



Radar Tracking  
SH4 100% Realism Setting

Revision: 6/11/2007



# Introduction

## Objective

This tutorial shows one way that MoBo can be used at 100% Realism settings with SH4. In this scenario, we will not be importing the “Chart Display” into MoBo but getting contact information from the Radar Display in the Conning Tower, this will allow us to use the software in its purest form; as a standalone moboard station.

This tutorial assumes you already have decent working knowledge of the MoBo application. If you're unfamiliar with MoBo please refer to the MoBo documentation before attempting this tutorial.

## Suggested SH4 Mods

It is strongly recommended that you install the **“PPI Circle Range Mark v1.2”** and the **“Small Radar Contacts Mod Stage 1”** for the most accurate contact information.

The “stock” SH4 Radar display is not suitable.

# Tutorial

The most important thing to remember is that the results provided by MoBo are only as good as the data that you provide it with. Input inaccurate data and you will get inaccurate results i.e. “Garbage In, Garbage Out”.

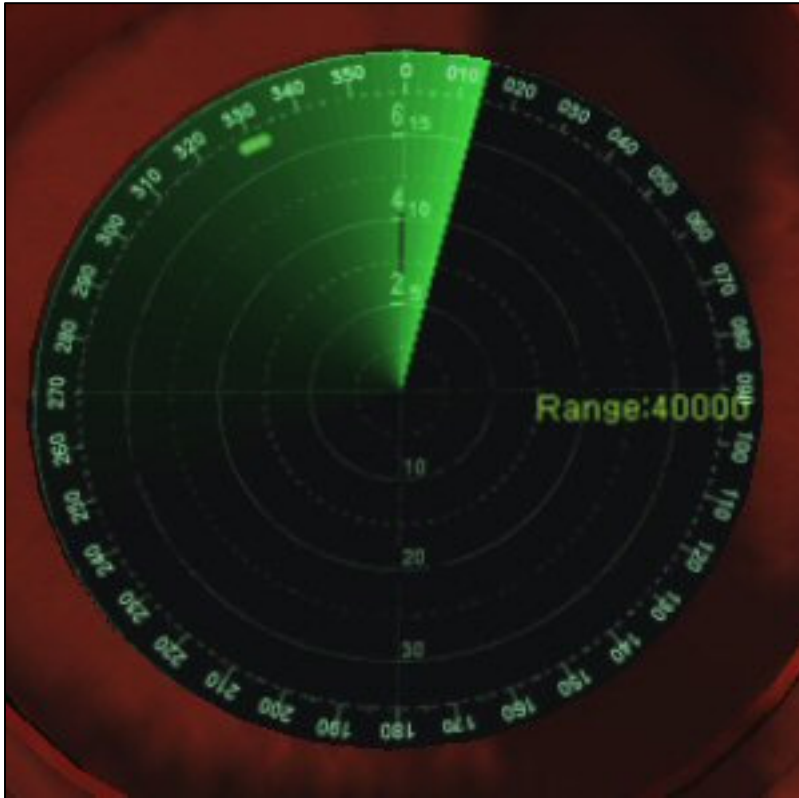
This is an advanced level tutorial for players who are comfortable playing SH4 in 100% realism mode. In this tutorial we are using MoBo as a true standalone maneuvering board station in conjunction with the radar station in SH4. We will not be importing pictures from the game.

When I was in the Navy, they taught us that the accurate “spot” when looking at a radar contact is the “Center Leading Edge”, however I have noted in SH4 the most accurate spot is “Center Back Edge” of the contact.

**Let's Begin...**

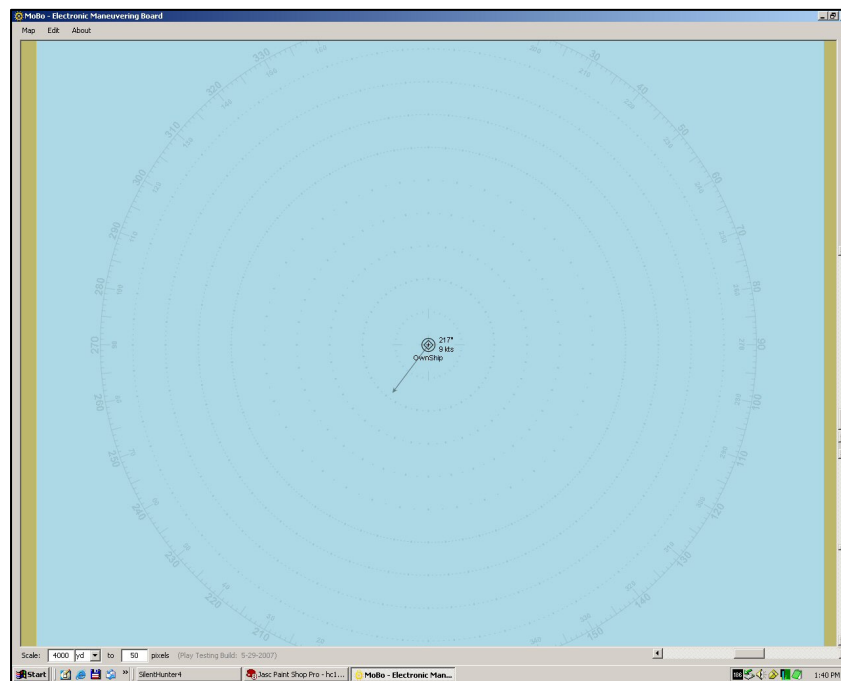
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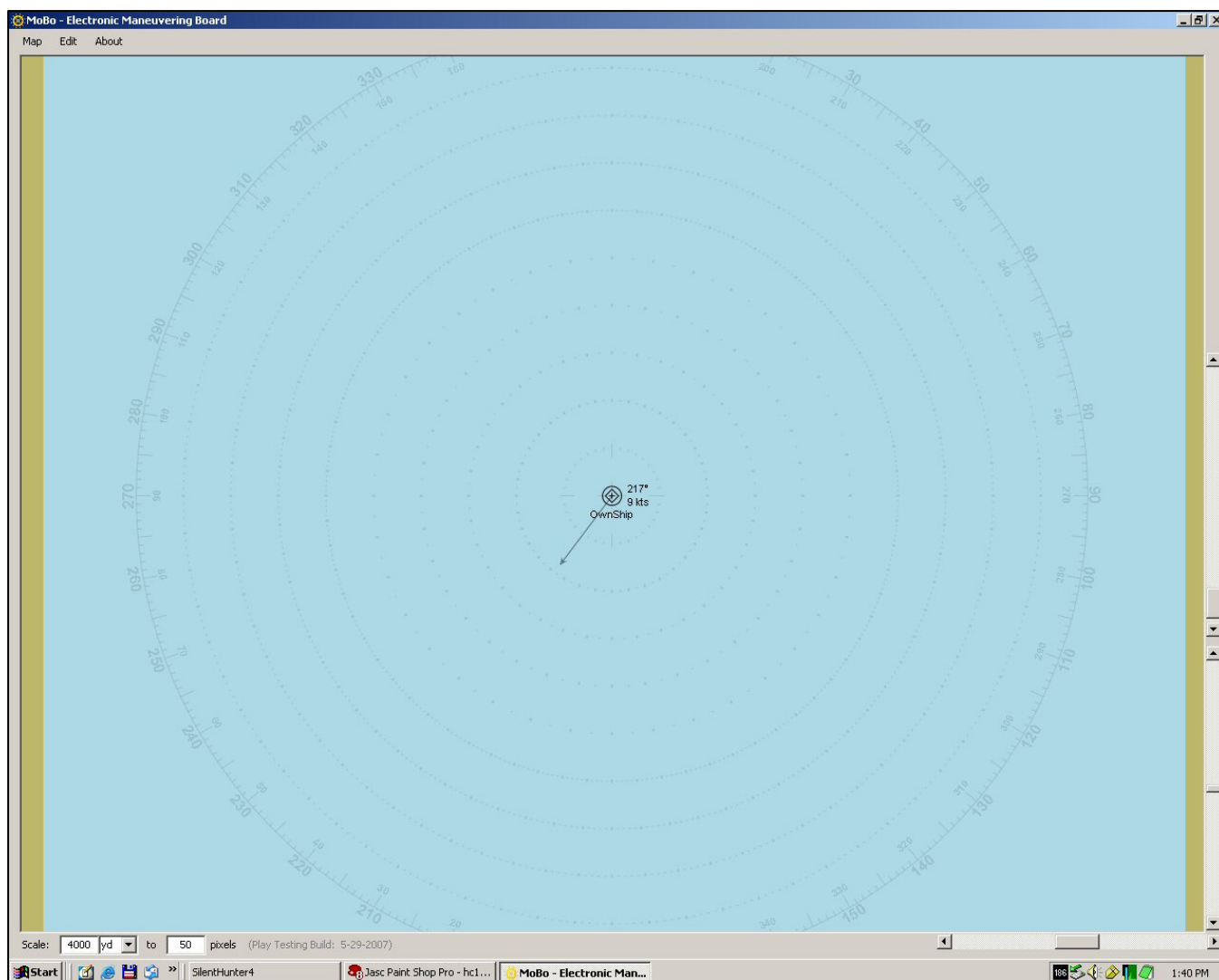


Multiple radar contacts bearing 330° 36,000 yards

1. The Radar Operator reports radar contacts
2. Looking at the radar scope, it appears that there are 3 contacts bearing 330°R at about 36,000 yards.
3. Start the “stop watch”
4. Alt-Tab out of SH4 and launch MoBo
5. Expand MoBo to “full” screen
6. Next plot OwnShip in the center of the display. “Select” the OwnShip symbol and use the “V” key to enter OwnShip’s course and speed.



OwnShip heading 217° speed 9 knots



The MoBo scale in the lower left corner is adjusted to display 4000 yards per ring, 10 rings equates to 40,000 yards

7. By default, the range scale in MoBo is set to 1000 yards (1000 yards per circle or ring), therefore the maximum range on the display is 10,000 yards. Since the track is at 36,000 yards, we need to change the range scale so the max range of the display is 40,000 yards. Change 1000 to 4000.

**Special Note:** When setting range scales in this mode *ALWAYS* use whole even numbers (i.e. 1000, 2000, 3000, etc). Once you set your scale and start adding contact data do not change the range scale.

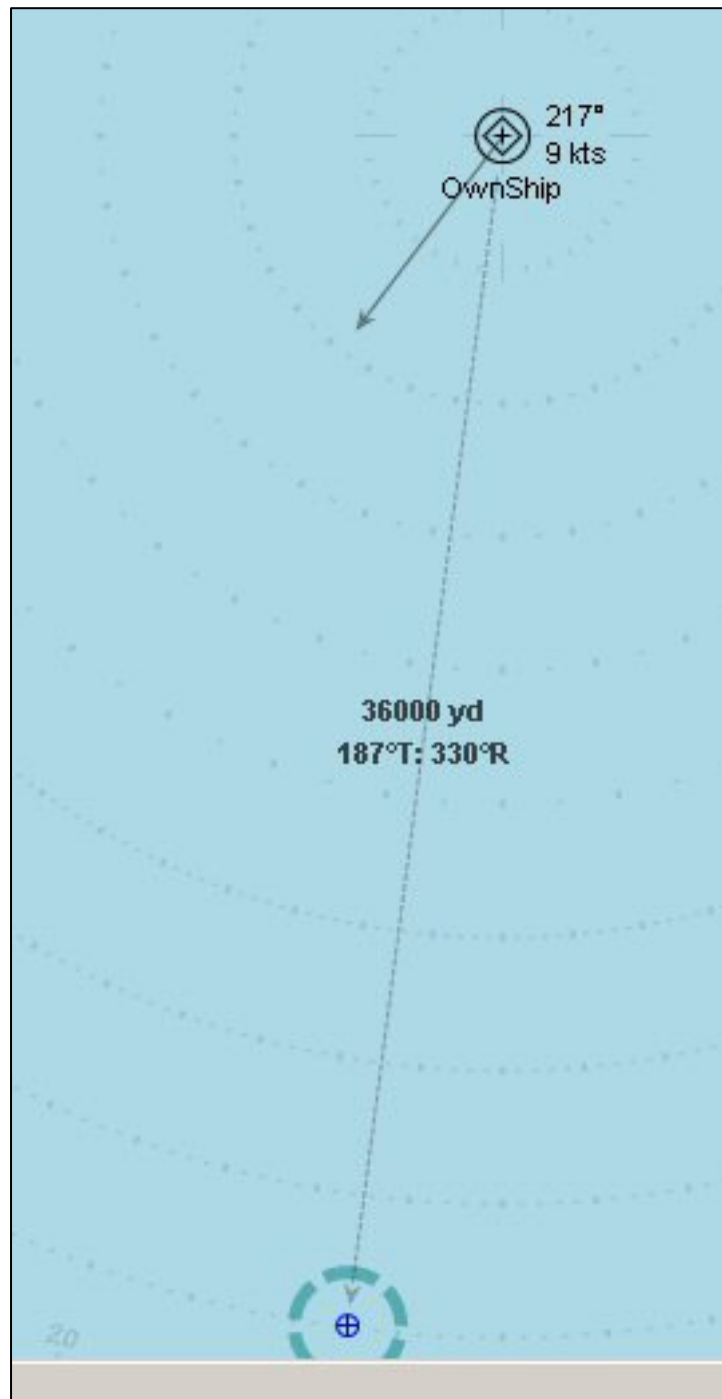
8. Generate a “node” using the “n” key and then press the space bar to “connect” the node to OwnShip. Then press the “B” key to generate a “bearing” and the “D” key to calculate and display the “distance” on the bearing line. The Spacebar-B-D hotkey combination only works if you leave your mouse hovering over the node unit, so don’t move it.

9. Move the node system until the bearing/range is equal to 330°R at 36,000 yards.
10. With the mouse over the node, press the “T” key and enter 00 and press enter.
11. Return to SH4
12. Wait 5 minutes and get bearing and range info on the contacts. In this case 335°R at 34,000 yards.



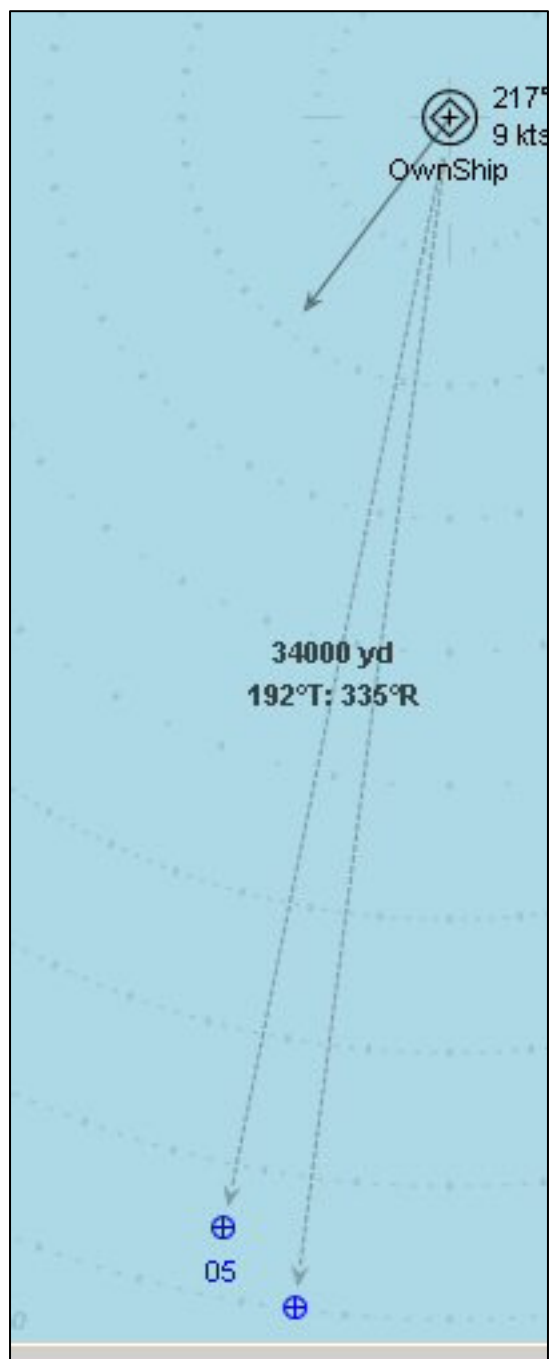
13. Alt-Tab out of SH4 and return to MoBo
14. Create another node using the same procedures mentioned in step 8.

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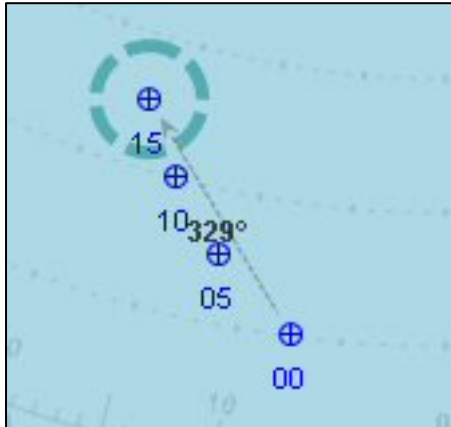


15. Move node until it equals 335°R at 34,000 yards, Enter time as in step 10. Time should be 05.
16. Return to SH4
17. Wait another 5 minutes and get bearing and range info on the contacts. In this case 339°R at 32,000 yards.
18. Alt-Tab out of SH4 and return to MoBo
19. Create another node, using the procedures mentioned in step 8.
20. Move node until it equates to 339°R at 32,000 yards; enter time as in step 10. Time should be 10.
21. Return to SH4
22. Wait another 5 minutes and get bearing and range info on the contacts. In this case 340°R at 30,000 yards.
23. Alt-Tab out of SH4 and return to MoBo
24. Create another node, using the procedures mentioned in step 8.
25. Move node until it equates to 340° R at 30,000 yards, Enter time as in step 10. Time should be 15.

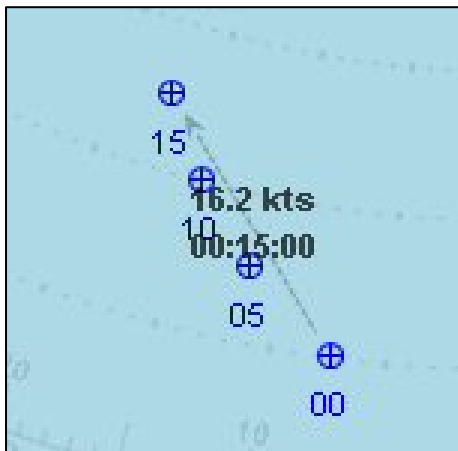
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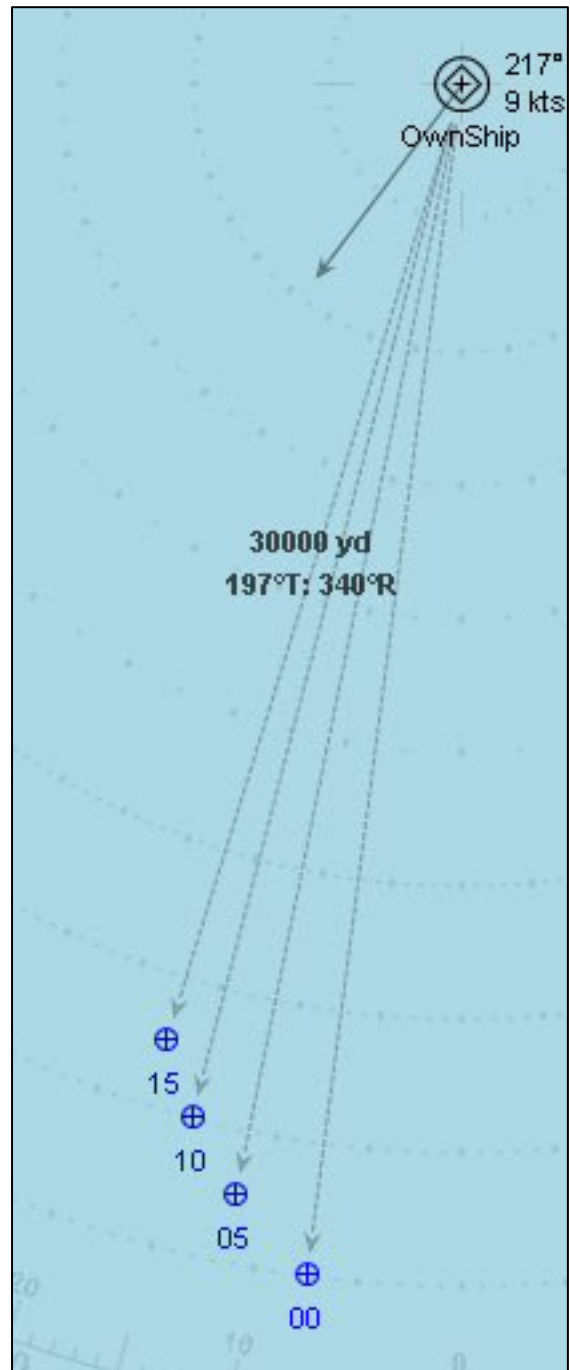
26. Move cursor over each node and press the spacebar to “break” the connection from OwnShip.
27. Go to the time 15 node and select it. Using the “Connect” option from the node 15 popup menu, place the connect cursor over the 00 node and connect.



28. With the cursor over the 15 node, press the B key to generate the “direction of relative motion” (DRM), in this case 329°R.



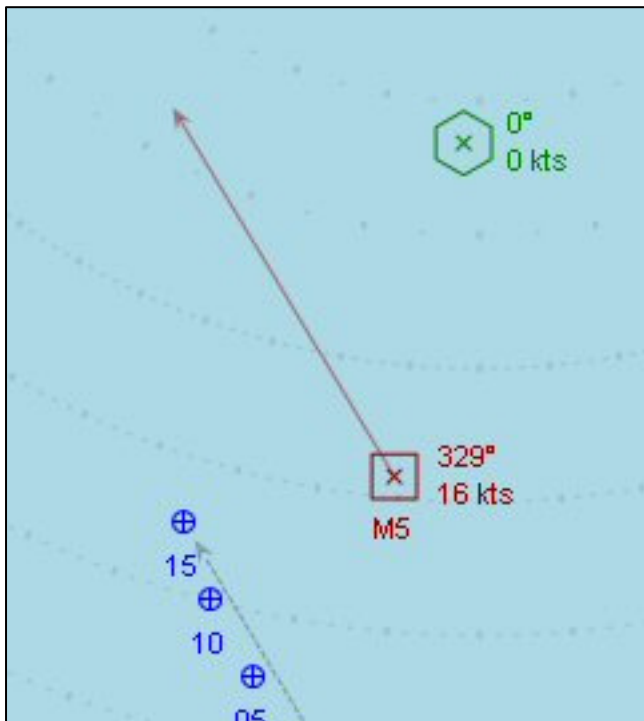
29. Now press the Y key to generate “relative speed”, in this case 16.2 knots.



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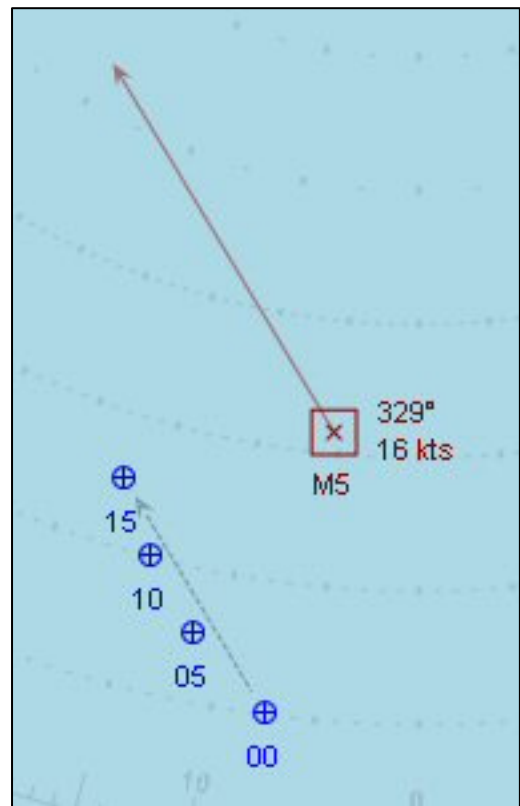
30. Now using the C key, create a contact to the right of the nodes. Using the V key, enter 329°/16 for course and speed.
31. Now off to one side of the contact, create an “Add-type” node by pressing the numpad “+” key.



**Step 31:** Plot an Add-type unit

32. Select the Add unit and access its right-click menu.

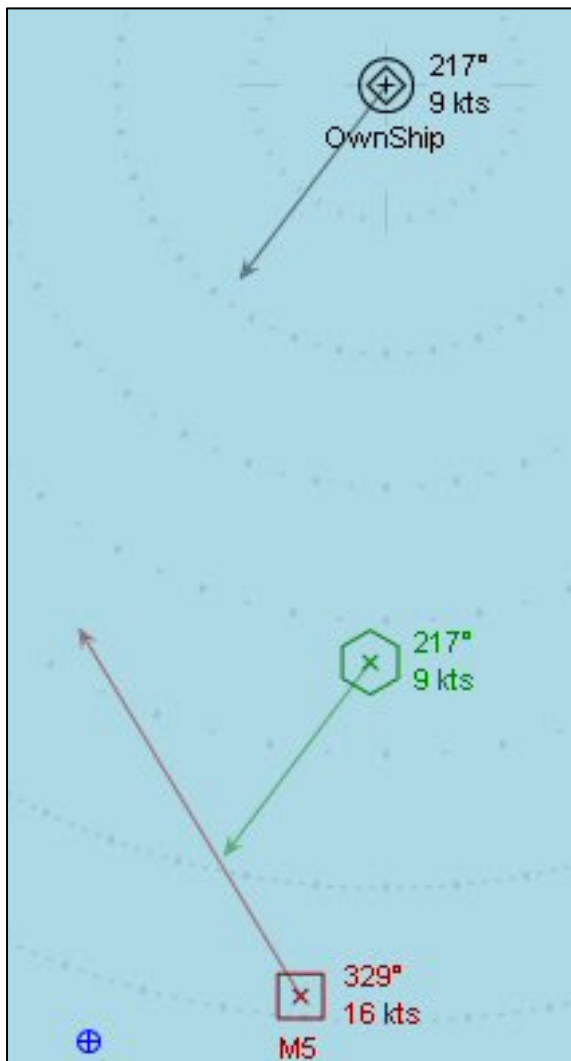
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**Step 30:** Create a contact based on your observations



**Step 32:** Assign Vector1 reference for Add unit

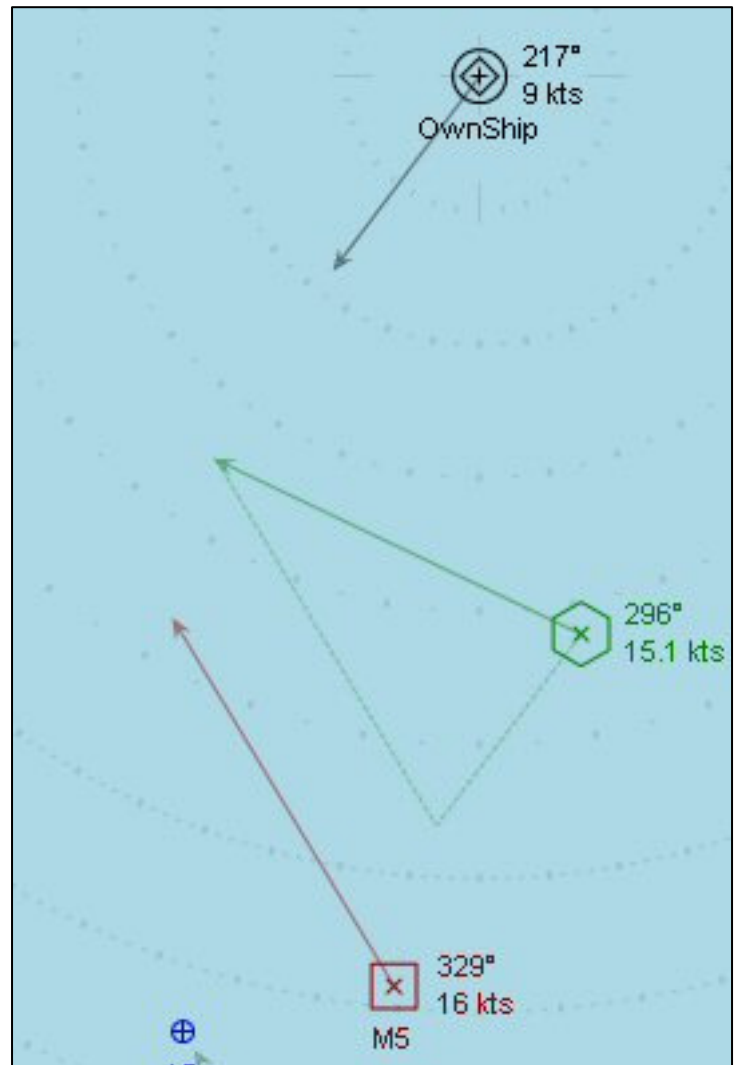


**Step 33:** Add unit reflecting the OwnShip vector

35. The Add unit will now display the “True” course and speed of the contact. In this case, 296° T at 15 knots.

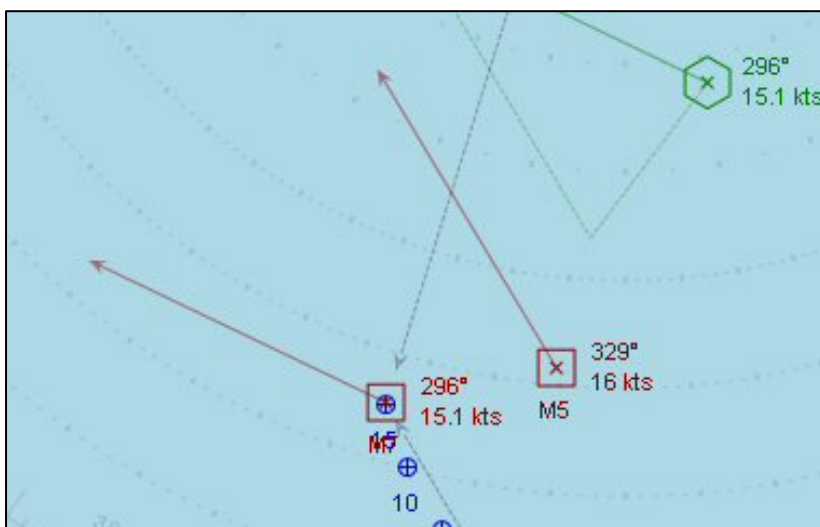
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33. Select “Vector1” and place the cursor over OwnShip and select it. You will notice that the Add unit will inherit the course and speed of OwnShip.
34. Now select “Vector2” from the popup menu of the Add unit and place the cursor over the contact with the “relative” course & speed.



**Step 35:** Add unit calculating True Course and Speed for the contact

36. Using the C key create another contact, use the “match” option (“=” key) and select the Add unit to allow the new contact to inherit the course & speed of the Add unit. Then place the new contact unit over the time 15 node (last known position). Press the spacebar to connect the contact to OwnShip.
37. Since OwnShip’s speed is only 9 knots where going to have to increase speed to something greater then 15 knots to generate an intercept. Set OwnShip speed to 18 knots.

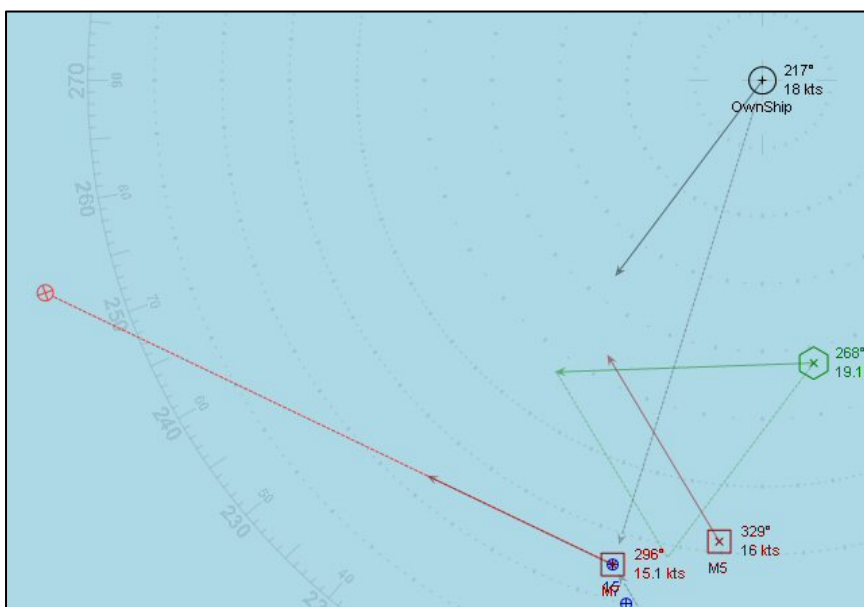


**Step 36:** New contact unit added to the display and positioned over the 15 node

### Special Note:

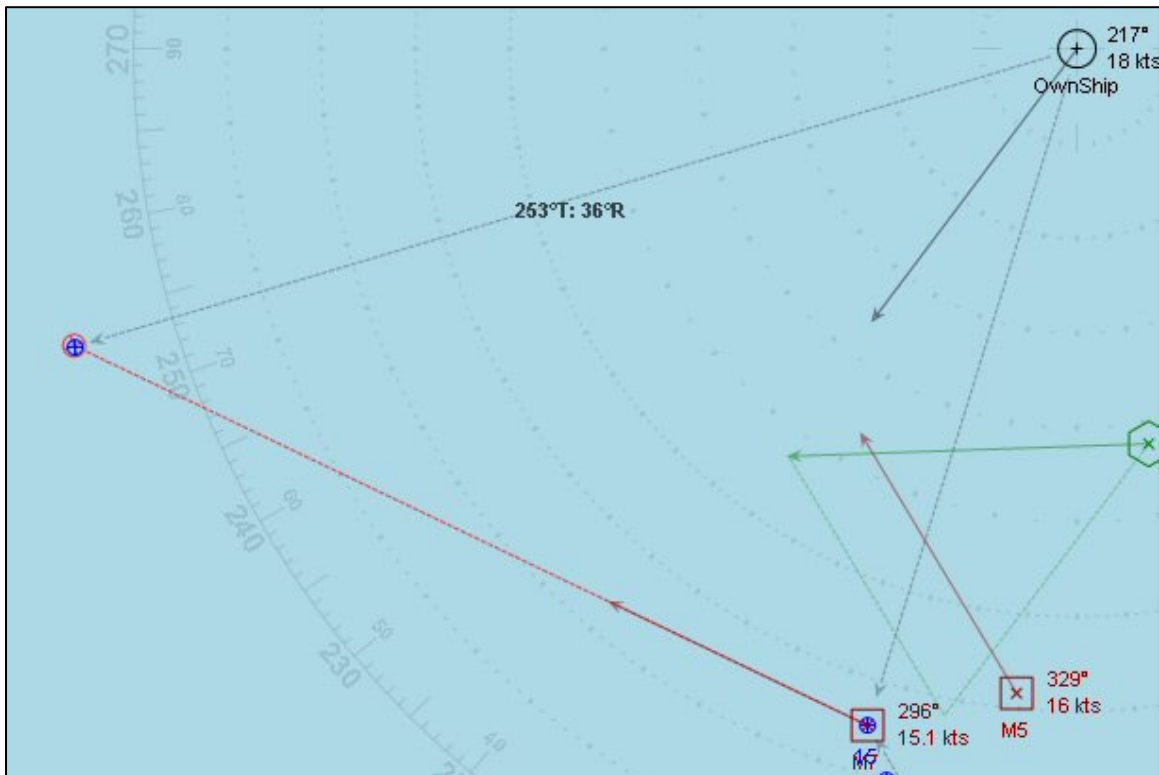
In step 37 we are adjusting the speed of the OwnShip unit. Since OwnShip is still connected to the Add unit, the values for the Add unit are going to change. You can just disregard the changes in the Add unit or delete the Add unit. We’ve already transferred the Add unit values to a new contact in step 36 so the Add unit is really no longer needed.

38. Select the new contact and display the popup menu. Choose “Intercept” to calculate and plot an intercept for the contact.



**Step 38:** Intercept is plotted for the contact based on OwnShip intercept speed of 18 knots

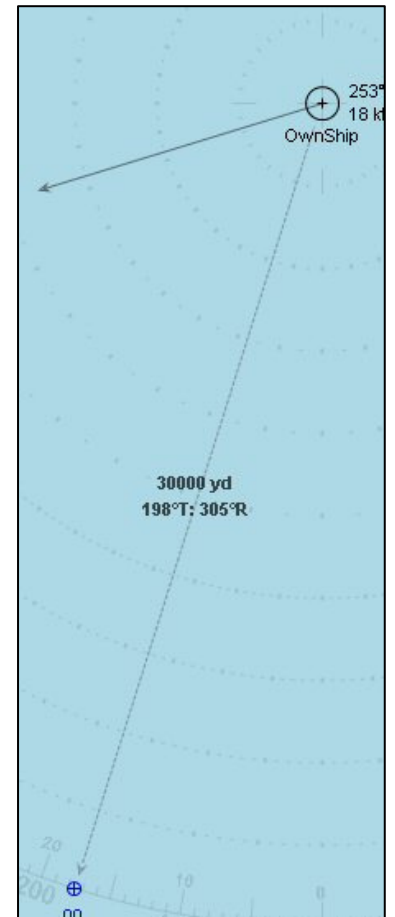
39. Create a node over the intercept point and connect it to OwnShip. Then press the “b” key to generate your “course to station”, in this case 253° T



**Step 39:** Course to intercept: 253° T at 18 knots

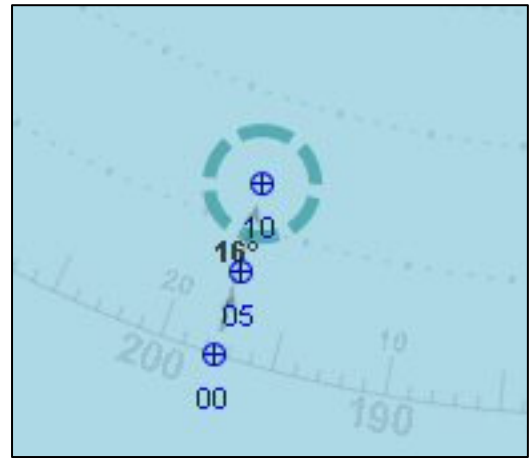
40. Return to SH4 and change OwnShip’s course and speed to 253° T at 18 knots.
41. Once steady on course and speed, reset your stopwatch and start tracking the contact. If you got the course and speed right then you will note a condition called “Steady Bearing / Decreasing Range”, in other words the contact will always be on the same relative bearing but the range will slowly decrease.
42. The contact is now at 305° R at 30,000 yards
43. Alt-Tab out of SH4 and return to MoBo
44. Since you have changed course and speed, you will need to use the “Clear All Objects” and reset the OwnShips course and speed to 253° T at 18 knots. Also since the contact’s range is now 30,000 yards you can change your range scale to 3000 from 4000 yards
45. Create a node using the steps we have talked about at 305° R at 30,000 yards

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46. As we continue to track the contact, we note at 5 minute interval the bearings and range of the contact and add them to MoBo.
47. Using the steps discussed earlier generate the relative course and speed. (016° R at 12 knots. Then create a contact and “ADD” unit to generate course and speed. (294° T at 15 knots)
48. At this point you have to decide if you want to continue the Intercept at these high speeds. With the small over take speed (3 knots) it will take a long time to get into a good attack position. It should be

noted that in this case I decided to break off the intercept.

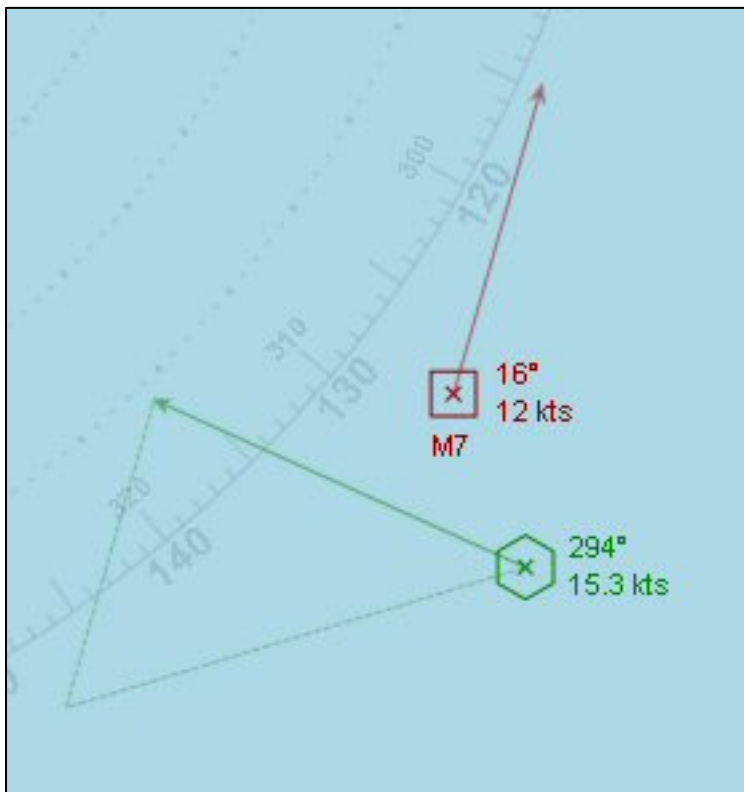


**Step 46:** Tracking the contact during intercept we note “Steady Bearing / Decreasing Range”

This concludes the “**Radar Tracking SH4 100% Realism Setting**” tutorial. In this tutorial, Lurker has provided you with all the steps necessary to:

1. Track the relative motion of a contact with respect to OwnShip’s movement
2. Convert the Contact’s relative motion to true motion
3. Plot an intercept for the contact
4. Monitor “Steady Bearing / Decreasing Range” condition
5. Make a decision about pressing on with the attack

At this point, it is recommended that you create a few training missions of your own and practice with the concepts provided.



**Step 47:** With OwnShip on intercept course at 18 knots we see the results of the Add unit still reflecting our original estimate for true course at ~294° and 15 knots.

The steps listed in this tutorial should be viewed as a general “How To” guide but feel free to make adjustments, add or modify steps as you see fit.

# Lurker's Bio

*A few note from Aaron about Lurker,*

Although I assisted with the editing, the tactics and graphics presented in this tutorial were provided by MoBo Development Team member: **“Lurker\_HLB3”**

Lurker was a valued member of the development team, who made several important suggestions to improve the MoBo application including the original suggestion for a, “*method to perform vector addition*”; which eventually resulted in the creation of the “Add-type” unit. You may recognize him on the forums as “Lurker\_HLB3” but he is too modest to go into great detail about himself in public forums. I was able to persuade him to allow me to give you a little detail about his background:

Retired US Navy, Chief Operations Specialist (OSC), 23 Years, Served On USS Bausell DD845, USS England DLG22, USS Sterrett CG31, and USS Leahy CG16. Qualified as a Tactical Action Officer (TAO), Air Intercept Controller (AIC/AICS), Anti-Submarine Air Controller (ASAC).

Currently a Software Troubleshooter / Systems Integrator that works on various military C4I Systems for DOD.

Have used my Systems Integrator skills to merge various mods / super mods on my custom SH3 install, have also done the same for SH4.

It was great to have someone with his experience working on the MoBo project and I would encourage you all to give him a little slap on the back for a job well done, if you should happen to spot him “Lurking” around the forums.





