 2000 yards, it is past the shutdown point. Torpedoes will hit ships with a draft down to 6 feet, which includes just about everything except some of the smaller patrol craft.

The fire control system will supply a default activation point for a given tracking solution. The only way I know of to defeat it is to give the contact an artificially long range like 25 miles. I do this for two reasons. The first reason may be related to my minimal computer system. If I have only one torpedo out, and give it too many commands after it has activated and been deactivated, it will jam. The "send" button remains permanently red and the torpedo stops accepting commands. Running at twice normal time reduces this problem, but does not eliminate it. The second reason is related to the noisemakers dropped by submarines. If you let the torpedo go to the noise maker, it will enter a search pattern after it passes through it. It may find the sub you are trying to sink, or another ship or noisemaker. Torpedoes will also home nicely on mines and biologics. Getting the torpedo headed back toward the original target takes time plus the risk that it will jam and you will lose it. I have concluded after a lot of experience that it is better to crank the range out to 25 miles before launch, send the altered distance and reset the range after the torpedo has traveled over 2000 yards or more. Maneuver the torpedo and manually activate it so that it will pass through the noise maker and find the target without delay or any further intervention on your part. I know that this procedure is a lot of "click, click, click," but it will save time in the long run and some frustration as well.

HARPOONS: They are simple weapons in Fast Attack. The manual description is accurate and fairly complete. The only detail missing is the function of the UPDate button. When you change a solution in the BSY-1, you should change the input Harpoon solution with the UPDate key. Just before firing, enter and clear the passive solution so the bearing will be correct. Use the UPD button to send the solution to the missile based on the current bearing.

The Harpoons are 88% reliable. You can get either a shutdown like the torpedoes or it may be a dud at the target. In your event chronology after the mission, you may see a "Harpoon shut down after 47.3 miles: or what ever without mentioning target damage. This means it was a dud. If it shutdown at 0.4 miles, the turbojet engine did not start. If it does shutdown at 0.4 miles, sonar will not detect it hitting the water.

In general, I have found it best not to try to dogleg the Harpoons around the non-targets. The Harpoons will do it, but it is necessary to know the exact ranges for all concerned in order to give the Harpoon a good solution, and exact ranges are available only with ALT-F5. What I do is either maneuver the ship or wait until the contact drives out into a clear bearing. Once the contact is clear, use any solution you can get as long as the dots align. This will enable the fire control system to calculate the proper lead for the contact. When you have it, set the Harpoon arm distance to 0 and fire it on a straight line.

If you are going to dogleg a Harpoon, be sure to set a finite distance for L-2. The default is 0. Just altering the direction the seeker looks in will not cause the missile to turn.

If you are engaging a number of ships with Harpoons, try to launch on two targets at once in order to save time. Be aware of the possibility of double targeting. Assume you have four contacts numbered 1,2,3,and 4 from left to right in the passive sonar. Fire on 1 and 3, give them time to sink, and then fire on 2 and 4. Patrol craft require only 1 Harpoon apiece.

GENERAL APPROACH PROCEDURES FOR TORPEDOES

Let's put it all together. In general, the following is how to play Fast Attack.

1) Deploy appropriate array. Maneuver vertically as required to be near the layer. Load appropriate weapons. By ear identify contacts of interest. Listen on both sides of the layer. Be aware that there may be more than one contact in a given band of light on the passive sonar display. Load the four most important contacts into fire control.

2) Get initial range on contacts of interest as described in the section in range finding. The ranges will be used to determine approach speed to the firing point. Use a speed of 1 kt per 1000 yard of range to avoid detection. For example, use a speed no faster than 15 kts when getting a solution on a sonar equipped ship that is 15,000 yards away. Pick likely location of satellite position markers if TASM use is contemplated.

3) Travel to the firing point range if not already there. The goal is to have the contact on the correct beam, at a range of 15000 yards for a sub, or 20000 yards for surface contacts. Make that a minimum of 20000 yards for SS-14 equipped surface contacts. At these ranges, the ship identifications will come up fairly quickly if you are stopped.

4) When you reach the desired location, turn so that the contact is on the correct beam, i.e., the contact should be traveling toward the stern when the ship is stopped. Use the speed variation technique to get a good tracking solution. Stay stopped long enough to get positive identification if you don't already have it. Launch the torpedo(s). When the torpedoes are about 5000 yards from the target, use a speed of 10 kts and 0 kts to update the range.

GENERAL APPROACH PROCEDURES FOR HARPOONS

The Harpoon procedures are generally similar to those for the torpedoes with two exceptions. The first exception is that it is not necessary to move to a firing point. It may, however, be advisable to move to the ranges indicated above to properly identify a target. This is most likely true for displacement hull vessels. Patrol craft can often be identified at a considerable range. It may be necessary to move as a part of a combined torpedo/Harpoon attack. Once a target is identified, any tracking solution that will generate the correct bearings will work. A good solution is necessary in order for the fire control system to give the Harpoons the correct amount of lead.

The other exception is that it is not necessary to update the solution after the Harpoon is fired. If more than twice the estimated time to impact has elapsed, merely rezero the solution in the passive display, UPDATE the Harpoon solution, sent it to another Harpoon and fire again.

T-8: Let's use T-8 to demonstrate the torpedo procedures. Go to T-8. Stop

the ship. Observe that we are above the layer which is at 263 feet. Since we are sub hunting today, deploy the TB-23. Load at least two torpedoes. By ear, we identify a probable sub at 326 degrees, which identification is further strengthened by an active sonar ping from that bearing. Probable merchants are identified at 240 degrees, 346 degrees, and 353 degrees. While we are waiting on our eight dots, the identifications come up on the three merchants. We further note that the probable sub is moving to the right or toward our ship's stern. We ring up 10 knots, change course to 240 degrees to put the probable sub on the beam, and descend to 260 feet, just above the layer. We accumulate more dots and straighten out the kinks in the passive solutions. The probable sub is at about 15000 yards with the merchants slightly closer. We are already at the appropriate range for a submarine. We ring up 15 knots, get the dots, and swing the parameters. The sub is moving almost parallel to the bearing, as shown by the sensitivity of the solution to course variation, but in which direction? We get good solutions on the three merchants. Next we slow the ship to 1 knot. Use the arrow keys to descend below the layer. The return for the probable sub diminishes, so it is above the layer. The sub is approximately 5000 yards from the merchants, or well within torpedo range. let's assume it is headed Southeast toward the freighters. We need to work fast.

We stop the ship at 260 feet to await the identification and warm up both torpedoes. We get the ident and the contact is a confirmed Foxtrot. We then crank the solution out to 25 NM for the sub and send it to both torpedoes. Since the Foxtrot is above the layer, we will go below the layer to flood both tubes and launch one torpedo. If the first torpedo shuts down, launch the other one. After the torpedo is 2000 yards away, come back up above the layer and crank the solution back down until it aligns again. Adjust the course of the torpedo so that it is not on the same bearing as the Foxtrot. That way, if the Foxtrot launches torpedoes at us, we will be able to spot them on the passive sonar as far out as possible.

When the torpedo is about 7000 yards from the Foxtrot, clear the dots and let 8 more accumulate. When you have them, ring up 10 knots and get 8 more. Stop the ship again and straighten out the dots with the range and clear them again. This is our final solution. When the torpedo is about 2500 yards from the Foxtrot, the Foxtrot drops a noise maker. This means we had a good solution. If your distance is different from 2500 yards, adjust the range so that the distance is about 2500 yards and clear the solution again. We have now marked the noise maker. Turn the torpedo at right angles to the bearing. When it is on the Foxtrot's projected course, turn the torpedo toward the noisemaker (Northwest) and activate it. If the sub is Southeast of the noise maker, the torpedo will go past it to the noise maker, discover that there is nothing on the other side of it, and enter a search pattern. We can use the point at which the torpedo loses contact to precisely locate the noise maker. Set the Foxtrot's speed to 2 knots and clear it so we can track the noisemaker as the basis for a search pattern to locate the Foxtrot. The Foxtrot will be on the same side of the bearing to the noise maker as the dots are with respect to the BSY-1 centerline. The torpedo will probably acquire one of the merchants. Disable the torpedo and maneuver it Northwest of the noise maker. Swing the torpedo around so that it is heading to the Southeast and reactivate it so that it homes again on the noise maker. If it again fails to acquire the Foxtrot, let it search unless it again homes on a merchant. Repeat to side of the bearing line that the sub has moved to. If the Foxtrot is moving slowly, it may actually be inside the torpedo's search radius and the torpedo will circle several times before it finds the Foxtrot. Be patient.

In this case, however, all of our what if'ing is unnecessary. The torpedo goes through the noise maker, finds the Foxtrot just to the Northwest of the noise maker, and sinks it. We have 42 minutes left. Use the time to track and identify the contact to the East. Maybe it is a Victor III sneaking in to avenge its brother. In some of the operational scenarios, both friendly and enemy ships will arrive unannounced in the mission orders. That is why it is a good idea to always maintain good situation awareness and positively identify all contacts in the quadrant around your target before you shoot.

TLAMs: The description in the manual is accurate, but the manual does not tell how to target the missiles. The following targets require a minimum of two TLAM Cs: barracks, ports, and EW GCI sites. Missiles, such as the Silkworm, and surface-to-surface missiles (SSM) require one TLAM D. Since the Typhoons are 88% reliable, I use one additional missile for redundancy, i.e., two TLAM Ds for a SSM or three TLAM-Cs for a port. Another item omitted from the manual is that you do not receive credit for killing the target unless the missiles arrive before the end of the mission. Therefore, when you have a surface strike mission in your orders, check the satellite broadcast every 15 minutes for the targeting data and launch as soon as possible after you get it.

In one of the Persian Gulf missions, you will be given a surface strike mission where the targets are located at the top edge of the AO map. With my graphics at least, it is not possible to select them. The way to select them is to zoom in so that the targets are several inches from the top of the screen. They can then be easily selected.

There are also several strike missions in the Adriatic sea area. Make sure that you use the animation to see the missiles arrive at the targets. Whoever programmed the graphics is definitely into sight humor.

TASMs: The TASMs are the only genuinely bad part of the code. If you have two or more satellite position reports, you will get a "target out of range" error message (on a 250 nautical mile range missile!) even if you have maneuvered the ship so that you have perfectly aligned the BSY-1 solution with the satellite position marker for the target. If you have only one satellite position report, the missile will launch, but it will travel directly to the satellite position marker without accounting for target motion.

There are also two software quirks. One of the quirks is that the game will lock up if you attempt to launch with the voices off. This problem is an easy one to fix. Simply make sure the voices are on before you try to launch. The other quirk is related to TASM target selection. When you select a missile, a little window with the selected satellite position report(s) from the A.O. map will appear. The appropriate position report is selected by clicking on it, but the game will not accept it unless the game is operating at four times normal time.

The fact that the TASM will launch against a satellite position marker when only one position report has been received is the key to the work around. The theory is simple enough. Maneuver the ship so that the satellite position marker is on the line between the sub and the actual target location taking into account target motion. When the TASM is fired, it will travel to the satellite position marker, find nothing, and keep on going in a straight line. If you lined everything up correctly, the TASM will eventually reach the target which has meanwhile driven up to the bearing the TASM was fired on and destroy it.

As the saying goes, however, the devil is in the details. The first problem is that you do not know in advance which ships will have their locations plotted by the satellite. You can use only one report. You will want to be near where the satellite position marker will be so that you can launch as soon as possible after getting the report. There is enough uncertainty built into the game so that the same ship may not be plotted every time you repeat the mission. Another problem is that the ship must be maneuvered both quickly and precisely to set up on the satellite position marker in the time allowed. That is why it is necessary to become very good at ship handling in T-1 as stated under NAVIGATION. The goal is to get between 2 and 3 thousand yards from the satellite position marker at a depth of 70 feet at 0 kts at approximately the calculated lead angle from the correct bearing with the position marker between you and the target in the minimum amount of time. It is not as easy as it sounds. You will need to use basic trigonometry to figure the initial course. To make it more complicated, the game gives you the bearing FROM the satellite position marker to the submarine in the AO map. You will need to take the reciprocal to match the bearing to the desired bearing. The easy way to do this mentally is to add 200 degrees and subtract 20 degrees or vice versa rather than trying to add or subtract 180 degrees in your head in addition to everything else. Another complicating factor is that the AO map does not automatically update the bearing from the satellite position marker to the sub. You will need to continually cycle the TRKNG MODE off and on to update the bearing from the satellite position marker as you move to the firing point. Lastly, you will need to get a good passive solution on the target as you approach the TASM firing point so that you will have an accurate range estimate which is needed for the lead calculation. Use the speed variation technique. It will also be necessary to continually update the BSY-1 solution as you approach the firing point. The bearing to the nearest one tenth of a degree for the contact is given in the passive sonar display.

It does not matter whose satellite position marker you use. It can be for a friendly or enemy ship, or one you have already sunk.

Calculating the lead is not too difficult. WITH THE SHIP STOPPED (it is very easy to forget this point!), get the Bearing-Rate, say 0.5 degree per minute, from the BSY-1 passive display. Simply multiply the B-R by the length of time in minutes it takes the Typhoon to travel to the target. Fast Attack's Typhoons travel at 448 knots, or about 15,000 yards a minute. Divide the range by 15,000 to get the time. Suppose the range is 26,000 yards. It takes the Typhoon 1.73 minutes to travel this distance. If we multiply 0.5 degrees/minute times 1.73 minutes, we see that the target will travel through approximately 0.9 degrees of bearing before it is struck. If the Typhoon is launched when the contact is 0.9 degree before the bearing to the satellite position marker, it will be on the bearing when the Typhoon arrives at its location. You will want to stop the ship approximately at that bearing to minimize the amount of time you wait before you fire. It is helpful if the target is traveling toward the stern of the ship. That way, if you overshoot the desired bearing to the satellite position marker while maneuvering the ship, the target's motion will bring its own bearing to the bearing that you did stop at.

Unfortunately, the calculated lead is only as accurate as your estimated range. Fortunately, it is not necessary to be absolutely precise, especially if the target is close. The Typhoon has a seeker at least as wide as the wide setting on the Harpoon.

Lastly, be aware that the Typhoon arms itself 5 miles before the satellite position marker. Since you are probably launching inside that range, it will be armed when it comes out of the tube, so plan accordingly. I assume that the seeker is twice as wide as the wide setting on the Harpoon. You can use the Harpoon firing solution to "sweep" the flight path to insure that all other ships, drilling platforms, etc., are clear before you launch.

Let's use T-3 to demonstrate the TASM procedures. T-1 would be easier, but a satellite position report for the ship is never transmitted. Go to T-3. Deploy the TB-16 since we are after surface ships. Even though it is a Typhoon training mission, we are still responsible for the safety of our ship, so load two Harpoons and two torpedoes.

Stop the ship and accumulate 6-8 dots. By ear, we immediately identify two merchants and one patrol craft to the Northeast. Since the contacts are moving from right to left, or toward the stern, use the default course of 110 degrees and make turns for 10 knots. We soon have the ranges of about 5000 yards for the SO-1 and about 10000 yards for the freighters. Since they are to the Northeast, we will head in that direction to get behind them.

The first satellite pass is at 10 minutes past the hour. 15 minutes after the pass will be at 25 minutes after the hour. This time is after the 20 minutes after broadcast, so the position report will not be available until 35 minutes after the hour at the earliest. We will want to be in position at that time since there will only be 25 minutes left in the mission.

In traveling to the Northeast, we will pass very close to the SO-1. The SO-1 apparently has no sonar, even though it is equipped with anti-submarine rockets similar to those demonstrated in the opening movie. The WLR-9 indicates that there is no current pinging, but to be sure, we will drop below the layer and slow to 5 knots.

The SO-1 drives right over us without incident and we continue on our way. At 35 minutes past the hour, we are stopped at 130 feet 2000 yards Northeast of the estimated position of the contacts with the floating wire antenna deployed. The position of all three ships comes down and we are good to go. The satellite position markers are deployed roughly Northeast-Southwest. The Northeasternmost marker is on a bearing of 169.1 degrees from the sub at a range of 1900 yards. We retract the antenna and head Southeast on a course of 110 degrees at 32 knots. This should put us North of the firing point at a distance of about 2500 yards from the satellite position marker. As we travel, select the Northeasternmost satellite position marker in the A.O. map and click TGT VLS. Go to the Typhoon firing console and turn it on. Go to 4T. Click on each TASM and select the marker. Return to 1T. Enter all four Typhoons in the firing order. Make sure that voices are on. You may want to have the animation on as well if you have not used Typhoons before. The Typhoon graphics and sound are very nice.

As we approach a bearing of 070 degrees from the satellite position marker, we clear the BSY-1 solution and restart it. When we reach a bearing from the satellite position marker of 070 degrees, we slow the ship, turn to 180 degrees and come up to 130 feet at 10 knots. We accumulate 6-8 more dots and stop the ship. We have made two state changes and can swing all three parameters for all three contacts. The contacts either changed course or we didn't get it right the first time. The freighters are now headed West at 10 kts on a course of about 265 degrees. The SO-1 is doing about 15 kts at a range of about 22000 yards and has a B-R of 0.2 (degrees/minute)R. Its exact bearing

is 263.5 degrees. The Typhoon time of flight to the SO-1 is 1.47 minutes. 1.47 minutes times 0.2 degrees/minute is essentially 0.3 degrees. If the satellite position marker was at a bearing of 263.8 degrees, we could shoot now.

Unfortunately, the bearing to the satellite position marker is actually 260.4 degrees. We have 3.4 degrees to go. At a distance of 2525 yards from the satellite position marker, that translates to a distance of 150 yards. Three knots is equivalent to 100 yards per minute. Make turns for 4 knots and start up to 50 feet. Clear the BSY-1 and check the bearing to the SO-1 in the passive sonar and then cycle the TRKNG MODE in the A.O. map to update the bearing to the satellite position marker. Do this continually. When the difference between the contact bearing and the bearing to the satellite position bearing is equal to twice the desired lead angle, or 0.6 degrees, reduce speed to 1 knot. When the difference between the contact bearing and the bearing to the satellite position bearing is equal to the desired lead angle, stop the ship. In my case, the SO-1 was at a bearing of 264.6 and the satellite position marker was at a bearing of 264.9. Go to the launch console, select single launch with the toggle switch and fire. Go to the cheat plot with ALT~ and watch. If the Typhoon shut down, it will not be visible. We will pretend that we heard it hit the water half a mile away and launch another.

In this case, the Typhoon is reliable. The freighters are on a bearing very close to that of the SO-1 and are closer. The Typhoon goes for the last freighter in line and sinks it. We wait for the freighter to sink before launching another Typhoon. In the interim, the SO-1 has moved 0.3 degree, so we continue South until the difference in bearings is again 0.3 degrees and fire another Typhoon. It hits the other freighter. The SO-1 gains another 0.2 degrees on us. We again continue South and regain our 0.3 degree lead while waiting for the other freighter to sink. After it sinks, we launch on the SO-1 and this Typhoon shuts down. We warm up both Harpoons and fire the last Typhoon. It sinks the SO-1 with 11 minutes to go in the scenario. We stand down the Harpoons and terminate the mission.

You are probably thinking that this is a lot of work to sink a lousy SO-1 which probably cost less than the Typhoon. I agree, but I personally enjoy this kind of challenge. Moreover, in the Sea of Japan scenario, you will need every weapon you have. I went 14/14 with the Typhoon with this procedure in the Sea of Japan scenario without using the cheats. My best shot using the cheats was a Taechong at 66 miles. I got the Taechong's data from the ALT~ plot since it was no longer detectable on sonar, calculated the lead angle the old fashioned way, maneuvered to the proper tenth of a degree and fired. The TASM only changed course about 10 degrees when it acquired the Taechong, so this method does work, although it is laborious.

There are two other training missions which can be used to exercise with the TASM, T-2 and T-8. T-2 is more of a challenge than T-3. As with T-3, you will have to do a reverse end run to get behind the contacts. In T-2, however, you will have to track the SS-14 equipped Krivak precisely enough to stay beyond its maximum detection range or bad things will happen. You will have to stop at 15 minute intervals to try to get the satellite message. You will need to work quickly to TASM both ships before time runs out.

In T-8, you are to launch TLAMs against ground targets. You might as well launch TASMs against the patrol craft while you are at it. In this mission, you will have to anticipate the motion of the three ships and pick the best satellite position marker for the TASM launch point. There is time for you

to set up on one of the patrol craft so that when you launch on the land targets, you can insure that the first Typhoon you launch is a TASM aimed at one of the patrol craft. Naturally, points will be deducted for TASMing the freighter. Both patrol craft will maneuver from time to time. When you have practiced T-8 to the point to where you feel comfortable and know what you are doing when you do it, then you can consider yourself qualified in Typhoons.

TORPEDO CIRCUS: This subject has gotten a lot of space in the bulletin boards. Basically, what happens is that aircraft will drop large numbers of torpedoes on you as depicted in the opening movie. Eventually, two of them will hit the sub and, as the saying goes, "GAME OVER." The GUIK area in particular has two missions where this happens, 5 and 9. To make it even more interesting, the decoys do not appear to work.

In order to survive these situations, there are three things that we need to know. First, the torpedoes are launched like torpedoes from a WWII torpedo bomber. At the time of launch, the launch platform calculates the correct lead and launches. The torpedo continues in a straight line and will hit you if you maintain course and speed. In MicroProse' Red Storm Rising and in reality, the torpedoes are dropped directly over the submarine and circle looking for it in the same manner as the MK 48s if they lose lock on their targets. Secondly, since the torpedoes travel in a straight line, they are a threat only to something in front of them. Lastly, the torpedoes can be detected with the passive sonar long before they tickle the WLR-9. With the early warning, we can sidestep them with ease. As usual, an example is appropriate.

Get a pencil and paper. Go to GIUK mission 5. Go to the helm and enter a course of 310, a speed of 32 kts and a depth of 500 feet. Go to double time. Deploy the TB-16. We are using 32 kts to simplify evasion. We use 500 feet because that is the operational depth for 32 kts. We are heading 310 degrees because that is the course to where the bad guys are. We use the TB-16 because it picks up sound much better at speed. Once you have done all this, go to passive sonar and wait. Bye and bye, a sonar contact will appear on the high frequency band toward the Northeast. Enter 1/10 time. Click on the contact and listen. Sound familiar? Load it in the tracker and write down the contact's number and initial bearing. Go to the BSY-1 display and observe that the contact's B-R is 0. Remember the old adage, "Constant bearing means collision?" Get a mental picture of what is happening. If our sub is headed Northwest and the torpedo is Northeast, and is pulling the proper amount of lead, then the torpedo is headed West, more or less. Go to the helm and enter a left turn to 160 degrees and return to normal time. Return to passive sonar and watch. As the ship stabilizes on 160 degrees, the torpedo bearing will begin to move through North to West. Once the torpedo has moved through 90 degrees of bearing, it is no longer a threat. I personally use 100 degrees because the mental math is easier. Clear its tracker and draw a line through the torpedo's numbers on the paper.

To repeat the basic procedures for surviving a torpedo circus, 1) identify and mark the torpedo. 2) turn away from the torpedo with a 150 degree turn. 3) drop the torpedo from consideration when its bearing has passed through 90 degrees and it is no longer capable of detecting you. Item 3) is the key to surviving the "circus." There may be five or more torpedoes visible on the passive sonar, but only one or two will actually be headed toward you. We can turn toward torpedoes that have already passed us because we are approaching them from the rear. We use the active trackers merely as a notebook to keep track of the dangerous ones. The rest can be ignored.

There is one consideration. If you change course only when a new torpedo is dropped, you will eventually have one dropped right on top of you that will be impossible to avoid. The way to insure that they are all dropped at a safe distance is to not travel in a straight line for not more than two minutes. If two minutes elapse without a new torpedo, change course 150 degrees anyway. A true 180 degree turn does not always defeat the aircraft's tracking logic, but the 150 degree turn seems to work pretty well.

To continue, there will be eight torpedoes dropped in GIUK-5. When you are certain that S8 is well clear, turn back to the Northwest and stop the ship. Some of the torpedoes will still be active. It is quite a sight on the passive sonar. It is comforting to know that all of them are headed away from us! Bring in the TB-16 and reel out the TB-23. You should be within detection range of the subs as well. There is a large minefield between you and the enemy subs, but it is not very dense and can be ignored.

In some of the other scenarios, you will have only one or two torpedoes dropped on you. They can be just as lethal as any in a torpedo circus. They are not always dropped at the beginning of the scenario either. For this reason, I always keep the passive sonar screen up as my default watch station. Even with torpedoes out, I make a correction to the torpedo, go to passive sonar, speed up the time, go to normal time, and make another correction, as necessary. If you see a torpedo in time, you can usually sidestep it at 10 knots or so which means that you will not lose the torpedo wire. When you are using a display other than the passive sonar, you have no situation awareness. In addition, train yourself to go to the passive sonar screen whenever you hear, "New sonar contact.."

MINES

Mines are easy points once you know how to plot them. The manual is accurate, but it doesn't tell you enough to be really helpful.

The BSQ-5 has two settings. One setting is wide angle for sweeping a corridor 800 yards wide. It has a published range of 2000 yards, which corresponds to an included angle of about 23 degrees. The narrow setting will sweep a corridor 400 yards wide. It has a published range of 4000 yards, but, at least with my eyesight, it will actually detect a mine only out to about 3200 yards. I use 3000 yards for planning purposes. The 4000 yard range corresponds to an included angle of 5.7 degrees. The ranges are best case with the ship stopped on the same side of the layer as the mine.

To plot the mines in an area, put the ship in the appropriate place and circle. Stop the ship every 5 degrees with the narrow setting or 20 degrees with the wide setting and ping. The narrow setting will cover twice the map area, but it takes a lot longer to move 5 degrees at a time rather than 20 degrees at a time. As usual, an example is worth a thousand words.

To get the mental picture of what we are going to do in the training mission below, imagine that you are sitting in your car in a very large and dark parking lot. You are facing East. All lights are off, but the engine is running and the steering wheel is turned all the way to the left. You can determine your course with a florescent compass. To your left is a group of orange cones scattered at random within several hundred yards of the car. You are to locate them by easing up on the brake and letting the car turn through 5 degrees. You then flash the headlights to spotlight the cones, let the car advance 5

more degrees, flash the headlights again and repeat. That is analogous to mine finding procedures in Fast Attack.

In Fast Attack, there are two types of minefields, linear and cluster. In this example, we will plot a line. Go to battle set and select Persian Gulf. Accept the first mission. Select a depth of 260, speed 20 kts and course 120 degrees in that order. Deploy the TB-16 array. Turn to a course of 100 degrees at latitude 26 06 13N followed by a change to 090 degrees at 26 06 10. At long 54 22 46E, decrease speed to 10 knots and go up to 130 feet, which will put you just above the layer. At 54 22 50E, come left to 060. At about 066 degrees, stop engines. The sub will drift to 060 and stop. Enter a course change left to 270 degrees. Nothing happened because the ship was not moving, correct? Enter 1/10T to save time. It does not effect plotting per se. Go to mine sonar. Select narrow and ping twice. You saw--nothing, correct? Be patient!! While we are doing this, load four contacts in the passive sonar and start ident. As they are identified, replace them with other contacts.

While watching the ownship display in the passive sonar, use the keypad to enter four pluses. Go to normal time. The ship will start to move and turn. At 57.0 degrees, enter three minuses. At 55.2 degrees, enter another minus and the ship should stop precisely at 55.0 degrees. It is important to get good at this procedure to avoid gaps in coverage. Again, enter 1/10T. Ping the narrow sonar twice. Always ping twice, because for some reason, the sonar does not always pick them up on the first ping. Enter four pluses. Go to normal time. This is the basic process. You should see the first mine at about 46 degrees. It will be a little green blob near the surface of the water. The closer you are, the bigger the blob. At less than 500 yards, the blob will be impressively large on the narrow display. Make sure you both click it and mark it in the display. There are 12 mines in the field with the last one being on a true bearing of approximately 305 degrees. You will get a yellow message telling you that the secondary objective has been achieved when you get the last mine. If you get to 270 degrees without the message, then you missed one assuming you started out in the right place. To admire your handiwork, go to the A.O. map and toggle TRKNG MODE. The sub will appear to be surrounded by red fuzz. Zoom in until the little red diamonds are across the top and the sub is at the bottom. We have here a typical Fast Attack linear minefield. The pattern is regular and there will be a fairly obvious gap where the mine should be if you missed one. Some of the mines can overlap by being on nearly the same bearing. If you did miss one, and can guess where it is, then merely continue counter clockwise around the circle and try again.

Restart the scenario. Position the ship as before. Repeat the procedure with a slight twist. When you detect a mine, write down its range and bearing along the ship's lat/long available from the A.O. map. When you get a mine within 2000 yards, go to the wide angle sonar and use 20 degree cuts. Use 8 knots for 20 degree cuts as follows. Enter 8 pluses, At 9 degrees to go, enter 4 minuses. At 2 degrees to go, enter 3 more minuses. At 0.2 degree to go, enter the last minus as before. I prefer to use headings divisible by 20, such as 040, 020, 000, etc., to avoid mental confusion when doing 20 degree cuts. I would continue to a multiple of 20 using 5 degree cuts before transitioning to 20 degree cuts. When you get a mine back out to 2000 yards, transition back to 5 degree cuts and narrow band. You will find it takes a lot less time to plot a line in this fashion.

Go back to passive sonar. Select the ships Northwest and Northeast. Set active sonar to 4000 yards wide band and ping on the ships. See anything familiar? Next, travel to 26 04 00N/54 22 50E. Turn so the minefield is on

the beam. Stop the ship above the layer. Select ships North of you and ping with the range set to 10000 yards. We see that the active sonar will give a general map of the minefield at long range.

Calculate the lat/long of each mine using the data you collected above. Use the minefield with this information as a calibration target for the active sonar. Redo the scenario again. Maneuver the ship so as to place the minefield in various places in the active sonar. Make sure you zero the bearing of any ship before you ping toward it. Use the knowledge of ownship lat/long and the mines lat/long to calculate the range and bearing to the various mines. Compare this data with the range and estimated bearing in the active sonar display. The goal is to learn to determine the location of any mine detected with the active sonar within 100 yards. Once you learn to do this, you can use the active sonar to determine the general layout of the minefield, the location of its extremities, and to determine the optimum pivot point location from which the minefield can be plotted in the minimum amount of time.

To summarize, plot a linear minefield by positioning yourself alongside the minefield as close as you reasonably dare at a distance no farther than 3000 yards from one end. Sweep the BSQ-5 through the field as described above. When you start to get mines at ranges less than 2000 yards, transition to 20 degree cuts as in the second run. Ideally, you should only do the ends at 5 degree cuts. If the line is more than 6000 yards long, you will have to reposition the sub to do the complete line.

We plot a cluster by carefully entering the minefield and performing a 360 degree turn to plot the field from the inside. We position ourselves so as to do as much of the 360 turn as possible with 20 degree cuts. It is very time consuming to do a complete 360 with 5 degree cuts. It is generally much quicker to reposition the ship one or more times and use 20 degree cuts.

FAST ATTACK PERISHER: The British Perisher course had gotten a lot of publicity in the popular press and television. A useful description is given in Tom Clancy's book, *Submarine*. At the risk of causing an international incident, I will say that all the Perisher course actually does is identify those individuals who can maintain good situation awareness while under high personnel stress. We can do that here on a very limited level in Fast Attack using T-11. To get the most out of it, do not attempt to run it until you have mastered the procedures in this tutorial with the possible exception of the TASMs. You can use it to see what kind of a Fast Attack CO you really are, Commanding Officer, or Commissary Officer.

To run T-11 properly, and to load yourself up, do the following. Use stereo headphones. Turn on all sound effects including voices. Keep the animation at your option. The next rule is, no pausing!! You can accelerate time, but no pause or 1/10T time. Here we go.

Start T-11. Deploy the towed array. We have two faint contacts to the Northeast. We determine that they are below the layer, so they are somebody's submarines. Next we go above the layer. Click on one of the contacts in the sonar. Go to active sonar, select wide band, and 10K for the range and ping. We see that we have your basic Fast Attack cluster minefield. The most efficient way to plot a cluster is to enter the cluster and do a 360 turn while plotting from the inside. We should position ourselves within it so that we can plot as much of it as possible with 20 degree cuts. It takes a long time to do a full 360 degree circle at 5 degree cuts. It is generally much quicker

to reposition the ship one or more times and use 20 degree cuts.

Next, go below the layer and stop. The contacts have not brightened. If they were brighter, it would mean that the subs were changing the bearing of the ping. If this happens, you have a very easy firing solution. Their course is the default course, right toward you. They are traveling at maximum speed. Since they are traveling at maximum speed, it will be possible to identify them at long range. Once you know the ident, get the max speed from the warbook and enter it in the solution. The only thing left is the range. Put the contact on the beam and get the range. It is very easy to put torpedo(s) on the stern between the sub and the noise maker and activate. I know this because I sank the Delta in GIUK-5 this way three separate times while mapping the minefield there.

In this case, however, we are being ignored. Based on our knowledge of the active sonar display, we select a course of 36 degrees from present position to a long of 34 59 00W where we will take a second look at close range. We travel at max speed above the layer and stop at a lat/long of 60 01 02N/34 59 00W. We ping again and get a good look at our minefield. It is a C, open to the South, with a line inside running North-South. We select a tentative pivot start point at lat/long of 60 02 10N/34 57 14W heading 090. We will turn to the left. We advance another 1500 yards at and stop headed North at 60 01 36N/34 58 27W. We ping again with the range of 4000 yards. Our projected pivot point looks good. THE PLAN: We will get the 4 mines in the Southwest corner with 20 degree cuts, go around them on the South, do the North-South line behind them with 20 degree cuts from approximate longitude 34 57 40W, and proceed into the minefield to our pivot point. We will do the field with 20 degrees cuts except for the 040 to 000 degree bearings which we will do with 5 degree cuts. While plotting the rest of the field, we will fire on the contacts if they are in fact the bad guys.

We go below the layer and check. The contacts have not brightened, so we are OK. Go back above the layer and stop the ship headed 000 degrees. Set the helm to 100 degrees. After you plot the four mines in the Southwest corner, turn the ship to 090. Ping twice at narrow band. We do detect two mines at 2200 yards, or a long of about 34 57 13W. Call up the tracking display and zoom in. A picture is worth a thousand estimated positions when driving through a minefield. Clear the BSY-1. Go below the layer and travel slowly around the Southwest corner so that you maintain contact on the contacts. You will make several turns which will be enough state changes to enable you estimate the initial ranges to the contacts. One is at 17000 yards and is apparently headed right for us. Go above the layer and stop at 34 57 43W headed 120 degrees. Get the other 3 mines in the North-South line with 20 degree cuts. Go below the layer and travel North between the mines. Make two speed changes and swing the parameters. One contact is headed directly toward us at about 8 knots at 16000 yards. The other is headed West at about 20000 yards at about 8 knots. Warm up all four torpedoes. You DID load torpedoes, correct? Intercept lat 60 02 10N heading 090 degrees. WHAT!! You don't know your ship's turning radius?? Try 220 yards or 7 seconds. Before you reach lat 60 02 03N, stop the ship below the layer and wait on the identifications. The one headed for us is a Victor III and the Oscar is to the Northeast. Go back above the layer and travel to the pivot point. As you intercept your turn point, flood the tubes, and crank the range on the solutions out to 25 miles. Stop the ship at lat/long 60 02 10N/34 57 14W headed 090. Fire a torpedo at both the Victor III and the Oscar. Start plotting the minefield while monitoring the torpedoes. When the torpedoes reach 2000 yards, reset the ranges. The stopping and starting all count as state changes with the

result that we can get extremely precise solutions on the subs. When the torpedo is 2500 yards from the Victor III, and we are heading 020, the Victor drops a noise maker. Maneuver the torpedo so that it intercepts the course of the Victor III about 3000 yards Northeast of the noise maker, turn it towards the noise maker and activate. There is no question about which way the Victor is going. The Oscar drops a noise maker about the time the Victor is sunk. Put the Oscar's torpedo about 3000 yards East of its noise maker headed West and activate. Launch a second torpedo at the Oscar. Continue to plot mines. Once you have reached a heading of approximately 210 degrees, you will have found all of the mines. If your navigation is precise, you can continue the turn until you are headed approximately 160 degrees and can illuminate all 5 mines in the line at one time. It is quite a sight. You should be done with approximately 30 minutes left.

Now, study the mine field carefully in the AO map and convince yourself that there are 26 mines. You can also count them in the Mission Log. Next, convince yourself that there are seven pairs of mines with the same labels. You may have noticed that we did not get the yellow message telling us that we had found all of the mines. You will find when you exit the mission that Fast Attack will only give you credit for finding 19 mines. $26 - 7 = 19$. $19 \text{ divided by } 0.7308 = 26$. That is my chief grip with Fast Attack, apart from the lack of "how to" documentation. You will find as you proceed through the operational missions that about 1 out of 3 missions will miscount something and you will not get full credit, assuming you earned it. On several occasions, you will be penalized for not sinking or plotting ships you were not told to sink or plot in the orders. I guess that is why the programmers let us repeat them!

For a variation on T-11, do not crank the ranges out on the solutions before firing, but accept the plotted tracking solution and see what happens. You will see why I use the torpedo procedure listed above, even though I agree it is a lot of "click, click, click."

There is one other mission you need to master before setting out to sea, namely T-7. There are no real tricks here, but you have to work fast and efficiently to torpedo all three ships before time runs out. T-7, along with T-8 and T-11 are the biggies. When you have mastered these three missions, and knew what you were doing when you did it, you can consider yourself ready in all respects for sea and patrol, as the saying goes.

One can also use the first missions in the battle sets as training missions. We used the first mission in the Persian Gulf to practice mine plotting. There are also a lot of slow moving ships there as well that provide good targets for passive tracking exercise. There is a US warship there as well that looks good through the periscope. The first Sea of Japan scenario has a lot of things running around at high speed. This scenario is another one for teaching situation awareness. In the first GUIK scenario, the entire Soviet fleet is present. You will sink it ship by ship in the remainder of the campaign. See if the game manual's assertion that it is better to use Harpoons on capital ships is valid. My experience is the opposite. In my opinion, it is far better to maintain stealth by torpedoing from long range anything that can shoot back. Save the air-breathers for the defenseless targets. Try it both ways. Don't forget your four TASMs. It IS possible to get all of them. What will The Management say?

T-6 is a fun mission. The reason why the Boston is cavitating is because she is on the surface. This is the only opportunity in Fast Attack to see

a surfaced submarine. This is a good mission for those who absolutely have to use the periscope. T-6 will also teach situation awareness at periscope depth. Dispatch the two bad guys, and then maneuver around the Boston as she travels on the surface. You will also be able to see how fast a modern submarine can change course.

There are a lot of other things that one can learn about how to play Fast Attack, but this little article will give you the basics so you can avoid a lot of frustration. Good hunting!

-- Littlefish

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