

## Sea Tel Lite Media Xchange Point™ (LMXP) User Manual



EAR Controlled - ECCN EAR99

This technical data is subject to US Government export control in accordance with the Export Administration Regulations. Export of this data to any foreign country or disclosure of this data to a Non-US person may be a violation of Federal law.

|  |  |  |
|--|--|--|
| <p>Sea Tel, Inc.<br/>(trading as Cobham SATCOM)<br/>4030 Nelson Avenue<br/>Concord, CA 94520<br/>Tel: +1 (925) 798-7979<br/>Fax: +1 (925) 798-7986</p> |  | <p>Thrane and Thrane A/S<br/>(trading as Cobham SATCOM)<br/>Lundtoftegaardsvej 93 D, 2800 Kgs.<br/>Lyngby, Denmark<br/>Tel: +45 3955 8800<br/>Fax: +45 3955 8888</p> |
| <p>Web: <a href="http://www.cobham.com/satcom">http://www.cobham.com/satcom</a></p>  |  | <p>Email: <a href="mailto:satcom.ohc@cobham.com">satcom.ohc@cobham.com</a></p>   |



Sea Tel Marine Stabilized Antenna systems are manufactured in the United States of America.



These commodities, technology, or software were exported from the United States in accordance with the Export Administration Regulations. Diversion contrary to U.S. law is prohibited.



Sea Tel is an ISO 9001:2008 registered company. Certificate Number 13690 originally issued on March 14, 2011 and renewed / reissued on March 10, 2014.

## R&TTE CE

The Sea Tel TV and TVHD Maritime Satellite Earth Station complies with the requirements of directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on Radio equipment and Telecommunication Terminal Equipment. A copy of the *R&TTE Declaration of Conformity* for this equipment is contained in the Antenna Installation Manual.

### Copyright Notice

Copyright © 2015 Sea Tel Inc. All Rights Reserved.

The information contained in this document is proprietary to **Sea Tel**, Inc. This document may not be reproduced or distributed in any form, without prior written consent of **Sea Tel**, Inc. The information in this document is subject to change without notice. **Sea Tel** Inc. is also doing business as Cobham SATCOM.

### Revision History

| REV | ECO# | Date             | Description   | By  |
|-----|------|------------------|---|-----|
| A   |      | January 14, 2015 | Production Release  | MDN |
| B   |      | May 5, 2015      | Update favorite satellite operation   | MDN |
| C   |      | July 27, 2015    | Updated the manual to reflect changes in the current software version. Renamed the manual from Operator Manual to User Manual, and renamed Operator to User. Reorganized the chapters and changed the formatting. | MDN |
|     |      |                  |   |     |
|     |      |                  |   |     |
|     |      |                  |   |     |
|     |      |                  |   |     |

|   |            |
|---|------------|
| <b>1. INTRODUCTION</b>  | <b>1-1</b> |
| 1.1. AUDIENCE   | 1-1        |
| 1.2. PREREQUISITES  | 1-1        |
| 1.2.1. Browsers   | 1-1        |
| 1.2.2. Monitors   | 1-1        |
| 1.2.3. Computer Parameters  | 1-1        |
| 1.2.4. SSL certificate  | 1-1        |
| 1.2.5. Signal Bar   | 1-1        |
| 1.3. USING THIS MANUAL  | 1-2        |
| <b>2. QUICK START</b>   | <b>2-1</b> |
| 2.1. TURN POWER ON  | 2-1        |
| 2.2. SATELLITE SIGNAL FOUND AND NETWORK LOCK ACHIEVED                 | 2-1        |
| 2.3. SATELLITE SIGNAL NOT FOUND                                       | 2-1        |
| 2.4. TARGET A DIFFERENT SATELLITE                                     | 2-2        |
| 2.5. NORMAL FRONT PANEL LED STATES                                    | 2-2        |
| <b>3. LOGIN TO LMXP</b>   | <b>3-1</b> |
| <b>4. COMMON INFORMATION ON ALL LMXP SYSTEM PAGES</b>                 | <b>4-1</b> |
| 4.1. BANNER   | 4-1        |
| 4.1.1. On the left side of the banner                                 | 4-1        |
| 4.1.2. Compass Rose, Ship Heading, and Antenna Direction              | 4-1        |
| 4.1.3. Blockage Zones   | 4-2        |
| 4.1.4. Pointing Information   | 4-2        |
| 4.1.5. Status Indicators  | 4-2        |
| 4.1.6. NID  | 4-2        |
| 4.1.7. Signal Level   | 4-2        |
| 4.2. LEFT SIDE BAR  | 4-3        |
| 4.2.1. Tracking   | 4-3        |
| 4.2.2. Headings (Expand or Collapse)                                  | 4-3        |
| 4.2.3. Subheadings  | 4-3        |
| 4.2.4. Save   | 4-3        |
| 4.3. TASK BAR   | 4-4        |
| <b>5. LMXP SYSTEM PAGES</b>   | <b>5-1</b> |
| 5.1. SATELLITE SEARCH > AUTO (SATELLITE SIGNAL AUTOMATIC SEARCH PAGE) | 5-1        |
| 5.2. CONFIGURATION > INTERFACES > (COMMUNICATION INTERFACES PAGE)     | 5-1        |
| 5.2.1. Network Configuration Section                                  | 5-2        |
| 5.2.2. Serial Ports Section   | 5-2        |
| 5.2.3. Navigation Section   | 5-3        |
| 5.2.4. Dry Alarms Section   | 5-4        |
| 5.3. CONFIGURATION > SATELLITE (SATELLITE CONFIGURATION PAGE)         | 5-5        |
| 5.3.1. Select a Satellite   | 5-5        |
| 5.3.2. Delete a Satellite   | 5-6        |
| 5.3.3. Add a Satellite  | 5-6        |
| 5.3.4. Edit Satellite   | 5-7        |
| 5.4. STATUS > SYSTEM (SYSTEM STATUS PAGE)                             | 5-10       |
| 5.5. TOOLS > POSITION ANTENNA (POSITION ANTENNA PAGE)                 | 5-11       |
| 5.5.1. Satellite  | 5-11       |
| 5.5.2. Threshold Section  | 5-14       |
| 5.5.3. Arbitrator Test Section  | 5-15       |
| 5.5.4. Advanced Operations Section                                    | 5-15       |
| 5.6. LOGS > ACTIVITY (VIEW SYSTEM LOGS PAGE)                          | 5-16       |
| 5.7. OTHERS > CHANGE PASSWORD   | 5-17       |
| 5.8. OTHERS > HELP  | 5-18       |

- 6. TROUBLESHOOTING FOR USERS ..... 6-1**
  - 6.1. CHECK THAT THE LMXP POWERS UP ..... 6-1
  - 6.2. CHECK THAT OTHER EQUIPMENT POWERS UP ..... 6-1
  - 6.3. CHECK THE FRONT PANEL LED STATES..... 6-1
  - 6.4. CHECK FOR BLOCKAGE..... 6-2
  - 6.5. CHECK FOR ERRORS..... 6-3
- 7. GLOSSARY OF TERMS..... 7-1**
- 8. TECHNICAL CONTACTS..... 8-1**

## 1. Introduction

---

The Lite Media Xchange Point (**LMXP**) is the primary interface for configuration, operation, monitoring, management, and maintenance of the antenna system. You can do the following with the **LMXP** interface:

- Configure system parameters
- Backup configurations
- Operate the **Sea Tel** antenna
- Add and delete satellites
- Edit satellite parameters
- Target, Search and Track a satellite
- Diagnose some communication problems
- View system status reports

### 1.1. Audience

This manual is intended for Users, rather than Administrators or Dealers.

### 1.2. Prerequisites

This section contains some information about system requirements. *For help with Windows requirements or usage, contact your IT Systems Administrator or Dealer.*

#### 1.2.1. Browsers

- **LMXP** supports Internet Explorer (version 9.0 or above), Firefox (version 5.0 or above), Chrome (version 13.0 or above) and Safari (version 5.1 and above).
- When you click the **SAVE** button, an animated image may not spin on browsers other than Firefox. It does not mean that **LMXP** Web stopped working; it still works properly. Wait until the "Saving" message goes away.
- Do not use the IE "Compatibility view", because it does not fully support **LMXP**, and it might cause problems with images, background color, or graphs.

#### 1.2.2. Monitors

The lowest supported monitor resolution is 1024 x 768. For optimal viewing, use a resolution of 1280x1024. If your monitor has a maximum vertical resolution of 768, then press **F11** to enter full screen mode. Press **F11** again to return to normal mode.

#### 1.2.3. Computer Parameters

If you have any problems or questions about your computer, or any of the items in the following list, contact your IT support person.

- Turn on popups and enable JavaScript.
- To access **LMXP** using https, contact your Dealer.
- **LMXP** makes heavy use of your computer resources. Therefore, if possible, close other applications that are running on your computer, and only keep one browser and one instance open.
- Log out and exit your browser after you finish the session.
- It is good practice to reboot your computer daily.

#### 1.2.4. SSL certificate

If you have any problems or questions about an SSL certificate, contact your Dealer.

#### 1.2.5. Signal Bar

- If you see 15px and 25px instead of the **Signal Bar** in the banner, then press **F5** to refresh the page, and it should appear normal. This happens because the downloading of required files is not complete.

- If pressing **F5** does not resolve the problem, then logout, and close the browser. Then restart the browser, log in, and the banner should display correctly.

**1.3. Using this Manual**

The order of the chapters reflects the order in which a typical user would use this manual and in the necessary sequence.

|   |   |
|---|---|
| <p><b>New users</b></p>                     | <p>Read the <i>Introduction</i> chapter.<br/>                 Read the <i>Quick Start</i> chapter.<br/>                 Read the <i>Login</i> chapter.<br/>                 Read the <b>Help</b> and <b>FAQ</b> pages.<br/>                 Read the <i>Common Information on all LMXP System Pages</i> chapter.<br/>                 As needed, read the rest of the chapters.</p> |
| <p><b>Experienced users</b></p>             | <p>Read the <i>Common Information on All LMXP System Pages</i> chapter, and all of the following chapters.</p>  |
| <p><b>Users who are troubleshooting</b></p> | <p>Read the <i>User Troubleshooting</i> chapter.<br/>                 Read the <i>Logs</i> sections.<br/>                 Read the <i>Technical Contacts</i> chapter.</p>   |

## 2. Quick Start

If your system was set up correctly, and if your ship has not moved since the system was set up or used last, then the system should:

- Automatically power up from a cold start;
- Acquire the last satellite that you used;
- Achieve receiver network lock;
- Start tracking.
- Then the system is fully operational

**Perform the steps in the rest of this chapter to go from a cold start to an operational system.**

### 2.1. Turn Power ON

To apply power to the antenna system:

1. If all of the Above Deck Equipment (ADE) and Below Decks Equipment (BDE) are connected to a Universal Power Supply (UPS), then first turn on the UPS, or verify that it is already on.
2. Turn on the **LMXP** and the antenna pedestal by toggling the power switch on the front panel of the **LMXP** to the **ON** position. The **LMXP** provides power to the ADE.



3. Turn on all BDE (receivers, distribution, and audio/video equipment).
4. The antenna system powers up, goes through its initialization process, and automatically targets the last satellite that was acquired.

### 2.2. Satellite Signal Found and Network Lock Achieved

If the satellite signal is found and network lock is achieved, then

1. Tracking takes over and automatically adjusts the antenna position for the highest received signal level from the satellite.
2. When the signal is above threshold, and the tracking receiver achieves network lock, the antenna continues to track the satellite.

Then the system continues to operate automatically and indefinitely until one of the following conditions occur:

- AC power to the system is interrupted;
- The satellite signal is blocked.
- The ship sails into an area with insufficient satellite signal strength or level.

### 2.3. Satellite Signal not Found

If the system *cannot find* the satellite from a cold start, then log into the **LMXP** and follow the steps below:

1. The **Tracking** LED, on the front panel of the **LMXP**, flashes for a short period of time (**Search Delay**) followed by the **Search** LED coming **ON**.
2. The antenna automatically begins a search pattern, attempting to relocate the desired satellite. The bar graph on the upper right displays red bars, while the signal value is less than the threshold value (indicated by the red bar in the bar graph).
3. If a signal greater than **Threshold** is not found during the scan, then the bar graph stays red, and the antenna is at the end of the search pattern.
4. Then antenna automatically retargets back to the satellite location, where it will pause for a short period of time (**Search Delay**).
5. If signal is still not found, the antenna begins the search pattern again, attempting to locate the satellite.
6. The antenna repeats steps 1 to 4, until either the satellite is found, or you stop the search.
7. Log into the **LMXP**.
8. Go to the **Configuration > Interfaces (Communication Interfaces page)**.

9. Check the Latitude, Longitude, and Heading values.
10. If the Latitude and Longitude values are not correct, then enter the correct Latitude and Longitude of the ship in the appropriate fields.
11. If the Heading value is not correct, then enter the correct value in the Heading field.
12. Go to **Satellite Search > Auto (Satellite Signal Automatic Search page)**.
13. Verify that the correct satellite is selected.
14. If the selected satellite is not the desired satellite, then click the dropdown list and select the desired satellite.
15. Click **Save**.

If the desired satellite is still not found:

1. Check for Blockage. (Blockage is the *most* common cause of not being able to acquire the desired satellite.) (See the *Check for Blockage* section in the *Troubleshooting* chapter for details.)
2. Check the cable connections to assure that a cable is not disconnected.
3. Read the *Troubleshooting* chapter for other possible causes and directions.

If you cannot identify or resolve the problem, then contact your Dealer.

## 2.4. Target a Different Satellite

To target a different satellite, perform the following steps:

1. Log into the **LMXP**.
2. To target a different satellite go to the **Satellite Search > Auto (Satellite Signal Automatic Search page)** and select the desired satellite from the dropdown list.
3. When you make that selection, the following temporary message appears: “*Acquiring Satellite Signal...Please Wait*”
4. Shortly after that, the following temporary messages appear: “*Satellite Signal Found.*” followed by “*Lock: ON*”

## 2.5. Normal Front Panel LED States

There are nine LEDs on the front panel, as shown in the following figure. Each LED can have several different colors, depending on their state. The Front Panel LEDs have the following priority, from highest to lowest, namely, Solid Red, Flashing Red, Solid Yellow, Flashing Yellow, Solid Green, and Flashing Green.



The normal operating states of the front panel LEDs are:

**ERROR** — **OFF** indicates that no errors have occurred.

**INIT** — **OFF** indicates that the system has finished initialization.

**TARGET** — **OFF** after the antenna has finished targeting.

**SEARCH** — **OFF** indicates that antenna is not searching.

**TRACK** — **ON** (Solid Green) indicates that the **LMXP** has identified and is actively tracking the desired satellite to optimize the signal level (AGC).

**BLOCK** — **OFF** indicates that the antenna is not within a *defined* blockage zone. However, the antenna still could be blocked by something outside of a *defined* blockage zones.

**LINK** — **ON** (Solid Green) indicates that the **LMXP** has good communications with the antenna (therefore good antenna control).

**STATUS** — **OFF** indicates that the status is normal.

**POWER** — **ON** (Solid Green) indicates that the **LMXP** boot sequence is complete, and the system power is **ON**.

If the **BLOCK** LED is ON, then the antenna is in a defined *blockage* zone. You cannot receive the satellite signal until the ship moves, or turns. You may be able to use a different unblocked satellite, if you have arranged for the appropriate services from that satellite.

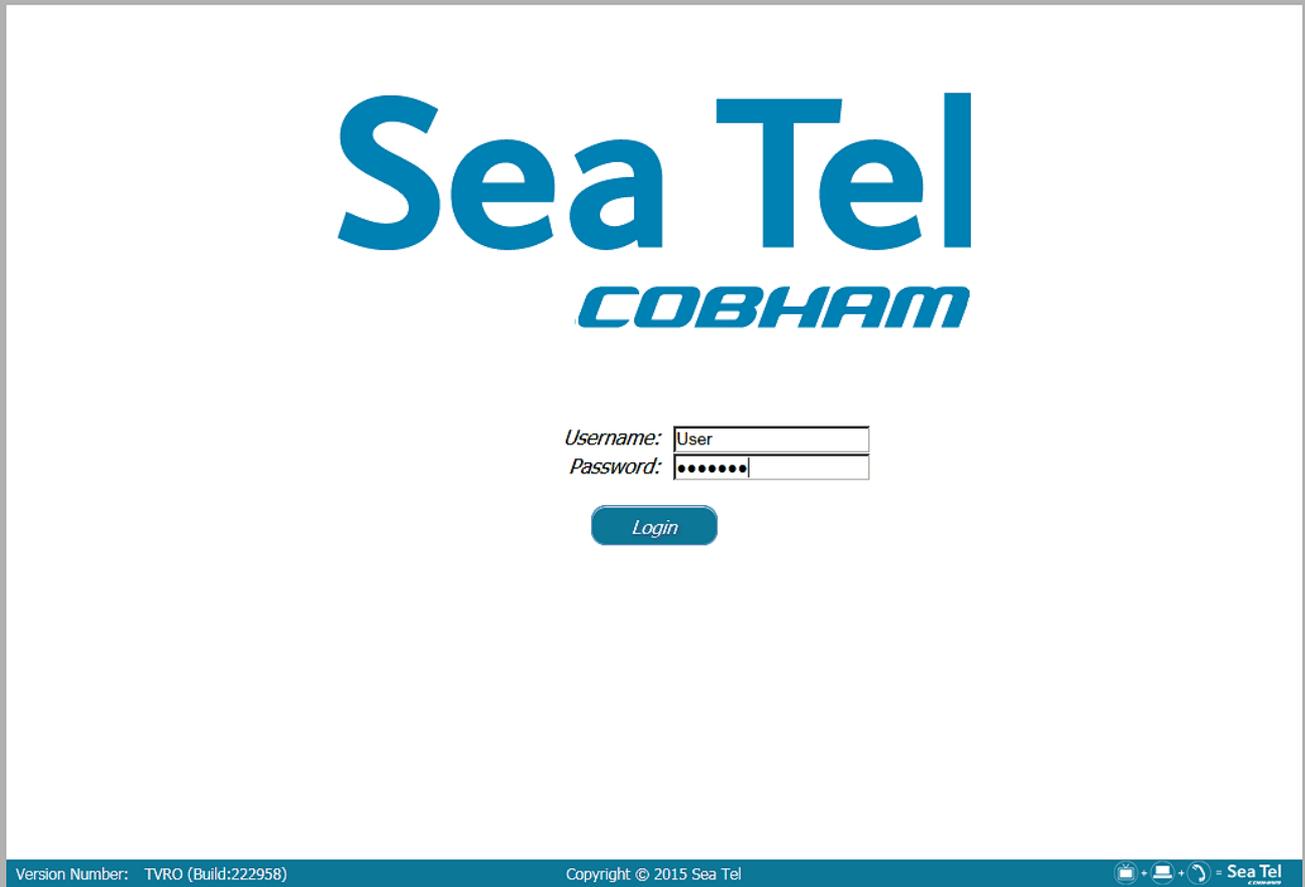
If the LEDs on the front panel are not in the normal operating state, then consult the *Troubleshooting* chapter (especially the *Front Panel LED States* section) and, if necessary, contact your Dealer for assistance.

### 3. Login to LMXP

---

Log in to the LMXP from the computer, and the **Login** page appears. If your Dealer did not set up the computer, then refer to the *Installation Manual* for setup instructions.

Enter the default **Username** (User) and **Password** (seatel1), or the **Username** and **Password** given to you by your Dealer. Both the **Username** and **Password** are case sensitive.



Sea Tel  
**COBHAM**

Username:

Password:

Login

Version Number: TVRO (Build:222958) Copyright © 2015 Sea Tel 

**This Page Intentionally Left Blank**

## 4. Common Information on all LMXP System Pages

### 4.1. Banner

The same banner appears at the top of every page. It contains much of the information that you might want to know about the system.



#### 4.1.1. On the left side of the banner

- To link to the **Sea Tel** web site, click the **Sea Tel** logo in the upper-left corner of the banner.
- **Login** displays the **User Name** that you used to log in.
- To log out of the system, click **LOGOUT**.
- The **Ship Name** is the last item displayed (if your Dealer entered it).

#### 4.1.2. Compass Rose, Ship Heading, and Antenna Direction

On the middle-left of the banner is a graphic. It shows the ship heading, a compass rose with four cardinal directions, numeric ship heading value and antenna direction (red arrow). The numeric value of the ship heading is displayed with more accuracy in the small box near the stern of the ship. The red arrow indicates the position of the antenna, both relative to the bow of the ship and to the true azimuth-pointing angle.

The compass follows the heading reading coming from either the gyrocompass on the ship, or the fixed heading entered in the **Navigation** section of the **Configuration > Interfaces (Communication Interfaces page)**.

##### 4.1.2.1. Customize the Compass Rose

To change the four principal directions on the Compass Rose, click on the Compass Rose, and then toggle it by pressing **Shift + C** on the keyboard. There are six different choices:

- The first set (default) is 'N', 'S', 'E', and 'W', representing North, South, East and West in English.
- The second set is 'N', 'S', 'E', and 'O' representing Nord, Sud, Est and Ouest in French or Norte, Sur, Este and Oeste in Spanish.
- The third set displays the four principal directions in traditional Chinese characters.
- The fourth set displays the initial letter of the names of the four principal directions in Cyrillic.
- The fifth set displays the universal circular degrees with 0 or 360 degrees representing North, 90 degrees representing East, 180 degrees representing South, and 270 degrees representing West.
- The sixth set displays the four principal radian values of the angular direction, with 0 or  $2\pi$  representing North,  $\pi/2$  representing East,  $\pi$  representing South, and  $3\pi/2$  representing West.



##### 4.1.2.2. Customize the Type of Ship

To change the silhouette of the ship within the Compass Rose, click on the ship graphic, and then toggle it by pressing **Shift+Q** on the keyboard to change to the next available ship image.

- The first (default) image is a needle shape typically found in a magnetic compass, with the needle always pointing towards the North magnetic pole. The needle rotates, and the compass rose directions remain static.
- The second image is a standard sailboat silhouette. The compass rose rotates and the sailboat silhouette remains static.
- The third image is a large ship silhouette. The compass rose rotates, and the large ship silhouette remains static.
- The fourth image is a catamaran silhouette. The compass rose rotates, and the catamaran silhouette rotates.

#### 4.1.3. Blockage Zones

Blockage zones are represented on the compass as translucent red wedges. The display of the blockage zones can be toggled ON or OFF by clicking on the compass and pressing **Shift+B**. Normally, Blockage Zones are defined only for permanent objects on the ship, and not for objects elsewhere, such as on-shore buildings, cranes, other ships, and so forth. Only the Dealer can add or delete Blockage Zones.



#### 4.1.4. Pointing Information

Pointing Information is displayed in the middle right of the banner. It displays values for:

- Sat Lon — is the longitude of the current satellite.
- Azimuth — is the true azimuth pointing angle of the antenna
- Heading — is the heading of the ship.
- Elevation — is the elevation pointing-angle of the antenna.
- Relative — is the azimuth-pointing angle of the antenna, relative to the bow of the ship.
- Lpolang — is the Linear Polarization Angle of a signal.

#### 4.1.5. Status Indicators

On the right side of the banner are nine status indicators that provide a top-level view of the state or health of the system. Their values (colors) are the same as those on the corresponding LED states on the front panel of the **LMPX**. See the **Front Panel LED States** section for details about the states.

#### 4.1.6. NID

The decimal value of the **Network ID (NID)** is displayed on the right side of the banner.

#### 4.1.7. Signal Level

The **Signal Level** bar graph is on the right side of the banner, below the **Status Indicators**. It is a visual representation of the relative signal strength (AGC). The signal level is displayed, both as a digital value of AGC, and as a relative bar graph. The AGC has a range of 0 to 4095. The bar graph displays a segment of the AGC range from -300 to +300 around the light gray bar. The light gray bar represents the current Threshold value. Its digital value is displayed directly above it.

When the signal level is greater than the **Threshold** value, then the segments of the bar graph are green. When the signal level is less than the **Threshold** value, then the segments of the bar graph are red. The more green bars, the stronger the signal strength.

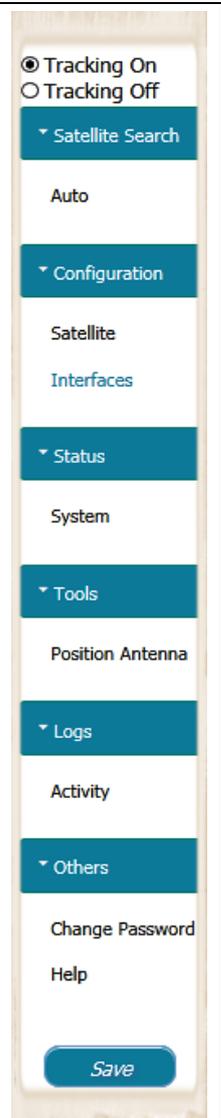
- If the signal strength (AGC) is 300 counts less than threshold, all bars are gray. A single gray bar represents the minimum value.
- If the signal strength (AGC) is less than the threshold, then red bars appear.
- If the signal strength (AGC) is greater than the threshold, then green bars appear.
- If the signal strength (AGC) is 300 counts greater than the threshold, then all bars are green.

The current decimal value of the signal is displayed to the left of the bar graph.

### 4.2. Left Side Bar

Following this sentence are a table and a figure. The table contains the **Headings, Subheadings,** and the **Page Titles** for the middle part of the **Left Side Bar**. The figure on the right is the complete **Left Side Bar**, with all levels expanded.

| Main or Top Level Headings<br>(Dark teal sections) | Subheadings<br>(White subsections) | Page Titles<br>(Names of the pages for each subsection. The text changes to light teal when you click on the subsection.) |
|--|------------------------------------|---|
| Tracking On<br>Tracking Off<br>(radio buttons)     | Not applicable                     | Not applicable  |
| Satellite Search                                   | Auto                               | Satellite Signal Automatic Search   |
| Configuration                                      | Satellite                          | Satellite Configuration   |
|  | Interfaces                         | Ship Position Setting   |
| Status   | System                             | System Status   |
| Tools  | Data Export                        | System Log  |
| Logs   | Activity                           | View Activity Log   |
| Others   | Change Password                    | Change User's Password  |
|  | Help                               | Help  |
| Save<br>(button)                                   | Not applicable                     | Not applicable  |



#### 4.2.1. Tracking

The **Tracking ON and OFF** radio buttons are on the top of the sidebar. **Tracking** can be turned **ON** or **OFF**, by clicking the appropriate button.

#### 4.2.2. Headings (Expand or Collapse)

Each of the dark teal headings below the **Tracking ON/OFF** buttons, have a small arrow on the left side that expands, or collapses the subsections.

#### 4.2.3. Subheadings

The subheadings correspond to each of the **LMXP System Page** sections. If you select a subheading, the text changes from black to light teal.

#### 4.2.4. Save

**Save** is on the bottom of the sidebar, where it is available for every page in the system. You can save the changes you made on each page, as you go, or after you finish making all changes on all pages. (If you click **Save**, then the values of all parameters are saved.)

### 4.3. *Task Bar*

The task bar is at the bottom of each page.



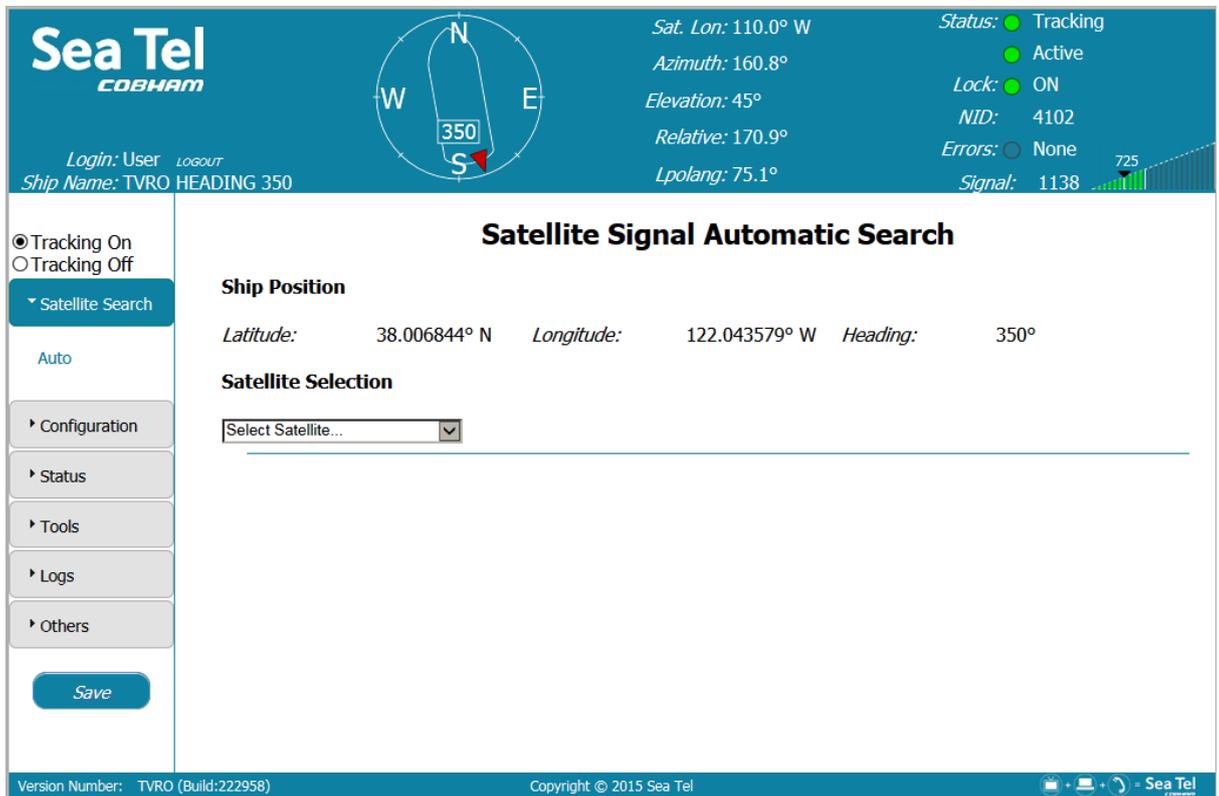
The **LMXP Software Version** and **Build Number** are on the left. The **Copyright** is in the middle.

Ignore the four icons on the right. Do not click the icons.

## 5. LMXP System Pages

### 5.1. Satellite Search > Auto (Satellite Signal Automatic Search page)

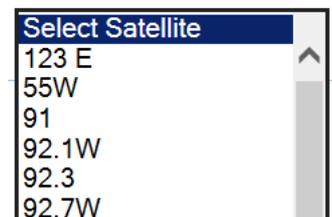
You can select and track any of up to 40 favorite satellites from the **Satellite Signal Automatic Search** page.



The **Ship Position** section displays the Latitude, Longitude, and Heading of the ship. You cannot change any of these values from this page. However, you can edit them in the **Navigation** section of the **Configuration > Interfaces (Communication Interfaces page)**.

You can add or delete a satellite, and edit the parameters of a selected satellite, in the **Configuration > Satellite (Satellite Configuration page)**.

The **Satellite Selection** section has a dropdown list that contains up to 40 “favorite” satellites. The graphic on the right is an example of the dropdown list. When you select a satellite, either the message “Acquiring satellite signal may take up to 60 seconds.....Please wait”, or the message “Acquiring satellite signal may take up to 300 seconds.....Please wait” is displayed. When the satellite signal is acquired, the message “Satellite target loaded.” is displayed.



**NOTE:** If the power to the system is recycled, then after power is restored, the system *retargets* the last satellite that was selected.

### 5.2. Configuration > Interfaces > (Communication Interfaces page)

The **Communication Interfaces** page enables the Dealer to define system settings to ensure that the **LMXP** can properly communicate with all equipment (ABD and BDE), whether supplied by Cobham SATCOM or not, as a part of normal operation or system maintenance.

The **Communication Interfaces** page has four subsections.

- **Network Configuration**
- **Serial Ports**
- **Navigation**
- **Dry Alarms**

**Sea Tel COBHAM**

Sat. Lon: 110.0° W      Status: ● Tracking  
 Azimuth: 160.8°      ● Active  
 Elevation: 45.1°      Lock: ● ON  
 Relative: 170.9°      NID: 4102  
 Lpolang: 75.1°      Errors: ○ None  
 Signal: 1138

Ship Name: TVRO HEADING 350

### Communication Interfaces

Tracking On  
 Tracking Off

Satellite Search

Configuration

Satellite

Interfaces

Status

Tools

Logs

Others

Save

**Network Configuration**

**Addresses**  
 MAC Address: 00:04:A3:D1:9D:69  
 IP Address: 10.192.104.184  
 Subnet Mask: 255.255.254.0  
 Gateway: 10.1.1.1  
 DNS Address: 10.1.1.205

**Ports**  
 UDP Port:  49184 ROAM  
 Web Port:  80  
 Secure Web Port:  443

**Telnet Ports**  
 TCP 0:  2000 Legacy  
 TCP 1:  2001 Legacy  
 TCP 2:  2002 OpenAMIP  
 TCP 3:  2003 CLI

**Serial Ports**

**LMXP**  
 NMEA 0183: 4800 baud  
 Console: 115200 baud  
 Flow Control:   
 (RTS/CTS):  
 Mode: CLI

**TICU**  
 Console: 115200 baud

**Navigation**

**Gyro**  
 Type: Fixed  
 Heading: 350°  
 Heading ID: HDT

**GPS**  
 Port: Internal  
 ID: RMC

**Ship Position**  
 Lat: 38.006886 N  
 Lon: 122.043587 W

**Dry Alarms**

Alarm 1  1001,1030,1031  
 Alarm 2  [ENTER ERROR CODES]

Version Number: TVRO (Build:222958)      Copyright © 2015 Sea Tel

### 5.2.1. Network Configuration Section

The **Network Configuration** parameters are in this section of the **Communication Interfaces** page. These are Ethernet-based communication settings for the system.

**Network Configuration**

**Addresses**  
 MAC Address: 00:04:A3:D1:9D:69  
 IP Address: 10.192.104.184  
 Subnet Mask: 255.255.254.0  
 Gateway: 10.1.1.1  
 DNS Address: 10.1.1.205

**Ports**  
 UDP Port:  49184 ROAM  
 Web Port:  80  
 Secure Web Port:  443

**Telnet Ports**  
 TCP 0:  2000 Legacy  
 TCP 1:  2001 Legacy  
 TCP 2:  2002 OpenAMIP  
 TCP 3:  2003 CLI

**Addresses, Ports and Telnet subsections** — These parameter values are usually left “as is” for a system that is accessed infrequently from a single computer. However, if you connect the system to a LAN, and allow access from multiple computers, then you must change the addresses to the appropriate values for the LAN.

### 5.2.2. Serial Ports Section

The **Serial Ports** parameters are in this section of the **Communication Interfaces** page. The values in this section define the serial port communication settings of the system. *Do not change* the factory default values unless it is absolutely necessary, and then, only with the assistance of your Dealer.

▾ Serial Ports

|  |  |
|--|--|
| <p><b>LMXP</b></p> <p>NMEA 0183: <input type="text" value="4800"/> <span style="font-size: 0.8em;">▼</span> baud</p> <p>Console: <input type="text" value="115200"/> <span style="font-size: 0.8em;">▼</span> baud</p> <p>Flow Control <input type="checkbox"/></p> <p>(RTS/CTS):</p> <p>Mode: <input type="text" value="CLI"/> <span style="font-size: 0.8em;">▼</span></p> | <p><b>TICU</b></p> <p>Console: <input type="text" value="115200"/> <span style="font-size: 0.8em;">▼</span> baud</p> |
|--|--|

**LMXP subsection**

- **NMEA 0183** — Enter the Baud Rate speed of the NMEA gyrocompass input connected to the rear panel of the **LMXP**. The standard baud rate for NMEA 0183 is 4800, but your device may be different. The default is 4800.
- **Console** — If a device is connected to the Console (serial) port on the rear panel of the **LMXP**, then enter the speed of the port to the appropriate baud rate of your device. The default is 115200.
- **Flow Control (RTS/CTS)** — Set the **Flow Control (RTS/CTS)** box to ON (box is checked), or OFF (box is unchecked), as appropriate for the input device. The default is OFF (Unchecked).
- **Mode** — Select either **CLI** or **Legacy**. The default is **CLI**.

**TICU subsection**

- **Console** — *Do not change* the baud rate of the **TICU Console** port. Leave it at the default value. The default is 115200.

**5.2.3. Navigation Section**

The **Navigation** parameters are in this section of the **Communication Interfaces** page.

**Caution:** The values in this section are the *only* ones that are safe to change *without* assistance from your Dealer.

▾ Navigation

|   |   |
|---|---|
| <p><b>Gyro</b></p> <p>Type: <input type="text" value="Fixed"/> <span style="font-size: 0.8em;">▼</span></p> <p>Heading: <input type="text" value="350"/> °</p> <p>Heading ID: <input type="text" value="HDT"/> <span style="font-size: 0.8em;">▼</span></p> | <p><b>GPS</b></p> <p>Port: <input type="text" value="Internal"/> <span style="font-size: 0.8em;">▼</span></p> <p>ID: <input type="text" value="RMC"/> <span style="font-size: 0.8em;">▼</span></p> <p><b>Ship Position</b></p> <p>Lat: <input type="text" value="38.006882 N"/></p> <p>Lon: <input type="text" value="122.043617 W"/></p> |
|---|---|

**5.2.3.1. Gyro subsection**

There are three fields in the Gyro subsection. They are **Type**, **Heading**, and **Heading ID**.

**Type**

- **No Gyro**  
If you *do not* have a gyrocompass, then select **No Gyro** from the dropdown list, and enter the current **Heading** of the ship.
- **Fixed**  
If the heading is fixed (for example, on an oil drilling platform), then select **Fixed** from the dropdown list. Then enter the heading in the **Heading** field.
- **NMEA**  
If you have a NMEA 0183 gyrocompass, then select **NMEA** from the dropdown list. The default **Type** is **NMEA 0183**, and the default **Heading ID** is **HDT**.  
Using a NMEA 0183 gyrocompass to find heading of the ship, reduces the time that is required to find a satellite.

**Heading**

If you selected **No Gyro, or Fixed**, as the **Gyro Type**, then enter the **Heading** in degrees.

**ID**

Select the type of **NMEA0183** data that your gyrocompass outputs.

- If your gyrocompass outputs digital HDD data, then select **HDD** from the dropdown list
- If your gyrocompass outputs heading deviation and variation data, then select **HDG** from the dropdown list.
- If your gyrocompass outputs magnetic heading data, then select **HDM** from the dropdown list.
- If your gyrocompass outputs true heading data, then select **HDT** from the dropdown list. **HDT** is the preferred heading selection.

**5.2.3.2. GPS subsection**

There are two fields in the **GPS** subsection. They are **Port** and **ID**. If an *external* GPS is used, or if periodic manual Latitude (**LAT**) and Longitude (**Lon**) entries are needed to reacquire a lost satellite signal, then you must select a **Port** and enter values for the **Ship Position**.

**Port**

Select the **Port** required by the external GPS. The **Port** options are:

- If you want the system to search for and find the correct port, then select **Auto**
- If your external GPS is connected to the **Aux** port on the back of the **LMXP**, then select **Aux**.
- If your external GPS is connected to the **Console** (serial) port on the back of the **LMXP**, then select **Console**.
- If you use the internal GPS that is mounted on the **Sea Tel** antenna (You selected **NMEA** as the **Gyro Type**.), then select **Internal**. The internal GPS provides automatic Latitude and Longitude input to the system. Because a GPS is part of the system, no external GPS is required. **Internal** is the default value.
- If you selected **NMEA** as the **Gyro Type**, then select **NMEA 0183**.

**Port ID**

If you have an external GPS, then select the **Port ID** of the external GPS. The **Port ID** choices are:

- Select **GCA** if your external GPS uses this Port ID.
- Select **GLL** if you selected **Internal** as the **Port**. **GLL** is the default value.
- Select **RMC** if your external GPS uses this Port ID.

**5.2.3.3. Ship Position subsection**

There are two fields in the **Ship Position** subsection.

If you do not have a gyrocompass, or it is not working, then enter the longitude and latitude of the ship manually. Enter values in degrees and tenths of a degree.

- The **LAT** entry format is **###.#**, followed by N or S for North or South, for example, 38.0 N.
- The **LON** entry format is **###.#**, followed by E or W for East or West, for example, 122.0 W.

**5.2.4. Dry Alarms Section**

The **Dry Alarms** parameters are in this section of the **Communication Interfaces** page. They enable you to define which **Error, Informational, or Warning Codes** trigger one of the two dry alarm contact sets. The contact sets are on the rear panel of the **LMXP**.

▼ Dry Alarms

|                |                                     |                     |
|----------------|-------------------------------------|---------------------|
| <i>Alarm 1</i> | <input checked="" type="checkbox"/> | 1001,1030,1031      |
| <i>Alarm 2</i> | <input type="checkbox"/>            | [ENTER ERROR CODES] |

The **Dry Alarms** must be electrically connected and configured appropriately. The **Dry Alarm** contacts can provide programmable alarm outputs to other equipment or systems. Switched outputs can use 4.7K Pull Up or Pull Down and can provide a maximum current sink of 0.5 amps. The contacts are normally **Open** for the **No Alarm** state and are **Closed** (Shorted) for the **Programmed Alarm** state. Click the alarm check box, and enter the error codes that you want to trigger that alarm.

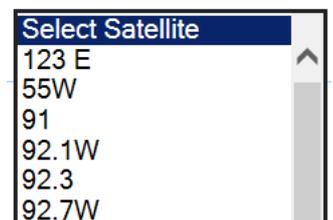
### 5.3. Configuration > Satellite (Satellite Configuration page)

You can select and track any of up to 40 favorite satellites from the **Satellite Signal Automatic Search** page. You can also edit, add, or remove a satellite starting from the same page. The following figure shows the page when it is *first* opened.

#### 5.3.1. Select a Satellite

The top section of the **Satellite Signal Automatic Search** page has a **Satellite Selection** dropdown list that contains up to 40 “favorite” satellites. The graphic on the right is an example of the dropdown list.

1. Select a satellite from the dropdown list that contains up to 40 “favorite” satellites. As soon as you select a satellite, the antenna immediately targets and acquires the satellite that you selected. An **Edit Satellite** section appears. It contains the parameters for the satellite that you selected. . Either the message “Acquiring satellite signal may take up to 60 seconds.....Please wait”, or the message “Acquiring satellite signal may take up to 300 seconds.....Please wait” is displayed. When the satellite signal is acquired, the message



“*Satellite target loaded.*” is displayed.

Then the bottom section (**Edit Satellite**) of the **Satellite Configuration** page is displayed. It contains the parameters for the satellite that you selected.

**NOTE:** If the power to the system is recycled, then when power is restored, the system *retargets* the last satellite that was selected.

### 5.3.2. Delete a Satellite

To delete a satellite, perform the following steps.

1. Go to the **Configuration > Satellite (Satellite Configuration page)**.
2. From the **Available Satellites** dropdown list, select the satellite that you want to delete.
3. Click **Delete Satellite**. The satellite is removed from the **Available Satellites** dropdown list. The parameters and everything else about the satellite are removed from the system.

### 5.3.3. Add a Satellite

The following figure shows the **Satellite Configuration** page *after* you click **Add Satellite**. Notice the bottom **Add Satellite** section that appears.

The screenshot shows the "Satellite Configuration" page. At the top, there is a "Satellite Selection" section with a dropdown menu labeled "Select Satellite" and an "Add Satellite" button. Below this, a text instruction reads: "If you do not see a dropdown list or your desired satellite is not in the dropdown list, click to add a satellite". The main section is titled "Add Satellite" and contains several input fields: "Satellite Name" (text box), "Longitude" (text box with a "W" dropdown), "Frequency" (text box with "1234.567" and "MHz" label), "Skew" (text box with "0" and "deg" label), "Search Pattern" (dropdown with "Spiral"), "Tx Polarity" (dropdown with "HORZ"), "Band" (dropdown with "1 (Lo: 10.000 GHz)"), "Reflector" (radio buttons for "Primary" and "Secondary"), and "Rx" (radio buttons for "XPOL" and "CoPol"). A "Save" button is located at the bottom left of the form area.

To add a satellite, perform the following steps.

1. Go to the **Configuration > Satellite (Satellite Configuration page)**.
2. Click **Add Satellite**. The **Add Satellite** section appears. It contains some parameter values for the current satellite. (See the **Edit Satellite** section).
3. Enter or change the parameter values for the new satellite.
4. After you finish, click **Save** on the left sidebar. The new satellite is added to the list of favorite satellites.

The system immediately locates, acquires, and tracks the new satellite.

5.3.4. **Edit Satellite**

The following figure shows the **Edit Satellite** section.

Enter or change the values of the parameters for the new satellite.

- **Satellite Name**  
Enter the name that you want to use for the new satellite.
- **Longitude**  
Enter the longitude position of new satellite.
- **E/W**  
Use the dropdown list to select the East or West longitude position of the satellite.
- **Skew**  
Enter a known skew for the new satellite. If the satellite is not skewed, then enter zero. The skew must be entered in degrees and tenths of degrees.
- **Baud rate**  
Enter the baud rate, or symbol rate, of the signal.
- **NID (Network ID)**  
Enter the decimal format Network ID (NID) of the signal that you will track.
- **FEC (Forward Error Correction)**  
From the dropdown list, select the **Forward Error Correction** rate of the tracking signal. This is the signal to error correction rate.

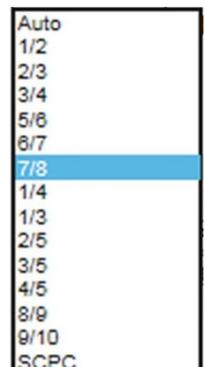
If you select **Auto**, then the system automatically locks on the best value, and updates it as conditions change. Auto should be used when **FEC** rate of the signal you want to track is not published.

If published, select the appropriate **fractional** fixed value. The fraction represents the amount of data vs the amount of error checking.

The larger the fraction, the higher the amount of data (and the lower the amount of error checking) per second is. This means that a lot of data gets through every second because so little error checking is being done. So  $\frac{9}{10}$  FEC rate provides  $\frac{9}{10}$  bits of data and only  $\frac{1}{10}$  bits of error checking.

The smaller the fraction, the lower the amount of data (and the higher the amount of error checking) per second is. This means that less data gets through every second because more error checking is being done. So  $\frac{1}{2}$  FEC rate provides  $\frac{1}{2}$  bits of data and  $\frac{1}{2}$  bits of error checking.

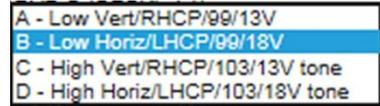
**SCPC** — For the **Sea Tel** TV & TVHD antennas, do not select **SCPC**.



- **Modulation**  
From the dropdown list, select the type of modulation that the tracking signal uses.
- **RX Input**



From the dropdown list, select the Band and Polarity of the **LNB** output, which is routed to the tracking receiver. This *must* be the Band and Polarity, which contains the desired tracking frequency/signal. **Example:** If the signal you want to track is LHCP (or Horizontal) at 12.224 GHz (high band), then select "D –High Horiz/LHCP/103/18Vtone" from the dropdown list.



• **LNB Type (LNB Mode)**

The TVRO LNB can operate in a variety of modes and frequency bands. This setting selects the Local Oscillator frequency (therefore the RF frequency band), linear or circular polarization and whether the **LNB** will output dual or quad IF outputs.



This selection sets the **LNB** into the listed modes (each emulating an individual **LNB** for the satellite and service. This *must* be set correctly for the desired satellite/service.

**NOTE:** The **Valid RF frequency range** for the selected **LNB Type** is displayed to the right of the RF frequency input field. This displays the acceptable range of RF frequencies that you can enter.

• **Search Pattern**

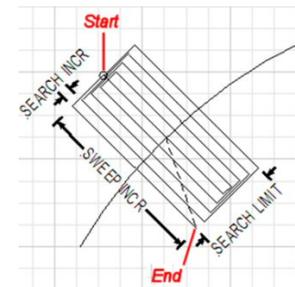
To choose the search pattern that you want the antenna to perform when searching for a satellite, select the search pattern from the dropdown list.



Please note that the **DEFAULT** search pattern is the **Spiral** search.

• **Inclined Orbit Search Pattern**

Some older satellites are in an inclined geosynchronous orbit, to save some of the fuel that would be used to keep them exactly positioned over the Equator. The satellite remains in a geosynchronous orbit, but is not geostationary. From a fixed observation point on Earth, the satellite appears to trace out a figure-eight with its lobes oriented northward and southward, once every twenty-four hours. The north-south excursions of the satellite may be too far from the center point to use the default Spiral (Box) Search Pattern to find the satellite throughout a 24-hour period. Therefore, an Inclined Orbit Search Pattern often is used for these satellites.



When a search begins, the antenna goes to a calculated position that is half of SWEEP INCR degrees above, and perpendicular to, the satellite arc (along the same angle as polarization for the satellite). This position is the Start of the search pattern in the graphic to the right. Then the antenna drives down along the polarization angle by SWEEP INCR degrees, step one SEARCH INCREMENT to the right (parallel to the satellite arc), search up along the polarization angle SWEEP INCR degrees, step two SEARCH INCREMENTS to the left, search down, expanding out in the search pattern until the Search Limit is reached. Then the **LMXP** retargets the antenna to the calculated Azimuth and Elevation point.

If the desired signal *is found* and network lock is achieved at this position, or anywhere within the search pattern, the **LMXP** terminates the search and goes into Tracking mode. If the desired signal *is not found*, then the **LMXP** waits for the SEARCH DELAY, then targets the antenna to the start point shown in the figure to the right and begin the search pattern again. This cycle repeats until the desired satellite signal is found or the user intervenes.

• **Sky Search Pattern**

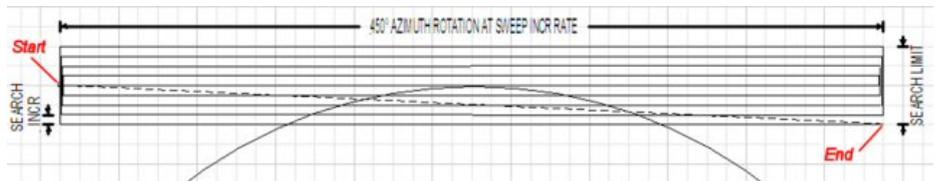
A Sky Search pattern is a hemispheric pattern. Its behavior is different, depending on whether or not you have a gyrocompass input.

**No Gyro** — If you do not have a gyrocompass, then set the gyro type to **No Gyro**. In this mode, the antenna is driven to the calculated elevation angle and then drives azimuth clockwise by 450 degrees, steps the elevation up and drives the azimuth counter clockwise by 450 degrees. It continues to alternately step the elevation up and down and drives azimuth alternately clockwise and counter clockwise by 450 degrees. Because of this large search area, acquiring the satellite takes longer than it

would have, if you had a valid heading input. If the end of the search pattern is reached, the **LMXP** moves the antenna back to the start point shown in the graphic below.

**With Gyro** — If you have a gyrocompass, then select the appropriate **Gyro Type** for your gyrocompass. In this mode, the antenna is driven to the calculated elevation angle and then drives azimuth clockwise by 360 degrees, and then steps the elevation up and drives the azimuth counterclockwise by 360 degrees. The antenna continues to alternately step the elevation up and down, and drive the azimuth alternately clockwise and counter clockwise by **360** degrees. Even though this is a large search area, acquiring the satellite takes less time than it would have without a gyrocompass, because you have valid heading input. If the end of the search pattern is reached, the **LMXP** moves the antenna back to the start point shown in the graphic below. If the signal is found, *and* network lock is achieved, at any position within the search pattern, then the **LMXP** terminates the search and goes into Tracking mode.

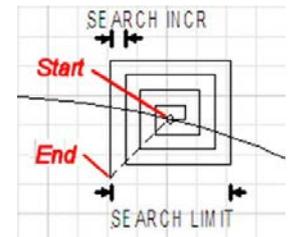
If the signal is not found within the search pattern, then the **LMXP** waits SEARCH DELAY seconds and then repeats the search pattern. This cycle repeats until the desired satellite signal is found or the user intervenes,



- **Spiral (Box) Search Pattern (Default)**

The default search pattern in the **LMXP** is a spiral pattern.

When a search begins, the antenna searches up in azimuth by one search increment, searches up in elevation by one search increment, searches down in azimuth by two search increments, search down in elevation by two Search increments, until the Search Limit is reached. When the search limit is reached, the **LMXP** moves the antenna to the calculated Azimuth and Elevation position of the desired satellite (start point).



If the signal is found, *and* network lock is achieved, at any position within the search pattern, then the **LMXP** terminates the search and goes into Tracking mode.

If the signal is not found within the search pattern, then the **LMXP** waits SEARCH DELAY seconds and then repeats the search pattern. This cycle repeats until the desired satellite signal is found or the user intervenes.

- **RF Frequency**

Enter the RF frequency of the signal you want the tracking receiver to use to track the new satellite. You must enter the **RF Frequency** in MHz, so a tracking frequency of **12.224** (twelve point two-two-four) GHz is entered as 12224 MHz.

**NOTE:** The **Valid RF frequency range** for the selected **LNB Type** is displayed to the right of the **RF Frequency** input field. This shows the acceptable range of **RF Frequency** that you can enter for the **LNB Type** that is currently selected.

- **IF Frequency**

This is a read-only list of RF ranges that are based upon your choices of **Rx input** and **LNB Type**. The frequency value entered in **Freq. (RF)** must be within one of these ranges.

To save the new satellite to the list of favorite satellites, click **Save** on the left sidebar. You can save up to 40 favorite satellites.

**5.4. Status > System (System Status page)**

The **System Status** page displays relevant system status information on a single page. The only action that you can perform on this page is to click **View** in the **System** subsection. **View** appears only if the **Errors** LED is solid red. If you click **View**, then the reported system errors page appears, which contains more information about the errors.

The screenshot shows the 'System Status' page for Sea Tel COBHAM. At the top, there's a header with the company logo, a compass rose showing heading 350, and various signal parameters: Sat. Lon: 110.0° W, Azimuth: 161°, Elevation: 45°, Relative: 170.9°, Lpolang: 75.1°. On the right, there are status indicators for Tracking (green), Active (green), Lock: ON (green), NID: 4102, Errors: None (red), and Signal: 1138 (with a 725 dBm signal strength indicator).

The main content area is titled 'System Status' and is divided into several sections:

- System:** Includes 'Errors: None' and 'Search Delay: 30 seconds'. There is a 'View' button next to the errors status.
- Satellite:** Displays details for '110W DVB-SQ', including Position (110.0° W), Freq. (IF): 1047.0 MHz, Freq. (RF): 12297.0 MHz, Skew: 0.0, Search Pattern: Spiral, Auto Threshold ON, Offset, and Threshold: 725.
- Front Panel LEDs:** Shows indicators for Error (red), Target (red), Link (green), Initializing (red), Search (red), Status (red), Power (green), Tracking (green), and Block (red).
- Ship:** Shows Latitude: 38.006870° N and Longitude: 122.043602° W.
- Antenna:** Shows Cross Level: 0.1° and Pol. Angle: 75.1°.

On the left side, there is a navigation menu with options like Tracking On/Off, Satellite Search, Configuration, Status (selected), System, Tools, Logs, and Others. A 'Save' button is also present.

At the bottom, the footer contains 'Version Number: TVRO (Build:222958)', 'Copyright © 2015 Sea Tel', and the Sea Tel logo.

- **System:** This section contains the **Search Delay** display, **Sat. Reference** display, and the **Errors** status. **NOTE:** If the errors status indicator is solid red, then click **View** to go to the reported system errors page.
- **Satellite:** This section consists of a read-only display of the current target satellite settings.
- **Front Panel LEDs:** This section consists of a mirror image of the LEDs on the front plate of the **LMXP**.
- **Ship:** This section consists of a read-only display of the current location of the ship, as provided by the integrated GPS.
- **Antenna:** This section is a read-only display of the current **Cross Level** and **Polarization Angle (Polang or Lpolang)** of the antenna signal.

### 5.5. Tools > Position Antenna (Position Antenna page)

The **Position Antenna** page enables you to edit the values of the current target satellite parameters, and to control the angular positions and operational states manually.

**CAUTION:** Do not change any of the values on this page unless you have received the appropriate training, or if your Dealer asks you to make them.

**Sea Tel COBHAM**

Login: User Logout  
Ship Name: TVRO HEADING 350

Sat. Lon: 110.0° W  
Azimuth: 160.8°  
Elevation: 45°  
Relative: 170.8°  
Lpolang: 75.1°

Status:  Tracking  
 Active  
Lock:  ON  
NID: 4102  
Errors:  None  
Signal: 1138

Tracking On  
Tracking Off

Satellite Search

Configuration

Status

System

Tools

Position Antenna

Logs

Others

Save

### Position Antenna

Reflector: Primary Reflector

**Satellite**

Longitude: 110.0 °

Skew: 0.0 °

Baudrate: 20000

NID: 4102

FEC: 7/8

Modulation: DVB-S (QPSK)

Rx Input: B - Low Horiz/LHCP/09/18V

LNB Type: DIRECTV HD Circular: 18.05 GHz(Ka)/11.25 GHz(Ku)

Search Patt.: Spiral

Freq. (RF): 12297.0 MHz

Freq. (IF): 1047.0 MHz

**Threshold**

Auto Mode:  On  Off

Auto Offset: 100

Threshold: 725

Manual Threshold: 075

**Arbitrator Test**

Blocked  Unblocked

Valid RF: 10700 - 11900 (Low)  
11550 - 12750 (High)

Auto Trim Add Satellite Re-target

**Advanced Operations**

Antenna Name: [Enter Description]

Antenna Model: ST120 TV

**Polang Target**

Polang: 75.1 °

**Position**

EL up

EL dn

AZ dn

AZ up

**Targets**

EL: 45.1 °

AZ: 160.8 °

CL: 0 °

Version Number: TVRO (Build:222958) Copyright © 2015 Sea Tel

#### 5.5.1. Satellite

Enter or change the values of the parameters for the new satellite.

- Longitude  
Enter the longitude position of new, or an existing, satellite.
- E/W  
Use the dropdown list to select the East or West longitude position of the satellite.
- Skew  
Enter a known skew for the new satellite. If the satellite is not skewed, then enter zero. The skew must be entered in degrees and tenths of degrees.
- Baud rate  
Enter the baud rate, or symbol rate, of the signal.
- NID (Network ID)  
Enter the decimal format Network ID (NID) of the signal that you will track.
- FEC (Forward Error Correction)  
From the dropdown list, select the **F**orward **E**rror **C**orrection rate of the tracking signal. This is the signal to error correction rate.

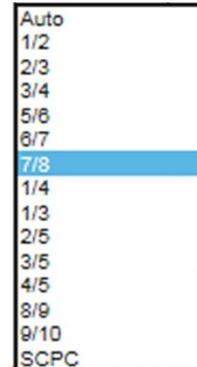
If you select **Auto**, then the system automatically locks on the best value, and updates it as conditions change. Auto should be used when **FEC** rate of the signal you want to track is not published.

If published, select the appropriate **fractional** fixed value. The fraction represents the amount of data vs the amount of error checking.

The larger the fraction, the higher the amount of data (and the lower the amount of error checking) per second is. This means that a lot of data gets through every second because so little error checking is being done. So  $\frac{9}{10}$  FEC rate provides  $\frac{9}{10}$  bits of data and only  $\frac{1}{10}$  bits of error checking.

The smaller the fraction, the lower the amount of data (and the higher the amount of error checking) per second is. This means that less data gets through every second because more error checking is being done. So  $\frac{1}{2}$  FEC rate provides  $\frac{1}{2}$  bits of data and  $\frac{1}{2}$  bits of error checking.

**SCPC** — For the **Sea Tel** TV & TVHD antennas, do not select **SCPC**.



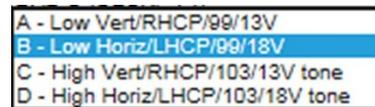
- Modulation

From the dropdown list, select the type of modulation that the tracking signal uses.



- RX Input

From the dropdown list, select the Band and Polarity of the **LNB** output, which is routed to the tracking receiver. This *must* be the Band and Polarity, which contains the desired tracking frequency/signal. **Example:** If the signal you want to track is LHCP (or Horizontal) at 12.224 GHz (high band), then select “D –High Horiz/LHCP/103/18Vtone” from the dropdown list.



- LNB Type (LNB Mode)

The TVRO LNB can operate in a variety of modes and frequency bands. This setting selects the Local Oscillator frequency (therefore the RF frequency band), linear or circular polarization and whether the **LNB** will output dual or quad IF outputs.



This selection sets the **LNB** into the listed modes (each emulating an individual **LNB** for the satellite and service. This *must* be set correctly for the desired satellite/service.

**NOTE:** The **Valid RF frequency range** for the selected **LNB Type** is displayed to the right of the RF frequency input field. This displays the acceptable range of RF frequencies that you can enter.

- Search Pattern

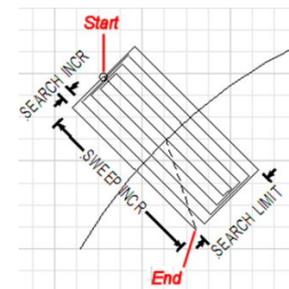
To choose the search pattern that you want the antenna to perform when searching for a satellite, select the search pattern from the dropdown list.



Please note that the **DEFAULT** search pattern is the **Spiral** search.

- Inclined Orbit Search Pattern

Some older satellites are in an inclined geosynchronous orbit, to save some of the fuel that would be used to keep them exactly positioned over the Equator. The satellite remains in a geosynchronous orbit, but is not geostationary. From a fixed observation point on Earth, the satellite appears to trace out a figure-eight with its lobes oriented northward and southward, once every twenty-four hours. The north-south excursions of the satellite may be too far from the center point to use the default Spiral (Box) Search Pattern to find the satellite throughout a 24-hour period. Therefore, an Inclined Orbit Search Pattern often is used for these satellites.



When a search begins, the antenna goes to a calculated position that is half of SWEEP INCR degrees above, and perpendicular to, the satellite arc (along the same angle as polarization for the satellite). This position is the Start of the search pattern in the graphic to the right. Then the antenna drives down along the polarization angle by

SWEEP INCR degrees, step one SEARCH INCREMENT to the right (parallel to the satellite arc), search up along the polarization angle SWEEP INCR degrees, step two SEARCH INCREMENTS to the left, search down, expanding out in the search pattern until the Search Limit is reached. Then the **LMXP** retargets the antenna to the calculated Azimuth and Elevation point.

If the desired signal *is found and* network lock is achieved at this position, or anywhere within the search pattern, the **LMXP** terminates the search and goes into Tracking mode. If the desired signal *is not found*, then the **LMXP** waits for the SEARCH DELAY, then targets the antenna to the start point shown in the figure to the right and begin the search pattern again. This cycle repeats until the desired satellite signal is found or the user intervenes.

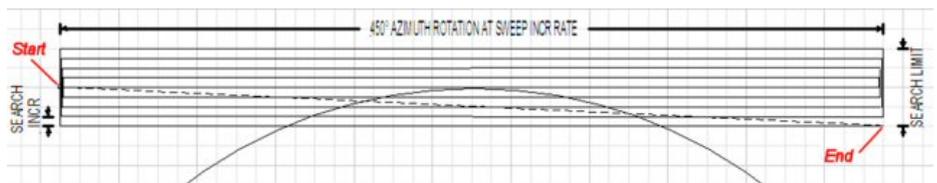
- Sky Search Pattern

A Sky Search pattern is a hemispheric pattern. Its behavior is different, depending on whether or not you have a gyrocompass input.

**No Gyro** — If you do not have a gyrocompass, then set the gyro type to **No Gyro**. In this mode, the antenna is driven to the calculated elevation angle and then drives azimuth clockwise by 450 degrees, steps the elevation up and drives the azimuth counter clockwise by 450 degrees. It continues to alternately step the elevation up and down and drives azimuth alternately clockwise and counter clockwise by 450 degrees. Because of this large search area, acquiring the satellite takes longer than it would have, if you had a valid heading input. If the end of the search pattern is reached, the **LMXP** moves the antenna back to the start point shown in the graphic below.

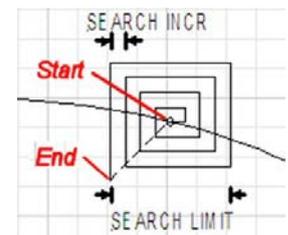
**With Gyro** — If you have a gyrocompass, then select the appropriate **Gyro Type** for your gyrocompass. In this mode, the antenna is driven to the calculated elevation angle and then drives azimuth clockwise by 360 degrees, and then steps the elevation up and drives the azimuth counterclockwise by 360 degrees. The antenna continues to alternately step the elevation up and down, and drive the azimuth alternately clockwise and counter clockwise by **360** degrees. Even though this is a large search area, acquiring the satellite takes less time than it would have without a gyrocompass, because you have valid heading input. If the end of the search pattern is reached, the **LMXP** moves the antenna back to the start point shown in the graphic below. If the signal is found, *and* network lock is achieved, at any position within the search pattern, then the **LMXP** terminates the search and goes into Tracking mode.

If the signal is not found within the search pattern, then the **LMXP** waits SEARCH DELAY seconds and then repeats the search pattern. This cycle repeats until the desired satellite signal is found or the user intervenes,



- Spiral (Box) Search Pattern (Default)

The default search pattern in the **LMXP** is a spiral pattern. When a search begins, the antenna searches up in azimuth by one search increment, searches up in elevation by one search increment, searches down in azimuth by two search increments, search down in elevation by two Search increments., until the Search Limit is reached. When the search limit is reached, the **LMXP** moves the antenna to the calculated Azimuth and Elevation position of the desired satellite (start point).



If the signal is found, *and* network lock is achieved, at any position within the search pattern, then the **LMXP** terminates the search and goes into Tracking mode.

If the signal is not found within the search pattern, then the **LMXP** waits SEARCH DELAY seconds and then repeats the search pattern. This cycle repeats until the desired satellite signal is found or the user intervenes.

- **RF Frequency**  
Enter the RF frequency of the signal you want the tracking receiver to use to track the new satellite. You must enter the **RF Frequency** in MHz, so a tracking frequency of **12.224** (twelve point two-two-four) GHz is entered as 12224 MHz.  
**NOTE:** The **Valid RF frequency range** for the selected **LNB Type** is displayed to the right of the **RF Frequency** input field. This shows the acceptable range of **RF Frequency** that you can enter for the **LNB Type** that is currently selected.
  - **IF Frequency**  
The system calculates the **IF Frequency** from both the **RF Frequency** and the **LNB Type** that you entered. This is a read only display.
  - **Add Satellite**  
After you enter all of the information for a specific satellite, then you can use the **Position** graphic to find the satellite manually. Turn tracking **ON** (at the top of the left side bar) and verify that you found the correct satellite.  
Verify that the signal from the satellite is maximized at the receiver. You must make these verifications every time that you add a new satellite.  
  
Click **Add Satellite** to add the new satellite to the favorite satellites list. A dialogue box opens, so that you can enter the new **Satellite Name**.
  - **Auto Trim**  
If you previously trimmed the antenna to optimize targeting, then you do not need to do it again.  
If you have *not* trimmed the antenna to optimize targeting, then click **Auto Trim**.
  - **Re-Target**  
To retarget the satellite, click **Re-Target**. This is a good way to verify that the trims on the antenna are set correctly, and that the antenna points to, or very near, the targeted satellite.
- To save the new satellite to the list of favorites satellites, click **Save** on the left sidebar. You can save a maximum of 40 favorite satellites.

### 5.5.2. Threshold Section

The system uses the **Threshold** parameters to calculate the threshold displayed in the signal bar graph in the banner and system. Enter the values of the **Threshold** parameters.

#### 5.5.2.1. Auto Mode

View or enter the threshold **Auto Mode**. For normal operation, it should always be **ON**.

#### 5.5.2.2. Auto Offset

View or enter the threshold **Auto Offset**. It seldom is changed from the default value. However, if you do want to optimize the **Auto Offset**, then:

1. Record the peak "ON Satellite" **AGC** value that is displayed in the Signal bar graph of the banner.
2. Turn Tracking **OFF**, and use the **UP** arrow on the Position graphic below to move the antenna **OFF** satellite.
3. Read the "OFF Satellite" **AGC** value.
4. Subtract the **OFF** Satellite **AGC** from the peak **ON** Satellite **AGC** to determine the difference in signal between **ON** satellite and **OFF** satellite.
5. Divide the difference value in half.
6. Enter that value in the **Auto Offset** field.
7. Use the **DOWN** arrow to return to the **ON** satellite state.
8. Turn **Tracking** back **ON**.

#### 5.5.2.3. Threshold

View the current **Threshold** value in the **Threshold** field.

#### 5.5.2.4. **Manual Threshold**

View or enter a **Manual Threshold** value in the **Manual Threshold** field. Unless it is absolutely necessary, do not set or change the value of the **Manual Threshold**. If you do, then the system cannot automatically adjust the **Threshold** value as the atmosphere changes, for example, rain, snow, clouds, etc. occur.

#### 5.5.3. **Arbitrator Test Section**

The advantage of a dual antenna system is that it helps reduce the time during which the ship will be without services due to an antenna being “blocked”. This configuration is especially useful if a large structure on the ship blocks a single antenna. One antenna will be **active** while the other is standing by and they are installed in such a way that they will never both be blocked at the same time. Because each antenna has its own **LMXP**, the arbitrator automatically switches between antennas as needed. When the **active** antenna becomes **blocked** the other antenna will take over supplying signal to the below decks equipment and distribution.

The arbitrator test enables you to simulate a blocked condition on either of the antennas. To test the arbitrator, perform the following steps:

1. Identify the **active** antenna.
2. Log into both **LMXPs** and select the **Position Antenna** page on each.
3. On the active antenna **LMXP** click **Blocked**, and the arbitrator should switch services to the other (standby) antenna, making it the active antenna.
4. On the same **LMXP** click **Unblocked**, and the arbitrator will NOT switch services.
5. On the other **LMXP** (now the active antenna) click **Blocked**, and the arbitrator should switch services to the other (standby) antenna, making it again the active antenna.
6. On the same **LMXP** click **Unblocked**, and the arbitrator will NOT switch services.

**CAUTION:** This is only a test mode. For normal operation, assure that both **LMXPs** are **Unblocked**.

#### 5.5.4. **Advanced Operations Section**

##### 5.5.4.1. **Antenna Name**

View the **Antenna Name**, for example, “Port Antenna”.

##### 5.5.4.2. **Antenna Model**

View the **Model** of the system. It can be changed in the Profile, which only is accessible to a Dealer.

##### 5.5.4.3. **Polang Target**

View or enter the current polarization angle target (**Polang Target**) value for the current satellite. Do not change the value of the **Polang Target** unless you are testing the feed polarity drive.

##### 5.5.4.4. **Position**

Use the **UP**, **DOWN**, **LEFT**, and **RIGHT** arrows to move the dish by small increments. Each click on an arrow moves the dish 0.3 degrees. Usually, you only change these values when you are performing a Four Quadrant Tracking Test, or when you are checking **ON** satellite / **OFF** satellite signal levels. To move the dish by larger increments, it is faster to enter new values of **AZ** and **EL** in the appropriate **Targets** fields.

##### 5.5.4.5. **Targets**

For larger antenna movements, enter values for **EL**, **AZ**, and **CL**.

5.6. **Logs > Activity (View System Logs page)**

The **View System Logs** page enables you to view and sort (by column) the last 20 system log entries.

**Sea Tel COBHAM**

Login: User locour  
Ship Name: TVRO HEADING 350

Sat. Lon: 110.0° W  
Azimuth: 161°  
Elevation: 44.1°  
Relative: 170.9°  
Lpolang: 75.1°

Status:  Tracking  
 Active  
Lock:  ON  
NID: 4102  
Errors:  None  
Signal: 1138

**View System Logs**

Tracking On  
 Tracking Off

- Satellite Search
- Configuration
- Status
- Tools
- Logs**
- Activity
- Others

Save

| Date                    | Severity    | Source | Error | Brief Summary  |
|-------------------------|-------------|--------|-------|--|
| 2015-06-01 19:33:43.067 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.763733%, Avg. Dest. CRCER 0.328223%, Avg. Src. CRCER 15.411532% |
| 2015-06-01 19:32:18.547 | INFORMATION | MXP    | 1031  | AGC Below Threshold: OFF   |
| 2015-06-01 19:31:57.927 | INFORMATION | MXP    | 1031  | AGC Below Threshold: ON  |
| 2015-06-01 19:30:05.077 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.438551%   |
| 2015-06-01 19:28:43.617 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.762595%, Avg. Dest. CRCER 0.316570%, Avg. Src. CRCER 17.412415% |
| 2015-06-01 19:25:05.627 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.418299%   |
| 2015-06-01 19:23:42.167 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.765423%, Avg. Dest. CRCER 0.420187%, Avg. Src. CRCER 15.557932% |
| 2015-06-01 19:20:04.147 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.431274%   |
| 2015-06-01 19:18:42.717 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.752470%, Avg. Dest. CRCER 0.276418%, Avg. Src. CRCER 16.620750% |
| 2015-06-01 19:15:04.697 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.411133%   |
| 2015-06-01 19:13:41.257 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.754552%, Avg. Dest. CRCER 0.351058%, Avg. Src. CRCER 15.267811% |
| 2015-06-01 19:10:03.247 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.401468%   |
| 2015-06-01 19:08:41.807 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.751608%, Avg. Dest. CRCER 0.330436%, Avg. Src. CRCER 16.014750% |
| 2015-06-01 19:05:03.867 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.397518%   |
| 2015-06-01 19:03:40.347 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.745723%, Avg. Dest. CRCER 0.335145%, Avg. Src. CRCER 14.476485% |
| 2015-06-01 19:00:02.367 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.400131%   |
| 2015-06-01 18:58:40.897 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.752387%, Avg. Dest. CRCER 0.321281%, Avg. Src. CRCER 15.050334% |
| 2015-06-01 18:55:02.907 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.390860%   |
| 2015-06-01 18:53:39.447 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.772049%, Avg. Dest. CRCER 0.303222%, Avg. Src. CRCER 14.313969% |
| 2015-06-01 18:50:01.457 | NOTICE      | ICU    | 0     | EOC Avg. BER 3.389569%   |
| 2015-06-01 18:48:39.997 | NOTICE      | MXP    | 0     | EOC Avg. BER 3.766191%, Avg. Dest. CRCER 0.348640%, Avg. Src. CRCER 14.758588% |

Version Number: TVRO (Build:222958) Copyright © 2015 Sea Tel

To sort the table up or down by column, click the small arrows (triangles pointing up and down) in the header columns. The column header with a *single* arrow indicates that the table was sorted by that column, and the direction of the arrow indicates whether it was sorted up or down.

### 5.7. Others > Change Password

Use this page to change your password. You entered your **User Id** when you logged into the system. Contact your Dealer if you want to change your **User Id**.

The screenshot shows the Sea Tel COBHAM web interface. At the top, there is a navigation bar with the following information:

- Sea Tel COBHAM** logo and a compass rose showing a heading of 350.
- Login:** User *Logout*
- Ship Name:** TVRO HEADING 350
- Sat. Lon:** 110.0° W
- Azimuth:** 160.7°
- Elevation:** 44°
- Relative:** 170.8°
- Lpolang:** 75.1°
- Status:** Tracking (Active), Lock: ON, NID: 4102, Errors: None, Signal: 1139

The left sidebar contains the following menu items:

- Tracking On (selected)
- Tracking Off
- Satellite Search
- Configuration
- Status
- Tools
- Logs
- Activity
- Others
- Change Password
- Help

The main content area is titled **Change User's Password** and contains the following form:

**User Id:** User

**Old Password:** \_\_\_\_\_

**New Password:** \_\_\_\_\_

**Confirm Password:** \_\_\_\_\_

**Update+Save**

At the bottom of the sidebar, there is a **Save** button. The footer of the page displays: Version Number: TVRO (Build:222958) Copyright © 2015 Sea Tel

To change your password:

1. Enter your **Old Password** (the one that you are currently uses).
3. Enter your **New Password** (the one that you want to use in the future).
4. Enter your **New Password** again (the one that you want to use in the future) to confirm your new password.
5. Click **Update+Save**.

Use your new password in the future.

### 5.8. Others > Help

The **Help** page provides some general information about the operational capabilities and restrictions of the LMXP.

The **Help** page contains six sections: **Overview**, **Access Permission**, **Browsers**, **Configuration Tips**, **Operation Tips**, and **Tech Contact**. Scroll up or down the page using the scrolling slider at the right hand side of the screen, or use the **Page Up** and **Page Down** keys on the keyboard.

**Sea Tel**  
COBHAM

Set Lon: 110.0° W      Status: Tracking  
Azimuth: 160.9°      Active  
Elevation: 44°      Lock: ON  
Relative: 171°      AID: 4102  
Lpolang: 75.1°      Errors: None  
Signal: 1138

Login: User    Logout  
Ship Name: TVRO HEADING 350

Tracking On  
Tracking Off

- Satellite Search
- Configuration
- Status
- Tools
- Logs
- Activity
- Others

Change Password  
Help  
Save

#### Overview

The Media Exchange Point (MXP) web is the primary interface for configuration, operation, monitoring, management, and maintenance of your antenna. You can do the following with MXP web interface: You can do the following with MXP web interface:

- Configure system parameters
- Backup configurations
- Operate Sea Tel's antenna
- Add and remove satellites
- Edit satellite parameters
- Target, Search, and Track a satellite
- Diagnose communication problems
- View system status reports
- Upgrade firmware
- Lock or unlock the system

It is recommended that new users go through the Help and FAQ pages first. The Help and FAQ pages provide valuable information, including how to use the utility tools, tips for operation and configuration, an explanation of technical terms, etc.

#### Access Permission

You may not be able to see some pages depending on your user type. A user may be able to view and access all or part of the menu on left-hand side after logging in successfully, depending on what has been granted to the user.

A user who has been granted a role of Dealer has full access to all menu items, including configuration, operations, system information query and firmware upgrade.

For a user who has been granted a role of User, the user only has partial access to menu items.

Contact your dealer if you need to access a particular page or menu which you do not have access to.

#### Browsers

MXP is tested under IE (ver 9.0 or above), Firefox (ver 5.0 or above), Chrome (ver 13.0 or above) and Safari (ver 5.1 and above). It may or may not work with other browsers.

The monitor's lowest resolution supported is 1024x768. For optimal view, a resolution of 1280x1024 is recommended.

If your monitor only has a maximum vertical resolution of 768, it is recommended to uncheck Menu and Favorite bars from your IE browser to make maximum working area available. Take similar actions for other browsers. For instance, uncheck Menu bar and Tabs on top in Firefox, and hide Menu, Bookmark, and Tab bars in Safari. For a shortcut, hit the F11 key to get maximum working space. Once done with your work, hit F11 again to restore the browser's status.

Make sure that cookies and JavaScript are enabled. Also make sure that Use SSL 3.0 is checked and Use TLS 1.2 is unchecked (see FAQ 10: How to enable SSL 3.0?)

If the interface does not appear to be displaying and updating values properly, hit F5 to refresh the page. Now, the page should appear normal. If F5 does not resolve the problem, simply logout, close the browser, and re-start it. Once you have logged in, you should see the normal appearance of web pages.

The MXP web uses your computer resources heavily to perform its tasks. It is strongly recommended that you close other applications which are running on your computer and keep one browser and one instance open only.

It is also strongly recommended to logout and exit your browser once your job is done.

It is recommended to reboot your computer periodically. It is good practice to reboot your computer once or twice per week.

To access MXP web via https, make sure that SSL3 is enabled.

Known issues:

- Compatibility view of IE may cause problems with images, background color or graphs. Therefore, users are not encouraged to use browser's compatibility view
- Chrome typically has much better performance than other browsers when working with https

#### Configuration Tips

- Add a satellite

If you do not see the dropdown list of satellite in the pages of Auto Search or Satellite configuration, it is likely that no satellite was previously added. To add one or more satellites, click Satellite on left-hand side menu, and click the Add Satellite button to start adding a satellite.

- Hardware profile

From the profile page, you can select a proper hardware profile to configure your antenna with a specific model. Once a profile is active, you are able to see the parameters of the profile under the advanced setting section in the system and reflector configuration pages.

- Number of reflectors (\* not implemented)

Parameter of the number of reflectors has a direct impact on the radio buttons of SECONDARY on the reflector, satellite, and position antenna pages. If the number of reflectors is 1, the radio button of SECONDARY is disabled.

- Satellite longitude

Once a satellite is selected from the dropdown list, the satellite longitude will show up in the top-center of the header. You can customize a satellite's name on the Satellite configuration page.

- Ship name

## 6. Troubleshooting For Users

Use the information in this chapter to assist with simple troubleshooting of your **Sea Tel** TVRO antenna and control unit. *Contact your Dealer for further troubleshooting or assistance in resolving problems relating to **Error** messages or other problems that you cannot resolve.*

### 6.1. Check that the LMXP Powers up

As the **LMXP** powers up, the LEDs on the front panel light up to indicate progress. The **LMXP** supplies power to the ADE (antenna and pedestal). (Refer to the *Quick Start* chapter for detailed instructions about starting up.)

### 6.2. Check that other Equipment Powers up

Apply power to the BDE.

Allow 3-4 minutes for the antenna to initialize and search for the satellite. After acquiring the satellite, it may take another few minutes for the receivers to lock and start providing your television services.

### 6.3. Check the Front Panel LED States

There are nine LEDs on the front panel. Each LED can have several different colors, depending on their state. The Front Panel LEDs have the following priority, from highest to lowest, namely, Solid Red, Flashing Red, Solid Yellow, Flashing Yellow, Solid Green, and Flashing Green.

The name, states, and meanings of the front panel LEDs are in the following table.

| Name                         | LED States     | Purpose   |
|------------------------------|----------------|---|
| <b>ERROR</b>                 | Off            | No errors have occurred.  |
|                              | Flashing RED   | One, <i>or more</i> , discrete system errors have occurred.   |
|                              | Solid RED      | One, <i>or more</i> , discrete system errors have occurred.   |
|                              | Flashing AMBER | One, <i>or more</i> , discrete system errors have occurred.   |
|                              | Solid AMBER    | One, <i>or more</i> , discrete system errors have occurred.   |
| <b>INIT (Initialization)</b> | Off            | The Initialization state is not active. The antenna has completed initializing and is ready for normal operation.   |
|                              | Solid GREEN    | System initialization (start-up) is in progress.  |
|                              | Flashing AMBER | A software update is in progress, or the system (ADE-BDE) is synchronizing or in-service / out-of-service testing is in progress.   |
| <b>TARGET</b>                | Off            | The antenna has completed targeting and is ready for normal operation.  |
|                              | Solid GREEN    | The antenna is targeting (driving) to the specified Azimuth and Elevation position.   |
| <b>SEARCH (Searching)</b>    | Off            | Search state is not active. The system is not searching for a satellite.  |
|                              | Solid GREEN    | Satellite search state is in progress. The system is targeting or driving to the specified Azimuth and Elevation position. The system is actively searching for the satellite signal. |

| Name                    | LED States     | Purpose  |
|-------------------------|----------------|--|
| <b>TRACK (Tracking)</b> | Off            | Satellite Tracking state is not active.  |
|                         | Solid GREEN    | System is actively in the tracking state with AGC above threshold. The system identified, and is actively tracking, the desired satellite to optimize the signal level ( <b>AGC</b> ).                       |
| <b>BLOCK</b>            | Off            | Either the antenna is <i>not</i> within a <i>defined</i> blockage zone, or <i>no</i> blockage zones were defined. The antenna still could be blocked by something outside of a <i>defined</i> blockage zone. |
|                         | Solid RED      | The system is within a defined blockage zone. Therefore, you will not have a satellite signal until the antenna exits the blockage zone.   |
| <b>LINK</b>             | Solid RED      | The (BDE) <b>LMXP</b> to (ADE) TICU communications link is down. This results in the loss of communications with the antenna, and therefore, loss of antenna control.  |
|                         | Solid GREEN    | The (BDE) <b>LMXP</b> to (ADE) TICU communications link is active. The system has good communications with the antenna (therefore good antenna control). This is the normal state for system operation.      |
| <b>STATUS</b>           | Off            | The status is normal.  |
|                         | Solid RED      | The AGC is below threshold. The satellite signal is low or lost.   |
| <b>POWER</b>            | Off            | There is no power to the system. Either the Power switch is OFF, or the power is interrupted by a fault in the power supply to the Power switch.   |
|                         | Flashing GREEN | The <b>LMXP</b> is in the process of booting up.   |
|                         | Solid GREEN    | <b>LMXP</b> boot sequence is complete, and the system power is ON (normal).  |

If Errors are found (The Errors LED is red.), and if **View** appears following the red LED, then click **View** to see the current uncleared color-coded errors in the system.

If you cannot resolve the errors, contact your Dealer for help.

### 6.4. Check for Blockage

The superstructure of the ship, cranes, buildings, trees, or other obstructions, which are between the satellite and the **Sea Tel** antenna, can block the signal from the satellite.

Blockage zones are represented on the compass rose as translucent red wedges. The display of the blockage zones can be toggled **ON** or **OFF** by clicking on the compass rose and pressing **Shift+B**. Normally, the Blockage Zones are defined only for permanent objects on the ship, and not for objects elsewhere, such as on-shore buildings and cranes, other ships, and so forth. Only the Dealer can add or delete Blockage Zones.

To check for blockage, perform the following steps:

1. Verify that the latitude, longitude and heading values in the **LMXP** are correct:
2. Retarget the satellite and turn Tracking **OFF** before the antenna begins a search.
3. Determine the heading of the ship so that you know where the bow of the ship is pointed, and where North is.
4. Determine the true azimuth-pointing angle of the antenna to the desired satellite.
5. Determine the relative position of the antenna, or look inside the radome to determine where the antenna is pointed.
6. Determine the elevation angle of the antenna, or look inside the radome to determine the elevation of the antenna.
7. Stand behind the radome facing the back of the reflector.
8. Look past the radome, to see where the antenna is pointed (in azimuth and in elevation).

9. Is it pointed toward the equator? (If you are in the northern hemisphere, the satellite is pointing towards the south. If you are in the southern hemisphere, the satellite is pointing towards the north.)
10. Is any structure on or off the ship in the path between the antenna and the satellite, such as, the superstructure, a mast, building, tower, crane, or mountain? *If so, the antenna probably is blocked. If not, there may be a failure that prevents the antenna from receiving the satellite signal.*

If the antenna is blocked, then you cannot receive the satellite signal until the ship moves, or at least turns. You may be able to target a different unblocked satellite, if you have arranged for services from that satellite.

If the antenna appears to be pointing towards the satellite, the sky is clear, and there are no obstructions, then contact your Dealer for assistance.

### 6.5. Check for Errors

Check for errors. If the **Errors** status indicator in the banner at the top of a page is red, then one or more errors have occurred and been detected by the system. Click **View** on the right of the LED to display the errors. If you call for support, then the support person will want to know exactly what error messages are/were displayed.

**NOTE:** The Front Panel LEDs indicate the error priority, from highest to lowest: Solid Red, Flashing Red, Solid Yellow, Flashing Yellow, Solid Green, and Flashing Green.

**NOTE:** An unlatched error can automatically clear itself, if the system corrects the condition that caused the error. However, only a user can clear a latched error.

The following table lists all of the possible displayed error codes. (It is possible that other errors might occur, but they are not displayed, and are not in this list.)

| Error Code | Description                                  | Type    | Front Panel LED |          |        | Latched or Unlatched |
|------------|--|---------|-----------------|----------|--------|----------------------|
|            |  |         | Type            | State    | Color  |                      |
| 1001       | Stability Limit                              | Error   | Error           | Solid    | Red    | Unlatched            |
| 1002       | Az Reference Error (Encoder Read)            | Error   | Error           | Solid    | Red    | Latched              |
| 1003       | AGC Below Noise Threshold                    | Error   | Error           | Solid    | Red    | Unlatched            |
| 1004       | Software Update Did not Load Properly        | Warning | Error           | Solid    | Red    | Latched              |
| 1005       | Comm Error w/ Motor Driver                   | Error   | Error           | Solid    | Red    | Latched              |
| 1006       | Motor Driver Fault Detected                  | Error   | Error           | Solid    | Red    | Latched              |
| 1007       | DishScan Disabled                            | Error   | Error           | Solid    | Red    | Unlatched            |
| 1008       | AZ Reference Error (Home Flag Read)          | Error   | Error           | Solid    | Red    | Latched              |
| 1009       | Tilt Sensor Error                            | Error   | Error           | Solid    | Red    | Unlatched            |
| 1010       | Rate Sensor Error                            | Error   | Error           | Solid    | Red    | Unlatched            |
| 1011       | Over Speed Error                             | Error   | Error           | Solid    | Red    | Latched              |
| 1012       | POST Failure                                 | Debug   | Error           | Solid    | Red    | Latched              |
| 1013       | OS Errors                                    | Warning | Error           | Solid    | Red    | Unlatched            |
| 1014       | Flash Failure                                | Error   | Error           | Solid    | Red    | Latched              |
| 1015       | MXP/ICU Link Error                           | Warning | Error           | Solid    | Red    | Unlatched            |
| 1016       | Az Servo Limit                               | Error   | Error           | Flashing | Red    | Latched              |
| 1017       | LV Servo Limit                               | Error   | Error           | Flashing | Red    | Latched              |
| 1018       | CL Servo Limit                               | Error   | Error           | Flashing | Red    | Latched              |
| 1019       | No GPS String                                | Error   | Error           | Flashing | Red    | Unlatched            |
| 1020       | No Profile Set in PCU                        | Error   | Error           | Flashing | Red    | Latched              |
| 1021       | NMEA HDD Heading Not Received for 10 Seconds | Error   | Error           | Solid    | Red    | Latched              |
| 1022       | NMEA HDG Heading Not Received for 10 Seconds | Error   | Error           | Solid    | Red    | Latched              |
| 1023       | NMEA HDM Heading Not Received for 10 Seconds | Error   | Error           | Solid    | Red    | Latched              |
| 1024       | NMEA HDT Heading Not Received for 10 Seconds | Error   | Error           | Solid    | Red    | Latched              |
| 1025       | GPS String Invalid                           | Warning | Error           | Flashing | Yellow | Unlatched            |
| 1026       | Antenna Not Balanced                         | Warning | Error           | Flashing | Red    | Unlatched            |
| 1027       | Satellite Out of Range                       | Info    | Error           | Solid    | Red    | Unlatched            |

| Error Code | Description  | Type    | Front Panel LED |          |        | Latched or Unlatched |
|------------|--|---------|-----------------|----------|--------|----------------------|
|            |  |         | Type            | State    | Color  |                      |
| 1028       | Temp In Radome Above/Below Operating Specs           | Warning | Error           | Solid    | Yellow | Unlatched            |
| 1029       | Antenna about to enter a Programmed Block Zone       | Notice  | Error           | Flashing | Yellow | Unlatched            |
| 1030       | Antenna Within a Programmed Block Zone               | Notice  | Error           | Solid    | Yellow | Unlatched            |
| 1031       | AGC Below Threshold                                  | Info    | Error           | Solid    | Yellow | Unlatched            |
| 1032       | Latest Parameters Not Saved                          | Notice  | Error           | Flashing | Yellow | Unlatched            |
| 1033       | Software Update In Progress                          | Info    | Initializing    | Flashing | Yellow | Unlatched            |
| 1034       | Block Zone Test/Simulation                           | Info    | Error           | Flashing | Yellow | Unlatched            |
| 1035       | MXP-ICU Sync Timeout                                 | Info    | Error           | Flashing | Yellow | Unlatched            |
| 1036       | Parameter Sync Error                                 | Warning | Error           | Flashing | Red    | Latched              |
| 1037       | Time Sync Error                                      | Warning | Error           | Flashing | Red    | Latched              |
| 1038       | System Serial Number Mismatch                        | Error   | Error           | Solid    | Yellow | Unlatched            |
| 1039       | System Serial Number Invalid                         | Error   | Error           | Solid    | Yellow | Unlatched            |
| 1040       | INI Integrity Error                                  | Warning | Error           | Flashing | Red    | Latched              |
| 1041       | NMEA HDD Received with Bad Checksum                  | Notice  | Error           | Solid    | Yellow | Latched              |
| 1042       | NMEA HDG Received with Bad Checksum                  | Notice  | Error           | Solid    | Yellow | Latched              |
| 1043       | NMEA HDM Received with Bad Checksum                  | Notice  | Error           | Solid    | Yellow | Latched              |
| 1044       | NMEA HDT Received with Bad Checksum                  | Notice  | Error           | Solid    | Yellow | Latched              |
| 1045       | Step by Step Gyro Took Invalid Step Size             | Warning | Error           | Solid    | Yellow | Latched              |
| 1046       | Step by Step Gyro Not Connected Correctly            | Error   | Error           | Solid    | Red    | Latched              |
| 1047       | Step by Step Gyro Requires Initial Heading           | Notice  | Error           | Solid    | Red    | Unlatched            |
| 1048       | 36:1 Synchro Gyro Requires Initial Heading           | Notice  | Error           | Solid    | Red    | Unlatched            |
| 1049       | 90:1 Synchro Gyro Requires Initial Heading           | Notice  | Error           | Solid    | Red    | Unlatched            |
| 1050       | 360:1 Synchro Gyro Requires Initial Heading          | Notice  | Error           | Solid    | Red    | Unlatched            |
| 1051       | 1:1 Synchro Gyro Is Not Properly Connected           | Error   | Error           | Solid    | Red    | Latched              |
| 1052       | 36:1 Synchro Gyro Is Not Properly Connected          | Error   | Error           | Solid    | Red    | Latched              |
| 1053       | 90:1 Synchro Gyro Is Not Properly Connected          | Error   | Error           | Solid    | Red    | Latched              |
| 1054       | 360:1 Synchro Gyro Is Not Properly Connected         | Error   | Error           | Solid    | Red    | Latched              |
| 1055       | Polang skew entry results in target out of range     | Error   | Error           | Flashing | Red    | Latched              |
| 1056       | Motor failed to reach Target                         | Error   | Error           | Solid    | Red    | Latched              |
| 1057       | Motion Platform Failed Initialization, Retrying      | Error   | Error           | Solid    | Red    | Unlatched            |
| 1058       | No Home Flag Detected During Pol Initialization      | Error   | Error           | Solid    | Red    | Latched              |
| 1059       | Multiple Home Flags Detected During Pol Init         | Error   | Error           | Solid    | Red    | Latched              |
| 1060       | Detected Pol Home Flag Sensor Anomaly                | Warning | Error           | Solid    | Yellow | Latched              |
| 1061       | Pol Home Flag Measured Too Wide                      | Error   | Error           | Solid    | Red    | Unlatched            |
| 1062       | Pol Home Flag Found In Wrong Location                | Error   | Error           | Solid    | Red    | Unlatched            |
| 1063       | CM current out of range                              | Error   | Error           | Solid    | Red    | Latched              |
| 1064       | CM Voltage out of range                              | Error   | Error           | Solid    | Red    | Latched              |
| 1065       | BUC current out of range                             | Error   | Error           | Solid    | Red    | Latched              |
| 1066       | BUC Voltage out of range                             | Error   | Error           | Solid    | Red    | Latched              |
| 1067       | Profile changed. Please save and reboot              | Error   | Error           | Solid    | Red    | Latched              |
| 1068       | No Pol Home Flag Detected, Using End Stop Home       | Warning | Error           | Solid    | Yellow | Latched              |
| 1069       | Pol Home Flag In Wrong Location, Using End Stop Home | Warning | Error           | Solid    | Yellow | Latched              |
| 1070       | Pol Home Flag Failed, Using End Stop Home            | Warning | Error           | Solid    | Yellow | Latched              |
| 1071       | Pol Motor Failed                                     | Error   | Error           | Solid    | Red    | Latched              |
| 1072       | Pol Has Been Driven Outside Of Hardware Limit        | Error   | Error           | Solid    | Red    | Latched              |
| 1073       | Pol Failed To Initialize With Encoder                | Error   | Error           | Solid    | Red    | Latched              |

| Error Code | Description                           | Type    | Front Panel LED |          |        | Latched or Unlatched |
|------------|---------------------------------------|---------|-----------------|----------|--------|----------------------|
|            |                                       |         | Type            | State    | Color  |                      |
| 1074       | Running Out Of Service Test           | Error   | Error           | Flashing | Red    | Unlatched            |
| 1075       | Open AMIP Error                       | Warning | Error           | Solid    | Red    | Unlatched            |
| 1086       | Pol Angle Targeting                   | Warning | Error           | Flashing | Yellow | Unlatched            |
| 1087       | Sub Reflector is not properly located | Error   | Error           | Flashing | Red    | Unlatched            |
| 1088       | Pol Polarization Error                | Error   | Error           | Solid    | Red    | Latched              |
| 1089       | Minor Alarm                           | Error   | Error           | Solid    | Red    | Latched              |
| 1090       | Major Alarm                           | Error   | Error           | Solid    | Red    | Latched              |
| 1091       | LNB Communication Error               | Error   | Error           | Solid    | Red    | Latched              |
| 1092       | LNB Configuration Error               | Error   | Error           | Solid    | Red    | Latched              |
| 1093       | Receiver Freq Configuration Error     | Error   | Error           | Solid    | Red    | Unlatched            |
| 1094       | Motors Exceeded Power Limit           | Error   | Error           | Solid    | Red    | Latched              |
| 1095       | Invalid System Profile                | Error   | Error           | Solid    | Red    | Latched              |
| 1096       | Receiver RxInput Configuration Error  | Error   | Error           | Solid    | Red    | Unlatched            |
| 1097       | Receiver Not Initialized              | Error   | Error           | Solid    | Red    | Unlatched            |

**This Page Intentionally Left Blank**

## 7. Glossary of Terms

---

**ACU (Antenna Control Unit)** — The ACU is the below-decks electronic equipment that controls the antenna.

**ADE (Above Decks Equipment)** — The ADE includes the **Sea Tel** antenna, and its fiberglass radome, because they are on a higher deck or mast location outside the ship. Your ADE may include a Base frame, Legs, Braces, and may even have a marine air conditioner.

**AGC (Automatic Gain Control)**

**Antenna** — The antenna is the entire assembly, including the dish (reflector), antenna support structure (but not the pedestal), enclosure (radome), mechanical drive mechanism, etc. The antenna includes an integrated preamplifier, waveguides, and other electronic components that are directly connected to the antenna assembly.

**AZ (Azimuth)** — Clockwise or Counter Clockwise rotation of the antenna

**BDE (Below Decks Equipment)** — The **LMXP**, satellite receivers, television sets and all other distribution and audio/video equipment that is associated with this type of system.

**BLOCK (Blockage)** — The signal from a satellite can be blocked by the superstructure of the ship, cranes, buildings, trees, or other obstructions, which are between the satellite (out in space directly above the equator) and the **Sea Tel** antenna. These obstacles block the signal, preventing it from reaching the antenna.

**bps (Bits Per Second)** — The speed at which a data signal carries information. It usually is expressed in thousands of bits per second (kbps).

**CFE (Customer Furnished Equipment)**

**CL (CROSS-LEVEL)** — Tilt (left-right) of the antenna

**DBS (Direct Broadcast Services)** — One of the satellite TV services in the USA

**Dish** — Part of an antenna. It is a parabolic reflector, which is a curved surface with the cross-sectional shape of a parabola, used to direct radio and microwaves (radar). The most common form is shaped like a dish. Often it is used synonymously with **Reflector**.

**DLA (DirecTV Latin America)** — A satellite TV service that covers the Caribbean and Latin America.

**DTH — (Direct To Home)** — A satellite TV service in Europe

**DVB (Digital Video Broadcast)** — A standard format for digital video broadcast services

**EL (ELEVATION)** — The pointing-angle of the satellite antenna, between the horizon (0 degrees EL) and the zenith (directly overhead at 90 degrees EL).

**ERROR** — Name of an LED on the front panel. **OFF** indicates that no errors have occurred.

**Favorite Satellite** — Any satellite that is in the **Available Satellite** dropdown list of satellites. The dropdown list is in the **Satellite Selection** section of the **Configuration > Satellite > Satellite Configuration** page.

**FEC (Forward Error Correction)**

**GLA (Galaxy Latin America)** — Obsolete name for **DirecTV Latin America (DLA)**

**GPS (Global Positioning System)** — A device that uses satellites to provide accurate Latitude and Longitude values for the position of the ship.

**GUI (Graphical User Interface)** — Refers to the Graphical User Interface of the **LMXP** ACU.

**Gyrocompass** — A gyrocompass provides the true heading of the ship, relative to true North. It is a non-magnetic compass, which is based on a fast-spinning disc and the rotation of the Earth. A gyrocompass is used on ships for navigation, because it finds true north as determined by the rotation of the Earth, which is more useful than magnetic north. A gyrocompass is not affected by ferromagnetic materials, such as a steel hull, which changes the magnetic field.

**Horiz (Horizontal)** — Horizontal linear polarity satellite signal.

**ICU (Integrated Control Unit)** — The remote controller that is mounted on the antenna pedestal. It is in constant communication with the ACU. They jointly control all the movements of the antenna.

**INIT (Initializing)** — Name of an LED on the front panel. **OFF** indicates that the system has finished initialization.

**LED (Light Emitting Diode)** — LEDs in various colors are used to indicate the status of parts of the system.

**LHCP (Left Hand Circular Polarity)** — Left-hand rotating circular polarity signal.

**LMXP** — Lite Media Xchange Point™ — This is the Antenna Control Unit for the **Sea Tel** system. It uses HTML-based internal web pages that form the GUI that enables a user to access and operate the system.

**LNB (Low Noise Block Down-Converter)**

**LNB Mode** — An alternative term for **LNB Type**.

**LNB Type** — An alternative term for **LNB Mode**.

**Lpolang (Polarization Angle or Polang)**

**NID (Network ID)**

**Polang (Polarization Angle or Lpolang)**

**POWER** — Name of an LED on the front panel. **ON** (Solid Green) indicates that the **LMXP** boot sequence is complete, and the system power is **ON** (normal).

**Radome** — A radome is a weatherproof enclosure that protects a microwave antenna from wind, rain, snow, etc.

**Reflector** — This part of an antenna is a parabolic reflector, which is a curved surface with the cross-sectional shape of a parabola. It is used with direct radio and microwaves (radar) antennas. The most common form is shaped like a dish. Often, a **Reflector** is used synonymously with **Dish**.

**RHCP (Right Hand Circular Polarity)** — Right hand rotating circular polarity.

**RMA (Return Material Authorization)**

**SCPC (Single Channel Per Carrier)**

**SEARCH (Searching)** — **OFF** indicates that antenna is not searching.

**STABILIZATION** — Decoupling of the ship's motion from the stabilized portion of the antenna, so that the antenna stays accurately pointed in a 3-dimensional free space.

**TARGET** — Name of an LED on the front panel. **OFF** indicates that the antenna has finished targeting a satellite.

**TRACK (Tracking)** — **ON** (Solid Green) indicates that the **LMXP** has identified and is actively tracking the desired satellite to optimize the signal level (AGC).

**TVRO (TeleVision Receive Only)**

**Vert (Vertical)** — Vertical linear polarity.

## 8. Technical Contacts

---

Your first technical contact always should be your Dealer, from whom you originally purchased the system. This is usually the fastest way to have your problem resolved. If your Dealer cannot resolve the problem, then they will contact **Sea Tel** directly and work together to resolve the problem.

For your reference, please write in the following information:

Dealer Name: \_\_\_\_\_

Dealer Address \_\_\_\_\_

Dealer Phone \_\_\_\_\_

Dealer Fax \_\_\_\_\_

Dealer Email Address \_\_\_\_\_

If, for some reason, you cannot contact your Dealer, then you can contact **Sea Tel** Service:

**Sea Tel** Inc., a Cobham SATCOM company  
4030 Nelson Ave.  
Concord, CA 94520  
USA

Email to GCS service: [sea.vsat.support@satcomgcs.com](mailto:sea.vsat.support@satcomgcs.com)  
Telephone: +1 (925) 798-2399

**This Page Intentionally Left Blank**