Command & Operations School

AN/SPS-73 SURFACE SEARCH RADAR

INTRODUCTION EXERCISE

US Coast Guard Academy
New London, CT
January 2005

Initial Conditions

You have just taken the watch onboard USCGC YEATON, a 378 foot WHEC, transiting Block Island Sound enroute The Race and Long Island Sound.

You will start in the vicinity of Block Island, just inshore of Southwest Ledge.

Your heading is 290°T, speed 10 knots.

Local time is 2000.

The visibility is clear, and the winds and weather are calm.

Current is slack water.

You will cross the COLREGs demarcation line at The Race.

Follow each task in the order given, checking them off as you proceed.

Items in gray are available only to the master radar!

Task	Procedure	Diagram Number	Function

Part I

Display Functions and Set Up, Local Tracks, Trial Maneuvers, Navigation Points

Familiarize yourself with the chart of Block Island Sound. Locate the following:

Block Island, Montauk Point, Shagwong Point, Endeavor Shoals, Cerberus Shoal, Fishers Island, Race Rock Lighthouse, and The Race.

☐	Adjust keyboard backlighting	Rotate keyboard dimmer switch left or right *(located in upper left corner of computer keyboard)*		*Controls keyboard dimmer*
Set radar gyro heading to 290°T.				
☐	Initialize Gyro Heading	Click **Navigation** pull down menu Click **Heading Init..** Use keyboard to enter ship's gyro heading *290°T* Click **OK**	14	*Enters heading into the system following a normal startup*
☐	Change Range Scale	Click RS 3.00 NM and select desired scale Selecting **Other…** allows operator entry of range scale not otherwise listed *or…* Place cursor over PPI and press **Up Arrow** or **Down Arrow** key on keyboard	1	*Defines distance from center of display area to compass rose.* *Range scale in use is also displayed in window at lower right of screen. (see drawing at 61)*
*Set the range scale to **12 nm** for the rest of the exercise.*				
☐	Change display mode	Click on Head Up Select desired mode	5	*Defines display Orientation:* *Head Up* *North Up* *True Motion (ownship resets to center after reaching 70% of range scale in use)*
*Set the display orientation to **NORTH UP** for the remainder of the exercise.*				
☐	Choose Unit of Measure	Click on button 6 Choose desired unit of measure	6	*Defines unit of measure for <u>all</u> measurements* *Note: M=meters; NM=nautical miles*

	Task	Procedure	Diagram Number	Function
	Select Pulse Width	Click on **PW** Select desired pulse width	7	*Defines pulse width of signal* *Selecting Auto will cause pulse width to be selected by the operating system based on range scale* *Recommended settings for inclement wx:* *Range scale less than 12nm: Short-1* *Range scale more than 12nm: Short-2* *Use short pulse widths for better resolution (less power).* *Use long pulse widths to enhance display of small targets (more power).*
Set CPA range limit to 1.5 NM and time limit to 12 minutes				
	Set CPA Alert	Click on **CPA** window Use keyboard to set range and hit enter	8	*The alert will only sound if the contact reaches the parameters set for <u>both</u> CPA and TCPA*
	Set Time of CPA Alert	Click on **TCPA** window Use keyboard to set time and hit enter	9	*The alert will only sound if the contact reaches the parameters set for <u>both</u> CPA and TCPA*
	Enable Audible Alert	Ensure that the bell icon is depressed 	34	*A bell will sound when an alert occurs* *Default is ON at power up*
	Adjust duration of alert	Click on **Display** Select **Display Settings..** Place pointer on slide bar and center click to move slider to desired bell duration Click **Test** Press **CTRL B** on the keyboard to silence OKr	11	*Adjusts the duration of the audible alert up to 15 seconds in length* *Test button allows a quick check of the audible alert* *(Use center button on mouse with all slide bar menus for easier manipulation)* *Silences alert*
	Display Target Symbols	Click on icon in upper right side of screen	42	*Displays target symbols (plus signs)* *The plus signs indicate where the tracker "sees" potential targets*
	Adjust Gain	Place pointer over **Radar Gain** slider Left Click & drag pointer to desired level	55	*Default is 60%* *Recommendations:* *Harbor Navigation (1.5-6NM scales): set gain 30-50%* *Ocean Navigation (6-24NM scales): set gain 40-60%* *(Use center button on mouse with all slide bar menus for easier manipulation)*
	Adjust Contrast	Press **F3** to decrease CRT contrast Press **F4** to increase CRT contrast		*Adjusts contrast of entire screen*

	Task	Procedure	Diagram Number	Function
	Adjust Track Sensitivity	Place pointer over **Track Sensitivity** slider Left Click & drag pointer to desired level	53	*Adjusts sensitivity (threshold) of potential track* *Adjust sensitivity to display one "plus sign" for each target* *(Use center button on mouse with all slide bar menus for easier manipulation)*
	Adjust Sensitivity Time Control (STC) *"Sea Return"*	Place pointer over **STC Control** slider Left Click & drag pointer to desired level	52	*Adjust amount of STC applied to radar return* *Calm represents minimum STC* *Rough represents maximum STC* *Always set STC to minimum of 1%* *(Use center button on mouse with all slide bar menus for easier manipulation)*
	Adjust Fast Time Constant (FTC) *"Rain Clutter"*	Place pointer over **FTC Control** slider Left Click & drag pointer to desired level	54	*Adjusts amount of FTC applied to radar return* *Light rain represents minimum FTC* *Heavy rain represents maximum FTC* *FTC slider should be adjusted upward until a target can be distinguished in the rain* *Good wx: set to 0%* *(Use center button on mouse with all slide bar menus for easier manipulation)*
	Turn off Target Symbols	Click on icon in upper right side of screen	42	*Turns off target symbols after radar picture adjustment is completed by operator*
	Adjust Radar Brightness	Place pointer over **Radar Brightness** slider Left Click & drag pointer to desired level *or…* Press **F5** to decrease radar brightness Press **F6** to increase radar brightness	57	*Adjusts brilliance of the items <u>inside</u> the PPI (plan position indicator)* *(Use center button on mouse with all slide bar menus for easier manipulation)*

	Task	Procedure	Diagram Number	Function
	Adjust Menu Brightness	Place pointer over **Menu Brightness** slider Left Click & drag pointer to desired level *or…* Press **F7** to decrease menu brightness Press **F8** to increase menu brightness	56	*Adjusts brilliance of the menus <u>surrounding</u> the PPI* *(Use center button on mouse with all slide bar menus for easier manipulation)*
	Verify Ownship Information	Observe information in ownship window at lower right side of screen	60	*If ownship information is incorrect, target information may be invalid*
	Verify cursor readout	Place cursor over center (ownship). Range and bearing of cursor should read zero.	62	*Validates range and bearing display of cursor.*
	Turn on Interference Rejection (IR)	Click the icon in the upper right side of the screen Click icon again to turn off	46	*Turns Interference Rejection (IR) on or off* *Helps to eliminate interference from another ship's radar, sometimes referred to as "running rabbits"* *IR can only be adjusted by maintenance personnel*
	Change Screen Color	Click on **Display** Select **Color Scheme** Select desired color *or…* Push **F9** or **F10** on the keyboard to scroll through the color schemes	11	*Adjusts screen color to suit operator preference*
	Display/Hide Range Rings	Click on icon	37	*Displays/hides 6 concentric range rings* *Distance between rings shown at top center of screen (near button number 6)*
	Adjust Range Ring Brightness	Click **Display** Select **Display Settings..** Move slider to desired brightness -OK	11	*Controls brightness of range rings* *(Use center button on mouse with all slide bar menus for easier manipulation)*
Turn off range rings for the remainder of the exercise				

Task	Procedure	Diagram Number	Function
Offset the display	Click on OS Centered and select **Offset** Place cursor at desired location of the new center and left click	4	*Defines where the center of the display will be located* *Azimuth of heading flasher no longer correlates with compass rose*
Center the display	Click on OS Centered and select **Center**	4	*Resets display to the center of the PPI*
Hide Heading Flasher	Depress icon and hold *or…* Place cursor over PPI Depress **H** key on keyboard	44	*Momentarily turns off Heading Flasher and Ownship Vector* *Heading flasher cannot be disabled nor permanently turned off*
Place the Electronic Bearing Line (EBL)	Click the icon in upper left side of screen *or…* Right click to display pop-up menu and select **Place EBL** Roll trackball to position where the EBL will point The bearing of the EBL is displayed in the upper left corner of the PPI Left click to display EBL	20	*Draws an electronic bearing line (EBL) from center of display to selected point*
Offset the EBL	Click the icon in upper left side of screen *or…* Right click to display pop-up menu and select **Offset EBL** Roll trackball to the desired point of origin Left click to display EBL	21	*Sets a new point of origin for the EBL* *Offsetting the EBL will also offset the VRM*
Recenter the EBL	Click the icon in upper left side of screen *or…* Right click to display pop-up menu and select **Center EBL**	22	*Resets origin of the EBL to the center of the PPI*

Task		Procedure	Diagram Number	Function
	Place Variable Range Marker (VRM)	Click the icon in the upper left side of screen *or…* Right click to display pop-up menu and select **Place VRM** Roll trackball to the desired range The range of the VRM is displayed in the upper left corner of the PPI Left click to display VRM	19	*Draws a Variable Range Marker (VRM) at a desired range*
	Adjust EBL/VRM Brightness	Click **Display** Select **Display Settings..** Move slider to desired brightness OK	11	*Controls brightness of EBL/VRM* *(Use center button on mouse with all slide bar menus for easier manipulation)*
	Hide or Display EBL	Click the icon in upper right side of screen	40	*Hides or displays the EBL on the PPI*
	Hide or Display VRM	Click the icon in the upper right side of screen	39	*Hides or displays the VRM on the PPI*
Hide the EBL & VRM for the remainder of the exercise.				
	Hide Tracks	Click on icon to hide all tracks	36	*Turns display of all tracks on or off* *Default is on at power up*
	Redisplay Tracks	Click on icon to display all tracks	36	*Turns display of all tracks on or off* *Default is on at power up*
	Offset the Cursor	Right click to display pop-up menu and select **Cursor Offset** Roll the trackball and place the crosshairs at the desired location of origin Left click Roll trackball on PPI to observe range and bearing from new point of origin	62	*Offsets the origin of the cursor* *Range and bearing information displayed in the lower right of the screen is now referenced to this new location (see diagram at 62)* *A dotted white line appears between the new point of origin and the cursor*

Task	Procedure	Diagram Number	Function

Using the offset cursor, determine the range and bearing <u>from</u> Shagwong Point <u>to</u> Endeavor Shoals Lighted Gong Buoy "1".

_____ ***°T*** _____***NM***

☐	Center the cursor	Right Click to display pop-up menu and select **Cursor Centered**	62	*Resets origin of cursor to ownship position*

You should notice a target ahead, slightly to starboard, in the vicinity of Cerberus Shoal Buoy.

*Determine its course, speed and CPA, using a **LOCAL TRACK**.*

☐	Use Local Track	Place cursor over PPI & right click to display pop-up menu Select **Enter Local Track** Place cursor over desired target and left click		*Displays a track icon as a blue circle* *Local tracks are seen only on the console where they are acquired* *There is no automatic update of course & speed information* *Range & bearing information is displayed however course and speed will read zero until the POSCOR function is used* *A circle will appear around the track icon and the track data is displayed in the window in the lower right side of the screen. This means the target is **"HOOKED"**.* *"Hooking" a target is similar to the term "designate" used with other radar systems* *A track must be hooked in order to display detailed information, edit the track properties, conduct a trial maneuver, etc* ***"HOOKED TARGET" display***

*There is <u>no</u> automatic update of course and speed information when using a local track. Wait approximately three minutes for the video to separate from the track, and then update the local track using **POSCOR.***

Task	Procedure	Diagram Number	Function
☐ Update Local Track Using **POSCOR**	**Position the cursor over radar video** Press **CTRL P** on the keyboard *or…* Right Click to display pop-up menu Select **POSCOR Track** Position the cursor over radar video Left Click		*The track icon moves to the new position on the PPI and the course, speed, and CPA information is updated* *Track must be <u>hooked</u> to perform this function* *The longer you wait for the video to separate before POSCOR, the better the solution.*

Name this target the GREEN LADY.

☐ Label Target	Place pointer in **U Label** field located in window at bottom right side of screen Left click and the pointer will become a flashing bracket Use the keyboard to type in the name of the target <u>Hit enter key</u> Name is displayed on PPI	59	*Displays name of target on screen next to track icon* *Track must be <u>hooked</u> to perform this function*

What is the course, speed, and CPA of the GREEN LADY?

Course: _____ ° T Speed: _____kts

CPA_____ NM
_____ ° T
_____ Time (add TCPA to the local time indicated on the radar in ownship window bottom right of screen)

Which describes a head-on situation?

a) Seeing one red light of a vessel directly ahead
b) Seeing two forward white towing lights in a vertical line on a towing vessel directly ahead
c) Seeing both sidelights of a vessel directly off your starboard beam
d) Seeing both sidelights of a vessel directly ahead

Task	Procedure	Diagram Number	Function
Rule 14 describes the action to be taken by vessels meeting head-on. Which of the following conditions must exist in order for this rule to apply? *a) Both vessels must be power driven* *b) They must be meeting on reciprocal or nearly reciprocal courses* *c) The situation must involve risk of collision* *d) All of the above*			
☐	Switch between relative & true vectors	Click icon and select desired	2	*Defines vector heading display* *This does not change the orientation of the radar image*
Set vector length to 6 minutes for remainder of exercise			
☐	Set vector length	Click and select desired length	3	*Defines target's velocity vector length* *Also defines Own Ship's Vector length at the center of the display*
☐	Show History Points	Click on icon *or…* Hook the target, then click on **TRK HST** button in Track Information Window, lower right side of screen (see diagram at 59) Select **ON**	38 59	*Displays position history of targets*
☐	Adjust History Points	Click on **Display** Select **Display Settings..** Click on **Number** to adjust the number of points displayed Click on **Timescale** to adjust the amount of time between successive history points Click on **Position** to set the track of the history points Click **OK**	11	*Adjusts the number, time interval, and track of the history points* *The **Position** button also allows you also to display the history points in true or relative, regardless of the target's vector orientation* *When you select **Follow Vel. Vector** the history points are displayed with the same orientation as the target's vector*
To ensure a safe passing, you should_____. *a) maintain course* *b) alter course to port* *c) alter course to ensure a starboard to starboard passing* *d) maneuver to ensure a port to port passing*			

Task	Procedure	Diagram Number	Function

Perform a trial maneuver to increase the CPA of GREEN LADY to 2 nm.

☐	Conduct a trial maneuver	Right Click to display pop-up menu Select **Trial Maneuver..** *or…* Click on **Navigation** pull down menu Select **Trial Maneuver..** Ownship Trial Maneuver pop-up window appears Use spin buttons or keyboard to enter new course & speed data Press enter key on keyboard New CPA and TCPA values are displayed Click **Reset** to perform another trial Click **Close** to exit trial maneuver function	14	*Track must be hooked to perform this function* *The words "SIMULATED MANEUVER RUNNING" appear at the bottom of the PPI* *All tracks' data are updated to show the effect of the trial maneuver* *It is best to use relative vectors to display the effect of the trial maneuver on the PPI (Relative motion is what runs over you!)* *The trial indicates results for a maneuver conducted immediately*

What course and/or speed would be required to increase the CPA of GREEN LADY to 2nm?

_____ *°T*
_____ *knots*

What whistle signal should you sound when you alter course?

a) one prolonged
b) two short
c) one short
d) no signal need be sounded

Task		Procedure	Diagram Number	Function
☐	Drop the Track	Hook the desired track to be dropped Press **CTRL D** on the keyboard *or…* Hook the desired track to be dropped Click the drop track icon *or…* Hook the desired track to be dropped Right click to display pop-up menu Click **Drop Object** *or…* Click on **Tracking** pull down menu (see diagram at 13) Click **Drop All Tracks** Click **OK** to drop <u>all</u> tracks	32 13	*Drops the track and the icon disappears from the PPI*
Place Navigation Points on the following geographic locations: *Shagwong Point* *Fisher's Island* *Watch Hill Point*				
☐	Establish Navigation Point	Place cursor over PPI Ensure no objects are hooked Right Click to display pop-up menu Select **Place Nav Point** Position the pointer at the desired location Left Click An orange triangle with a dot appears		*Places a Navigation Point at a desired location* *A Nav Point is a <u>local track</u> with coordinates established by the operator* *Nav Points are displayed as a stationary triangle with zero speed* *You may display up to 30 Nav Points*

Task	Procedure	Diagram Number	Function
Label your three Navigation Points			
☐ Label the Nav Point	Click on **Navigation** drop down menu Click **Edit Nav Points..** Place pointer in **U Label** field Left Click Use the keyboard to type in a name for the Nav Point Name appears on PPI Click **Close** to exit this window	14	*Displays a label on the PPI next to the Nav Point* *Label names can be up to 15 alphanumeric characters*
☐ Hide/Display the Nav Point	Hook the desired Nav Point Click on **Navigation** drop down menu Click **Edit Nav Points..** Click in the small box to the left of the hooked Nav Point Nav Point disappears from the PPI Click in the small box again to redisplay the Nav Point Click **Close**	14	*Toggles the Nav Point on or off*
☐ Display Range & Bearing to Nav Points	Click on **Navigation** drop down menu Click **Edit Nav Points..** Observe Rng & Brg to the Nav Point is displayed in the window Click **Frozen** to temporarily lock the range & bearing to the Nav Point Click **Normal**	14	*Displays range and bearing to the Nav Point* *Allows operator to temporarily "freeze" range and bearing information in order to record or transfer to chart*

Task	Procedure	Diagram Number	Function
Delete your Nav Points using the each of the three methods below.			
☐	Delete Nav Point	Hook the Nav Point to be dropped Press **CTRL D** on the keyboard *or…* Hook the Nav Point to be dropped Right click to display pop-up menu Click **Drop Object** *or…* Click on the **Navigation** drop down menu Click **Edit Nav Points..** Click on a single Nav Point in the list Click **Clear All** button	14	*Drops the Nav Point and the orange triangle disappears from the PPI*
STOP! Tell the instructor you have finished Part I. Part II will start when everyone reaches this point			

Task	Procedure	Diagram Number	Function

Part II

Graphics, Automatic Acquisition, System Tracks, Target Labels, Intercept, Parallel Indexing, Miscellaneous Menus, System Shut Down

You receive word that a closed fishing area has been established within the following coordinates:

041:08.5 N, 072:00.0 W
041:08.5 N, 072:05.0 W
041:11.0 N, 072:05.0 W
041:11.0 N, 072:00.0 W
041:08.5 N, 072:00.0 W

Establish this area on your radar and enable it to automatically acquire any targets that transit this area.

☐	Draw Automatic Acquisition Area	Select **Graphics** pull down menu Click **Geo Stabilized** Click **Edit Polygon..** Select **LAT/LONG** Select **Closed Polygon** Place cursor in Latitude Field Use keyboard to type the coordinates of the closed area into the Latitude and Longitude fields Use the **TAB** key to move between fields <u>Type the coordinates in the format exactly as given above</u> Click **Apply** when finished Closed area should appear on PPI as dotted purple line Click **Close** to close Polygon Editor	10 16	*Establishes an area in which contacts may be acquired automatically by the system* *The area may be Geo Stabilized to a latitude/longitude set by operator* *or…* *It may be Slaved to Ownship and will move across the PPI as ownship moves*
☐	Enable the Acquisition Area	Click the Acquisition Area icon	24	*Selecting the Acquisition area icon defines the area as an area where targets will be automatically acquired*

Task		Procedure	Diagram Number	Function
☐	Hide/Display the Area	Click the Circles, Lines, & Polygons icon Area is hidden Click icon again to display	35	*Hides and displays the graphic*
☐	Color the Area	Left click on the area to hook it Select **Graphics** pull down menu Select **Fill** Select the desired fill pattern Area fills with the desired pattern	10	*Fills the graphic with a variety of patterns*
Leave the closed area displayed on the PPI. ***Tell the instructor when you are finished drawing your closed area!***				
Reacquire the GREEN LADY using a ***SYSTEM TRACK.***				
☐	Use System Track	Place cursor over PPI & right click to display pop-up menu Select **Acquire Track** Place cursor over desired target and left click *or…* Position cursor over desired target Press **CTRL A** on the keyboard A <u>dotted yellow square</u> appears over the video until the track becomes stable The icon will become a <u>yellow circle</u> once the track becomes stable		*Displays a track icon as a yellow circle* *Observe that SYSTEM TRACKS are displayed on all radars in the network* *The target is automatically tracked by the ARPA and continuously updates the target's course and speed* *If the ARPA loses a system track, the yellow icon will flash as a yellow diamond*

Task	Procedure	Diagram Number	Function

Rename this target the GREEN LADY.

☐	Label Target	Hook Target Place pointer in **U Label** field located in window at bottom right side of screen Left click and the pointer will become a flashing bracket Use the keyboard to type in the name of the target Hit enter key Name is displayed on PPI	59	*Displays name of target on screen next to track icon* *Track must be <u>hooked</u> to perform this function* *Observe that SYSTEM TRACKS are displayed on all radars in the network*
☐	View Tracker Status Window	Click on **Tracking** pull down menu Select **Tracker Status** Tracker status window in lower left of PPI is turned on or off	13 64	*Displays tracker status readouts* *The SPS-73 can hold a maximum of 200 SYSTEM TRACKS! Consult this window when having difficulty acquiring tracks. System may be overloaded.*

Local tracks appear as what color:_____.

System tracks appear as what color:_____.

TRUE or FALSE: The course and speed of a local track is automatically updated by the ARPA.

TRUE or FALSE: The course and speed of a system track is automatically updated by the ARPA.

A dotted yellow square on your PPI indicates:
- *a) a target that has reached the operator's CPA limits*
- *b) a system track that is not yet reliable or stable*
- *c) a lost track*
- *d) a navigation point*

A flashing yellow diamond on the PPI indicates:
- *a) a target that has reached the operator's CPA limits*
- *b) a system track that is not yet reliable or stable*
- *c) a lost track*
- *d) a navigation point*

You can tell that a track is "hooked" because:
- *a) The track icon will flash*
- *b) The track icon will be a dotted square*
- *c) The track icon will be surrounded by a circle*
- *d) The track icon will have a vector*

Task	Procedure	Diagram Number	Function
Soon, a target will transit into your closed area. If you have set your area up properly, the target should automatically be acquired and an alert will sound. *Note that this track is yellow in color. This is a system track, and will display on all radars in the network.*			
What is the course, speed, and CPA of this target in the closed area? *Course: _____ °T Speed: _____kts* *CPA_____ NM* *_____ °T* *_____ Time (add TCPA to the local time indicated on the radar)*			
Name this target the DOWNEASTER ALEXA.			
☐	Label Target	Hook Target Place pointer in **U Label** field located in window at bottom right side of screen Left click and the pointer will become a flashing bracket Use the keyboard to type in the name of the target Hit enter key Name is displayed on PPI	59	*Displays name of target on screen next to track icon* *Track must be hooked to perform this function*
Classify DOWNEASTER ALEXA as a trawler.			
☐	Edit Target Classification	Place pointer in **CLASS** field located in window at bottom right side of screen Left Click and Hold Place pointer on desired classification Release left click Unique classification icon displays on PPI	59	*Displays target classification at track icon* *Track must be hooked to perform this function*

Task	Procedure	Diagram Number	Function
Display that you are interested in boarding the DOWNEASTER ALEXA.			
☐ Edit Boarding Status of Target	Left Click in **BOARD** field located in window at bottom right side of screen Select desired status Boarding status displays on PPI	59	*Displays normally for NO INTEREST* *Displays orange oval for INTEREST* *Displays flashing orange oval for ON BOARD* *Displays dashed orange oval for BOARDED* *Track must be hooked to perform this function*
*Classify DOWNEASTER ALEXA as a **NEUTRAL** target*			
☐ Edit Target Affiliation	Place pointer in **AFFIL** field located in window at bottom right side of screen Left Click and Hold Place pointer on desired affiliation Release left click Affiliation color displays on PPI	59	*Displays yellow track icon for UNKONWN* *Displays blue track icon for FRIENDLY* *Displays red track icon for HOSTILE* *Displays green track icon for NEUTRAL* *Track must be hooked to perform this function*
Determine the course & speed to intercept the DOWNEASTER ALEXA.			

Task		Procedure	Diagram Number	Function
	Determine Course, Speed and Time to Intercept	Hook the desired target Right Click to display pop-up menu Select **Intercept** *or…* Click on **Navigation** pull down menu Select **Intercept..** Intercept pop-up window appears Click **Enter ISD with Speed** Speed defaults to current speed or type desired speed into **OS Speed** field and press enter Intercept standoff distance defaults to 0 or type desired distance into **Int Standoff Distance** field and press enter <u>Course and Time</u> to intercept are displayed Click **Reset** to perform another intercept Click **Enter ISD with Time** Time defaults to 10 minutes or type desired time in **Time to Intercept** field and press enter Intercept standoff distance defaults to 0 or type desired distance into **Int Standoff Distance** field and press enter <u>Course and Speed</u> to intercept is displayed Click **Close** to exit intercept function	14	*Displays course, speed, or time to intercept* *Operator may accept default values for intercept standoff distance, speed, and time, or type in other values* *Defaults:* *Intercept Standoff Distance: 0 nm* *Speed: Ownship current speed* *Time: 10 minutes*

What is the course, speed, and time to intercept the DOWNEASTER ALEXA?
_____ *°T*
_____*knots*
_____*minutes*

Task		Procedure	Diagram Number	Function
☐	Delete the Closed Area	Left click on the area to hook it Select **Graphics** pull down menu Select **Drop All Graphics..**		*Deletes the Graphic*
☐	Drop all Tracks	Click on **Tracking** pull down menu (see diagram at 13) Click **Drop All Tracks** Click **OK** to drop all tracks	13	*Drops all tracks and the icons disappear from the PPI*
*The Navigator's Trackline is drawn to leave Race Rock Lighthouse **0.4 NM abeam to starboard while on course of 290°T**. (Race Rock Lighthouse is located at the entrance to The Race, near the southwest tip of Fisher's Island, Fl R 10s, 67ft, 16M, HORN)* *Use parallel indexing to determine how far you are from the navigator's trackline.*				
Set the radar to the 6nm scale for the remainder of the exercise.				
☐	Place EBL to align parallel with the navigator's trackline	Right click to display pop-up menu and select **Place EBL** Roll trackball to an azimuth of *110°T* *(reciprocal of navigator's track)* Left click to display EBL The bearing of the EBL is displayed in the upper left corner of the PPI	20	*Draws an electronic bearing line (EBL) from center of display to selected point*
☐	Offset the EBL to form a parallel index line	Right click to display pop-up menu and select **Offset EBL** Roll and place trackball to *Race Rock Lighthouse* Left click to display EBL	21	*Sets a new point of origin for the EBL*

The EBL is always slaved to ownship. It cannot be geostabilized, and will become unreliable for parallel indexing as the ship moves. You can now place a geostabilized polyline over the EBL to use as a parallel index line.

Task		Procedure	Diagram Number	Function
☐	Place polyline	Select **Graphics** pull down menu Click **Geostabilized** Click **Draw Polygon/Polyline** icon Roll and place trackball to <u>Race Rock Lighthouse</u> Left Click Roll trackball down length of EBL to the end <u>Double</u> click to display polyline	16	*This technique places a geostabilized polyline on top of the EBL* *The polyline is now geostablized on top of Race Rock Lighthouse, and is aligned with the direction of the navigator's track* *The polyline will show as a dashed purple line* *You need only display the EBL long enough to establish the location of the polyline*
Recenter and Hide the EBL				
☐	Recenter the EBL	Click the icon in upper <u>left</u> side of screen *or…* Right click to display pop-up menu and select **Center EBL**	22	*Resets origin of the EBL to the center of the PPI*
☐	Hide the EBL	Click the icon in upper <u>right</u> side of screen	40	*Hides or displays the EBL on the PPI*
You can now use the VRM or cursor to measure the distance from your ship to the parallel index line and determine how far you are from the navigator's track.				
☐	Place Variable Range Marker (VRM)	Click the icon in the upper <u>left</u> side of screen Roll trackball to the closest point of the dashed purple polyline from ownship The range of the VRM is displayed in the upper left corner of the PPI Left click to display VRM	19	*Draws a Variable Range Marker (VRM) at a desired range*
You are _____NM <u>left</u> or <u>right</u> (circle one) of the navigator's trackline. *(Remember: the navigator's trackline is drawn to leave Race Rock **.4 NM** abeam!)*				

Task		Procedure	Diagram Number	Function
You may also display the VRM at the desired range (.4nm), then conn the ship until the VRM touches the polyline to regain the navigator's track.				
☐	Delete polyline	Select **Graphics** pull down menu Click **Drop All Graphics**	10	*Drops all graphics from the display*
☐	Degauss System	Click on the icon	45	*Performs degauss of CRT* *Use to correct any abnormal screen colors caused by magnetic interference*
☐	Type a Note to the Notepad	Click on **Display** pull down menu Select **Note Pad..** *or…* Click on Notepad icon in upper right side of screen Type your notes using the keyboard Click on **File** then **Close** to close the Note Pad when finished	11 47	*Allows operator to write information and save for the next watch* *Notepad operates in the same manner as a windows based word processing program*
☐	View and Drop Alerts	<u>Right Click</u> on **System Alert Window** Select **Drop All** Click **Close**	48	*Lists all alerts.* *Most recent alert at bottom of list.* *Drops all alerts*
☐	View Software Version Data	Click on **System** Select **About S/W..** View Software Version Click **Close**	15	*Displays Software Version Build Number*
What software version build is operating? _____ *Date:*_____				
STOP! You have completed the exercise. ***Instructor and volunteers will perform shutdown after final debrief.***				

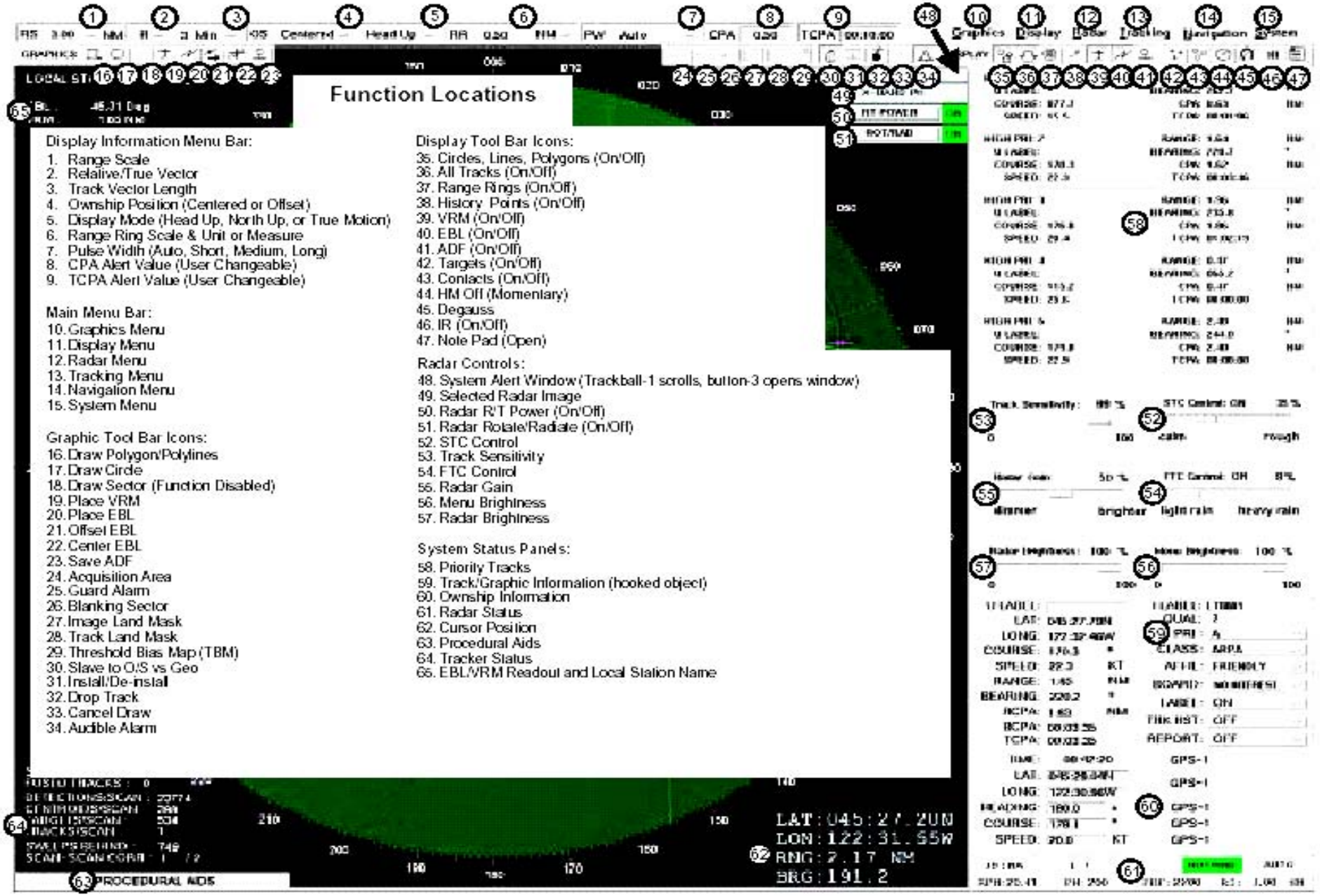
	Task	Procedure	Diagram Number	Function
Shut down the radar.				
☐	Place the radar in standby	Click **ROT/RAD** to **OFF**	51	*Antenna is not spinning and no pulses are being transmitted.* *No radar image displayed.* *Radar can be turned on again immediately from this condition.*
☐	Shut down the radar	Click **RT POWER** to **OFF** Confirmation window appears Click **OK**	50	*Performs normal shutdown*
☐	Shut down the radar	Select the **System** pull down menu Click **Shutdown..** Confirmation window appears Click **OK** Observe Screen, wait for message to disappear	15	*Performs normal shutdown*
☐	Turn off power	Place **RADAR POWER ENABLE** switch to **OFF** Place **ANTENNA ROTATE/RADIATE ENABLE** switch to **OFF**		*Located on the front panel of the SAOP*
☐	Turn off power	Place **POWER** switch to **OFF**		*Located on the front panel of the SAOP*

You are encouraged to keep a copy of this exercise for reference onboard your cutter.

The C2CEN website can be a helpful source of information concerning your AN/SPS-73 surface search radar:

http://cgweb.lant.uscg.mil/c2cen/index.html

Point of Contact: Mr. Patrick DeJoseph, C2CEN, (757) 686-4192, pdejoseph@c2cen.uscg.mil


Function Locations
Display Information Menu Bar:
1. Range Scale
2. Relative/True Vector
3. Track Vector Length
4. Ownship Position (Centered or Offset)
5. Display Mode (Head Up, North Up, or True Motion)
6. Range Ring Scale & Unit or Measure
7. Pulse Width (Auto, Short, Medium, Long)
8. CPA Alert Value (User Changeable)
9. TCPA Alert Value (User Changeable)
Main Menu Bar:
10. Graphics Menu
11. Display Menu
12. Radar Menu
13. Tracking Menu
14. Navigation Menu
15. System Menu
Graphic Tool Bar Icons:
16. Draw Polygon/Polylines
17. Draw Circle
18. Draw Sector (Function Disabled)
19. Place VRM
20. Place EBL
21. Offset EBL
22. Center EBL
23. Save ADF
24. Acquisition Area
25. Guard Alarm
26. Blanking Sector
27. Image Land Mask
28. Track Land Mask
29. Threshold Bias Map (TBM)
30. Slave to O/S vs Geo
31. Install/De-install
32. Drop Track
33. Cancel Draw
34. Audible Alarm
Display Tool Bar Icons:
35. Circles, Lines, Polygons (On/Off)
36. All Tracks (On/Off)
37. Range Rings (On/Off)
38. History Points (On/Off)
39. VRM (On/Off)
40. EBL (On/Off)
41. ADF (On/Off)
42. Targets (On/Off)
43. Contacts (On/Off)
44. HM Off (Momentary)
45. Degauss
46. IR (On/Off)
47. Note Pad (Open)
Radar Controls:
48. System Alert Window (Trackball-1 scrolls, button-3 opens window)
49. Selected Radar Image
50. Radar R/T Power (On/Off)
51. Radar Rotate/Radiate (On/Off)
52. STC Control
53. Track Sensitivity
54. FTC Control
55. Radar Gain
56. Menu Brightness
57. Radar Brightness
System Status Panels:
58. Priority Tracks
59. Track/Graphic Information (hooked object)
60. Ownship Information
61. Radar Status
62. Cursor Position
63. Procedural Aids
64. Tracker Status
65. EBL/VRM Readout and Local Station Name
LAT: 045:27.2UN
LON: 122:31.55W
RNG: 2.17 NM
BRG: 191.2
PROCEDURAL AIDS