|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Record of Changes | | | | |
| ECO | Description Rev | |
|  | Released | A | 2023-04-21 | |
|  | Drone Detection  Standalone ADS-B  OU AutoMode and Configurable Timeouts  Requirement numbers updated  Bird Filter  Track Rules sorting | |

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# Introduction

## Purpose

This document constitutes the System Test for the Baseline 3 release of C-Flex Patrol.

The purpose of this document is to verify that the implemented functionalities in the C-Flex Patrol system comply with the system requirements specified in [BNC] and [NSE].

## Scope

The scope of this test specification covers the formal System Test (SYT) for the Baseline 3 release of C-Flex Patrol.

The procedure focuses on requirements that, through test analysis, have been selected for verification at this level.

This document provides a detailed description and specification of the manual tests to be performed in relation to the defined functional areas.

## Intended Audience

The intended audience for this document is:

* Customer project management
* Customer specialist and subsystem responsible
* Terma project management
* Terma project team

## Application

Software C-Flex Patrol build under test.

### System Control

The C4I can be used to perform actions with severe, costly or damaging consequences. Means are present to prevent abuse or unauthorized use.

Access Control is used to define which operators that have access to various parts of C4I.

Operators are identified and authenticated through a logon to C4I to achieve accountability for the actions taken through C4I.

# References

|  |  |  |  |
| --- | --- | --- | --- |
| **Doc Class.** | **Doc. No.** | **Title** | **Rev.** |
| [BNC] | 2017969-002-DT | Basic Naval C2 System Requirements - Patrol | X |
| [NSE] | 2274145-002-DT | Naval Sensors System Requirements - Patrol | X |
| [IRS] | 1993864 | Default Product Configuration - CFlex Export | B |

# Patrol

## Test Configuration

|  |  |
| --- | --- |
| **Configuration Status** | |
| C-Flex Build: |  |

## Test Estimation

|  |  |  |
| --- | --- | --- |
| **Test Case** | **Estimated time (h)** | **Actual time (h)** |
| Test preparation and setup |  |  |
| Test Case 1: Use rules that define what is a suspect track |  |  |
| Test Case 2: Identify Suspicious Tracks - Rule for Acceleration & Deceleration |  |  |
| Test Case 7: Create Reports from Recorded Data - Formex 114 |  |  |
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| Test Case 9: Create Reports from Recorded Data - Meteorological Data List |  |  |
| Test Case 11: S63 Sea Charts - View Information Description |  |  |
| Test Case 13: Tactical recording stops due to disk space |  |  |
| Test Case 14: Pattern - geographically referenced |  |  |
| Test Case 15: SA related to the Status of the C2 System and Connected Systems |  |  |
| Test Case 16: Use common operations on smart display |  |  |
| Test Case 17: Shortcut for on-screen keyboard |  |  |
| Test Case 18: Color schemes of User Interface components |  |  |
| Test Case 19: Vector - Settings for relative north |  |  |
| Test Case 20: See Relevant HMI elements |  |  |
| Test Case 21: Replay Operational Data |  |  |
| Test Case 23: Manage Recorded Operational Data |  |  |
| Test Case 24: I want the display of alerts to be sorted so that I can quickly view the ones I am interested |  |  |
| Test Case 25: I want to be able to see how many alerts are unread and need my attention |  |  |
| Test Case 26: Apply Track and Bearing Line Filters Description |  |  |
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| Test Case 32: OU Auto Mode and Configurable Timeouts |  |  |
| Test Case 33: OU - Configure groups. |  |  |
| Test Case 34: OU –No data transmitted with wrong checksum |  |  |
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| Test Case 39: Radar Video for ARPA Port & Starboard |  |  |
| Test Case 40: Sudden Course Speed Change |  |  |
| Test Case 41: Radar - I want to be able to start and stop the radar rotation. |  |  |
| Test Case 42: NMEA TTM tracks\_config1 |  |  |
| Test Case 43: View depth information (DBT) |  |  |
| Test Case 44: View Bearing Lines on a Sea Chart - ESM |  |  |
| Test Case 45: View Bearing Lines on a Sea Chart - DataLink |  |  |
| Test Case 46: TTM export |  |  |
| Test Case 47: History of a track |  |  |
| Test Case 48: Speed and course showing as vector for a track |  |  |
| Test Case 49: Adjust Radar Video Display Parameters |  |  |
| Test Case 50: Radar - Automatic Video Processing |  |  |
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| Test Case 52: Radar - Sector Settings, Sector Transmission |  |  |
| Test Case 53: Chart tracks - Bearing and distance to a point |  |  |
| Test Case 54: Orthodrome measurement |  |  |
| Test Case 55: Track Symbol presentation |  |  |
| Test Case 62: Jam strobes for IFF |  |  |
| Test Case 63: Filter Track Cards |  |  |
|  |  |  |
| Test Case 65: Detailed ADS-B Track |  |  |
| Test Case 67: Radar - As an operator I want to be able to view the status of the radar |  |  |
| Test Case 70: Specify and trigger CPA |  |  |
| Test Case 71: Area Surveillance – Create Area |  |  |
| Test Case 76: Delete Alerts |  |  |
| Test Case 79: SA Related to My Own Ships Tactical Situation |  |  |
| Test Case 80: See OU on the map |  |  |
| Test Case 81: Speed and course - GPS |  |  |
| Test Case 82: Navigational Data |  |  |
| Test Case 88: View and use data from a Weather station |  |  |
| Test Case 89: View and use data from a SCANTER radar |  |  |
| Test Case 90: Cross-correlate 2 bearing lines |  |  |
| Test Case 91: Track label |  |  |
| Test Case 92: |  |  |
| Test Case 94: See local tracks from radar and IFF plots |  |  |
| Test Case 95: Single Representation of Each Physical Entity |  |  |
| Test Case 97: Automatically Categorize Tracks as Surface\_Ground |  |  |
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| Test Case 100: AIS sensor receiving NMEA VDM messages |  |  |
| Test Case 101: Tracks from AIS |  |  |
| Test Case 102: Processing of data from the AIS on and off |  |  |
| Test Case 103: Tracks from ARPA |  |  |
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| Test Case 104: Setting up IFF |  |  |
| Test Case 105: IFF tracks and user alarm |  |  |
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| Test Case 109: |  |  |
| Test Case 110: |  |  |
| Test Case 111: Track identity - Change track identity |  |  |
| Test Cas e 112: Select and view live stream video on the vessel |  |  |
| Test Case 113: Manage Maps |  |  |
| Test Case 114: Support of map types |  |  |
| Test Case 115: |  |  |
| Test Case 116: Select detail level of map |  |  |
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| Test Case 118: Predefined Sets of Layers |  |  |
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| Test Case 120: Change orientation mode |  |  |
| Test Case 121: I want to be able to select Relative motion |  |  |
| Test Case 122: Info for focus point on map |  |  |
| Test Case 123: |  |  |
| Test Case 124: Vector creation and deletion |  |  |
| Test Case 125: Radar - As an operator I want to be able to turn the radar power on and off |  |  |
| Test Case 126: |  |  |
| Test Case 127: |  |  |
| Test Case 128: IFF Replays in encrypted military modes |  |  |
| Test Case 129: IFF Import IFF codes |  |  |
| Test Case 130: IFF tracks in Patrol |  |  |
| Test Case 131: IFF on and off |  |  |
| Test Case 132: SAR - The pattern shall not block or clutter the SA view |  |  |
| Test Case 133: SAR - Sector Search pattern |  |  |
| Test Case 134: SAR - Parallel track search pattern |  |  |
| Test Case 135: SAR – Expanding Square/Edit pattern |  |  |
| Test Case 136: Helo Approach - I want to support Helo approach |  |  |
| Test Case 137: Choose helicopter tracked by AIS |  |  |
| Test Case 138: Choose helicopter tracked by AIS |  |  |
| Test Case 139: Helo video stream |  |  |
| Test Case 140: Map details |  |  |
| Test Case 141: |  |  |
| Test Case 142: Show Helo Approach Patterns on Situation Display |  |  |
| Test Case 143: Get Quickly Within Range of a Target |  |  |
| Test Case 144: |  |  |
| Test Case 145: |  |  |
| Test Case 146: |  |  |
| Test Case 147: Use a UAS as an Inspection Tool |  |  |
| Test Case 148: Intercept a Target for Boarding |  |  |
| Test Case 149: Create and Use Ad-hoc Graphic - polygon & polylines |  |  |
| Test Case 150: Create and Use Ad-hoc Graphic - position |  |  |
| Test Case 151: Create and Use Ad-hoc Graphic - graphic individually per console |  |  |
| Test Case 152: Create and Use Ad-hoc Graphic - polygon change |  |  |
| Test Case 153: Create and Use Ad-hoc Graphic - restart Patrol |  |  |
| Test Case 154: Zoom, point and rotate using pointing device |  |  |
| Test Case 155: Menu activation |  |  |
| Test Case 156: |  |  |
| Test Case 157: Persistence of settings |  |  |
| Test Case 158: Record Operational Data |  |  |
| Test Case 159: Tactical recording |  |  |
| Test Case 160: Drone Detection |  |  |
| Test Case 161: Standalone ADS-B |  |  |
| Test Case 162: Bird Filter |  |  |
| Test Case 163: Operator guide |  |  |
| Test Case 164: Load test |  |  |
| Test Case 165: Track Correlation |  |  |
| Test Case 166: Track Correlation |  |  |
| Test Case 168: System Track Information and Updates |  |  |
| Test Case 169: Recording and Replay |  |  |
| **Total** |  |  |

# Patrol Baseline Release Test

## Test Case : Use rules that define what is a suspect track

### Description

Test case is testing track rules functionallity.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

Open the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS348] As an Operator, I want to be notified of tracks having identity as Unknown or Pending that are showing abnormal or suspicious behavior.

**Accept Criteria:**

[BNC2585] I want to be able to use pre-defined rules to determine when a track which is "Pending" or "Unknown" is considered suspicious, automatically setting any track that fulfils the rule as Identity "Suspect".

[BNC2587] I want to be able to enable or disable individual suspicious track rules.

[BNC2595] As a System Configurator, I want to be able to change the kinematic values for the rules.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| 1.1 |  | **Simulator PC**  In the SCANTER 6002 Simulator, navigate to the “**Entities**” tab.  Click “**Add**”. | **Simulator PC**  A “**Add Entity**” window appears on the screen. |  |
| 1.2 |  | In the “Add Entity” window insert the following:   * **ID**: SCANTER * **Position**: 560000N/0110000E   Click “**OK**” to add the track. | Verify, that the track is listed under “Entities” in the “Entities” tab.  **MFCC**  Verify, that the track is shown on the Situational Display and listed in the Track List. |  |
| 1.3 |  | **MFCC**  In the ActionMenuList, navigate to “**Track List**”. Find the track created in step 2 and open the “**Track Details**” by clicking “**>**”. | Verify, that the identiy of the track is “**pending**”. |  |
| 1.4 |  | **MFCC**  Open Patrol HMI and select “Track Rules” option from the Action Panel Menu List. | Check that the Track Rules panel is opened. |  |
| 1.5 | #BNC2587 | Expand all three (Birds,Default and Drones) drop down arrows and check for following pre-defined rules:   * Air track *Altitude less than* 300 meters * Air track *Ascent/Descent*  greater than 7 m/s * Air tracks *Speed*  greater than 500 knots * Air track with *Speed*  less than 50 knots   + Surface track with Acceleration/Deceleration greater than 2 m/s2   + Surface tracks with *Speed greater than* 10 knots and *Course Against* OU within 10 deg   + Surface tracks *Speed greater than* 5 knots   + Surface tracks *Speed less than* 10 knots or greater than 15 knots   + Surface track with *Turning Rate greater than* 3 deg/s   + Notify and set classification of a track as a drone when it’s probability of being a drone exceeds xx %   + Set classification of a track as a bird when it’s probability of being a bird exceeds xx %   Turn on and off every rule. | Verify that in the Track Rules panel, that:   * + the pre-defined rules are available.   + each rule can be turned on/off individually and the change is visible on all available MFCCs.   + Birds, Default and Drones list are expandlable and collapsable |  |
| 1.6 |  | Make sure all Track Rules are disabled.  Then toggle the following rule and notification/ highlight to “on”:   * Surface track with speed greater than 5 knots. | Make sure the correct track rule is enabled. |  |
| 1.7 |  | **Simulator PC**  In the “**SCANTER 6002 Simulator**” click on the track created in step 2, and click “Edit”. | **Simulator PC**  Verify, that a “**Edit Entity**” window appears on the screen. |  |
| 1.8 |  | In the “**Edit Entity**” window change the following values:   * **Speed**: 6   Click “**OK**”. | **MFCC**  Verify, that a Tactical Notification appears on the screen indicating, that the Track fulfills the rule applied in step 6  Verify also, that the track is now highlighted red on the SD. |  |
| 1.9 | #BNC2585 | **MFCC**  In the ActionMenuList, navigate to “**Track List**”. Find the track created in step 2 and open the “**Track Details**” by clicking “**>**”. | Verify, that the identiy of the track has changed to “**suspect**”. |  |
| 1.10 |  | Close C-flex HMI and log in on the server using putty. |  |  |
| 1.11 |  | **C-flex Server**  Open config.xml on the server. | Config file is opened. |  |
| 1.12 |  | In the config file change one of the pre-defined rules (E.g. Air tracks *Speed*  greater than 500 knots ) with a new value ( Air tracks *Speed*  greater than 600 knots ). Save and close the file  NOTE: In config file search after the following text: "name="com.terma.c2.cflex.trackmanagementrules.patrol.FastAirLimit" , chnage the value from alue="500" to alue="600" | The new rule is saved in the Config file. |  |
| 1.13 | #BNC2595 | **MFCC**  Open Patrol HMI and select Track Rules option from the Action Panel Menu List. | Check that in the Track Rules panel the new rule created in step 4 is available. |  |
| 1.14 |  | Repeat steps 3 and 4, but change back to original value  NOTE: In config file search after the following text: "name="com.terma.c2.cflex.trackmanagementrules.patrol.FastAirLimit" , change the value from alue="600" to alue="500"  After that repeat step 5 | Check that in the Track Rules panel the rule has been correctly updated. |  |

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## Test Case 2: Identify Suspicious Tracks - Rule for Acceleration & Deceleration

### Description

Identify Suspicious Tracks - Rule for Acceleration & Deceleration.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenatiosimulator
2. sensorsim-ais

### Requirements

**Stakeholder Requirement:**

[BNCS348] As an Operator, I want to be notified of tracks having identity as Unknown or Pending that are showing abnormal or suspicious behavior.

**Accept Criteria:**

[BNC2585] I want to be able to use pre-defined rules to determine when a track which is "Pending" or "Unknown" is considered suspicious, automatically setting any track that fulfils the rule as Identity "Suspect".

[BNC2590] I want to be able to receive notifications when a track fulfills a suspicious track rule, including details about the fulfilled rule.

[BNC2626] I want to be able to highlight a track that fulfills a suspicious track rule on the situation display.

[BNC2620] I want to be able to enable or disable suspicious track rule notifications.

[BNC2622] I want to be able to enable or disable suspicious track highlighting.

[BNC2621] I want to be able to turn the highlighting off on an already highlighted track.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 2.1 |  | **MFCC1**  Navigate to Track Rulespanel in right menu and turn-on the following rule:   * Surface track with Acceleration or /Deceleration greater than 2 m/s2 | On all available MFCCs check that:   * The rule is turned on. |  |
| 2.2 |  | **MFCC1**  In the Track Rulespanel, turn on the highlighting and notification for the rule enabled in step 6.1. | **MFCC1**   * Check that "highlighting and notification" toggle button is on.   **Any other MFCC**   * Check that "highlighting and notification" toggle button is on. |  |
| 2.3 |  | **Simulator PC**  Create AIS track by running the "AIS\_Acceleration" script.  NOTE: The script is created for a track that is accelarating  Create an AIS track by running  "AIS\_Decelaration" script.  NOTE: The script is created for a track that is decelarating | **MFCC**  Check in Patrol that Trk1 and Trk2 are available on the Sit Disp. |  |
| 2.4 | #BNC2585  #BNC2590  #BNC2626 | Wait 5 seconds, in this time the tracks speed will be changed. | **MFCC1**   * An alert is triggered for Trk 1:Alert will contain the name of the rule causing the track to be suspect * An alert is triggered for Trk 2:Alert will contain the name of the rule causing the track to be suspect * Both  trk 1 and trk 2 are highlighted on the Sit. Disp. * Identity should become Suspect for both tracks   **Any other MFCC**   * The rule is turned on. * Identity should become Suspect for both tracks |  |
| 2.5 | #BNC2620  #BNC2622 | **MFCC1**  Navigate to Track Rulespanel in right menu and  turn-off the following rule and notification/ highlight:   * Surface track with Acceleration/Deceleration Outside 0 to 2 m/s2 | **MFCC1**   * Both tracks are still highlighted   **Any other MFCC**   * The rule is turned off. * Trk 1 Identity is Suspect. |  |
| 2.6 | #BNC2621 | Open "Track List", select Trk1 and open track details card. Press on "Remove highlighting" button | Check that on Sit Disp the track is not highlighted. |  |

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## Test Case 3: Place holder

## Test Case 4: Place holder

## Test Case 5: Place holder

## Test Case 6: Place holder

## Test Case 7: Create Reports from Recorded Data - Formex 114

### Description

Create Reports from Recorded Data - Formex 114

### Test Environment

C-Flex Patrol release under test must be installed.

* + 1. **Automation Level**

N/A

* + 1. **Test Data**

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. nmea2ownunitsimulator

### Requirements

**Stakeholder Requirement:**

[BNCS440] As an Operator, I want to generate a report containing sailed route for own ship, so that I can document own ship location.

**Accept Criteria:**

[BNC1800] I want to be able to define the classification for the report.

[BNC1801] I want to be able to inspect the generated report on the console.

[BNC1817] I want to be able to create an own ship report (FORMEX 114).

[BNC1818] I want the FORMEX 114 report to contain the following time stamped data: total sailed distance, own ship position, source, heading and speed.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 7.1 |  | **Simulator PC**  In the sensorsim-gps simulator. Navigate to “**Scripts**”, and start the script “**!OwnUnit.js**” | **Simulator PC**  Go to “**Entities**” and check that the script is added. |  |
| 7.2 |  | **MFCC**  In the Burger Menu, navigate to “**Settings Center**”. Under “**Sensors**”, turn on “**Enable Auto OU Sensor Selection**”. | **MFCC**  Verify, that “Enable Auto OU Sensor Selection” is turned on. |  |
| 7.3 |  | Open Own Unit Management under Burger menu, and in the Tab: “Own Unit Management” make sure to set:   * Position: “**Sensors**”. * Course / Speed: “**Sensors**”. | Position and Course / Speed is set to Sensors. |  |
| 7.4 |  | Navigate to the Tab: “**Own Unit Source Status**”. | Check that OU is receiving information from sensors, by checking if the green indication light is on at “Position, Velocity (RMC)”. |  |
| 7.5 |  | On the SD, in the ActionMenuList, navigate to “**Tactical Recording**”  Make sure Tactical Recording is switched “**Off**”.  Then insert a name in the Text box “**Name**”.  Switch “**On**” Recording.  “*Wait at least 30 seconds*”  And then switch “**Off**” recording, | Check that the recording is started and stopped. |  |
| 7.6 |  | In the BurgerMenu select “**Tactical Replay**”. | Check that Tactical Replay is opened. |  |
| 7.7 |  | In the ActionMenuList, under “**Tactical Replay**” find the recording created in step 7.3 and click on “**>**”, to view more details. | Check that the Recording action panel is opened and there is a button named "**Open Report Wizard**" |  |
| 7.8 |  | Click on "**Open Report Wizard**". | Check that Report Wizard is opened in the Tactical Report Canvas |  |
| 7.9 |  | From "Select Report Type" drop down list select “**Formex 114**”. | Report is selected. |  |
| 7.10 |  | Press the "**Next >**" button. | Check that "Recording time" is opened |  |
| 7.11 |  | In the "Recording time" the values for start and end time of the recoding are pre-filled. | Check that the correct values are displayed by default. |  |
| 7.12 |  | Press the "**Next >**" button. | Check that "Report Labels" is opened and the following values are available:   * Originator * Event * Classification   Check that by default no value is pre-filled for these fields. |  |
| 7.13 | #BNC1800 | Manually insert the following values:   * Originator: Originator\_test * Event: Event\_test   In the classification dropdown list, the classification of the Formex114 document can be selected.  Select "**Unclassified**". | Check that the inserted values are correct and that the classification drop down list contains the following categories:   * Unclassified * Restricted * Confidential * Secret * Nato unclassified * Nato restricted * Nato confidential * Nato secret |  |
| 7.14 |  | Press "**Next >**" button | Check that "Data" is opened |  |
| 7.15 |  | Set the Time Interval to 10s. | Check that the time interval is set and in the list below all the records in the time period selected in step 7.9 are displayed. |  |
| 7.16 | #BNC1817  #BNC1801 | Press "**Next >**" button | Check that the report is generated and pops up on the console. |  |
| 7.17 |  | **Simulator PC**  Use NMEA OWNUNIT Simulator and open "**Speed VBW**" tab. Insert the following values:   * Water speed (Longitudinal speed (knt)): “**5**”. * Water speed (Transverse speed (knt)): “**6**”. * Ground speed (Longitudinal speed (knt)): “**7**”. * Ground speed (Transverse speed (knt)): “**8**”. * Stern transverse water speed: “**9**”. * Stern transverse ground speed: “**10**”.   In the tick box “**Tx:**” set a tick, and click “**Start**”. | **Simutlator PC**  After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. |  |
| 7.18 |  | **MFCC**  Open Own Unit Management under Burger menu, and in the Tab: “Own Unit Management” make sure to set:   * Relative Speed: “**Sensors**”. | **MFCC**  Check that the OU is receiving the Speed throught water from sensor |  |
| 7.19 |  | In the same Tab, expand Heading, and change the value to:   * Heading: “**180 deg**”   Press on "**Save**" button | Check that the correct value is inserted |  |
| 7.20 | #BNC1818 | Execute steps 7.3 - 7.14 again to generate a new report. | Check that the Formex114 report contains timestamped data for the following categories, and that the data is correct in regards to the input:   * **Log NM** * **Position Source** * **Position** * **Heading deg** * **Speed (Relative) Kts** |  |
| 7.21 |  | In the BurgerMenu, navigate to “**Setting Center**”.  Click on “**Sensors**” and under “Own Unit Sensor Selection” turn it “**Off**”.  Click “**Save**”  Navigate then to “Own Unit Management”.  Under the tab “Own Unit Management”, set:   * Position: “**Calculated**” * Velocity: “**Calculated**” * Relative Speed: “**Calculated**” | Check that all sources are set to Calculated. |  |
| 7.22 |  | Execute steps 7.3 - 7.14 again to generate a new report. | Check the report and validate that:   * Column: "**Position Source**" = "**DR**" |  |
| 7.23 |  | Execute steps 7.3 – 7.14 but with the following change in step 7.9.  Change “**Select Start Time**” to 10 s *later*  Change “**Select End Time**” to 10 s *earlier* | Check that the correct time is dispalyed in the report |  |

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## Test Case 8: Create Reports from Recorded Data - Formex 118

### Description

Create Reports form Recorded Data – Formex 118

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-arpa
4. sensorsim-phobos

### Requirements

**Stakeholder Requirement:**

[BNCS442] As an Operator, I want to generate a report containing track data, so that I can document the tactical situation.

**Accept Criteria:**

[BNC1800] I want to be able to define the classification for the report.

[BNC1825] I want to be able to create a track report (FORMEX 118).

[BNC1827] I want to be able to enter a remark for each track entry in the FORMEX 118 report.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 8.1 |  | **MFCC**  In the ActionMenuList, navigate to Tactical Recording.  Make sure Tactical Recording is switched “**Off**”.  Then insert a name in the Text box “**Name**”.  Switch “**On**” Recording. | Check that the recording is started. |  |
| 8.2 |  | **Simulator PC**  In the sensorsim-gps navigate to the “**Scripts**” tab.  Locate the Script: “**!OwnUnit.js**”andrun it by clicking the “Start” button**.** | **Simulator PC**  Under the “**Entities**” tab, a new entity has been created with the ID: OWN\_UNIT  **MFCC**  Open the Burger Menu and select “**Own Unit Management**”.  View the “**Own Unit Source Status**” section.  The system shows it is receiving data from the GPS source via a green icon. |  |
| 8.3 |  | **Simulator PC**  Under the “Entities” tab, highlight the OWN\_UNIT entitiy and click on “**Edit**”.  Edit Entity window opens.  Under the field “**Position**” change the position to: **565000N/0110000E** | **MFCC**  Own Unit is visible on the situation display at the given location. |  |
| 8.4 |  | **MFCC**  On the Situational display in the ActionMenuList, navigate to "**New Manual Track**".  Create tracks with the following category and type:   * **track 1**: ground, convoy * **track 2**: unknown, unknown * **track 3**: subsurface, diesel electric attack submarine * **track 4**: subsurface, unknown submarine propulsation * **track 5**: subsurface, torpedo   Create an EW line (Bearing Line) using OU possition:   * **track6**: surface, command | From the ActionMenuList open "Track list" and check that tracks are created and shown on the situational display, aswell as in the track list. |  |
| 8.5 |  | **Simulator PC**  In the sensorsim-arpa navigate to the “**Poistion/Range**” tab.  Under the section “**Range**” set the input field to be: **5000.00 km** and click “**Apply**”.  Now navigate to the “**Entities**” tab.  Add an ARPA track by clicking on the “**Add**” button. | **Simulator PC**  “**Add Entity**” window is opened. |  |
| 8.6 |  | **Simulator PC**  In the “**Add Entity**” window write the following values into the input fields:   * **ID:** ARPA * **Position:** 570000N/0110000E   Click **OK** to create the track. | **Simulator PC**  Under the “Entities” tab, a new entity has been created with the ID: ARPA  **MFCC**  An ARPA Track is now created on the situation display.  Example output: |  |
| 8.7 |  | **Simulator PC**  In the sensorsim-phobos navigate to the “**Entities**” tab.  Add an EW bearing line by clicking on the “**Add**” button. | **Simulator PC**  “Add Entity” window is opened. |  |
| 8.8 |  | **Simulator PC**  In the “Add Entity” window input the following values into the input fields:   * **ID:** PHOBOS * **Emitter name:** 1 * **Identity:** 2 * **Spotnumber:** 3   Click “**OK**” to add the track. | **MFCC**  EW bearing Line is generated on the Situation Display, emanating from the own unit track.  And after a split second it auto-correlates with the ARPA system track. This can be seen on the “Track List”.  Example output: |  |
| 8.9 |  | **MFCC**  In the “Tactical Recording” Action Panel, toggle the “Recording” button to “**Off**”. | **MFCC**  Make sure the tactical recording is turned off. |  |
| 8.10 |  | Open the BurgerMenu and  select Tactical Replay. | Check that Tactical Replay is opened. |  |
| 8.11 |  | In the ActionMenuList navigate to “**Tactical Replay**”. Select the recording created in step 8.1 and open Recording action panel. | Check that the Recording action panel is opened and there is a button named "Open Report Wizard". |  |
| 8.12 |  | Press on "**Open Report Wizard**" button. | Check that Report Wizard is opened in the Tactical Report Canvas. |  |
| 8.13 |  | From "**Select Report Type**" drop down list select Formex 118 report. | Report is selected. |  |
| 8.14 |  | Press "**Next**" button. | Check that "Recording time" is opened. |  |
| 8.15 |  | In the "**Recording time**" the values for start and end time of the recoding are pre-filled. | Check that the correct values are displayed by default. |  |
| 8.16 |  | Press "**Next**" button. | Check that "Report Labels" is opened and the following values are available:   * Originator * Event * Classification   Check that by default no value is pre-filled for these fields. |  |
| 8.17 | #BNC1800 | Manually insert the following values:   * Originator: Originator\_test * Event: Event\_test   In the classification dropdown list, the classification of the Formex114 document can be selected.  Select "**Unclassified**". | Check that the inserted values are correct and that the classification drop down list contains the following categories:   * Unclassified * Restricted * Confidential * Secret * Nato unclassified * Nato restricted * Nato confidential * Nato secret |  |
| 8.18 |  | Press "**Next >**" button. | Check that "**Data**" is opened. |  |
| 8.19 |  | Select all tracks. | Check that the tracks are selected and the EW line created in step 8.4 is not listed.  Note: EW line track numbers start with EWM and not SYS. |  |
| 8.20 | #BNC1827 | Add remarks for tracks in the “**Remark**” column.  E.g:   * Own Unit * track 1 * track 2 * track 3 * track 4 * track 5 * ARPA * PHOBOS   Note: Make sure to press enter after the last “Remark” has been written to lock it in. | Check that remarks are added. |  |
| 8.21 | #BNC1825  #BNC1827 | Press “**Next**” to generate the report . | Check that the report is generated and looking somewhat like the one shown below.  The report sould be marked with the document classification added in step 8.17.  Check that the Formex118 report contains timestamped data for the following categories, and that the data is correct in regards to the input:   * **Track number** * **Track type** * **Previous track number** * **Track identity** * **Remark**   Note: The Previous track numer column will always be empty. |  |
| 8.22 | #BNC1825  #BNC1826  #BNC1827 | Repete step 8.10 to 8.21 with the following changes:   * In step 8.17, do not select a classification. * In step 8.19 enable “**Show Unique Track Numbers**” after all tracks have been selected.   Check, that a tick is set under “**Show Unique Track Numbers**”, and that all numbers that were doubble listed are only shown once now. | Check that the report is generated and looking somewhat like the one shown below.    The document should be generated without a document classification.  Although “**Show Unique Track Numbers**” is ticked, all track numbers are generated and listed in the report. |  |

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## Test Case 9: Create Reports from Recorded Data - Meteorological Data List

### Description

This Test Case is testing the system’s ability to generate textual reports, like e.g. FORMEX 114, FORMEX 118, Meteorological reports etc.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. nmea2ownunitsimulator

### Requirements

**Stakeholder Requirement:**

[BNCS436] As an Operator, I want to generate textual reports containing specific data from the recordings.

**Accept Criteria:**

[BNC1800] I want to be able to define the classification for the report.

[BNC1817] I want to be able to create an own ship report (FORMEX 114).

[BNC1825] I want to be able to create a track report (FORMEX 118).

[BNC1842] I want to be able to create a Meteorological report.

[BNC1843] I want the Meteorological report to contain the following time stamped data: weather, wind, sea state, visibility, air temperature and air pressure.

[BNC1799] I want to be able to specify the time period for a report. If not specified, the time period shall be that of the selected recording sequence.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 9.1 |  | **Simulator PC**  In the nmea simulator navigate to “**Wind MWV**”.  Insert the following values:   * In the “**Angle (deg)**” input field, enter: 45 * In the “**Speed**” input field, enter: 3 * Make sure the “**Reference**” field is set to: Relative (R) * Make sure the “**Unit**” field is set to: METERS\_PER\_SEC (M)   Enable the checkbox labeled “**Tx:**”, and click “**Start**”.  Navigate then to “**Meteo Data XDR**”.  Insert the following values:   * **Pressure: 1** * **Humidity: 87** * **Air Temperature: 9** * **Water Temperature: 7**   Set the checkbox labeled “**Tx:**”, to “**Combined**” and click “**Start”** | **Simulator PC**  After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. |  |
| 9.2 |  | **MFCC**  Open the Burger Menu and click on “**Settings Center**”.  On the left side of the Screen click on “**Sensors**”.  Check that “**Own Unit Sensor Selection**” is set to “**On**”.  In the Burger Menu navigate to “**Own Unit Management**”.  On the left side of the Screen click on “**Own Unit Source Status**”.  Expand the categories:   * “**Environment (XDR)**” * “**Wind (MWV)**”. | **MFCC**  Check that the values under the two categories correspond to the values entered in the simulator. |  |
| 9.3 |  | Navigate to SD and click on “**Tactical Recording**”.  Switch the Recording button to “**Off**” and then to “**On**”. | Check that the recording is started, by checking that the “**Recording time**” is running. |  |
| 9.4 |  | In the Burger Menu select “**Tactical Replay**”. | Check that Tactical Replay is opened. |  |
| 9.5 |  | In the ActionMenuList, go to “**Tactical Replay**”.  Select the most recently created recording and click on “**>**”, to view more details. | Check that the Recording action panel is opened and there is a button named "Open Report Wizard". |  |
| 9.6 |  | Click on "**Open Report Wizard**". | Check that Report Wizard is opened in the Tactical Report Canvas. |  |
| 9.7 |  | From "Select Report Type" drop down list, select “**MeteorologicalDataList**” . | Report is slected. |  |
| 9.8 |  | Press **"Next>"** button | Check that "Recording time" is opened |  |
| 9.9 | #BNC1799 | Under “Select Start Time” and “Select End Time” check that the time is filled out by default.  Press “**Next>**” | Check that "Report Labels" is opened and the following values are available:   * Originator * Event * Classification   Check that by default no value is pre-filled for these fields. |  |
| 9.10 | #BNC1800 | Manually insert the following values:   * Originator: Originator\_test * Event: Event\_test   In the classification dropdown list, the classification of the Formex114 document can be selected.  Select "**Unclassified**". | Check that the inserted values are correct and that the classification drop down list contains the following categories:   * Unclassified * Restricted * Confidential * Secret * Nato unclassified * Nato restricted * Nato confidential * Nato secret |  |
| 9.11 |  | Press **"Next>"** button | Check that "Data" is opened |  |
| 9.12 |  | Set the Time Interval to 10s. | Check that the time interval is set and in the list below there are all the records in the periode selected in step 9.9. |  |
| 9.13 | #BNC1842 BNC1843 | Click on “**Next>**” to generate the report.  NOTE: The Weather, Sea State and Visibility columns will be empty because there is no correspondence for those fields in Patrol in this moment | Check that the Meteorological report contains timestamped data for the following categories, and that the data is correct in regards to the input:   * **Weather** * **Wind** * **Sea state** * **Visibility** * **Air temperature** * **Air pressure**   NOTE: Weather, Sea Weather, Visibility columns are always empty. |  |
| 9.14 | #BNC1817  #BNC1799 | Repeat steps **9.3 – 9.6**.  Repeat step **9.7**, with the following change:   * Select “**FORMEX114**” from the drop down list   Repeat step **9.8**.  Repeat step **9.9**, with the following change:   * Change the “Select Start Time” to 10 seconds later * Change the “Select End Time” to 10 seconds earlier.   Repeat steps **9.10 – 9.13**. | Check that the report is generated.  NOTE: Weather, Sea Weather, Visibility columns are always empty. |  |
| 9.15 | #BNC1825 | Repeat steps **9.3 – 9.6**.  Repeat step **9.7**, with the following change:   * Select “**FORMEX118**” from the drop down list   Repeat steps **9.8 – 9.13**. | Check that the report is generated.  NOTE: Weather, Sea Weather, Visibility columns are always empty. |  |

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## Test Case : Place holder











## Test Case 11: S63 Sea Charts - View Information Description

### Description

This Test Case is testing the System’s ability to select among map and sea chart data.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requrement:**

[BNCS201] As an Operator, I want to see and select among map and sea chart data, so that I can work with a map that suits the current situation.

**Accept Criteria:**

[BNC212] I want to be able to monitor error messages according to "IHO Data Protection" in case of failure in presenting the S-63 map information.

[BNC214] I want to be able to inspect S-63 map user permits.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 11.1 |  | **MFCC PC**  Navigate to the following address C:\C-flex\Program\Configuration  and open “Config Properties” file | Check that file contains the following information:  com.terma.cflex.applicationframework.luciad.s63.customer.system.id=FSV2REFSITE  NOTE: if file does not contain this then manually added it and save the file. |  |
| 11.2 |  | Copy "DK1NORSO.000" file in  the following location: "C:\C-flex\MapsGISData\maps\S63\AVCS\_S631\_1\_REISSUE\_DVD1\_VK19\_16\B4\ENC\_ROOT\ENC\_ROOT\DK\DK1NORSO\25"  NOTE: Replace the existing file if needed. | Check that file is copied. |  |
| 11.3 |  | Copy the following files:  - DK2STOBL.000  - DK2STOBL.001  - DK2STOBL.002  - DK2STOBL.003  - DK2STOBL.004  - DK2STOBL.005  in the following location: "C:\C-flex\MapGISData\maps\S63\AVCS\_S631-1\_REISSUE\_DVD1\_WK19\_16\B4\ENC\_ROOT\DK\DK2STOBL\41".  NOTE: Replace the existing file if needed. | Check that file is copied. |  |
| 11.4 |  | **MFCC**  Start Patrol HMI and press on the menu button in the top right corner. | Check that the panel with different available screens is opened. |  |
| 11.5 |  | Select "ECDIS S63 Sea Charts" option | Check that "ECDIS S63 Sea Charts" is opened in Main Panel. |  |
| 11.6 | #BNC212  #BNC214 | After "ECDIS S63 Sea Charts" is opened in Main Panel | Check that the following infromation is available:  1. ECDIS S63 User Permit pannel containing:  - Permit Path - will display the path to the S63 sea charts permits file  2. ECDIS S63 Cells, Warnings and Errors  - In the Error section there should be an error related to the file copied in step 2.  - In Warning there is the list of warnings where a refference to the file copied in step 3 should be found (screenshot similar with the one in step 5). |  |

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## Test Case 12: Place holder

## Test Case 13: Tactical recording stops due to disk space

### Description

This Test Case tests the System’s ability to record operational data in a named and timestamped collection.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS420] As an Operator, I want to record operational data in a named and timestamped collection, so that it can e.g. be replayed for debriefing purposes or exported for use ashore as evidence in court.

**Accept Criteria:**

[BNC1706] I want to receive an alert when the amount of space available for recordings is low and the recording should stop.

[BNC1708] I want the system to automatically stop recording when the maximum disk space available for recordings has been reached.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 13.1 |  | **C-flex Server**  Log on to the server with putty and edit config.xml.  Edit the following property:  <Property name="dk.flexccis.system.persistenceservice.dbwrapper.hsqldb.H2Wrapper.CatalogMaxSize"            value=" 10000000"/>  Save the changes and restart the system. | Changes are correctly saved |  |
| 13.2 |  | **MFCC**  Start Patrol HMI on any available MFCC | Check that HMI is properly started. |  |
| 13.3 |  | Navigate to Tactical Recording and start a new recording | Check that the recording is started |  |
| 13.4 | #BNC1706  #BNC1708 | **Simulator PC**  Run the system with the "Load test - Random moving simulated tracks " script over night. | **MFCC**  Check that an alert is received when the maximum amount of space available for recordings is low and the recording will stop. |  |
| 13.5 |  | **C-flex Server**  Change config.xml back to:  <Property name="dk.flexccis.system.persistenceservice.dbwrapper.hsqldb.H2Wrapper.CatalogMaxSize"            value="10000000000"/>  Save the changes and restart the system. | Changes are correctly saved |  |

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## Test Case 14: Pattern - geographically referenced

### Description

Test Case, to test the Patterns functionality in C-Flex Patrol.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS388] As an Operator, I want to create patterns for SAR missions, so that the search participants are guided to move in a structured way maximizing the chance of finding the victims and minimizing the time to do so.

**Accept Criteria:**

TODO PU-2320 I want the pattern to be geographically referenced.

[BNC1202] I want to be able to define circle patterns by entry of the following parameters: center, inner range, outer range, and sector bearings.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 14.1 | #BNC1202 | **MFCC**  Open "**Tools**" and then "**Patterns**", press "**Create Pattern**" button and select "**Circle**".  Add values to the follwing parameters and save it:   * Name * Position * From * To * Inner range * Outer range   Click “**Save**”. | **MFCC**  Verify that the circle pattern is created and available on Sit Disp |  |
| 14.2 |  | Go to the Edit mode of the above created circle.  Attach the circle to either an “**Own unit**” or any other “**track**”  Click “**Save**”. | Verify that it is possible to attach a circle to an Own unit or a Track. |  |
| 14.3 |  | Open "**Tools**" and then "**Patterns**", press "**Create** **Pattern**" button and select "**Sector** **Search**". | Check that it is possible to insert coordinates in the "**Position**" field. |  |
| 14.4 |  | **Save** the changes | Check that the pattern is created and available on Sit Disp in the correct position. |  |
| 14.5 |  | Open "**Tools**" and then "**Patterns**", press "**Create** **Pattern**" button and select "**Parallel** **Track**". | Check that it is possible to insert coordinates in the "**Position**" field. |  |
| 14.6 |  | **Save** the changes | Check that the pattern is created and available on Sit Disp in the correct position. |  |
| 14.7 |  | Open "**Tools**" and then "**Patterns**", press "**Create** **Pattern**" button and select "**Expanding** **Square**". | Check that it is possible to insert coordinates in the “**Position**” field. |  |
| 14.8 |  | **Save** the changes | Check that the pattern is created and available on Sit Disp in the correct position and with correct parameters as added. |  |

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## Test Case 15: SA related to the Status of the C2 System and Connected Systems

### Description

The Test Case tests the system’s ability to show systems status of connected systems and its ability to handle track numbering.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

Open the following sensors:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS711] As an Operator, I want to have a good overview of the status of connected subsystems, so that I can determine the overall combat/mission readiness of the platform.

**Accept Criteria:**

[BNC1005] I want to be able to view the technical state of the surveillance radar, including BITE fault.

**Stakeholder Requirement:**

[BNCS143] As a Picture Compiler, I want the system to handle track numbering and relations to external track numbers from e.g. Link, in order to have a unique reference for each track.

**Accept Criteria:**

[BNC622] The track numbers shall always be viewable, so that tracks can be cross read with other systems on the vessel.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 15.1 | #BNC1005 | **MFCC**  In the ActionMenuList, open "**Radar** **Control** **& Video**".  Select the “**Scanter** **6002**”. | **MFCC**  Verify that the following categories are available:   * System * Antena RPM * Error messages |  |
| 15.2 | #BNC622 | **Simulator PC**  In the “**SCANTER** **6002** **Simulator**” navigate to the “**Entities**” tab.  Click “**Add**”, and in the “**Add Entity**” window insert the following:   * **ID**: SCANTER * **Position**: 560000N/0110000E * **Role**: Track + Plot   Click “**OK**”. | **Simulator PC**  In the “**Entities**” tab, verify that the Track has been added.  **MFCC**  Verify that the track is shown on the SD in the correct position and with a visible track number.  Check, that the track is listed in the Track List and the Track Number can be seen under “**Track Details**”. |  |
| 15.3 | #BNC622 | **MFCC**  In the ActionMenuList navigate to “**New Manual Track**”.  Insert the following:   * **Track**: Tick it * **Name**: Manual Track * **Position**: 56°00'00"N - 011°30'00"E   Click “**Save**”. | Verify that the track is shown on the SD in the correct position.  Check, that the track is listed in the Track List. Navigate to “**Track Details**” and verify, that the track has a unique Track Number. |  |

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## Test Case 16: Use common operations on smart display

### Description

The Test Case is testing the touch screen functionality of the SmartDisplay.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC2 (console) with a SmartDisplay

Open the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS471] As an Operator, I want to use the touch screen to operate Patrol without the use of keyboard and/or mouse.

**Accept Criteria:**

[BNC1920] I want to enable gestures (two/or more fingers) in the situation display.

[BNC1918] I want the system to support touch scroll in panels.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 16.1 |  | **Simulator PC**  In the “**Scenario Simulator**” run the following script:   * "**100FixedTracks.js**" | **Simulator PC**  In the “**Entities**” tab verify that the tracks have been added and the script is running.  **MFCC2**  Check that tracks are shown on the Situational Display and listed in the Track List. |  |
| 16.2 | #BNC1918 | **MFCC2**  In the ActionMenuList, navigate to “**Track List**”.  By using touch scroll on MFCC2 scroll down to the last track card. | **MFCC2**  Check that is possible to scroll down the list until the last track card is shown. |  |
| 16.3 | #BNC1920 | On the SmartDisplay navigate to “**View Options**”.  Enable “**Free Rotation**”  On the situational display exicute the following gestures:     * Use one or two fingers to move the map around * Use two fingers to zoom in / out the map * Use two fingers to rotate the map | Check that the edescribed behaviors are correctly working when using gestures. |  |
| 16.4 |  | Use the SmartDisplay to “**click**” on the “**Burger Menu**”. | Check that the burger menu is opened when using the touch screen. |  |
| 16.5 |  | Use the SmartDisplay to open “**Track Filters**”.  Turn on/ off different available options. | Check that different options can be turned on/off when using touch the screen. |  |
| 16.6 | #BNC1918 | Use SmartDisplay to open "**New Manual Track**".  Select a value for each of the following fields:   * Category * Type * Identity | Check that it is possible to select a value in a drop down list by using the touch screen. |  |
| 16.7 |  | Use the SmartDisplay to Create a new track.   * Use your finger on the SmartDisplay to click on the “**Position**” field. * Now use the Pointing Device (**NOT THE SMART DISPLAY**), to move the pointer over to the map. * On the keyboard, click CTRL+S | Check that the track “**Position**” will be filled in the track card when using the touch screen. |  |

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## Test Case 17: Shortcut for on-screen keyboard

### Description

This Test Case is testing the functionality of the systems keyboard shortcuts.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

Have a Keyboard.

### Requirements

**Stakeholder Requirement:**

[BNCS471] As an Operator, I want to use the touch screen to operate Patrol without the use of keyboard and/or mouse.

**Accept Criteria:**

[BNC1919] I want to have a shortcut for on-screen keyboard.

[BNC1880] I want to be able to define keyboard shortcuts to activate functions in the UI using the keys I find most intuitive.

**Stakeholder Requirement:**

[BNCS464] As an Operator, I want to use keyboard bindings for the most common tasks, in order to speed up the use of the system. I also want to use keyboard shortcuts to activate functions instead of using the mouse.

**Accept Criteria:**

[BNC1878] I want to be able to use keyboard bindings.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 17.1 |  | **MFCC**  In the Burger menu open “**Shortcut Center**” | **MFCC**  Check that Shortcut Center is opened |  |
| 17.2 | #BNC1919  #BNC1880 | Under “**Select Shortcut**”, in the text box insert: "**Open keybord**".  In the list below, click or select Open Keyboard:    In the right panel under “**Enter Key Combination**” register: "**CTRL + K**" in the text box.  Press "**Register**" button to save your new shortcut. | Check that the shortcut has been saved. |  |
| 17.3 | #BNC1919  #BNC1878 | Navigate back to the Situation Display.  Press CTRL + K. | On-Screen Keyboard window is opened. |  |

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## Test Case 18: Color schemes of User Interface components

### Description

This Test Case tests the System’s ability to change the Day/Dusk/Night color scheme of the User Interface.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS473] As an Operator, I want the UI to support a day/dusk/night color scheme, so that I have a more appealing and consistent look-and-feel and do not unduly strain my eyes nor make my ship visible to others by using bright colors, when using the system at night.

**Accept Criteria:**

[BNC1926 ] I want to be able to use color properties for sea charts and their map details (e.g. ECDIS) for day, dusk and night.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 18.1 |  | **MFCC**  In the ActionMenuList navigate to “**New Manual Track**”.  Create a new manual track and a Bearing Line. | **MFCC**  Verify, that the Track, Bearing Line and Own Unit are visible on the Sit. Display. |  |
| 18.2 |  | **MFCC**  In the ActionMenuList, navigate to "**View options**" | **MFCC**  Verify that “**View Options**” is opened. |  |
| 18.3 | #BNC1926 | Under “**ECDIS Chart Setting**” switch between the options   * Day * Dusk * Night | Verify that the Patrol Sit. Display changes color. Observ the tracks and EW lines and make sure they are visible for each option. |  |

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| *Date* |  | *Time* |  | *Testers* |

## Test Case 19: Vector - Settings for relative north

### Description

The Test Case is testing if the angle of the measurement vector is north referenced.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS219] As an Operator, I want to measure distance between entities and the relative/absolute angles for getting a better situational awareness.

Note: This information I can use to evaluate the risk of collision or simply as a measuring tool.

**Accept Criteria:**

[BNC259] I want the measurement vector angle to be relative to North.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 19.1 |  | **MFCC**  In the ActionMenuList navigate to “**Tools**”.  Open “**Measurements**”. | **MFCC**  “**Measurements**” action panel is opened. |  |
| 19.2 |  | Press the “**Create Measurement**” button and select the "**Measurement Vector**" option. | Check that a new “**Measurement Vector**” action panel is opened. |  |
| 19.3 |  | Create a new measurement vector by inserting the following values:   * **New** **Name**: Test 1 * **Visibility**: ON   Footpoint:   * **Type**: Own Unit * **From**: value displayed will be Own Unit   Apex:   * **Type**: Fixed Position * **To**: the default value will be displayed   “**Save**” the created measurement vector | Verify that the correct vector is created and that it is placed in the correct postion. |  |
| 19.4 | #BNC259 | In the ActionMenuList, navigate to "**View Options**".  In the Heading section, click “**Free Rotation**”.  Rotate the map. | The distance and the angle of the measurement vector does not change regardless of map view. |  |
| 19.5 |  | In Patrol HMI manually create 2 tracks with fixed position:   * trk 1 (Position: 56°35'40"N - 010°40'10"E) * trk 2  (Position: 56°28'44"N - 010°19'05"E) | Check that the tracks are created. |  |
| 19.6 |  | Create a measurement vector between the tracks from step 5 by using the following details:   * **New** **Name**: Test 2 * **Visibility**: ON   Footpoint:   * **Type**: Track * **From**: trk 1   Apex:   * **Type**: Track * **To**: trk 2   “**Save**” the created measurement vector | Verify that the correct vector is created. |  |
| 19.7 | #BNC259 | Rotate the map | Verify that the distance and the angle does not change regardless of the map view. |  |
| 19.8 |  | Use the tracks from step 6 and change the tracks course and speed in the following way:  Navigate to “**Track List**”, open Track details for trk 1 and set:   * **Course** **/ Speed**: 090° - 30 deg-knots * **Save** the changes   Open Track details for trk 2 and set:   * **Course / Speed**: 120° - 50 deg-knots * **Save** the changes | Check that the tracks are correctly updated. |  |
| 19.9 | #BNC259 | Rotate the map | Verify that the distance and the angle does not change regardless of the map view. |  |

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| *Date* |  | *Time* |  | *Testers* |

## Test Case 20: See Relevant HMI elements

### Description

This Test Case is testing the Systems User Interface functionalities.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenatiosimulator

### Requirements

**Stakeholder Requirement:**

[BNCS490] As an Operator, I want to have UI panels and elements to interact with the system, so I can perform my role.

**Accept Criteria:**

[BNC1868] I want to only see visual elements and user interfaces for capabilities and features that are relevant for my system.

[BNC1869] I want to be able to see a splash screen while the system is starting.

**Stakeholder Requirement:**

[BNCS657] As a System Configurator, I want to define logos and branding elements that are relevant to the system.

**Accept Criteria:**

[BNC2095] I want to be able to define logos and branding elements that are relevant to the system.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 20.1 |  | **MFCC1 PC**  navigate to the following location: C: \C-flex\Program\Nodes\workstation and replace the existing splashscreen with "splash.png" | Check that the file has been replaced. |  |
| 20.2 |  | Open Windows PowerShell and insert the following line:  kill -name jave.  Press Enter | Check that Patrol HMI is closed on MFCC1. |  |
| 20.3 | #BNC1869 | **MFCC1**  Start Patrol HMI | Check that the new splashscreen copied in step 2 is used. |  |
| 20.4 |  | Open IFF (Identification Friend or Foe) action panel | In the Transmission modes check that the following modes are available:  - Mode 1+2  - Mode C+S  - Mode 3/A + C  - Mode 1+3/A + C  - Mode 2+3/A + C  - Mode 3/A + C+S  - Mode 1+3/A + C+S  - Mode 2+3/A + C+S |  |
| 20.5 |  | **Simulator PC**  Using Radarsim: Scenario simulator use the following script to create a track:  - OneTrack.js | **MFCC1**  In Patrol HM, open Track List and check that the track has been created |  |
| 20.6 |  | **MFCC1**  From Patrol HMI -> Track List, open the track card of the track created in step 3. | Check that the sensor section contains the following icons:  - AIS  - Scanter  - IFF  - ADS-B  - ARPA  - ESM |  |
| 20.7 |  | Using Patrol HMI open Tools | Check that the Helo Approach option is available |  |
| 20.8 |  | Using Patrol HMI open Helo Approach. | Check that there is an option called "Display Helo Video" optiuon available |  |
| 20.9 |  | In Patrol HMI | Check that Tactical Recording is available |  |
| 20.10 |  | Open Action Menu List (burger button) | Check that "Tactical Replay" is available in the list. |  |
| 20.11 |  | Open About pop-up | Check that the following text is appearing on the About pop-up: Terma A/S - C-flex Patrol (as it is also marked in red in the below picture).   |  | | --- | | graphic | |  |
| 20.12 |  | **MFCC1 PC**  navigate to C-flex -> Program -> Configuration and open config.xml file by using Notepadd++.  In the config file search after "<Property name="image.name" value="Terma A/S - C-Flex Patrol" />".  Replace "Terma A/S - C-Flex Patrol" by "Terma Test Patrol".  Save the changes | Check that the new text is saved |  |
| 20.13 |  | Open Windows PowerShell and insert the following line:  kill -name jave.  Press Enter | Check that Patrol HMI is closed on MFCC1. |  |
| 20.14 |  | **MFCC1**  start Patrol HMI and navifate to Burger menu - About pop-up | Check that the windows title has been changed with the text inserted in step 14. Also, the main window title has been changed (as it is also marked in red in the below picture).   |  | | --- | | graphic | |  |
| 20.15 |  | **MFCC1 PC**  navigate to C-flex -> Program -> Configuration and open config.properties file by using Notepadd++.  In the file search after "com.terma.cflex.flexplate.aboutdialog.description=Terma A/S - C-Flex Patrol".  Replace "Terma A/S - C-Flex Patrol" by "Terma Test".  Save the changes | Check that the new text is saved |  |
| 20.16 |  | Open Windows PowerShell and insert the following line:  kill -name jave.  Press Enter | Check that Patrol HMI is closed on MFCC 1. |  |
| 20.17 |  | **MFCC1**  start Patrol HMI and navifate to Burger menu - About pop-up | Check that the windows title has been changed with the text inserted in step 17.   |  | | --- | | graphic | |  |

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## Test Case 21: Replay Operational Data

### Description

This Test Case is testing the Systems recording and replaying functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS430] As an Operator, I want to replay previously recorded operational data, e.g. for debriefing purposes. Replayed data shall not be shown with live data on any console.

**Accept Criteria:**

[BNC1763] I want it to be visually obvious that a console is running in replay mode.

[BNC1765] I want to be able to replay tracks/bearing lines and tactical events.

[BNC1767] I want to be able to start and stop replay.

[BNC1771] I want to be able to control the rate of time progression (Not for synchronized video replay).

[BNC1772] I want to be able to skip back and forth in time.

[BNC1773] I want to be able to see XP vector of a track.

[BNC1777] I want to be able to revert to live mode.

[BNC1778] I want to be able to quickly perform tactical replay to review the recent past while still receiving alerts/notifications like in the live view.

**Stakeholder Requirement:**

[BNCS432] As an Operator, I want that operators can join my replay session from their consoles, e.g. for debriefing and training purposes.

**Accept Criteria:**

[BNC1784] I want that the other operators can join my controlled replay session and thereby have the replayed picture presented at their consoles.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 21.1 |  | **MFCC1**  In the **ActionMenuList** navigate to the “**Tactical Recording**” button.  Start a recording by switching the sliding button under Recording to “**On**”. | **MFCC1**  Check that a recording has started. |  |
| 21.2 |  | In the **ActionMenuList** navigate to the “**New Manual Track**” create a new track and a new Bearing line:   1. **Track**   Select Entity Type:   * Click on “**Track**”   Details:   * **Name**: Track * **Position**: 57°00'00"N - 011°00'00"E * **Altitude**: 0 f * **Course/Speed**: 090° - 0 deg-knots   Classification:   * **Category**: air * **Type**: drone * **Identity**: unknown   Click “**Save**” to create the track.   1. **Bearing Line**   Select Entity Type:   * Click on “**Bearing Line**”   Details:   * **Name**: Bearing Line * **Foot** **Point**: 56°00'00"N - 011°00'00"E * **Bearing**: 000   Classification:   * **Category**: air * **Type**: drone * **Identity**: unknown   Click “**Save**” to create the track. | Check that track and EW lines/ Bearing line are created on the SD. |  |
| 21.3 | #BNC1763  #BNC1765  #BNC1766 | From Burger menu, open “**Tactical Replay**”.  Click on “**Tactical Replay**” in the “**ActionMenuList**” and expand the latest recording by clicking on “**>**”, to view the recording made in step 21.1 and 21.2.  Under Replay Control, click on the “**start**” button.  Wait until the tracks added in step 21.2 appear on the screen. | Check that the tactical replay opens in the SD with a red bar at the top of the screen indicating “Not Live Situational Awareness Picture”.    Check, that tracks, and EW lines created in step 21.3 are present and marked with a R symbol.  Then verify, that the symbology available during replay is the same as in live mode. |  |
| 21.4 | #BNC1767 | In tactical replay “**start**”  and “**stop**”  replay by clicking on the triangular and then on the square symbol. | Check that Start and stop is possible |  |
| 21.5 | #BNC1770 | In the tactical replay press “**start**”  and then press “**pause**” .  To resume the replay press “**start**”  again. | Check if the Tactical Recording freezes when pressing “**pause**” and resumes when pressing “**start**”. |  |
| 21.6 | #BNC1771 | Then control the rate of time progression (Not for synchronized video replay), by slyding the “**Replay Speed**” from 1x to 5x | Check that replay speed can be changed |  |
| 21.7 | #BNC1772 | In tactical replay skip “**back**” () and “**forth**”() in time by clicking on the symbols. | Check that jumping back and forth is possible, by checking the Replay time before and after skipping |  |
| 21.8 | #BNC1777 | While in Tactical Replay, open Burger menu and select “**Situation Display**”. Then in the Burger menu again, click Tactical Replay | Check that it is possible to jump between Tactical Replay and Situation Display. |  |
| 21.9 | #BNC1773 | While in tactical replay, open "**View Options**" and toggle "**XP Vector**" option to “**On**” and “**Off**” | Check that on the Tactical Replay the vector track is shown. |  |
| 21.10 | #BNC1778  #BNC1784 | **MFCC1**  In one “Terma A/S – C Flex Patrol” window, open the Situational Display.  **MFCC2**  In the other “Terma A/S – C Flex Patrol” window navigate to Tactical Replay and open the replay from step 21.1. | Check that it is posible to play a Tactical Replay on MFCC2, while still receiving live alerts/ notifications on the SD on MFCC1. |  |

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## Test Case 22: Place holder

## Test Case : Manage Recorded Operational Data

### Description

This Test Case is testing the systems recording and disc space functionality.

### Test Environment

C-Flex Patrol release under test must be installed

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Several recordings with different sizes already existing in the system

### Requirements

**Stakeholder Requirement:**

[BNCS428] As an Operator, I want to manage recordings, so that the disk usage can be kept under control.

**Accept Criteria:**

[BNC1751] I want to be able to delete recordings, so that I can keep disk space consumption under control and retain overview of recordings.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 23.1 |  | **MFCC**  Open HMI and select “**Tactical** **Recording**” from the action menu list.  Insert "**Test1**" in the" **Name**" field and start the recording by setting "**Recording** = **ON**" | Check that recording is started and let it run for 5 min before proceeding. |  |
| 23.2 |  | Open Patrol HMI and press on the Burger Menu button.  Select “**Tactical** **Replay**”. | Check that Tactical Replay is opened. |  |
| 23.3 |  | From the action menu list select "**Tactical** **Replay**" | Check that the "Action panel" is opened and all created recording are in the list. |  |
| 23.4 |  | Select the recording created in step 2 and try to delete it. | Check that a message appears informing that the ongoing recording cannot be deleted. |  |
| 23.5 |  | Navigate to Situational Display.  Open “**Tactical Recording**”. | Check the Remaining Time to see the amount of time remaining for recording. |  |
| 23.6 | #BNC1751 | Navigate back to Tactical Replay and delete several existing recordings.Return to Situational Display - Tactical Recording. | Check the value displayed under Remaining time and validate that value has been increased. |  |
| 23.7 |  | Perform some more tactical recordings. | Check the value displayed under Remaining time and validate that value has been decreased. |  |

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## Test Case : I want the display of alerts to be sorted so that I can quickly view the ones I am interested in

### Description

This Test Case is testing the Alert functionality in C-Flex Patrol.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-ais

Different notifications should be available in the Technical Notifications and Operational Notifications

### Requirements

**Stakeholder Requirement:**

[BNCS328] As an Operator, I want to select the alerts that I deem are most relevant for me, so I am not burdened with unimportant alerts.

**Accept Criteria:**

[BNC1040] I want the display of alerts to be sorted so that I can quickly view the ones I am interested in.

**Stakeholder Requirement:**

[BNCS326] As an Operator, asynchronously with my current operations, I want to receive notifications about tactical events, so that I don't have to monitor these myself.

**Accept Criteria:**

[BNC1034] I want the alerts to be displayed in a way that they catch my attention and are easy to view, but at the same time does not interfere with or block the view of the situation display.

**Stakeholder Requirement:**

[BNCS713] As a system Technician, asynchronously with my current operations, I want to receive notifications about technical events, so that I don't have to monitor these myself.

**Accept Criteria:**

[BNC1051] I want the system to generate an alert and present this to the operator in technical control of the system when a system node or subsystem malfunctions.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. | Technical notification settings | | | |
| 24.1 |  | **Simulator PC**  Open the sensorism-ais and close it again. | **Simulator PC**  sensorism-ais is opened and is closed again. |  |
| 24.2 | #BNC1051  #BNC1034 | **MFCC**  Wait until you have recived at least two Technical Notifications on the Situation Display.  In the “**ActionMenuList**”, Navigate to Technical Notifications | **MFCC**  Check that two technical notifications are received:   1. “AIS interface receiving data” 2. “AIS interface down” |  |
| 24.3 |  | In Technical Notifications open notification setting (the little gear icon in the top right corner) | Check that notification setting is opened and the options are selectable.  Example output:  graphic |  |
| 24.4 | #BNC1040 | In the Notification Settings select Sort by Newest First and navigate to Technical Notifications | Check that the newest notifications are displayed first |  |
| 24.5 | #BNC1040 | In the Notification Settings select Sort by Oldest First and navigate to Technical Notifications | Check that the oldest notifications are displayed first |  |
| 24.6 | #BNC1040  #BNC1034 | In the Notification Settings select Sort by Most Sever First and navigate to Technical Notifications | Check that the most sevear notifications are displayed first  1. notifications with red symbol  2.  notifications with grey symbol  3. notifications with green symbol  Example output:  graphic |  |
| 24.7 | #BNC1040  #BNC1034 | In the Notification Settings select Sort by Group ID and navigate to Technical Notifications | Check that the group id is used to sort notifications.  Example output:  graphic |  |

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## Test Case : I want to be able to see how many alerts are unread and need my attention

### Description

This Test Case is testing the Alert functionality in C-Flex Patrol.

### Test Environment

C-Flex Patrol release under test must be installed

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-ais

### Requirements

**Stakeholder Requirement:**

[BNCS328] As an Operator, I want to select the alerts that I deem are most relevant for me, so I am not burdened with unimportant alerts.

**Accept Criteria:**

[BNC1041] I want to be able to see how many alerts are unread and need my attention.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 25.1 |  | **Simulator PC**  In the AIS simulator Create some AIS tracks so that there will be some alerts available. | **MFCC**  Check that some alerts are created. and that the total number of unread items is displayed as a number on the icon.  Example output: |  |
| 25.2 | #BNC1041 | **MFCC**  Open and read 1 of the alerts from the pop-up. | Check that the  total number of unread items displayed as a number on the icon has decreased by 1 alert. |  |

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## Test Case : Apply Track and Bearing Line Filters Description

### Description

This Test Case is testing the system’s track filter functionality

### Test Environment

C-Flex Patrol release under test must be installed

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Have a mix of manual and sensor tracks and bearing lines that cover all types of Category, Identity and Sources   
Have tracks that don’t have ADS-B, AIS and IFF replies associated   
Create TE rules such that existing tracks get flagged as Threats   
Note that the filters take effect on the SD as well as the track list panel. OU is always visible no matter the filter setting

### Requirements

**Stakeholder Requirement:**

[BNCS260] As an Operator, I want to limit display of tracks and bearing lines on the situation display via filters, so that I only view the ones relevant for my current operative task/role.

**Accept Criteria:**

[BNC390] I want the system to show all tracks and bearing lines by default.

[BNC392] I want to be able to filter on Category, Identity and on Source.

[BNC393] I want the situation display to shown only the items that match the selected Category values AND the selected Identity values AND the selected Source values AND any special filters that I have selected.

[BNC394] I want to be able to select a special filter "Silent" that shows tracks that are not actively sending/replying to data (i.e. where neither ADS-B nor AIS is in the data source list and where the set of associated IFF replies is empty).

**Stakeholder Requirement:**

[BNCS270] As an Operator, I want to filter track cards so that the tracks that are most relevant to my mission is shown or shown more predominant than tracks that are less relevant.

**Accept Criteria:**

[BNC501] On the track card, I want to view the same tracks/bearing lines as is selected for the situation display (SIT and track cards shall be synchronized).

**Stakeholder Requirement:**

[BNCS133] As a Picture Compiler, I want the system to automatically correlate track measurements from available sources into one system track, so I see the correct number of entities in the area.

**Accept Criteria:**

[BNC587] I want to be able to suppress an individual track source and thus deactivating all its incoming source tracks.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 26.1 | #BNC390  #BNC501 | **MFCC**  On the Filters Panel verify that all sliders are set to OFF | All tracks and bearing lines must be visible on the SD and track list panel  On the lower widget, Track Filters: Off must be shown  Check that the same tracks and EW lines displayd on Sit Disp are also visible on Track List panel. |  |
| 26.2 | #BNC392  #BNC393  #BNC501 | On the Filter Panel, move some of the Category Slider to On | Only tracks and bearing lines that belong to that Category must be shown on the SD and the track list panel. OU must always be shown.  On the lower widget, Track Filters: On must be shown  Check that the same tracks and EW lines displayd on Sit Disp are also visible on Track List panel. |  |
| 26.3 | #BNC392  #BNC393  #BNC501 | On the Filter Panel, move some of the Identity Slider to On | On the tracks/bearing lines that were filtered above, the Identity filter should take effect and fewer tracks must be shown that only filfill both the Identity AND Category criteria  Check that the same tracks and EW lines displayd on Sit Disp are also visible on Track List panel. |  |
| 26.4 |  | On the Filter Panel turn Off all filters. | All Tracks are shown on the SD |  |
| 26.8 | #BNC392  #BNC393  #BNC501  #BNC587 | On the Filter Panel, move a Source Slider to On | The Source filter should take effect. All tracks send from the sensor that has been filtered out, should dissapear from the SD and the track list.  Check that the same tracks and EW lines displayd on Sit Disp are also visible on Track List panel. |  |
| 26.9 |  | Turn all filter sliders to off | All tracks and bearing lines must be visible on the SD and track list panel  On the lower widget, Track Filters: Off must be shown |  |
| 26.10 | #BNC394  #BNC501 | Set 'Silent' slider to On | All tracks/bearing lines that don’t have ADS-B, AIS and IFF replies associated must be shown on the SD and track list.  On the lower widget, Track Filters: On must be shown  Check that the same tracks and EW lines displayd on Sit Disp are also visible on Track List panel. |  |
| 26.11 | #BNC501 | Turn all filter sliders to off | All tracks and bearing lines must be visible on the SD and track list panel  On the lower widget, Track Filters: Off must be shown  Check that the same tracks and EW lines displayd on Sit Disp are also visible on Track List panel. |  |

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## Test Case 27: Manually override some of the data coming form OU sensors

### Description

This Test Case is testing whether the Systems can give an overview of the tactical situation, regarding e.g. wind and weather conditions.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

On the simulator PC start the following simulators:

1. nmea2ownunitsimulator

2. em3000gyrosimulator

3. sensorsim-scenariosimulator

4. sensorsim-gps

Insert valid values in all simulators and start sendind data.

### Requirements

**Stakeholder Requirement:**

[BNCS296] As an Operator, I want the system to give me a good overview of what the tactical situation is for own ship, so that I am able to carry out my mission.

**Accept Criteria:**

[BNC847] I want to update values within the pre-configured groups independently of any other data (except roll, pitch and relative wind data).

[BNC845] I want to be able to manually override all data from own ship sensors (except attitude data and relative wind data).

[BNC2574] I want the system to automatically use the last known sensor inputs when switching to Calculated mode.

**Stakeholder Requirement:**

[BNCS621] As an Operator, I want to have updated weather data, so that I can assess the impact on my mission.

**Accept Criteria:**

[BNC2577] I want to be able to enter sea state value between 0 and 9.

[BNC903] I want to be able to select whether to use calculated true wind or manual wind data throughout the system.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 27.1 |  | **MFCC**  Open burger menu and select Own Unit Management. From the left menu select Own Unit Management option. | Check that Own Unit Management screen is opened. |  |
| 27.2 | #BNC845  #BNC847  #BNC903 | In the Own Unit Management, the default configuration is availabe. | Check that the following groups are displayed:  - Position, Velocity  - Heading  - Misc  - Attitude  - Depth  - Sea State  - Environment  - True Wind  - Additional Wind Information  - Relative Wind  - Relative speed  Check that by default the following groups are set to Calculated and the status is changed to Sensor when automode is ON and simulator input is available. Also check that when auto mode is off and simulator input is available then operator can freely choose to use either sensor data or the calculated data for these groups:  - Position, Velocity  - Heading  - Depth  - Environment  - True Wind  - Relative speed  Check that by default the following groups are set to Sensor and the status cannot be changed to Calculated even when auto mode is off and simulator input is available :  - Misc  - Attitude  - Additional Wind Information  - Relative Wind  Check that by default the following groups are set to Calculated and the status cannot be changed to Sensor:  - Sea State  Check that for all groups set to Sensors, the values are read only and cannot be manually edited. |  |
| 27.3 |  | Expand each group by pressing the arrow in front of the group lable | Check that for each group the correct values used in the simulators are available:  1. Position, Velocity              - Position              - Course/Speed              - Positional Delution  2. Heading              - Heading  3. Misc              - Heading rate              - Pich rate              - Roll rate  4. Attitude              - Pitch              - Roll  5. Depth              - Depth Below Keel              - Surface Depth  6. Sea State              - Sea State  7. Environment              - Air pressure              - Air Humidity              - Air Temperature              - Sea Temperature  8. True Wind              - True Wind  9. Additional Wind Information              - Rel. Mean Wind              - Mean True Wind              - Rel. Peak Wind     * Relative Wind               - Relative Wind  11. Relative Speed              - Speed through water  Check that each group have a timestamp (Except, "Misc, Attitude, Additional Wind Information and Relative Wind") |  |
| 27.4 |  | Expand all the groups that are set to Calculated | Check that for those groups it is possible to manually edit the values (fields are not read only anymore).  Check that when values are input, "Save" and "Cancel" buttons are enabled. |  |
| 27.5 | #BNC2577 | In the Sea State group, insert a valid value in the Sea State field.  E.G. Sea State = 9  Save the value | Check the new value is displayed in the field and it has been saved. |  |
| 27.6 | #BNC2577 | In the Sea State group, insert an invalid value in the Sea State field.  E.G. Sea State = 11 | Check that the field is marked red and the save button is not active.  Check that if moused-over, the Sea State field presents a took tip for correct values. |  |
| 27.7 |  | Repeat step .5 and .6 for several options in the following groups :  - Position, Velocity  - Heading  - Depth  - Environment  - True Wind  - Relative Speed | Check that it is only possible to manually edit values for sensors that can be set to Calculated and not for the ones set to Sensor |  |
| 27.8 | #BNC2574 | In Settings Center, turn off “Enable Auto OU Sensor Selection”.  In Own unit management section,toggle Position, Velocity group to receive data from sensor and input new values through simulator.  E.G. Course = 120, Speed = 20 knots | Check that simulator data input is displayed |  |
| 27.9 | #BNC2574 | Toggle Position, Velocity group to calculated | Check that the last known sensor values input in step 9 is presented. |  |
| 27.10 | #BNC2574 | Repeat steps 8 and 9 for several options in the following groups:  - Heading  - Depth  - Environment  - True Wind  - Relative Speed | Check that groups are presenting the last known sensor input when switching to calculated mode |  |

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## Test Case 28: OU Sensor Data - Timestamp

### Description

This Test Case is testing the system’s ability to send sensor data and update with the correct timestamp.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

On the simulators PC start the following simulators:

1. nmea2ownunitsimulator

2. em3000gyrosimulator

3. sensorsim-scenariosimulator

4. sensorsim-gps

Insert valid values and send data from the sensors

### Requirements

**Stakeholder Requirement:**

[BNCS296] As an Operator, I want the system to give me a good overview of what the tactical situation is for own ship, so that I am able to carry out my mission.

**Accept Criteria:**

[BNC2576] I want to be able to enter a timestamp from when calculated values take effect.

[BNC848] I want to be able to see the timestamp for when the sensor data was last received.

[BNC2575] I want to know the time at which calculated values got used, until I make an update to the timestamp.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 28.1 |  | **MFCC**  In Settings Center,turn off “Enable auto OU sensor selection”  Open Cflex - Burger Menu - select Own Unit option. Open Own Unit Management screen by pressing the option in the left menu. | Check that the correct screen is opened. |  |
| 28.2 |  | Set all available groups to receive data from sensors by toggling the button apearing near each grop on Sensor (only for groups for which the switch to sensor is possible). | Check that all the groups are set to receive data from sensor. |  |
| 28.3 |  | Expand all the groups | Check that there is a timestamp field available where the time is updated with data coming from the sensors.  Check that all fields avaialble are read only and cannot be updated. |  |
| 28.4 |  | For any of the sensors supporting calculated values, toggle the button to Calculated and expand the group. | Check that the time displayed in the Timestamp represent the time for when the switch to calculated took place.  Check that all data for the group no longer is read only and can be edited. |  |
| 28.5 |  | Toggle the group back to sensor, navigate to "Own Unit Source Status" and expand them all. | Check that the timestamp is real time. |  |
| 28.6 | #BNC848  #BNC2575 | **Simulator PC**  Stop transmission from all simulators. | **MFCC**  Check that the time displayed in the timestamp is the time for when the sensor data was last received. |  |
| 28.7 | #BNC2576 | **MFCC**  Navigate to "Own Unit Management"  For "Position, Velocity" group, Timestamp field, manually insert a value in the past. Save the changes | Check that the time is correctly saved. |  |
| 28.8 |  | Insert an invalid time format in the Timestamp field. Try to save | Check that:  - The field is marked in red.  - 'The "Save" button is disabled.  - The "Cancel" button is enabled.  - If moused over, the field presents a tooltip for correct format. |  |
| 28.9 |  | Press "Cancel" button | Check that the timestamp is reset and displays the value prior to editing. |  |
| 28.10 |  | Repeat step 7, 8, 9 for several groups. | Check that result for several groups is as expected |  |

### Comments

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## Test Case 29: Place Holder











## Test Case 30: OU – Wind Information

### Description

This Test Case tests the weather data functionality in C-Flex Patrol.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

On the simulators PC start the following simulators:

1. nmea2ownunitsimulator

2. sensorsim-gps

### Requirements

**Stakeholder Requirement:**

[BNCS621] As an Operator, I want to have updated weather data, so that I can assess the impact on my mission.

**Accept Criteria:**

[BNC902] I want to be able to enter true wind manually.

[BNC901] I want that the system calculates true wind based on data from the sensor giving the highest wind speed and the course/speed over ground of own ship. Mean true wind data shall be filtered.

[BNC2579] I want to see which direction the wind is coming from for true and relative wind.

[BNC865] I want to be able to use manually entered course/speed over ground throughout the system.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 30.1 |  | **MFCC**  Under the Burger Menu, navigate to “**Settings Center**”.  Under the “**Sensors**” tap check that “**Enable auto OU sensor selection**” is turned “**ON**”.  In the Burger Menu, navigate to “**Own Unit Management**” and under the “**Own Unit Management**” tab insert the following values under “**Position, Velocity**”:   * **Course/ Speed**: 000° - 0 deg-knots * **Position**: 56°14'00"N - 010°14'34"E * **Positional Dilution**: 0 m * Press “**Use Current Time**” and “**save**”. | **MFCC**  Check that values are added and saved. |  |
| 30.2 |  | **Simulator PC**  In “**NMEA2OwnUnit Simulator**” open "**Wind MWV**" tab  Insert the following:   * Angle: 15 * Var: 0 * Refference: Relative (R) * Speed: 1 * Var: 0 * Unit: Meter\_Per\_Sec * Status: Data\_Valid (A)   Check "**Tx**" checkbox and press on "**Start**" button. | **Simulator PC**  After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. |  |
| 30.3 | #BNC2579 | **MFCC**  Navigate to the “SD”. In the ActionMenuList, click on “**Own Unit**”.  Observe the values presented for wind is aligned with input from simulator. | **MFCC**  Relative Wind: **G015 - 1 rel-m/s**  True Wind: **015° - 1 deg-m/s**  Rel. Mean Wind: **G015 - 1 rel-m/s**  Mean True Wind: **015° - 1 deg-m/s**  Rel. Peak Wind: **G015 - 1 rel-m/s** |  |
| 30.4 | #BNC2579 | In the ActionMenuList navigte to “**Tools**” and click on “**Helo Approach**”.  Check that the values presented under the category “**Wind Data**” are aligned with the input from the simulator. | True Wind: **015° - 1 deg-m/s**  Rel. Mean Wind: **G015 - 1 rel-m/s**  Rel. Peak Wind: **G015 - 1 rel-m/s** |  |
| 30.5 |  | **Simulator PC**  In “**NMEA2OwnUnit Simulator**” open the "**Heading, Roll, Pitch PANZHRP**" tab and  Insert the following:   * Source: Unknown (0) * Heading: 20 * Roll: 0 * Pitch: 0 * Heading Angular Rate: 0 * Roll Angular Rate: 0 * Pitch Angular Rate: 0 * Status: Valid(A) * Selection: Selected (A)   Check "**Tx**" checkbox and press on "**Start**" button. | **Simulator PC**  After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. |  |
| 30.6 | #BNC2579 | **MFCC**  Navigate to the “SD”. In the ActionMenuList, click on “**Own Unit**”.  Observe the values presented for wind is aligned with input from simulator. | **MFCC**  Relative Wind: **G015 - 1 rel-m/s**  True Wind: **035° - 1 deg-m/s**  Rel. Mean Wind: **G015 - 1 rel-m/s**  Mean True Wind: **035° - 1 deg-m/s**  Rel. Peak Wind: **G015 - 1 rel-m/s** |  |
| 30.7 | #BNC2579 | In the ActionMenuList navigte to “**Tools**” and click on “**Helo Approach**”.  Check that the values presented under the category “**Wind Data**” are aligned with the input from the simulator. | Check that the following values are displayed:  True Wind: **35° - 1 deg-m/s**  Rel. Mean Wind: **G015 - 1 rel-m/s**  Rel. Peak Wind: **G015 - 1 rel-m/s** |  |
| 30.8 |  | In the Burger Menu, navigate to "**Own Unit Management**".  Select "**Own Unit Management**" on the left of the screen. | Check that the "**Relative Wind**" group is set to "**Sensor**" and that the button can not be toggled. |  |
| 30.9 |  | Expand the "**Relative Wind**" group. | Check that the “**Relative Wind**” field contains valid values in accordance to the values inserted in the simulator.    Check that values are read only and cannot be manually changed by the operator. |  |
| 30.10 | #BNC2579 | Expand "**Additional Wind Information**" group.  Check that the values presented under the category “**Additional Wind Information**” are aligned with the input from the simulator. | Check that the following values are displayed:  Rel. Mean Wind: **G015 – 1 rel-m/s**  Mean True Wind: **035° – 1 deg-m/s**  Rel. Peak Wind: **G015 – 1 rel-m/s**  Check that values are updated each time value in "**Relative Wind**" is updated.  Check that values are read only and cannot be manually edited by operator. |  |
| 30.11 |  | **Simulator PC**  In “**NMEA2OwnUnit Simulator**” open the "**Wind MWV**" tab and press the "**Stop**" button. | **MFCC**  Under “**Own Unit** Management” check that the values in both "**Relative Wind**" and "**Additional Wind Information**" are all set to "**N/A**".  Check that a Technical Notification is sent informing that the MWVRECEIVER sensor is no longer capable of reporting relative wind. |  |
| 30.12 |  | **Simulator PC:**  In “**NMEA2OwnUnit Simulator**” open the "**Wind MWV**" tab. Press the "**Start**" button.  **MFCC**  In “**Settings Center**” navigate to “**Sensors**” and turn “**Off**” “**Enable auto OU sensor selection**” and click “**Save**” in the bottom.  In the Burger Menu select “**Own Unit Management**” and open “**Own Unit Management**” on the screen. | **MFCC**  Check that there is a group called "**True Wind**".  Check that the "**True Wind**" group can be toggled from “**Calculated**” to “**Sensor**” and back again. |  |
| 30.13 |  | **MFCC**  In the “**True Wind**” group toggle the button to "**Calculated**" and expand the group. | Check that there is the following information available:  **1. True Wind** - last value received from simulator is still available but is not updated anymore.  **2. Timestamp** - the time for the last update is still available and the time is not automatically updating.  **3. Manual update** - Both values can be manually edited by operator. |  |
| 30.14 | #BNC902 | In the "**True Wind**" field, insert the following values:   * True Wind: **030° - 1 deg-m/s** * Timestamp: press “**Use Current Timestamp**”   Press “**Save**”. | Check that the value is saved. |  |
| 30.15 |  | In the “**True Wind**” group toggle the button to “**Sensor**”. | Check that “**True Wind**” contains the values coming from the sensor now. |  |
| 30.16 | #BNC901 | Expand "**Position, Velocity**" group and edit the following:   * Course / Speed: **000° - 20 deg-knots** * Timestamp: Press “**Use Current Timestamp**”   Press “**Save**”. | Check that the “**True Wind**” group and the “**Mean True Wind**” group contain valid values in accordance to the values changed in ”**Course/ Speed**” and "**Wind MWV**" |  |
| 30.17 | #BNC865 | **MFCC**  In the ActionMenuList, click on “**Own Unit**”.  Find the category “**Position, Velocity**” and “**Heading**” | **MFCC**  Check that the values presented under the two categories align with the manual input from “**Course/ Speed**”.   * Course/ Speed: **000° - 20 deg-knots** * Heading: **020 deg** |  |
| 30.18 | #BNC865 | In the ActionMenuList navigte to “**Tools**” and click on “**Helo Approach**”.  Find the category “**Own Unit Data**” | Check that the values presented under “**Own Unit Data**” align with the manual input from “**Course/ Speed**”.   * Course/ Speed: **000° - 20 deg-knots** * Heading: **020 deg** |  |



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## Test Case 31: OU – Dead reckoning

### Description

This Test Case tests the systems dead-reckoned Own Unit position/ velocity function in C-Flex Patrol.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulators PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-scanter6002

### Requirements

#### Stakeholder Requirement:

[BNCS298] As an Operator, I want to know where I am, in which direction I am moving and how fast (irrespective of wind and current), so that I can comprehend the situation.

**Accept Criteria:**

[BNC862] I want to be able to use dead-reckoned own ship position throughout the system. Dead-reckoning shall automatically start based on the latest known own ship position. The dead-reckoned position shall be updated periodically based on data from the selected source for course/speed over ground.

[BNC863] I want to be able to adjust the dead-reckoned position manually when dead-reckoning is selected as source for own ship position.

[BNC864] I want to be able to input the time stamp for the manually entered values for dead reckoning. If I do not enter a time, I want the time stamp to be set to actual time. When entering time stamp for dead reckoning, I want the system to take position, course and speed altogether into account.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 31.1 |  | **Simulator PC**  In the sensorsim-gps navigate to the “Scripts” tab.  Locate the Script: “**!OwnUnit.js**”andrun it by clicking the “Start” button**.**  **MFCC**  Check that “Enable Auto OU Sensor Section” is turned on in Settings Center if applicable.  Next go to the Own Unit Mangemnet from the burger menu and Open Own Unit Management in the left menu. | Check that the "Position, and Course/Speed" is set to "Sensor". |  |
| 31.2 |  | Expand "Position, and Course/Speed" group. | Check that Position, Course, Speed are correctly updated with values received from sensor. |  |
| 31.3 | #BNC862 | **Simulator PC:**  Close the GPS simulator | **MFCC**  Check that  - Position and Course Speed groups are set to Calculated.  - Position is still updated taking into account the last value received from sensor for Course/Speed.  - Values for Course and Speed are the last values received from GPS Simulator |  |
| 31.4 | #BNC863 | **MFCC**  Still under the “Own Unit Management”, now update the two groups by manually inserting the following values:  For **Position**:  56°00'00"N - 011°00'47"E  For **Course/Speed**:  270° - 30 deg-knots  Save the changes. | Check that the position is changing according to the new inserted values |  |
| 31.5 |  | **Simulator PC:**  Start the GPS simulator | **MFCC**  Check and see that the Positions and Course Speed groups are switched back to Sensor status, and that the values match that of the values form the Simulator.  Example output: |  |
| 31.6 | #BNC864 | **MFCC**  Now switch the these back to Calculated status.  In the Position field manually insert the following values::  For **Position**:  55°26'52"N - 012°43'16"E.  For **Course/Speed**:  270° - 100 deg-knots  For both groups, press the: "**Use Current Time**" button  Save the changes  *Note: Write down the time.* | Open Burger Menu -> Situation display and open Own Unit Position from the right menu.  Check that the Position, Course and Speed for Own Unit are the correct ones and that the ship is heading in the right direction. |  |
| 31.7 |  | Back in the Own Unit Management  Now switch groups back to “**Sensor**” status. | Check that:  - Values for Position, Course, Speed are the same as the ones in the simulator. |  |
| 31.8 |  | Switch the grops back to "**Calculated**" and expand them. | Check that the group is set to calculated |  |
| 31.9 | #BNC864 | In the Position field manually insert the following values:  For **Position**:  55°26'52"N - 012°43'16"E.  For **Course/Speed**:  100° - 50 deg-knots  Timestamp: Set this to yesterday  Save the changes  *Note: Write down the time.* | Open Burger Menu -> Situation display and open Own Unit Position from the right menu.  Check that the Position, Course and Speed for Own Unit are the correct ones and that the ship is heading in the right direction.  *Note: Given we are not using current time, the heading should be aligned with the original value from the moment dead reckoning occured.* |  |
| 31.10 |  | Back in the Own Unit Management  Now switch groups back to “Sensor” status. | Check that:  - Values for Position, Course, Speed are the same as the ones in the simulator. |  |
| 31.11 |  | Switch the grops back to "**Calculated**" and expand them. | Check that the group is set to calculated |  |
| 31.12 | #BNC864 | In the Position field manually insert the following values:  For **Position**:  55°26'52"N - 012°43'16"E.  For **Course/Speed**:  020° - 25 deg-knots  Timestamp: Set this to tomorrow  Save the changes  Note: Write down the time. | Open Burger Menu -> Situation display and open Own Unit Position from the right menu.  Check that the Position, Course and Speed for Own Unit are the correct ones and that the ship is heading in the right direction.  *Note: Given we are not using current time, the heading should be aligned with the original value from the moment dead reckoning was occured.* |  |

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## Test Case : OU Auto Mode and Configurable Timeouts

### Description

Operator can choose if the system shall automatically use sensor inputs when available.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

TBD

### Test Prerequisites

On the simulators PC start the following simulators:

1. nmea2ownunitsimulator

### Requirements

**Stakeholder Requirement:**

[BNCS296] As an Operator, I want the system to give me a good overview of what the tactical situation is for own ship, so that I am able to carry out my mission.

**Accept Criteria:**

[BNC2596] I want to be able to choose if the system shall automatically use sensor inputs whenever available (Auto mode).

[BNC2573] I want the system to automatically use manual/calculated values after 15 sec of non availability of sensor data (except roll, pitch and relative wind data).

[BNC847] I want to update values within the pre-configured groups independently of any other data (except roll, pitch and relative wind data).

[BNC2570] As a System Configurator, I want to be able to configure a timeout for stale data after which a sensor data is considered old.

[BNC849] I want to know if the system data is older than the configured stale data timeout.

[BNC877] I want to be able to use manually entered heading throughout the system.

[BNC1004] I want to be able to view the status of connections to integrated systems (and the operational status to the extent it is available), for e.g. sensors, effectors and link systems.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 32.1 |  | **MFCC1:**  Open Cflex – Burger Menu  Go to Setting Center if applicable. | **MFCC1:**  Check that the” Own unit sensor selection” option is turned ON |  |
| 32.2 |  | **Nmea Simulator:**  Open "Heading, Roll and Pitch PANZHRP" tab and insert valid values for:  - Heading = 1  - Roll = 2  - Pitch = 3  - Heading Angular rate = 10  - Roll Angular Rate = 20  - Pitch Angular rate = 30  Check TX checkbox and press "Apply" and “Start” buttons | **Nmea Simulator:**  Simulator is connected. |  |
| 32.3 |  | **MFCC1:**  Open Cflex - Burger Menu  Select Own Unit Management option.  Open Own Unit Management screen by pressing the option in the left menu. | **MFCC1:**  Check that the correct screen is opened. |  |
| 32.4 | #BNC1004 | Expand the following groups:   * Heading * Misc * Attitude | Check that Sensor source is selected and each group is receiving valid data from the sensor.  Check that you can not change the source to Calculated. |  |
| 32.5 |  | Go to the Situational display.  Select OU from the Action menu panel. | Check that the following groups are showing data, coming from the Nmea Simualtor,   * Heading * Misc * Attitude |  |
| 32.6 |  | **Nmea Simulator:**  In "Heading, Roll and Pitch PANZHRP" tab, select Stop | **Nmea Simulator:**  Check that the simulator is disconnected. |  |
| 32.7 | #BNC2573 | **MFCC1:**  In Situational display Action menu panel, select OU | **MFCC1:**  Check that all three (Heading, Attitude, Misc) stop receiving data from the sensors and show an hour glass after five(set default time) seconds.  Check that hour glass appears only for 10 seconds(set default time) and after that a calculator symbol is visible and data is no more coming from the sensors. |  |
| 32.8 | #BNC2573  #BNC847  #BNC877 | Go to the Burger Menu.  Select Own Unit Management option.  Open Own Unit Management screen by pressing the option in the left menu.  Expand Heading  Add some valid manual value for Heading  Click Save.  Expand Misc. And Attitude | Check that the Heading is switched to Calculated mode and the user is able to add and save manul input.  Check that “Misc.” and “Attitude” tabs doesn’t switch to Calculated mode and all the data fields inside these (Roll, Pitch etc) are showing N/A values |  |
| 32.9 | #BNC877  #BNC2573 | Navigate to "OU" in Situational Display Action menu | Check that the Heading is showing the changed calculated value now |  |
| 32.10 |  | **Nmea Simulator:**  In Heading,Roll, Pitch PANZHRP tab, change all values and select Apply and Start | **Nmea Simulator:**  Check that values are changed and the simulator is connected. |  |
| 32.11 |  | **MFCC1:**  In Cflex, navigate to "OU" in Situational Display Action menu | **MFCC1:**  Check that the new values are displaying for Heading, Attitude and Misc groups and data is receving from the sensors and values are same as in Nmea simulator.  Check that there is no calculator symbol besides the values now. |  |
| 32.12 | #BNC2570 | **Server:**  In config.xml file on the server, search for the property “dk.flexccis.business.ownunitmanagement.itemgroups.OldDataNotificationTimeForGroups” and change value for “heading” from 5000 to 10000, and add a new property,  “com.terma.cflex.ownunitsensor.ownunitdatarecv.hdtMaxMessageDelay=20000” then save and close the config file.  **MFCC1:**  Restart Cflex Patrol.  **Nmea Simulator:**  Stop the source “Heading,Roll, Pitch PANZHRP”.  Go to “Heading HDT” tab, add some valid value, click on Tx checkmark and select Apply and Start. | **MFCC1:**  Check that new Heading value is displayed in OU UI |  |
| 32.13 | #BNC2573 | Slect Stop in “Heading HDT” tab.  **MFCC1:**  In Cflex, navigate to "OU" in Situational Display Action menu  and check the “Heading” section. | **MFCC1:**  Check that an hour glass appears infront of the Heading value,after 10 seconds of stopping the data in the sensor.  Check that an hour glass shows only for 10 seconds and then a calculator icon appears. |  |
| 32.14 | #BNC2596 | **Nmea Simulator:**  Slect Start in “Heading HDT” tab.  **MFCC1:**  In Burger menu, select Setting Center.  Turn Off “Enable Auto OU Sensor Selection”.  Select “Save”. | Check that the “Auto OU Sensor selection” is turned off |  |
| 32.15 | #BNC847 | Go to the Own Unit Mangement from the Burger Menu.  Select Own Unit Management from the left panel.  Change the Heading mode from Sensor to Calculated.  Add manual values.  Save it. | Check that when auto mode is off, then the operator can freely choose to either use sensor data or calculated data when nmea input is available. |  |
| 32.16 | #BNC847 | Go to the Own unit details in Situational Display. | Check that the Heading is using a manual value added in Calculated mode earlier |  |
| 32.17 | #BNC847 | Go to the Own Unit Mangement from the Burger Menu.  Select Own Unit Management from the left panel.  Change the Heading mode from Calculated to Sensor. | Check that when auto mode is off, then the operator can freely choose to either use sensor data or calculated data when nmea input is available |  |
| 32.18 |  | Go to the Own unit details in Situational Display | Check that now the data is shoiwng in “Heading” is coming from the Sensor |  |
| 32.19 |  | **Nmea Simulator:**  In “Heading HDT” tab, select “Stop” | **Nmea Simulator:**  Check that the sensor is disconnected. |  |
| 32.20 | #BNC2573 | **MFCC1:**  Go to the Own unit details in Situational Display | **MFCC1:**  Check that Heading stops receiving data from the sensors and show an hour glass after 10 seconds.  Check that hour glass shows only for 10 seconds and after that a calculator symbol is visible and data is no more coming from the sensors. |  |
| 32.21 | #BNC2573 | Go to the Own Unit Mangement from the Burger Menu  Select Own Unit Management from the left panel | Check that when no Nmea input is available, then calculated mode is always used.  Check that Heading mode has changed back to calculated and you cannot move it to Sensor now. |  |
| 32.22 | #BNC847 | Repeat all above steps for several groups. | Check that the correct information is shown |  |
| 32.23 | #BNC2570 | **Server:**  In config.xml file on the server, search for the property “dk.flexccis.business.ownunitmanagement.itemgroups.OldDataNotificationTimeForGroups” and revert the value for “heading” from 10000 to 5000, save and delete the property,  “com.terma.cflex.ownunitsensor.ownunitdatarecv.hdtMaxMessageDelay=20000” then save and close the config file.  **MFCC1:**  Restart Cflex Patrol | Check that all changes are reverted. |  |

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## Test Case 33: OU - Configure groups.

### Description

This Test Case is testing the System’s “configure groups” functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

From the the following path on the local network:  
\\terma.com\Shares\SMS-Programs\Ohio\Isy\Projects\Patrol\Test\_Files

Copy the following to a USB drive:

- config.xml

- config - Default.xml

### Requirements

**Stakeholder Requirement:**

[BNCS296] As an Operator, I want the system to give me a good overview of what the tactical situation is for own ship, so that I am able to carry out my mission.

**Accept Criteria:**:

[BNC846] As a configurator I want to be able to configure the group containing the set of parameters received from each sensor source.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 33.1 |  | **C-flex Server**  Connect to MFCC VM server through Putty | Connection established |  |
| 33.2 |  | Navigate to the configuration folder through the following command:  cd /opt/cflex/program/configuration |  |  |
| 33.3 |  | Make a copy of the initial system config.xml by using the following command:  mv config.xml configcopy.xml |  |  |
| 33.4 |  | Terminate the Putty connection | Connection terminated |  |
| 33.5 |  | Connect to MFCC VM server through powershell: | Connection established |  |
| 33.6 | [BNC846] | Copy "config.xml" from the USB drive into the VM location /opt/cflex/program/configuration/  Replace the file.  **Cockpit**  Restart C-flex. | **MFCC**  After Cflex is restarted, navigate to OU management and check the following:  - there is a group named Environment\_test  - under Environment\_test group there are only two values available:  Air Pressure, Air Temperature. |  |
| 33.7 |  | **C-flex Server**  Delete "config.xml" file.  Copy "config\_Default.xml" from the USB drive into the location /opt/cflex/program/configuration/ and rename the file to "config.xml".  **Cockpit**  Restart C-flex. | **MFCC**  After Cflex is restarted, navigate to OU mangement and check the following:  - there is a group named Environment  - unde Environment\_test group there are four values available:  Air Pressure, Air Temperature, Air Humidity, Sea Temperature. |  |

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## Test Case 34: OU –No data transmitted with wrong checksum

### Description

This Test Case is testing the System’s ability to support standard interfaces for navigation data.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

On the simulators PC start the following simulators:

1. nmea2ownunitsimulator

### Requirements

**Stakeholder Requirement:**

[BNCS743] As a System Configurator, I want the system to support standard interfaces for navigation data, so I can select between different subsystems.

**Accept Criteria:**:

[BNC2578] I want the data sent with wrong checksum to be discarded.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 34.1 |  | **MFCC**  In the Burger Menu navigate to “**Settings Center**”. Open the “**Sensors**” tab. | **MFCC**  Verify, that the “**Enable Auto OU Sensor Selection**” is turned “ON”. |  |
| 34.2 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator, insert valid values in the following groups:   * Heading * Misc * Attitude * Depth * Environment * True Wind * Additional Wind Information * Relative Wind * Relative Speed   Check the "**Tx**" box before transmitting.  Press apply and start. | **Simulator PC**  Verify, that the Server is started, Tx is enabled and the simulator is connected for all groups.  **MFCC**  In the “Own Unit” action panel, verify, that all data is transmitted. |  |
| 34.3 | #BNC2578 | In the NMEA2OwnUnit Simulator, edit the groups from above, by also checking the “**Wrong checksum**” box.  Press apply and start. | **Simulator PC**  Verify, that the Server is started, Tx and “Wrong checksum” is enabled and the simulator is connected for all groups.  **MFCC**  In the “Own Unit” action panel, verify, that no data is transmitted anymore. |  |

### Comments

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## Test Case 35: Show radar video

### Description

Show radar video

### Test Environment

C-Flex Patrol release under test must be installed

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

"Air\_video.bat"

"surface\_video.bat"

(Scanter\_videoserver\_win" folder)

### Requirements

**Stakeholder Requirement:**

[BNCS286] As an Operator, I want to view radar video as an overlay on my sea chart, allowing me to verify that all relevant echoes have been automatically converted to tracks.

**Accept Criteria:**

[BNC464] I want to be able to show/hide presentation of radar video.

[BNC465] When more than one source of radar video is available, I want to be able to select which one of them to display, independent of the choice of other operators.

[BNC466] I want to be able to show two radar signals simultaneously.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 35.1 |  | **Simulator PC**  Navigate to directory which holds "Scanter\_videoserver\_win" folder and start the following:  "Air\_video.bat"  "surface\_video.bat" | Two console windows are opened and lines are printed for data rate received from last scan.  Note: Value should be 0 because we are not displaying anything on MFCC's yet. |  |
| 35.2 |  | **MFCC1**  In the ActionMenuList, navigate to the “**Radar Control & Video**” tab.  Open the “**Radar Video**” action panel. | **MFCC**  The “**Radar Video**” Action Panel is opened and video options are displayed. |  |
| 35.3 | #BNC464 | Toggle "**Display Scanter Air Video**" to “**On**”. | **MFCC**  Check that Scanter radar picture is visually present on situation display  **Simulator PC:**  Check the console representing Scanter Air is printing values into data rate received from last scan as mentioned in step 1 |  |
| 35.4 | #BNC464 | Toggle "**Display Scanter Air Video**" to “**Off**”. | **MFCC**  Check that Scanter radar picture is no longer visually present on situation display  **Simulator PC:**  Check the console representing Scanter Air is back to printing 0 as the data rate received from last scan |  |
| 35.5 | #BNC464 | Toggle "**Display Scanter Surface Video**" to “**On**”. | **MFCC**  Check that Scanter radar picture is visually present on the situational display.  **Simulator PC:**  Check the console representing Scanter Surface is printing values into data rate received from last scan as mentioned in step 1 |  |
| 35.6 | #BNC466 | Toggle "**Display Scanter Air Video**" to “**On**”. | **MFCC1**  Check that it is possible to have 2  radar signals simultaneously.  **MFCC2**  Navigate to radar control and video -> Radar video through the action panel and check that the radars are turned off. |  |
| 35.7 | #BNC465 | **MFCC2**  In the ActionMenuList, navigate to the “**Radar Control & Video**” tab.  Open the “**Radar Video**” action panel.  Toggle one of the available radar video sources that is also toggled to on back on MFCC1. | **MFCC1**  Check there are still 2 radar video sources switched on  **MFCC2**  Only 1 radar video source is swithched on |  |
| 35.8 | #BNC465 | **MFCC1**  In the ActionMenuList, navigate to the “**Radar Control & Video**” tab.  Open the “**Radar Video**” action panel.  Switch off the source that is also switched on on MFCC2. | **MFCC1**  Check that the Radar video source is switched off.  **MFCC2**  Check that the Radar video source is switched on. |  |

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## Test Case 36: PANZHRP - heading, roll and pitch

### Description

PANZHRP - heading, roll and pitch

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

Start nmea2ownunitsimulator

### Requirements

**Stakeholder Requirement:**

[BNCS743] As a System Configurator, I want the system to support standard interfaces for navigation data, so I can select between different subsystems.

**Accept Criteria:**

[BNC2212] I want the system to be able to use heading, roll and pitch via PANZHRP, per [STD30MF].

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 36.1 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator, navigate to the “**Heading, Roll, Pitch HRP**” tap and insert the following values:   * **Heading**: 90 * **Roll**: 10 * **Pitch**: 5 | **Simulator PC**  Verify, that the server is started, Tx is enabled and the system is connected. |  |
| 36.2 | #BNC2212 | **MFCC**  In the Action Menu List, navigat to the “**Own Unit**” Action Panel. | **MFCC**  Verify, that the correct information is listed under Heading, Roll and Pitch.  Verify, that the information is continiously updated. |  |

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## Test Case 37: Place holder

## Test Case 38: Place holder























## Test Case 39: Radar Video for ARPA Port & Starboard

### Description

Radar Video for ARPA Port & Starboard

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation level

N/A

### Test Data

N/A

### Test Prerequisites

Launch Hyper-V and start the virtual machine called "Linux sim pc".

### Requirements

**Stakeholder Requirement:**

[BNCS286] As an Operator, I want to view radar video as an overlay on my sea chart, allowing me to verify that all relevant echoes have been automatically converted to tracks.

**Accept Criteria:**

[BNC465] When more than one source of radar video is available, I want to be able to select which one of them to display, independent of the choice of other operators.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 39.1 |  | **Simulator PC:**  Launch Hyper-V and start the virtual machine called "Linux sim pc".  **Note:**  Credentials are:  user: "admin"  pw: "1234" | **Hypver V VM:**  End up in home directory of the virtual machine. |  |
| 39.2 |  | **Hyper V VM:**  Run the following command: "./run\_video.sh" | The console indicates video is being streamed. |  |
| 39.3 |  | **MFCC1**  In the Action Menu List, navigate to the “**View Options**” action panel.  Under “**Map** **Details**”, select “**No** **Charts**”. | **MFCC1**  The view option is changed to show no charts. |  |
| 39.4 |  | In the Action Menu List, open “**Radar Control & Video**”.  Navigate to the “**Radar Video**” and turn on the video from ARPA starboard. | Radar video from ARPA starboard is displayed on the Situation Display. |  |
| 39.5 |  | Under ARPA video starboard, change the Color Theme, Briliance, Amplitude, Afterglow and History. | Verify, that the parameters have been changed correctly. |  |
| 39.6 |  | In the “**Radar Video**” Action Panel, open and select to display radar video from ARPA port. | The Radar video from ARPA port is displayed on the Situation Display. |  |
| 39.7 |  | Under ARPA video port, change the Color Theme, Briliance, Amplitude, Afterglow and History. | Verify, that the parameters have been changed correctly. |  |
| 39.8 |  | **MFCC2**  Open Radar Control & Video -> Radar Video and  select to display radar video from ARPA starboard. | **MFCC2**  Radar video from ARPA starboard is displayed at Situation Display. |  |
| 39.9 | #BNC465 | Under ARPA video starboard, change the Color Theme, Briliance, Amplitude, Afterglow and History. | Verify, that the parameters have been changed.  **MFCC1**  Verify, that the parameters on MFCC1 have not changed. |  |
| 39.10 |  | Open Radar Control & Video -> Radar Video and  select to display radar video from ARPA port. | **MFCC2**  Radar video from ARPA port is displayed at Situation Display. |  |
| 39.11 | #BNC465 | Under ARPA video port, change the Color Theme, Briliance, Amplitude, Afterglow and History. | Verify, that the parameters have been changed.  **MFCC1**  Verify, that the parameters on MFCC1 have not changed. |  |

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## Test Case 40: Sudden Course Speed Change

### Description

This Test Case is testing, the system’s ability to receive information from an ARPA sensor and how it is integrated in the HMI.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Level

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS663] As an Operator, I want the system to monitor course/speed changes, so that I can be notified about suspicious behavior.

**Accept Criteria:**

[BNC1100] I want the system to monitor and alert me if tracks exhibit sudden change of behavior, e.g. abruptly increases speed or changes course.

[BNC1102] I want to be able to define the thresholds for automatic monitoring of sudden course/speed changes.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 40.1 | #BNC1102 | **MFCC**  In the ActionMenuList, navigate to “**Tools**” and open “**Sudden Crs. Sp. Change**”.  Insert the following values:  Air Tracks:   * **Course**: 15 deg * **Speed**: 10.00 knots   Non Air Tracks:   * **Course**: 15 deg * **Speed**: 10.00 knots   Toggle the “**Enable**” button to “**On**”.  Click “**Save**”. | **MFCC**  Make sure “**Sudden Course Speed Change**” is enabled. |  |
| 40.2 |  | **Simulator PC**  In the Scanter 6002 simulator open the “**Entities**” tab and click “**Add**”.  Insert the following values in the “**Add Entity**” window:   * **ID**: test * **Position**: 560000N/0110000E * **Altitude**: 0.00 * **Speed**: 10.00 * **Course**: 0.00   Click “**OK**” to add the track. | **Simulator PC**  Make sure the track is listed in the Entities tab.  **MFCC**  Make sure the track is shown on the Situational Display. |  |
| 40.3 |  | In the “**Entities**” tab, click on the track created in step 40.2, and then click “**Edit**”.  Change the follwing values in the “**Edit Entity**” window:   * **Speed**: 19.00 KNOTS   Click “**OK**” to edit the track. | **Simulator PC**  Make sure the track is edited in the Entities tab.  **MFCC**  Make sure that no operational notificaition regarding sudden course or speed changes is showing up on the Situational Display. |  |
| 40.4 | #BNC1100 | In the “**Entities**” tab, click on the track created in step 40.2, and then click “**Edit**”.  Change the follwing values in the “**Edit Entity**” window:   * **Speed**: 29.00 KNOTS   Click “**OK**” to edit the track. | **Simulator PC**  Make sure the track is edited in the Entities tab.  **MFCC**  Make sure a operational notificaition saying the track has exceeded sudden course speed alert is showing up on the Situational Display.  Check, that the notification is listed in the ActionMenuList under “**Operational Notifications**”. |  |
| 40.5 |  | **MFCC**  In the ActionMenuList, navigate to the “**Operational Notifications**” tab.  Click “**Delete All**”. | All operational notifications are deleted. |  |
| 40.6 |  | **Simulator PC**  In the “**Entities**” tab, click on the track created in step 40.2, and then click “**Edit**”.  Change the follwing values in the “**Edit Entity**” window:   * **Course**: 14.00 DEGREES   Click “**OK**” to edit the track.  the track. | **Simulator PC**  Make sure the track is edited in the Entities tab.  **MFCC**  Make sure that no operational notificaition regarding sudden course or speed changes is showing up on the Situational Display. |  |
| 40.7 | #BNC1100 | In the “**Entities**” tab, click on the track created in step 40.2, and then click “**Edit**”.  Change the follwing values in the “**Edit Entity**” window:   * **Course**: 29.00 DEGREES   Click “**OK**” to edit the track. | **Simulator PC**  Make sure the track is edited in the Entities tab.  **MFCC**  Make sure a operational notificaition saying the track has exceeded sudden course speed alert is showing up on the Situational Display.  Check, that the notification is listed in the ActionMenuList under “**Operational Notifications**”. |  |

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## Test Case 41: Radar - I want to be able to start and stop the radar rotation.

### Description

This Test Case is testing the system’s ability to turn on/ off radar rotation.

### Test Environment

C-Flex Patrol release under test must be installed

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenatiosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[NSES181] As an Operator, I want to control and monitor the SCANTER Radar to suit my mission goal.

**Accept Criteria:**

[NSE502] I want to be able to start and stop the radar rotation.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 41.1 |  | **MFCC**  In the ActionMenuList navigate to “**Radar Control & Video**” and click “**Scanter 6002**”. | **MFCC**  The “**Scanter 6002**” Action Panel is opened.  Check, that the “System Status” is set to “**Operational**”. |  |
| 41.2 | #NSE502 | Under “Control” toggle the “Rotation” button to “Off”. | **Simulator PC**  At the radarsim-scanter "Parameters" tab on "Incoming" tab:  - Verify the status is set to “Off”. |  |
| 41.3 | #NSE502 | Under “Control” toggle the “Rotation” button to “On”. Remember there is latency in relation to this step. | **Simulator PC**  At the radarsim-scanter simulator "Parameters" tab on "Incoming" tab:  - Verify the status is set to “On”.  - Verify tracks reappear, and remember there is a small latency for this |  |

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## Test Case : NMEA TTM tracks\_config1

### Description

This Test Case is testing, the system’s ability to receive information from an ARPA sensor and how it is integrated in the HMI.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Level

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-arpa

### Requirements

**Stakeholder Requirement:**

[BNCS737] As a System Configurator, I want that the system implements the specified ARPA interface, so I can ensure proper integration with the subsystem.

**Accept Criteria:**

[BNC2182] I want that the system can read NMEA TTM sentences via a connection to a TCP server.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 42.1 |  | **Simulator PC**  Start ARPA Simulator |  |  |
| 42.2 |  | Send a track from the ARPA simulator:  Position: "555555N/0110000E"  Speed: 25  Course: 90 | **MFCC**  Track is shown in Sit. Disp. |  |
| 42.3 |  | Start ARPA2 Simulator |  |  |
| 42.4 |  | Send a track from the ARPA2 simulator:  Position: "555444N/0110000E"  Speed: 35  Course: 180 | **MFCC**  Track is shown in Sit. Disp. |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : View depth information (DBT)

### Description

This Test Case is testing the system’s ability to receive information from an echo sounder unit regarding the depth below keel (DBT).

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. nmea2ownunitsimulator

### Requirements

**Stakeholder Requirement:**

[BNCS304] As an Operator, I want to know the measured water depth under keel so that I do not have to rely on potentially inaccurate/obsolete data from a sea chart.

**Accept Criteria:**

[BNC891] I want to view and use depth below keel from an Echo Sounder unit.

Comment: For DBT, configure a positive offset to provide surface depth and a negative offset to provide depth under keel.

**Stakeholder Requirement:**

[BNCS743] As a System Configurator, I want the system to support standard interfaces for navigation data, so I can select between different subsystems.

**Accept Criteria:**

[BNC2214] I want the system to be able to support at least NMEA DPT with a negative transducer offset (for depth under keel) .

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 43.1 |  | **Simulator PC**  Start NMEA2OwnUnit (DBT) simulator | Simulator interface is ready |  |
| 43.2 |  | Select tap "DBT" and set the following values:  Water depth, m = 10  EchoSounder (Top right corner) = DBT  Check "Tx" and click start to start transmitting data.  NOTE:  Offset from Transducer accepts both possitive and negative values:   - Negative value indicates the distance from transducer to keel  - Positive value indicates the distance from transducer to water line.  Note: Depending on the configuration, a certain COM port and Baud Rate is needed - Below is an example:  COM Port: 14  Baud Rate: 115200. | **MFCC**  The Depth (DBT) group transmission indicator turns green under Own Unit Source Status  The Depth (DBT) group (When expanded) contains a surface depth value = 11 |  |
| 43.3 |  | Change the following value:  Water depth, m = -10  NOTE:  Offset from Transducer accepts both possitive and negative values:   - Negative value indicates the distance from transducer to keel  - Positive value indicates the distance from transducer to water line. | **MFCC**  The Depth (DBT) group contains a depth below keep value = -9 |  |

### Comments

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## Test Case : View Bearing Lines on a Sea Chart - ESM

### Description

This Test Case is testing the system’s ability to show bearing lines (EW-lines) received from an integrated ESM system.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenatiosimulator

1. sensorsim-phobos
2. sensorsim-gps

### Requirements

**Stakeholder Requirement:**

[BNCS655] As an Operator, I want to view bearing lines on the situation display, so I can quickly identify direction of the received RF signals indicating presence of other units.

**Accept Criteria:**

[BNC375] I want EW bearing lines received from the ESM System to use consistent symbology with the rest of the system.

[BNC376] I want the EW line's contextual information to be populated with the data received from the ESM System.

[BNC377] I want to be able to see bearing lines presented on the situation display as lines emanating from its foot-point and with a direction corresponding to its bearing.

**Stakeholder Requirement:**

[BNCS180] As an EW Operator, I want to receive bearing lines from an ESM System, so I can quickly identify direction of the received RF signals indicating presence of other units.

**Accept Criteria:**

[BNC797] I want that the system can receive EW lines from an integrated ESM system

**Stakeholder Requirement:**

[NSES189] As an EW Operator, I want to control and monitor the Phobos ESM system, so I can evaluate if it is configured correctly and working.

**Accept Criteria:**

[NSE572] I want to be able to see Phobos link status.

[NSE573] I want to be able to see the number of EW bearing lines reported by the Phobos system.

[NSE574] I want to be able to see the library used by the Phobos system.

[NSE575] I want the track management type of EW bearing lines received from Phobos ESM to be set to Unknown.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 44.1 |  | **Simulator PC**  In the “**GPS Simulator**” navigate to “**Scripts**”.  Click on “**!OwnUnit.js**” and afterwards click “**Start**”, to run the simulation. | **Simulator PC**  Go to the “Entities” tab and make sure the entity has been added. |  |
| 44.2 |  | In the “**sensorsim-phobos simulator**” navigate to Entities and add a track by clicking on “**Add**”.  In the “Add Entity” window insert the following values into the input fields:   * **ID:** test * **Emitter name:** Bearing * **Identity:** Generic * **Bearing:** 45 * **Spotnumber:** 808   Click “**Ok**” to add the bearing. | **Simulator PC**  Phobos (ESM) simulator is up and running.  A track with a bearing is created and shown in the Entities tab. |  |
| 44.3 | #BNC377  #BNC797 | **MFCC**  Check that the track created in step 44.1 is showing up on the Situational Display. | **MFCC**  Track is visibly present, with a bearing. |  |
| 44.4 | #NSE572 | In the ActionMenuList navigate to “**Phobos ESM**”.  Check that the following information is available:   * System Status * Total / Hostile * Pending / Active / Fading * Library | The system status is showing a green light with the indication “**OK**”. Showing that the phobos link is active. |  |
| 44.5 | #NSE574 | **Simulator PC**  In the “**Phobos simulator**” navigate to the “**Options**” tab.  Under “Parameters” change “Used Libarary” to: “**Test**”.  Expand the “System Status” drop down list and click on “**OK**”. | **MFCC**  In the “**Phobos ESM**” Action Panel, check, that under Statistics the “Library” says “**Test**”. |  |
| 44.6 | #NSE572 | In the “**Options**” tab expand the “System Status” drop down list and click on “**Sys Error**”.  Then switch it back to “**OK**” | In the “**Phobos ESM**” Action Panel, check, that the “System Status” says “**Sys Error**” with a orange indication light.  After switching it back to “OK” in the simulator, the “System Status” says “**OK**” with a green indication light. |  |
| 44.7 | #BNC377  #NSE575  #NSE573  #BNC376 | Through the ActionMenuList, navigate to “**Track List**”. Find the created track, and expand it to view the “**Track Details**”, by clicking on the “**>**” symbol. | In the “**Track List**” the number of EW bearing lines reported by the Phobos system are shown.  Verify that the information shown under “**Track Details**” is aligned with the input from the simulator.  Check that the “Bearing” value supplied from the simulator is accurate and that the “**Type**” of the track is set to be “**unknown**”. |  |
| 44.8 | #BNC375 | In the ActionMenuList navigate to “**New Manual Track**”. Create a new track with a EW line by inserting the following values:   * **Bearing Line**: Click it * **Name**: Manual test * **Foot Point**: 56°00'00"N - 011°00'00"E * **Bearing**: 045 * **Save**: Click it | Check that the manual track and the track from the phobos simulator use the same symbology. |  |
| 44.9 | #NSE572 | **Simulator PC**  Close the sensorsim-phobos simulator.  **MFCC**  In the ActionMenuList navigate to Phobos ESM, to view the system status of the ESM. | **Simulator PC**  The simulator is closed.  **MFCC**  The system status is showing a red light with the indication “**Offline**”. Showing that the phobos link is inactive. |  |

### Comments

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## Test Case : Place holder











## Test Case : TTM export

### Description

This Test Case is testing the System’s ability to send track queuing information to a remote system and implements a specified target designation interface.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS827] As an Operator, I want to send track queuing information to a remote system, e.g. a weapon station using NMEA TTM messages.

**Accept Criteria:**

[BNC2416] I want to be able to start exporting track position data from the Extended track card.

[BNC2418] I want to be able to have exported data updated continuously, until explicitly stopped.

[BNC2415] I want to be able to see which track is being exported to which device on the situation display.

[BNC2417] I want to be able to start exporting track position data from the track context menu.

**Stakeholder Requirement:**

[BNCS829] As a System Configurator, I want that the system implements the specified target designation interface, so I can ensure proper integration with the subsystem.

**Accept Criteria:**

[BNC2414] I want to be able to export track information using NMEA TTM message.

[BNC2420] I want to make exported data available over one or more TCP sockets.

[BNC2421] I want to allow multiple clients to connect over one or more TCP ports so that multiple systems can receive individual exported data (the individual systems may receive different tracks).

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 46.1 |  | **Simulator PC**  Create two tracks through Sensorsim | **MFCC**  Two tracks are visible in situation display |  |
| 46.2 |  | **MFCC**  CTRL + Right click the first track and designate it to camera | The letter "D" is assigned to the track and are visible in situation display |  |
| 46.3 |  | CTRL + Right click the second track and designate it to gun | The letter "G" is assigned to the track and are visible in situation display |  |
| 46.4 |  | **Putty client 1 (EOD)**  Launch a putty client, choose telnet option and start listening to:  IP: 192.168.200.2  Port: 10110 | **Putty client 1 (EOD)**  The client starts transmitting data from the designated track (Track 1)  Verify the NMEA data is equivalent to the movement of track 1.  Verify the header contains "TTM", indicating NMEA TTM messages are being transmitted.  An examlple is shared below:  $--TTM,00,0.0,236.5,R,2.0,11.6,R,0.0,0.0,N,SYS0001,T,,091737.53,M\*7B  $--TTM,00,0.0,236.5,R,2.0,11.6,R,0.0,0.0,N,SYS0001,T,,091737.53,M\*7B  $--TTM,00,0.0,236.9,R,2.0,11.6,R,0.0,0.0,N,SYS0001,T,,091738.54,M\*7F  $--TTM,00,0.0,247.0,R,2.0,9.8,R,0.0,0.0,N,SYS0001,T,,091738.54,M\*47  $--TTM,00,0.0,247.2,R,2.0,9.8,R,0.0,0.0,N,SYS0001,T,,091739.54,M\*44 |  |
| 46.5 |  | **Putty client 2 (GUN)**  Launch a putty client, choose telnet option and start listening to:  IP: 192.168.200.2  Port: 10111 | **Putty client 2 (GUN)**  The client starts transmitting data from the designated track (Track 2)  Verify the NMEA data is equivalent to the movement of track 2. |  |
| 46.6 |  | **Putty client 3 (EOD)**  Launch another putty client for the EOD track, choose telnet option and start listening to:  IP: 192.168.200.2  Port: 10110 | **Putty client 3 (EOD)**  The client starts transmitting data from the designated track (Track 1)  Verify the NMEA data is equivalent to the movement of track 1.  Check that it is possible to have multiple clients (1 and 3) running simulatanously but receiving individual data from the same track (Track 1) |  |
| 46.7 |  | **Putty client 4 (GUN)**  Launch another putty client for the EOD track, choose telnet option and start listening to:  IP: 192.168.200.2  Port: 10111 | **Putty client 4 (GUN)**  The client starts transmitting data from the designated track (Track 2)  Verify the NMEA data is equivalent to the movement of track 2.  Check that it is possible to have multiple clients (2 and 4) running simulatanously but receiving individual data from the same track (Track 2) |  |
| 46.8 |  | **MFCC**  CTRL + Right click the first track and remove the designation to camera | **MFCC**  The letter "D" is removed from the track and are no longer visible in situation display  **Putty client 1+3 (EOD)**  Putty clients are no longer transmitting NMEA TTM messages, as the designation has been explicitly stopped. |  |
| 46.9 |  | CTRL + Right click the second track and remove the designation to gun | **MFCC**  The letter "G" is removed from the track and are no longer visible in situation display  **Putty client 1+3 (EOD)**  Putty clients are no longer transmitting NMEA TTM messages, as the designation has been explicitly stopped. |  |
| 46.10 |  | Through the action panel, navigate to the track details (Extended track card) of track 1 and set "Designate to Effector (Gun)" to on | **Putty client 2 + 4 (GUN)**  Putty clients starts transmitting NMEA TTM messages |  |
| 46.11 |  | Through the action panel, navigate to the track details (Extended track card) of track 2 and set "Designate to Camera (EOD)" to on | **Putty client 1 + 3 (EOD)**  Putty clients starts transmitting NMEA TTM messages |  |
| 46.12 |  | **C-flex server**  Inside config.xml locate the tag "TrackNmea" and note IP and portnumber  (looks like  <Component version="1.0.0"             version-class="com.terma.cflex.application.tracknmea.central.impl.CentralTrackNmea"             class="com.terma.cflex.application.tracknmea.central.impl.CentralTrackNmea"             logical-name="TrackNmeaA"             presentation-name="TrackNmea System"             timeout="120000">      <SubSystem presentation-name="TrackNmea Subsystem"                 logical-name="TrackNmeaSubsystem0"/>      <ComponentConfiguration>          <RelativeAngleInterval interval="ZeroTo360"/>          <TargetBearing bearing="Relative"/>          <TargetCourse course="Relative"/>          <TrackNmeaIpAddress address="0.0.0.0"/>          <TrackNmeaIpPort port="10110"/>          <TypeOfAcquisition type="Manual"/>      </ComponentConfiguration>  </Component>  If port = 0 then default = 10110 is used  If IP = 0.0.0.0 the IP is the same as Workstation (192.168.200.2) | Note IP and Port number |  |

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## Test Case : History of a track

### Description

This test case is testing the system’s ability to show the track history of a track

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenatiosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS250] As an Operator, I want to view the historic trajectory of a track, so that I can see where it is coming from and possibly where it is headed.

Comments: The history of a track is also used to determine if the movement of the track is consistent with the identity of the track.

**Accept Criteria:**

[BNC405] I want to be able to show/hide presentation of track history.

[BNC406] I want to see a polyline joining the past positions of the track on the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 47.1 |  | **Simulator PC**  In the “**Scenario Simulator**” open the “**Scripts**” tab and run the following script:   * “**OneTrack.js**” | **Simulator PC**  The track is now listed under Entities in the “Entities” tab.  **MFCC**  The track appears on the Sit. Display |  |
| 47.2 |  | **MFCC**  In the ActionMenuList, navigate to “**Track List**”.  Find the track created in step 1 and click “**>**” to navigate to the “**Track Details**”. | The Track Details are opened. |  |
| 47.3 | #BNC405  #BNC406 | In the “**Track Details**” Action Panel, click on the “**History**” button. | Zoom very close into the Track until the polyline appears for the track showing its course manouvers. |  |
| 47.4 | #BNC405  #BNC406 | In the “**Track Details**” Action Panel, click on the History tab to hide the polyline again. | Polyline disappears from the map. |  |

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## Test Case : Speed and course showing as vector for a track

### Description

This test case is testing the system’s ability to show quick information about a track or bearing line.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS242] As an Operator, I want to view tracks known by the system on a sea chart, so that I can quickly comprehend the situation.

**Accept Criteria:**

[BNC357] I want to see an XP vector starting from the middle of the track's symbol, oriented along the track's course and proportional in length to the track's speed is drawn on the situation display.

[BNC358] I want that the relationship between XP vector length and track speed is well defined, e.g. indicate the track position in 1 minutes time. The definition shall be documented in the help/documentation.

[BNC497] By clicking on the brief information, I want to get the Detailed Track Card Display of the data available on the track.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 48.1 | #BNC357 | **MFCC**  In the ActionMenuList navigate to “**New Manual Track**”. Add the following 4 Tracks:   1. Track:   **Name**: Track 1  **Position**: 56°30'00"N - 011°00'00"E  **Course/ Speed**: 270° - 100 deg-knots   1. Track:   **Name**: Track 2  **Position**: 56°30'00"N - 011°30'00"E  **Course/ Speed**: 000° - 200 deg-knots   1. Track:   **Name**: Track 3  **Position**: 56°30'00"N - 012°00'00"E  **Course/ Speed**: 180° - 300 deg-knots   1. Track:   **Name**: Track 2  **Position**: 56°30'00"N - 012°30'00"E  **Course/ Speed**: 090° - 400 deg-knots | **MFCC**  4 tracks are created and shown on the SD.  Check, the following:   1. Each track have their own vector starting from the middle of the track's symbol. 2. The vector points in the direction of the track's course. 3. The tracks that are faster have a longer vector. |  |
| 48.2 | #BNC358 | Open Help/Documentation | Make sure there is a description of the relationship between vector length and track speed in the Help/Documentation |  |
| 48.3 | #BNC497 | Press the **SHIFT** key and move the pointing device over the tracks on the Situation Display. | A semi-transparent panel with detailed item information is overlaid on the map. |  |

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## Test Case : Adjust Radar Video Display Parameters

### Description

This Test Case is testing the System’s ability to control the display of radar video.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

.bat files for scanter radar videos on the simulator PC need to be running.

### Requirements

**Stakeholder Requirement:**

[BNCS288] As an Operator, I want to control the display of radar video, e.g. intensity, afterglow time/color of current scan and afterglow time/color of previous scans, so that the display is as clear as possible on different backgrounds.

**Accept Criteria:**

[BNC476] I want to be able to adjust radar video after glow color of current scan for spotting radar reflections.

[BNC477] I want to be able to adjust radar video after glow color of previous scans for confirming whether radar reflections are consistent in time and space.

[BNC478] I want to be able to adjust the time taken for the previous scans to disappear from the Radar Video display for decluttering the radar video view.

[BNC479] I want to be able to adjust the added gain to the radar video picture for distinguishing weak radar echoes.

[BNC480] I want to be able to adjust the added color intensity to the radar video picture for distinguishing weak radar echoes.

[BNC486] I want to be able to zoom in/out on the radar video picture for close inspection of radar video echoes.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 49.1 |  | **MFCC**  Start Radar Control and Video | Radar video is shown |  |
| 49.2 |  | Click on the radar view option  graphic | Radar options appears |  |
| 49.3 |  | Click on scanter surface for the Radar Video Sensor Panel | Radar  video enabled |  |
| 49.4 |  | Verify that radar video for Scanter surface is appearing | Radar video is appearing |  |
| 49.5 |  | In Radar Video sources set at least one radar to ON | Changes are reflected in Sit. Disp. |  |
| 49.6 |  | Zoom in and Out on the radar video picture | Check that is possible to zoom in and Out on the radar video picture for close inspection of radar video echoes |  |
| 49.7 |  | Select the color theme that will be used to display the radar | Check that the correct color theme is display in Sit. Disp. |  |
| 49.8 |  | By using Brilliance filter, set the color intensity of the radar video picture | Check that the color intensity is correctly adjusted on Sit. Disp. |  |
| 49.9 |  | By using Amplify filter, set the amplification of the radar video pictture | Check that the gain is correctly adjusted to the radar video picture for distinguishing weak radar echoes. |  |
| 49.10 |  | By using the History filter, adjust the time taken for the previous scans to disappear from the Radar Video display | Check that the time is correctly adjusted on the Sit. Disp. |  |
| 49.11 |  | By using the Afterglow filter, adjust the radar afterglow color. | Check that the color on ther Sit. Displ. is properly adjusted so that:  - for previous scans is confirming that radar reflections are consistent in time and space.  - for current scan is spotting radar reflections. |  |

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## Test Case : Radar - Automatic Video Processing

### Description

This Test Case is testing the System’s ability to control the display of radar video.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

.bat files for scanter radar videos on the simulator PC need to be running.

### Requirements

**Stakeholder Requirement:**

[BNCS288] As an Operator, I want to control the display of radar video, e.g. intensity, afterglow time/color of current scan and afterglow time/color of previous scans, so that the display is as clear as possible on different backgrounds.

**Accept Criteria:**

[BNC483] I want to be able to control the radar video's suppression for extended rain clutter.

[BNC482] I want to be able to control the radar video's range dependent attenuation of sea-based clutter.

[BNC481 ] I want to be able to control the radar video's overall sensitivity (gain).

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 50.1 |  | **MFCC**  Open Radar Contorl & Video AP  Radarsim: Open Parameters tab  - Incoming tab | Opened |  |
| 50.2 |  | **Simulator PC**  radarsim: Filter Incoming by the word "processing" | filtered |  |
| 50.3 |  | **MFCC**  switch OFF the switch "Automatic Video Processing" | **Simulator PC**  Radarsim: the filed "Video Processing..." is set to "Manual"  the filed "Update time" is set |  |
| 50.4 |  | **Simulator PC**  radarsim: Filter Incoming by the word "Manual" | filtered |  |
| 50.5 |  | **MFCC**  set the sliders  to some value   * Gain * Sea * Rain | **Simulator PC** the fileds  is set to the same values   * Manual Gain... * Manual STC... * Manual Clutter Control...   the corresponding fileds "Update time" is set |  |

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## Test Case 51: Radar – Tracker Sensitivity

### Description

This Test Case is testing the system’s ability to control the tracker's air and surface sensitivity.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS288] As an Operator, I want to control the display of radar video, e.g. intensity, afterglow time/color of current scan and afterglow time/color of previous scans, so that the display is as clear as possible on different backgrounds.

**Accept Criteria:**

[BNC484] I want to be able to control the tracker's air and surface sensitivity.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 51.1 |  | **MFCC**  In the ActionMenuList, open “Radar Contorl & Video” AP and navigate to “Scanter 6002” | The “Scanter 6002” Action Panel is opened |  |
| 51.2 |  | **Simulator PC**  In the Scanter 6002 simulator, navigate to the “Parameters” tab and click on “Incoming”.  In the search field, filter “Incoming” by the word "tracker" | Incomming is filtered by “tracker”. |  |
| 51.3 |  | **MFCC**  In “Scanter 6002” Action Panel, set the following switches to “ON”.   * Automatic Surface Sensitivity * Automatic Air Sensitivity | **Simulator PC**  Scanter sim: fields are set to "Manual"   * Tracker Sensitivity Mode#Air * Tracker Sensitivity Mode#Surface   the corresponding filde "Update Time" is set |  |
| 51.4 | #BNC484 | In “Scanter 6002” Action Panel, set the following switches to “Off”.   * Automatic Surface Sensitivity * Automatic Air Sensitivity   Then, set the following sliders to some random values:   * Surface Channel * Air Channel | **Simulator PC**  Scanter sim: the Fields are set to the same values as inserted in patrol.   * Manual Tracker Sensitivity#Air * Manual Tracker Sensitivity#Surface   the corresponding fildes "Update Time" are set |  |

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## Test Case : Radar - Sector Settings, Sector Transmission

### Description

This Test Case is testing the System’s ability to control and monitor the SCANTER Radar.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[NSES181] As an Operator, I want to control and monitor the SCANTER Radar to suit my mission goal.

**Accept Criteria:**

[NSE510] I want to be able to define north-referenced or heading referenced silence sectors (sectors where transmission is off).

[NSE511] I want to be able to control limit transmissions in north referenced or heading referenced directions which create false echoes/radhaz.

[NSE512] I want to be able to define up to 16 transmission sectors with coverage, mode and power-reduction parameters for the SCANTER Radar.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 52.1 |  | **Simulator PC**  In the SCANTER 6002 simulator, navigate to “**Parameters**”  Open the tab “**Incoming**”.  Make sure to put a checkmark on the box called “**Filter**”, and in the search field below insert the word “**sector**”. | **Simulator PC**  The filter is set, highlightning all the sector fields with red. |  |
| 52.2 |  | **MFCC**  In the ActionMenuList, open “**Radar Contorl & Video**”.  Open the “**Scanter 6002**” window.  Under “Control”, make sure the “**Sector Transmission**” is switched to “**On**”. | **Simulator PC**  In the SCANTER simulator under the tab incoming, scroll to the bottom.  Find “**Sector Transmittion**” and make sure the field is set correspondingly to “**On**”. |  |
| 52.3 |  | **MFCC**  In the “Scanter 6002” window, under “Control” expand the “**Sector Settings**”. | **MFCC**  The "**Radar Sectors**" window is opened. |  |
| 52.4 | #NSE511 | **MFCC**  Under “**Sector 1**” change the parameters to:   * **Mode**: Prohibit Sector * **From**: 20 * **To**: 140 * **Stabized**: On | **Simulator PC**  Under “Sector 1”, check that the following values are correct:   * **Attenuation**: 0.0 * **Azimuth Mode**: Stabilised * **Bearing**: 80 * **Mode**: Prohibit Sector * **Width**: 120   Check that:  Width = To - From  Bearing = (To + From) / 2  Updated time are set for the updated fields only |  |
| 52.5 | #NSE510 | **MFCC**  Under “**Sector 2**” change the parameters to:   * **Mode**: Disabled * **From**: 30 * **To**: 155 * **Stabized**: On | **Simulator PC**  Under “Sector 2”, check that the following values are correct:   * **Attenuation**: 0.0 * **Azimuth Mode**: Stabilized * **Bearing**: 93 * **Mode**: Disabled * **Width**: 125   Check that:  Width = To - From  Bearing = (To + From) / 2  Updated time are set for the updated fields only |  |
| 52.6 | #NSE512 | **MFCC**  From “**Sector 1**” to “**Sector 16**” change the parameters to:   * **Mode**: Reduced Power Sector * **From**: start with 20. For each new sector, increase the number by 5 * **To**: start with 140. For each new sector, increase the number by 5 * **Stabized**: even numberd sectors “**Off**”. Uneven numbered sectors “**On**” * **Attenuation(dB)**: start with 0. For each new sector, increase the number by 2 | **Simulator PC**  From “Sector 1” to “Sector 16”, check that the values are correct, in accordance to the input on the MFCC:     * **Attenuation**: in accordance with the input * **Azimuth Mode**: in accordance with the input * **Bearing**: Bearing = (To+From)/2 * **Mode**: Reduced Power Sector * **Width**: Width = To - From   Note: Updated time are set for the updated fields only |  |

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## Test Case : Chart tracks - Bearing and distance to a point

### Description

This Test Case is testing the system’s measurement vector functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS219] As an Operator, I want to measure distance between entities and the relative/absolute angles for getting a better situational awareness.

Comments: This information I can use to evaluate the risk of collision or simply as a measuring tool.

**Accept Criteria:**

[BNC258] I want to be able to monitor bearing/range for defined measurement vectors.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 53.1 |  | **MFCC**  In the ActionMenuList, navigate to “**New Manual Track**” and insert the following values:   * **Track**: Set a tick * **Name**: Test 1 * **Position**: 56°00'00"N - 010°30'00"E   Click “**Save**” to add the new track | **MFCC**  A new track is added on the situational display. |  |
| 53.2 | #BNC258 | In the ActionMenuList, navigate to “**Tools**” and click on “**Measurements**”.  Expand the dropdown list at the top called “**Create Measurement**”, and choose “**Measurement Vector**”.  Under Footpoint in the dropdown list “**Type**” click “**Own Unit**”.  Under Apex in the dropdown list “**Type**” click “**Track**”.  Make sure to click “**Save**” | A measurement vector is created, that indicates the bearing and range from the Own Unit to the Track. |  |
| 53.3 |  | Hover the pointing device over the Situational Display and move it on top of the track created in step 53.1.  At the bottom of the SD, the exact position of the track and its distance to the own unit is shown on the indication bar. | Verify the bearing and distance is shown and appears correctly (compare to grid lines and the Measurement Vector) |  |

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## Test Case : Orthodrome measurement

### Description

This Test Case is testing the system’s measurement functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS219] As an Operator, I want to measure distance between entities and the relative/absolute angles for getting a better situational awareness.

Comments: This information I can use to evaluate the risk of collision or simply as a measuring tool.

**Accept Criteria:**

[BNC261] I want the measurement vector distance to be calculated as an orthodrome (great circle) distance.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 54.1 |  | **MFCC**  In the ActionMenuList, navigat to “New Manual Track” and create two manual tracks by inserting following:  Track 1:   * **Name**: Track 1 * **Position**: 00°00'00"N - 090°00'00"E   Track 2:   * **Name**: Track 2 * **Position**: 00°00'00"N - 000°00'00"E | The tracks are created, shown on the Sit. Display and listed in the track list. |  |
| 54.2 | #BNC261 | In the ActionMenuList, navigate to “Tools” and open “Measurements”.  Expand the dropdown list: “Create Measurement” and click “Measurement Vector”.  Under footpoint, expand the dropdown list “Type”, and choose “Track”. Expand then the “From” drop down list and choose “Track 1”.  Under Apex, expand the dropdown list “Type”, and choose “Track”. Expand then the “To” drop down list and choose “Track 2”. | Verify that the distance is 5409.694 nm and that the line is curved and not straight. |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Track Symbol presentation

### Description

This Test Case is testing the system’s ability to display tracks clearly.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS242] As an Operator, I want to view tracks known by the system on a sea chart, so that I can quickly comprehend the situation.

**Accept Criteria:**

[BNC2628] I want to be able to adjust the size of track symbols on the situational display, with changes saved per console and persisting across operational use.

[BNC351] I want a track symbol size that balances the need for space for info against cluttering.

[BNC349] I want to be able to use a symbology compliant with NTDS or MIL2525 rev C or later. Only symbols - tactical graphics not required.

[BNC350] I want a track symbology that distinguishes between different identity, category, and type.

[BNC354] I want a label, which provides key info for each track, presented adjacent to the track symbol.

[BNC366] I want to be able to view detailed information like track positions as bearing/range from own-unit.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 55.1 | #BNC351 | **Simulator PC**  In the Scanter 6002 simulator, navigate to the “**Scripts**” tab.  Run the “**Common\_Square.js**” script. | **Simulator PC**  In the “**Entities**” all new tracks are listes.  **MFCC1**  Verify, that the tracks are shown on the SD and that the track symbol size balances the need for space for info against cluttering. |  |
| 55.2 | #BNC354  #BNC366 | **MFCC1**  On the Situational Display, move the pointing device first over own unit, and hold left shift key down to get the label.  Then chose any track on the Sit. Display and get the label. | Track data label is open and data is present on track and Own Unit  Verify that the labels have the following listed:   * Appropiate Icon * Position * Bearing/ Range * Course/ Speed * Track number * Category * Type * Identity * Description |  |
| 55.3 |  | **Simulator PC**  In the “**Scenario Simulator**” navigate to the “**Scripts**” tab, and run the script “**Remove-all.js**”.  **MFCC1**  On the Sit. Display mark all track, navigate to track list, and click delete, to delete all tracks. | **MFCC 1**  All tracks have been deleted. |  |
| 55.4 | #BNC349  #BNC350 | In the ActionMenuList, navigate to “**New Manual Track**”. Create the 63 tracks listed in the table below:  graphic | Verify that all groups of symbols adhere to the MIL2525 Standard  and that the colorcoding of friend and foe and unknow is correct. |  |
| 55.5 |  | In the “**Scenario Simulator**” navigate to the “**Scripts**” tab, and run the script “**Remove-all.js**”.  **MFCC1**  On the Sit. Display mark all track, navigate to track list, and click delete, to delete all tracks. | All tracks have been deleted. |  |
| 55.6 |  | In the ActionMenuList, navigate to “**Tactical Recording**”.  Insert a name and toggle recording to “On”. | Check, that a recording has started |  |
| 55.7 |  | In the ActionMenuList, open “**Create New Track**” and insert the following:   * **Track**: Tick it * **Name**: Track 1 * **Position**: 56°00'00"N - 011°00'00"E   Click “**Save**”. | A track is created, shown on the Situational Display and listed in the Track List. |  |
| 55.8 | #BNC2628 | In the ActionMenuList, open “**View Options**”.  Under Track Detail Graphics change the “**Track Symbol Size**” to 100. | All tracks on the screen are turned up to 100% visibility. |  |
| 55.9 |  | **MFCC2**  In the BurgerMenu, navigate to “**Tactical Replay**”.  Open the tactical replay created in step 6 and press play. | **MFCC2**  The tactical replay is playing. |  |
| 55.10 | #BNC2628 | Navigate to “**View Options**” in the tactical replay and change the “**Track Symbol Size**” to 0. | Make sure the track symbol size is set to 0%. |  |
| 55.11 |  | Wait 5-6 minutes, then in the Burger Menu click “Exit Application” to close down C-Flex Patrol.  If needed close the Application down in the task manager aswell. | Make sure the application is fully closed down. |  |
| 55.12 |  | Start C-Flex Patrol again. | Patrol is up and running |  |
| 55.13 |  | **MFCC1**  In the ActionMenuList, open “**Create New Track**” and insert the following:   * **Track**: Tick it * **Name**: Track 2 * **Position**: 56°00'00"N - 011°00'00"E   Click “**Save**”. | **MFCC1**  A track is created, shown on the Situational Display and listed in the Track List. |  |
| 55.14 | #BNC2628 | In the ActionMenuList, open “**View Options**”. | Under Track Detail Graphics make sure the “**Track Symbol Size**” is already set to 100% visibility by default. |  |
| 55.15 |  | **MFCC2**  In the BurgerMenu, navigate to “**Tactical Replay**”.  Open the tactical replay created in step 6 and press play. | **MFCC2**  The tactical replay is playing |  |
| 55.16 | #BNC2628 | Navigate to “**View Options**” in the tactical replay. | Under Track Detail Graphics make sure the “**Track Symbol Size**” is already set to 0% visibility by default. |  |

### Comments

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## Test Case 56 Place holder

## Test Case 57 Place holder

## Test Case 58 Place holder

## Test Case 59 Place holder

## Test Case 60 Place holder

## Test Case 61 Place holder















































## Test Case : Jam strobes for IFF

### Description

This Test Case is testing the System’s jam strobe functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-mmsr2000

### Requirements

**Stakeholder Requirement:**

[BNCS256] As an Operator, I want the system to present jam strobes, so that I can detect jamming entities.

**Accept Criteria:**

[BNC455] I want to be able to view jam strobes from an integrated IFF interrogator.

[BNC456] I want to be able to show/hide jam strobes.

[BNC446] I want to be able to show/hide IFF plots.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 62.1 |  | **Simulator PC**  In the **GPS simulator** navigate to “**Scripts**”.  Locate the “**!OwnUnit.js**” script and run it by clicking “**Start**”. | **Simulator PC**  In the “**Entities**” tab a new entity with the ID “**OWN\_UNIT**” has been added.  **MFCC**  Verify that the Own Unit has the same position as sent from the GPS. |  |
| 62.2 |  | In the **IFF Interrogator MSSR2000 Simulator**, navigate to “**Position/Range**”.  Make sure the “**Position**” is set to **OWN\_UNIT**.  Set the “**Range**” to 5000.00 km and click “**Apply**”. | **Simulator PC**  Verify, that the position and range are set correctly. |  |
| 62.3 |  | In the “Entities” tab, click “Add”.  In the “Add Entity” window, insert the following:   * **ID**: IFF * **Position**: 563000N/0110000E * **Role**: Plot   Click “OK” to add the Entity. | Verify that the entity has been added. |  |
| 62.4 |  | Navigate to the “**Jamming Strobes**” tab, and insert the following:   * **From (range)**: 2000   + Click enter | Make sure a window pops up with the following information: “**Start range from must be less than 255 and a positive number**”. |  |
| 62.5 |  | In the “**Jamming Strobes**” tab insert the following values:   * **From (range)**: 0   + Click enter * **To (range)**: 2000   + Click enter | Make sure a window pops up with the following information: “**End range from must be less than 255 and a positive number**”. |  |
| 62.6 |  | In the “**Jamming Strobes**” tab insert the following values:   * **To (range)**: 0   + Click enter * **From (degree)**: 2000   + Click enter | Make sure a window pops up with the following information: “**Start degree must be less than 180 and a positive number**”. |  |
| 62.7 |  | In the “**Jamming Strobes**” tab insert the following values:   * **From (degree)**: 0   + Click enter * **To (degree)**: 2000   + Click enter | Make sure a window pops up with the following information: “**End degree must be less than 180 and a positive number**”. |  |
| 62.8 |  | In the “**Jamming Strobes**” tab insert the following:   * **From (range)**: 0 * **To (range)**: 20 * **From (degree)**: 0 * **To (degree)**: 180   Click enter and then click “**Start transmission**”. | Make sure the “**Status**” has changed to “**Transmitting: 1 jamming strobe(s)**”. |  |
| 62.9 | #BNC455  #BNC456  #BNC446 | **MFCC**  In the ActionMenuList, navigate to “**View Options**”.  Under “**Track Detail Graphics**” toggle the “**IFF Plots And Jamming Strob…**” button to “**On**”. | **MFCC**  Make sure the “IFF Plots and Jamming Strob..” button is enabled.  Verify, that the Jaming strobes are visible on the situational display.  And verify, that the IFF plot created in step 3 is visible on the Sit. Display |  |
| 62.10 | #BNC456 | Under “**Track Detail Graphics**” toggle the “**IFF Plots And Jamming Strob…**” button to “**Off**”. | Verify that although the IFF simulator is still sending jamming strobes, the strobes are now hidden on the Situational display.  Verify, that although the simulator is still sending information about the IFF plot, the plot is hidden on the Sit. Display. |  |
| 62.11 |  | Under “**Track Detail Graphics**” toggle the “**IFF Plots And Jamming Strob…**” button to “**On**”. | Verify, that the Jaming strobes are visible again on the situational display.  Verify, that the IFF plot is visible on the Sit. Display again |  |
| 62.12 |  | **Simulator PC**  Close the IFF Interrogator MSSR2000 Simulator by clicking the X in the right upper corner. | **Simulator PC**  Verify that the IFF Interrogator MSSR2000 Simulator window has been closed  **MFCC**  Verify that a Technical Notification pops up on the screen with the information that the connection to the MSSR 2000 I is lost”.  Verify that no Jamming Strobes are shown on the SD.  Verify, that no IFF plots are shown on the SD. |  |

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## Test Case : Filter Track Cards

### Description

This Test Case is testing the track filter functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the Simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS270] As an Operator, I want to filter track cards so that the tracks that are most relevant to my mission is shown or shown more predominant than tracks that are less relevant.

**Accept Criteria:**

[BNC502] I want to be able to remove filtering.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 63.1 |  | **Simulator PC**  Run a script in the scanter 6002 simulator to create a bunch of tracks, or create them manually yourself. | **MFCC**  Tracks are shown on the situation display |  |
| 63.2 |  | **MFCC**  Create a bearing line manually |  |  |
| 63.3 | #BNC502 | Turn on/off different filters. | On the situation display, only the filtered tracks/bearing lines are shown.  When no filters are active, all tracks/bearing lines are shown. |  |
| 63.4 |  | Observe that the tracks/bearing lines in the track card only shows the tracks/bearing lines being filtered for | Tracks/bearing lines shown on situation display is the same as can be seen in the track card |  |

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## Test Case 64: Track - Primary data presentation

### Description

This test case is testing the System’s ability to show relevant track information, by both quick access and filtering.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-scanter6002
4. sensorsim-arpa
5. sensorsim-ais

### Requirements

**Stakeholder Requirement:**

[BNCS276] As an Operator, I want to get an easy overview of the tracks with a brief display of the most relevant data available about the tracks.

**Accept Criteria:**

[BNC496] I want the most relevant data to be shown: Track ID/AIS name, identity, category and the sensors are contributing to the track (if any). Data can be shown as text and/or icons.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 64.1 |  | **Simulator PC**  In the sensorsim-gps navigate to the “Scripts” tab.  Locate the Script: “**!OwnUnit.js**”andrun it by clicking the “Start” button**.** | **Simulator PC**  Under the “Entities” tab, a new entity has been created with the ID: OWN\_UNIT  **MFCC**  Open the Burger Menu and select “Own Unit Management”.  View the “Own Unit Source Status” section.  The system shows it is receiving data from the GPS source via a green icon. |  |
| 64.2 |  | Make two tracks:   1. With Scanter and AIS correlated. 2. With Arpa and AIS correlated.   Then make a track only with Scanter. | Tracks shown in Sit. Displ and TrackCards |  |
| 64.3 |  | **MFCC**  Create a manual track with the following parameters:   * Air * Tanker * Suspect | The track is created |  |
| 64.4 | #BNC496 | Hover the pointing device over the track, you wish to view into from, whilst holding down the shift key on the keyboard. | A Info window is showing with the following information:   * Track ID * Identity * Category * Contributing sensors (if any) |  |
| 64.5 |  | Open "Track Filters" and make sure all filters are turned off. | All filters are set to Off and the tracks created above are all shown. |  |
| 64.6 |  | In "Source filters" set SCANTER and AIS to “On” | Only track containing Scanter and AIS are shown.  On the Widgets bar in the lower left corner of the Sit. disp., the indication of “Track Filters” is set to “On”. |  |
| 64.7 |  | In "Source filters" set “SCANTER” to “On” and AIS to “Off”. | Only tracks containing Scanter are shown. |  |
| 64.8 |  | In "Source filters" set all filters to “Off”.  In “Category filter” set “Air” to “On”. | Only the manual track just created is shown. |  |
| 64.9 |  | In "Category filters" set all filters to “Off”.  In "Identity filter" set “Suspect” to “On”. | Only the manual track just created is shown. |  |

### Comments

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## Test Case : Detailed ADS-B Track

### Description

This Test Case is testing the System’s ability to easily view detailed track information.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-scanter6002
4. sensorsim-ais
5. sensorsim-mssr2000
6. sensorsim-adsb

### Requirements

**Stakeholder Requirement:**

[BNCS278] As an Operator, I want to easily view detailed track information i.e. a comprehensive set of data known about the track.

**Accept Criteria:**

[BNC506] I want to see track identification (track ID or AIS name), Track position (lat/lon, altitude), track category and type, track identity, AIS parameters (If available: IMO, MMSI, destination, …), course and speed, IFF parameters (if available), ADS-B parameters (if available: identification, position, altitude and velocity).

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 65.1 |  | **Simulator PC**  Open the GPS simulator. Navigate to the “**Scripts**” tab.  Run the “!Own\_Unit.js” script. | **Simulator PC**  Verify, that the script is running.  **MFCC**  Verify, that the Own Unit has changed to the correct position. |  |
| 65.2 |  | In the AIS Simulator, navigate to the “**Entities**” tab.  Click “**Add**”.  In the “**Add Entity**” window insert the following values:   * **ID**: AIS * **Position**: 563000N/0110000E * **Altitude**: 0.5 * **Speed**: 7 * **Course**: 90 * **MMSI**: 220459491 * **IMO**: 10 * **Ship Type**: FISHING * **Nav. Status**: ENGAGED\_IN\_FISHING * **Ship Name**: Local\_Fisherman * **Call Sign**: TANGO2703 * **Destination**: COPENHAGEN   To add the entity, click “**OK**”. | **Simulator PC**  In the AIS Simulator, under Entities, verify, that the entity has been added.  **MFCC**  Verify, that the Track is showing up on the Sit. Display and is listed in the Track list. |  |
| 65.3 | #BNC506 | **MFCC**  In the ActionMenuList, navigate to “**Track List**”. Find the Track added in the step above and click open its “**Track Details**”. | Under track details, verify that the following information is available and correct according to the input on the Simulator PC:   * Position * Category * Type * Identity * MMSI * IMO * Destination * Course/ Speed * AIS Name * AIS Type * IRCS * Navigational Status |  |
| 65.4 |  | **Simulator PC**  In the ADSB simulator, click on “**Position/ Range**”. Set “Range” to “**5000.00**” km.  Click “**Apply**” | **Simulator PC**  Check, that the range is set to 5000.00 km. |  |
| 65.5 |  | Navigate to “**Entities**” and click “**Add**” to create a track.  Insert the following:   * **ID**: ADSB * **Altitude**: 10.000 (METERS) * **Speed**: 500.00 (KNOTS) * **Mode S Callsign**: 123 456 * **Mode S addr**: 123456   Click “**OK**” to add the Track. | Check, that a new track is created under Entities.  **MFCC**  Check that the new track is shown on the SD. |  |
| 65.6 |  | **MFCC**  Under the ActionMenuList, navigate to the “**Track List**”.  Find the track that was just created in step 109.2. | Make sure the ADS-B icon is higlighted, to indicate that the system can receive tracks from an ADS-B Receiver. |  |
| 65.7 | #BNC506 | Click on “**>**” to view the Track Details and find the following:   * Position * Altitude * Bearing/ Range * Course/ Speed * Track Number * Category * Type * Identity | Check that the correct values under each category are displayed. |  |
| 65.8 |  | **Simulator PC**  In the IFF Interrogator MSSR2000 Simulator, navigate to “Scripts” tab and start a script “Load\_test\_Random\_moving\_tracks.js” or add manually an entity via Entity tab | **Simulator PC**  Verify that under Entities, new entities appeared  **MFCC**  Verify, that IFF tracks are showing up on the Sit. Display and are listed in the Track list. |  |
| 65.9 | #BNC506 | **MFCC**  In the Track List action panel, click on “**>**” next to a newly created IFF track | **MFCC**  Verify, that IFF icon is highlighted in identification section and IFF parameters are displayed correctly: all of the usual parameters like Position, Bearing/Range etc but also IFF specific like IFF Mode |  |

### Comments

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## Test Case Place holder











## Test Case : Radar - As an operator I want to be able to view the status of the radar

### Description

This Test Case is testing the System’s ability to show the status of connection of the radar systems.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

On the simulators PC start the following simulators:

1. sensorsim-scenariosimulator

2. sensorism-scanter6002

### Requirements

**Stakeholder Requirement:**

[NSES181] As an Operator, I want to control and monitor the SCANTER Radar to suit my mission goal.

**Accept Criteria:**

[NSE503] I want to be able to switch transmission on and off, independent of the rotation.

[NSE504] I want to be able to select a predefined radar profile, giving the range, mission focus and weather focus I need, as I may not have the necessary training or experience to do it myself.

[NSE506] I want to be able to view the status of the radar.

[NSE508] I want to be able to view BITE results.

[NSE509] If connected, I want to be able to view the status of the SCANTER, e.g. rotation speed and error status, but not necessarily very low-level BITE errors.

[NSE513] I want to be able to control and reset the surface radar video gain, STC and clutter control for the SCANTER Radar

**Stakeholder Requirement:**

[BNCS711] As an Operator, I want to have a good overview of the status of connected subsystems, so that I can determine the overall combat/mission readiness of the platform.

**Accept Criteria:**

[BNC1004] I want to be able to view the status of connections to integrated systems (and the operational status to the extent it is available), for e.g. sensors, effectors and link systems.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 67.1 | #BNC1004  #NSE506 | **MFCC**  In the ActionMenuList, navigate to “**Radar Control & Video**”  Then, click on “**Scanter 6002**”. | “Scanter 6002” Action Panel is opened.  Verify, that the system is set to “Operational” (Green light). |  |
| 67.2 | #NSE513 | Under “Video Processing”, turn “Off” “Automatic Video Processing”. | Verify, that the following options can be changed manually:   * Gain * Sea * Rain |  |
| 67.3 | #NSE513 | Under “Video Processing”, turn “On” “Automatic Video Processing”. | Verify, that the following options can no longer be changed manually:   * Gain * Sea * Rain |  |
| 67.4 |  | **Simulator PC**  In the “**Scanter** **6002**” simulator run the following script:  “**Common\_square.js**” | **Simulator PC**  The tracks are listed in the “Entities” tab.  **MFCC**  The tracks are shown on the Sit. Display and listed in the track list. |  |
| 67.5 | #NSE503 | **MFCC**  In the “**Scanter** **6002**” Action Panel, under “**Control**” turn “**Off**” “**Transmition**”. | Verify, that the Tracks are starting to blink on the Sit. Display and after a little while they completely disappear. |  |
| 67.6 | #NSE503 | In the “**Scanter** **6002**” Action Panel, under “**Control**” turn “**On**” “**Transmition**”. | Verify, that the tracks are shown on the Sit. Display again. |  |
| 67.7 | #NSE508  #NSE509 | **Simulator PC**  In the “**Scanter 6002**” simulator navigate to the “**Parameters**” tab.  Open “**Outgoing**” and filter by “**RPM**”.  In the “**Antenna RPM Tellback**” text field insert: “**50.0**” | **MFCC**  In the “Scanter 6002” Action Panel, under “Status” verify, that the “Antenna RPM” is set to 50 rpm. |  |
| 67.8 | #NSE508  #NSE509 | **Simulator PC**  Still in the “**Outgoing**” tab filter now by “**Failure**”.  Now tick the box next to “**Transceiver failure override**” and click “**Send**”. | **MFCC**  Still under “Status” verify that the following “Error Messages” is now listed: “Transceiver Failure Override”. |  |
| 67.9 | #BNC504 | **MFCC**  Under “**Control**”, change the profile for the radar from “**P0: Default**” to “**P10: Default**”. | **Simulator PC**  In the “**Scanter 6002**” simulator navigate to the “**Parameters**” tab.  Open “**Incoming**” and verify, that the “Curent Profile” is set to “**Profile#10**”. |  |
| 67.10 | #BNC1004  #NSE506 | **Simulator PC**  Shut down the scanter simulator | **MFCC**  After a short while:  System = Link Down (Red) |  |
| 67.11 | #BNC1004  #NSE506 | Start sensorism-scanter6002 | **MFCC**  After a short while:  System = Operational (Green) |  |

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## Test Case 68 Place holder

## Test Case 69 Place holder























## Test Case : Specify and trigger CPA

### Description

This Test Case is testing the System’s ability to automatically calculate Closest Point of Approach (CPA).

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC open the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS342] As an Operator, I want the system to automatically calculate Closest Point of Approach (CPA) for other surface tracks and warn me if any of them is calculated to get too close to my ship.

Comment: CPA raises an alert if a surface track gets nearer to OU than the distance given by CPA radius within the time given by TCPA (provided OU and the track follows their present course/speed), signifying that a collision is likely and imminent.

**Accept Criteria:**

[BNC1111] I want to be able to specify the Alert Radius.

[BNC1112] I want to be able to specify the Alert TCPA.

[BNC1113] I want to be able to see CPA values of the track that have caused an alert.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 70.1 |  | **Simulator PC**  In the GPS simulator, navigate to “Scripts” and run the “!OwnUnit.js” script. | **Simulator PC**  In the “Entities” tab, OWN\_UNIT is listed under “Entities”. |  |
| 70.2 |  | **MFCC**  In the ActionMenuList, open “**Tools**” and navigate to “**Closest Point of Approach**”. | “Closest Point of Approach” Action Panel is opened. |  |
| 70.3 | #BNC1111  #BNC1112 | Click “**CPA Settings**” and make the following changes:   * Set the “**Alert Radius**” to 2.5nm * Set the “**Alert TCPA**” to 15m00s * “**Activate**” the TCPA calculation | Settings are changed / activated. |  |
| 70.4 | #BNC1113 | **Simulator PC**  Create a track that moves within the alert radius parameter | **MFCC**  Verify that an alert will appear in the CPA panel as the track enteres the area. |  |

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## Test Case : Area Surveillance – Create Area

### Description

This Test Case is testing the system’s ability to create areas and specify alarms for the created areas.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS334] As an Operator, I want to create areas of different shapes and sizes in an easy way.

**Accept Criteria:**

[BNC1070] I want to be able to create geographical shapes by clicking the situation display and draw the areas directly on the map.

[BNC1073] I want to be able to show/hide geographical shapes on the situation display.

**Stakeholder Requirement:**

[BNCS332] As an Operator, I want to perform geographical surveillance i.e. have the system automatically detect anyone/anything that enters/leaves/moves in specific areas so that I don't have to constantly monitor the area myself.

**Accept Criteria:**

[BNC1087] I want to be able to specify what types/categories of tracks sets the alert on/off.

[BNC1090] I want the system to generate an alert when a track selected for a geographical shape crosses the line/border of this geographical shape in the specified direction.

[BNC1091] When alert on enter is selected for a geographical shape, I want the system to generate an alert when a new track matching the criteria appears inside this geographical shape.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 71.1 |  | **MFCC**  In the ActionMenuList, navigate to “**Area and Zones**”. | **MFCC**  “Area and Zones” Action tab is open. |  |
| 71.2 |  | Click on “**Create Area**”. | Verify that a dropdown list with the following area shapes is available:   * Create sector area * Create line area * Create polygon area |  |
| 71.3 |  | Create a “**Sector area**” by inserting following:   * **Name**: Sector area 1 * **Center position**: 56°00'00"N - 011°00'00"E * **From bearing**: 000 deg * **To bearing**: 000 deg * **From range**: 0 nm * **To range**: 5 nm   Click “**Save**” and toggle “**Active**” and “**Visible**” to on. Click “**Save**” again. | Verify that the correct “circle area” has been created, is visible on the situational display and the area is listed under “Area and Zones”. |  |
| 71.4 |  | Create a “**Sector area**” by inserting following:   * **Name**: Sector area 2 * **Center position**: 56°00'00"N - 011°30'00"E * **From bearing**: 000 deg * **To bearing**: 090 deg * **From range**: 5 nm * **To range**: 10nm   Click “**Save**” and toggle “**Active**” and “**Visible**” to on. Click “**Save**” again. | Verify that the correct “sector-slice area” has been created, is visible on the situational display and the area is listed under “Area and Zones”. |  |
| 71.5 |  | Create a “**Line area**” by inserting following:   * **Name**: Line area 1 * **Start position**: 56°30'00"N - 011°00'00"E * **End position**: 56°20'00"N - 011°00'00"E   Click “**Save**” and toggle “**Active**” and “**Visible**” to on. Click “**Save**” again. | Verify that the correct “line area” has been created, is visible on the situational display and the area is listed under “Area and Zones”. |  |
| 71.6 | #BNC1070 | Create a “**Polygon area**” by inserting following:   * **Name**: Polygon area 1 * **Add points using mouse click**: toggle to on * **Click** on the situational display and draw the area directly on the map.   Click “**Save**” and toggle “**Active**” and “**Visible**” to on. Click “**Save**” again. | Verify that the correct “Polygon area” has been created, is visible on the situational display and the area is listed under “Area and Zones”. |  |
| 71.7 | #BNC1073 | Navigate to the “Areas and Zones” Action Panel and for every area created, toggle “**Visible**” to “**Hidden**” and back again. | Verify, that all areas can be hidden and showed on the SD. |  |
| 71.8 |  | **Simulator PC**  In the Scanter 6002 simulator navigate to the “Entities” tab, click “**Add**” and create the following track:   * **ID**: Track 1 * **Position**: 564000N/0100000E * **Speed**: 1000 * **Course**: 90   Click “**OK**” to add the track | **Simulator PC**  Verify that the track has been created, and is listed under Entities in the Entities tab.  **MFCC**  Verify that the track is show on the situational display and listed in the track list  Verify, that the track is entering and leaving sector area 1 and these actions are not setting off any alarms. |  |
| 71.9 |  | **MFCC**  Navigate to the Action Panel of “**Sector Area 1**”.  Under Events, toggle “**On enter**” and “**On leave**” to “**On**”.  Click “**Save**”. | **MFCC**  Verify that the events have been toggled to “On”. |  |
| 71.10 |  | **Simulator PC**  In the Scanter 6002 simulator navigate to the “Entities” tab, click on the track created in step 8 and then click “**Edit**”. Change the following:   * **Position**: 564000N/0100000E   Click “**OK**” to save the changes. | **Simulator PC**  Verify that the track has been edited.  **MFCC**  Verify, that the track is entering and leaving sector area 1 and that these actions are setting off the alarms. |  |
| 71.11 |  | **MFCC**  Navigate to the Action Panel of “**Sector Area 1**”.  Under Properties, toggle “**Active**” to “**Off**”.  Click “**Save**”. | Verify, that Active has been set to “Off”. |  |
| 71.12 |  | **Simulator PC**  In the Scanter 6002 simulator navigate to the “Entities” tab, click on the track created in step 8 and then click “**Edit**”. Change the following:   * **Position**: 564000N/0100000E   Click “**OK**” to save the changes. | **Simulator PC**  Verify that the track has been edited.  **MFCC**  Verify, that the track is entering and leaving sector area 1 and these actions are not setting off any alarms although under Events “On enter” and “On leave” have been toggled to “On”. |  |
| 71.13 |  | **MFCC**  Navigate to the Action Panel of “**Sector Area 1**”.  Under Properties, toggle “**Active**” to “**On**”.  Click “**Save**”. | Verify, that Active has been set to “On”. |  |
| 71.14 | #BNC1087 | **MFCC**  Navigate to the Action Panel of “**Sector Area 1**”.  Under Critera, toggle “**Air**” to “**On**”.  Click “**Save**”. | **MFCC**  Verify that the Criteria have been toggled to “On”. |  |
| 71.15 |  | In the ActionMenuList, navigate to the “**Track List**” and open the “Track Details” of the track created in step 8.  Change its category to “**Surface**”.  Click “**Save**”. | Verify, that the category has been changed to “Surface”. |  |
| 71.16 |  | **Simulator PC**  In the Scanter 6002 simulator navigate to the “Entities” tab, click on the track created in step 8 and then click “**Edit**”. Change the following:   * **Position**: 564000N/0100000E   Click “**OK**” to save the changes. | **Simulator PC**  Verify that the track has been edited.  **MFCC**  Verify, that the track is entering and leaving sector area 1 and these actions are not setting off any alarms. |  |
| 71.17 |  | **MFCC**  In the ActionMenuList, navigate to the “**Track List**” and open the “Track Details” of the track created in step 8.  Change its category to “**Air**” | Verify, that the category has been changed to “Air”. |  |
| 71.18 | #BNC1091 | **Simulator PC**  In the Scanter 6002 simulator navigate to the “Entities” tab, click on the track created in step 8 and then click “**Edit**”. Change the following:   * **Position**: 564000N/0100000E   Click “**OK**” to save the changes. | **Simulator PC**  Verify that the track has been edited.  **MFCC**  Verify, that the track is entering and leaving sector area 1 and these actions are setting off two alarms. |  |
| 71.19 | #BNC1087  #BNC1091 | **MFCC/ Simulator PC**  Repete steps 14 to 18, as many times as needed. For each repetition change the criteria of “Sector Area 1” to verify, that the alarms are working for each criteria and any combination. | **MFCC/ Simulator PC**  Verify, that the alarms are working for each criteria and any combination. |  |
| 71.20 |  | **MFCC**  Navigate to the “**Line area 1”** action panel and toggle “**On cross**” to “**On**”.  Click “**Save**”. | **MFCC**  Verify, that “On cross” has been set to “On”. |  |
| 71.21 | #BNC1090 | **Simulator PC**  In the Scanter 6002 simulator navigate to the “Entities” tab, click on the track created in step 8 and then click “**Edit**”. Change the following:   * **Position**: 562500N/0105500E   Click “**OK**” to save the changes. | **Simulator PC**  Verify that the track has been edited.  **MFCC**  Verify, that the track is crossing the line area 1 and that action is setting off an alarm. |  |

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## Test Case 72: Place holder

## Test Case 73: Place holder

## Test Case 74: Place holder

## Test Case 75: Place holder

## Test Case : Delete Alerts

### Description

This test case is testing the system’s ability to receive and visualize technical and operational notifications.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC1 and MFCC2.

On the Simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002
3. sensorsim-ais
4. sensorsim-

### Requirements

**Stakeholder Requirement:**

[BNCS326] As an Operator, asynchronously with my current operations, I want to receive notifications about tactical events, so that I don't have to monitor these myself.

**Accept Criteria:**

[BNC1029] I want the alert messages are labeled with a severity, so that I can get a quick overview of what is important to deal with.

[BNC1032] I want to be able to delete alerts and notifications.

[BNC1034] I want the alerts to be displayed in a way that they catch my attention and are easy to view, but at the same time does not interfere with or block the view of the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 76.1 |  | **MFCC**  In the Action Menu List navigate to the “Technical Notifications” Action Panel. | **MFCC**  Verify, that some “Grey” Alerts are listed. |  |
| 76.2 |  | **Simulator PC**  Start the AIS simulator. When the AIS simulator is started, and connected with the system, close it again. | **Simulator PC**  In the “Technical Notifications” Action Panel, verify that an Alert has appeared with a “green” AIS Icon and the message “AIS Interface is receiving data”.  Verify, that another Alert has appeared with a “red” AIS Icon and the message “AIS Interface is down”. |  |
| 76.3 |  | In the Scanter6002 Simulator navigate to the “Scripts” tab and run the following script:   * Load\_test\_Random\_moving\_surface\_tracks.js | Verify, that the script is running and the tracks are shown on the Sit. Display. |  |
| 76.4 |  | **MFCC**  In the Action Menu List, navigate to the “Track Rules” Action Panel.  Expand the “Default” dropdown list.  Under “Surface Track with Acceleration or Deaceleration greater than 2 m/s/s” toggle both buttons to “On”.  Toggle them to “Off” again after 3 seconds. | **MFCC**  In the “Operational Notifications” action panel verify that some “red” notifications have appeared. |  |
| 76.5 |  | If possible, trigger also some green, gray and yellow “Operational Notifications”.  If possible, trigger also some yellow “Technacal Notifications”. |  |  |
| 76.6 | #BNC1029  #BNC1034 | **MFCC**  Create a broad range of both technical and operational notifications. | Verify that a broad range of technical and operational notifications have been created.  Verify, that each time an alert has been created, they appear in the right upper corner, and disappear after a short while, but are still to be found under either technical or operational notification action panel.  Verify that the following color coding is used depending on the severity of the notification:   * Red (High severity) * Yellow * Green * Grey (Low severity) |  |
| 76.7 | #BNC1032 | Open Technical Notifications  Press the button "Delete All Notifications" | All Technical Notifications are deleted  Operation notifications are NOT deleted  For the sytem with 2 MFCCs:  **On another MFCC:**  corresponding notifications are not removed |  |
| 76.8 |  | Create a broad range of both technical and operational notifications. |  |  |
| 76.9 | #BNC1032 | Open Operational Notifications  Press the button "Delete All Notifications" | All Operation Notifications are deleted  Technical notifications are NOT deleted  For the sytem with 2 MFCCs:  **On another MFCC:**  corresponding notifications are not removed |  |

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## Test Case 77: Place holder

## Test Case 78: Place holder

## Test Case : SA Related to My Own Ships Tactical Situation

### Description

This Test Case is testing the System’s ability to set a threshold for the shallow water depth.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS304] As an Operator, I want to know the measured water depth under keel so that I do not have to rely on potentially inaccurate/obsolete data from a sea chart.

**Accept Criteria:**

[BNC892] I want to be able to set a shallow water depth threshold.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 79.1 |  | **MFCC**  In the Action Menu List, navigate to “View Options”. | **MFCC**  Check that there is a "Safety" section available. |  |
| 79.2 | #BNC892 | Select "Two shaded" option and insert a value for Safety. | Check that the colors are changing on the Sit. Disp. |  |
| 79.3 | #BNC892 | Select "Four shaded" option and insert different values for Safety | Check that the colors are changing on the Sit. Disp. |  |

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## Test Case : See OU on the map

### Description

This Test Case is testing the System’s ability to give a good overview of what the tactical situation is for own ship and its ability to support standard interfaces for navigation data.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the Simulator PC start the following simulators:

1. Nmea2ownunitsimulator

### Requirements

**Stakeholder Requirement:**

[BNCS296] As an Operator, I want the system to give me a good overview of what the tactical situation is for own ship, so that I am able to carry out my mission.

**Accept Criteria:**

[BNC843] I want to see own ship on the situation display as a track symbol.

**Stakeholder Requirement:**

[BNCS743] As a System Configurator, I want the system to support standard interfaces for navigation data, so I can select between different subsystems.

**Accept Criteria:**

[BNC2207] I want the system to be able to read OU data via NMEA0183 delivered via TCP/IP over LAN.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 80.1 | #BNC843 | **MFCC**  On keyboard hold the “control” button down and with the pointing device right click on the Own Unit.  Select “Own Unit” and click “Open Track Details”. | **MFCC**  Verify that the Own Unit is displayed on the SD as a track symbol. |  |
| 80.2 |  | In the Burger Menu, navigate to “Own Unit Management”.  And open “Own Unit Management” from the selection panel to the left. | Verify that the following categories are set to calculated:   * Position * Heading * Course/ speed |  |
| 80.3 |  | **Simulator PC**  In the NMEA2OwnUnit simulator, navigate to “Position GLL” and insert the following values:   * **Latitude**: 5600 NORTH (N) * **Longitute**: 1100 EAST (E) * **Tx**: Set a tick   Click “**Start**”. | **Simulator PC**  After a few seconds the port status changes from red to green saying: Server started, TX enabled, Connected. |  |
| 80.4 | #BNC2207 | **MFCC**  Navigate to Own Unit Management. | **MFCC**  Verify, that under “Own Unit Management”, the “Position” has switched to “Sensor” and is now receiving information from the Nmea simulator. |  |
| 80.5 |  | Navigate back to the Sit. Display | Verify that the position of the Own Unit has swiched to the position provided by the NMEA simulator. |  |
| 80.6 |  | In the ActionMenuList, navigate to Own Unit. | Verify, that the position displayed is correct. |  |
| 80.7 |  | Close down the NMEA simulator | Verify, that “Position” under “Own Unit Management” has swiched back to calculated. |  |

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## Test Case : Speed and course - GPS

### Description

This Test Case is testing the System’s ability to receive and display information from a GPS unit.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the Simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps

### Requirements

**Stakeholder Requirement:**

[BNCS298] As an Operator, I want to know where I am, in which direction I am moving and how fast (irrespective of wind and current), so that I can comprehend the situation.

**Accept Criteria:**

[BNC861] I want to view and use position and course/speed over ground from a GPS unit.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 81.1 |  | **Simulator PC**  In the GPS Simulator, navigate to “**Scripts**” and click “**Add**”.  In the “**Add Entities**” window insert the following informaion:   * **ID**: OWN\_UNIT * **Position**: 560000N/0110000E LL * **Speed**: 1.94 KNOTS * **Course**: 90.00 Degrees * **Include Sim**: GPS   Click “**OK**” to add the Entity | **Simulator PC**  Verify, that the Enitiy has been added and is listed under Entities ind the Entities tab.  **MFCC**  Verify, that the Position of the Own Unit is displayes correctly on the Sit. Display. |  |
| 81.2 |  | **MFCC**  In the ActionMenuList, navigate to “**Own Unit**”. | Verify, that the following information is displayed accordingly to the input in the simulator:   * Position * Course / Speed |  |
| 81.3 |  | In the Burger Menu Navigate to “**Own Unit Management**” and open the “**Own Unit Source Status**” tab. | Verify, that the System is reciving data from the GPS simulator. – The indication light under “Position, Velocity (RMC)” is green and the data is continuously updated. |  |
| 81.6 |  | **Simulator PC**  In GPS simulator, navigate to “**Options**”.  Under “**Control**” disable “**Active**” by removing the mark.  **MFCC**  In the Burger Menu Navigate to “**Own Unit Management**” and open the “**Own Unit Source Status**” tab. | **MFCC**  Verify, that the System is no longer reciving data from the GPS simulator. – The indication light under “Position, Velocity (RMC)” is red and no data is shown. |  |
| 81.7 |  | Under “**Own Unit** Managament” navigate to the “**Own Unit Management**” tab. | Verify, that the information displayed under “Heading” and “Course/ Speed” is the latest information received from the GPS simulator. |  |
| 81.8 |  | Navigate back to the Sit. Display and open “**Own Unit**” from the ActionMenuList. | Verify, that the information displayed under “Position” and “Course / Speed” is the information lastly received from the GPS simulator and the “Positional Dilution” is calculated accordingly. |  |

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## Test Case : Navigational Data

### Description

This Test Case is testing the System’s ability to receive and display navigational data from different subsystems.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the Simulator PC start the following simulators:

1. nmea2ownunitsimulator
2. em3000gyrosimulator

### Requirements

**Stakeholder Requirement:**

[BNCS743] As a System Configurator, I want the system to support standard interfaces for navigation data, so I can select between different subsystems.

**Accept Criteria:**

[BNC2208] I want the system to be able to support NMEA RMC.

[BNC2209] I want the system to be able to support NMEA HDT (for heading) and XDR (for heading, roll and pitch, per [MK27]).

[BNC2210] I want the system to be able to use roll and pitch via PHTRO (for roll and pitch).

[BNC2211] I want the system to be able to use data from a Simrad EM3000 gyro, per [EM3000].

[BNC2213] I want the system to be able to support NMEA VBW.

[BNC2214] I want the system to be able to support at least NMEA DPT with a negative transducer offset (for depth under keel).

**Stakeholder Requirement:**

[BNCS300] As an Operator, I want to know the vessel heading, roll and pitch so that I can inform e.g. a helicopter pilot about the data.

**Accept Criteria:**

[BNC875] I want to view and use heading, roll, and pitch from a gyro unit.

**Stakeholder Requirement:**

[BNCS302] As an Operator, I want to know the vessel speed relative to water so that I can reason about sea current.

**Accept Criteria:**

[BNC883] I want to view and use relative speed through water from a Log unit.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 82.1 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator navigate to the “**Heading HDT**” tab and insert the following values:   * **Heading, T,**: 90 * **Tx**: Set a tick   Click “**Start**”. | **Simulator PC**  Verify, that the port status has changed from ret to green, saying:  “Port: 4002 Status: Server started, Tx, enabled, Connected”. |  |
| 82.2 | #BNC2208  #BNC2209 | **MFCC**  In the ActionMenuList, navigate to “**Own Unit**”. | **MFCC**  Verify that heading has been updated accordingly to the input in the NMEA simulator. |  |
| 82.3 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator navigate to the “**Depth DPT**” tab and insert the following values:   * **Depth (A) (m)**: 50 * **Offset transducer (B I C) (m)**: -10 * **Tx**: Set a tick   Click “**Start**”. | **Simulator PC**  Verify, that the port status has changed from ret to green, saying:  “Port: 4003 Status: Server started, Tx, enabled, Connected”. |  |
| 82.4 | #BNC2208  #BNC2214 | **MFCC**  In the ActionMenuList, navigate to “**Own Unit**”. | **MFCC**  Verify that “Depth Below Keel” has been updated accordingly to the input in the NMEA simulator. |  |
| 82.5 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator navigate to the “**Speed VBW**” tab and insert the following values:  **Water speed:**   * **Longitudinal speed (knt)**: 10 * **Status**: DATA\_VALID (A)   **Tx**: Set a tick  Click “**Start**”. | **Simulator PC**  Verify, that the port status has changed from ret to green, saying:  “Port: 4012 Status: Server started, Tx, enabled, Connected”. |  |
| 82.6 | #BNC2208  #BNC883  #BNC2213 | **MFCC**  In the ActionMenuList, navigate to “**Own Unit**”. | **MFCC**  Verify that “Speed through water” has been updated accordingly to the input in the NMEA simulator. |  |
| 82.7 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator navigate to the “**Heading, Roll and Pitch XDR**” tab and insert the following values:  **Heading:**   * **Value**: 45   **Roll:**   * **Value**: 10   **Pitch:**   * **Value**: 5   **Tx**: Set a tick  Click “**Start**”. | **Simulator PC**  Verify, that the port status has changed from ret to green, saying:  “Port: 4007 Status: Server started, Tx, enabled, Connected”. |  |
| 82.8 | #BNC875  #BNC2209 | **MFCC**  In the ActionMenuList, navigate to “**Own Unit**”. | **MFCC**  Verify that “Heading”, “Pitch” and “Roll” has been updated accordingly to the input in the NMEA simulator. |  |
| 82.9 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator navigate to the “**Pitch and Roll TRO**” tab and insert the following values:   * **Pitch**: 50 * **Roll**: 15   **Tx**: Set a tick  Click “**Start**”. | **Simulator PC**  Verify, that the port status has changed from ret to green, saying:  “Port: 4006 Status: Server started, Tx, enabled, Connected”. |  |
| 82.10 | #BNC2210 | **MFCC**  In the ActionMenuList, navigate to “**Own Unit**”. | **MFCC**  Verify that under Attitude “Pitch” and “Roll” has been updated accordingly to the input in the NMEA simulator. |  |
| 82.11 |  | **Simulator PC**  In the EM3000 Gyro Simulator insert the following values:  **Roll:**   * **Period (sec)**: 5 * **Amplitude (deg)**: 10   **Pitch:**   * **Period (sec)**: 2 * **Amplitude (deg)**: 5   **Heading:**   * **Heading (deg)**: 90   Click “**Start**” | **Simulator PC**  Verify, that the port status has changed from ret to green, saying:  “Status: Server started, Tx, enabled, Connected”. |  |
| 82.12 | #BNC2211 | **MFCC**  In the ActionMenuList, navigate to “**Own Unit**”. | **MFCC**  Verify that “Heading”, “Pitch” and “Roll” has been updated accordingly to the input in the NMEA simulator. |  |



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## Test Case Place holder











## Test Case Place holder











## Test Case Place holder











## Test Case Place holder











## Test Case Place holder











## Test Case : View and use data from a Weather station

### Description

This Test Case is testing the System’s ability to display weather information received from a weather station.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulators PC start the following simulators:

1. nmea2ownunitsimulator

### Requirements

**Stakeholder Requirement:**

[BNCS745] As a System Configurator, I want to use data from a weather station, so I can get information about the weather around own ship, use the data in calculations and inform e.g. helicopter pilot.

**Accept Criteria:**

[BNC2223] I want to be able to receive and display wind speed and direction, temperature, humidity and pressure data from a weather station via a single TCP server (i.e. the system shall support that several NMEA sentences carrying data pertaining to different sensors are multiplexed onto the same TCP connection).

[BNC2224] I want the system to be able to read the Wind Speed and Direction as NMEA MWV at 1 Hz.

[BNC2225] I want the system to be able to read Air Temperature as NMEA XDR with a configurable transducer ID (default=0) at 1Hz.

[BNC2226] I want the system to be able to read Water Temperature as NMEA XDR with a configurable transducer ID (default=1) at 1Hz.

[BNC2227] I want the system to be able to read Humidity as NMEA XDR with a configurable transducer ID (default=2) at 1Hz.

[BNC2228] I want the system to be able to read Air Pressure as NMEA XDR with a configurable transducer ID (default=3) at 1Hz.

[BNC904] I want to be able to monitor measured air temperature, air pressure and air humidity.

**Stakeholder Requirement:**

[BNCS296] As an Operator, I want the system to give me a good overview of what the tactical situation is for own ship, so that I am able to carry out my mission.

**Accept Criteria:**:

[BNC1004] I want to be able to view the status of connections to integrated systems (and the operational status to the extent it is available), for e.g. sensors, effectors and link systems.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 88.1 |  | **Simulator PC**  In the nmea2ownunitsimulator navigate to the “**Wind MWV**” tab.   * In the “**Angle (deg)**” input field, enter: 60 * In the “**Speed**” input field, enter: 5 * Make sure the “**Reference**” field is set to: Relative (R) * Make sure the “**Unit**” field is set to: METERS\_PER\_SEC (M)   Enable the checkbox labeled “**Tx:**”, then click the “**Start**” button. | **Simulator PC**  After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. |  |
| 88.2 |  | In the nmea2ownunitsimulator navigate to the “**Meteo Data XDR**” tab.   * In the “**Pressure (P)**” input field, enter: 1 * In the “**Humidity (H)**” input field, enter: 2 * In the “**Air Temperature (C)**” input field, enter: 3 * In the “**Water Temperature (C)**” input field, enter: 4   Set Tx to “**combined**” then click on "**Start**" button. | After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. |  |
| 88.3 | #BNC2223  #BNC 904 | **MFCC:**  In the ActionMenuList, go to “**Own Unit**”.  Under the following sections, check the displayed values:   * Environment * Relative Wind * True Wind * Additional Wind Information | **MFCC:**  The values should be displayed as:   * **Environment:**   + **Air Humidity:** 2.0%   + **Air pressure:** 1000.0 mbar   + **Air temperature:** 3.0 C   + **Water temperature:** 4.0 C * **Relative Wind:** G060 - 5 rel-m/s * **True Wind:** 060° - 5 deg-m/s * **Additional Wind Information:** * **Rel. Mean Wind:** G060 - 5 rel-m/s * **Mean True Wind:** 060° - 5 deg-m/s * **Rel. Peak Wind:** G060 - 5 rel-m/s |  |
| 88.4 | #BNC2224  #BNC2225  #BNC2226  #BNC2227  #BNC2228 | **MFCC**  Under the Burger menu, click on “**Own Unit Management**”  Click on “**Own Unit Source Status**” on the left side of the screen.  Expand the following tabs:   * Environment (XDR) * Wind (MWV) | Check that the following categories can be found under “**Environment**” and:   * Air Humidity * Air pressure * Air temperature * Sea temperature   Check that the following category can be found under “**Wind (MWV)**”:   * Relative Wind   Check under “**Environment**” and under “**Wind (MWV)**” that the “**Timestamp (Last Received)**” is updating every second. |  |
| 88.5 |  | **Simulator PC**  In the “**Meteo Data XDR**” tab, set Tx to “**Off**” then click “Apply”.  In the “**Wind MWV**” tab, un-tick the Tx checkmark box to stop sending data - then click “Apply”. | **Simulator PC**  After a short while the Port Status indicator changes from green to blue.  Status text updates to:  Server started, Tx stopped, Connected. |  |
| 88.6 | #BNC1004 | **MFCC**  Under the Burger menu, click on “**Own Unit Management**”  Click on “**Own Unit Management**” on the left side of the screen.  Expand the following tabs:   * Environment * True Wind | **MFCC**  The last value the simulator has sent is the value displayed under each category, with the timestamp being the last time data was received from the sensor. |  |

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## Test Case : View and use data from a SCANTER radar

### Description

This Test Case is testing the System’s ability to receive and display information form a SCANTER radar.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the Simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS744] As a System Configurator, I want to use own ship data from the SCANTER radar.

**Accept Criteria:**

[BNC2218] I want to be able to use position, course and speed information from a SCANTER radar.

[BNC2219] I want to be able to use heading information from a SCANTER radar.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 89.1 |  | **Simulator PC**  In the Scanter Simulator navigate to the Enitities tab and click “**Add**”.  In the “**Add Entity**” window, insert the following:   * **Position**: 560000N/0110000E LL * **Speed**: 10.00 KNOTS * **Course**: 90.0 DEGREES   Click “**OK**” to add the track. | **Simulator PC**  Verify, that a track has been created and is listed under Entites in the Entities tab.  **MFCC**  Verify, that the track is correctly displayed on the Sit. Display. |  |
| 89.2 | #BNC2218  #BNC2219 | **MFCC**  In the ActionMenuList navigate to “**Track List**”. Open the “**Track Details**” of the track created in step 1. | Verify, that the following information is available:   * Position * Bearing/Range * Course/Speed |  |

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## Test Case : Cross-correlate 2 bearing lines

### Description

This Test Case is testing the System’s ability to create and handle information about EW lines (Bearing lines).

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulators PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-phobos

No Own Unit simulator should be running on the system.

### Requirements

**Stakeholder Requirement:**

[BNCS628] As an Operator, I want to see technical information about a detected emitter, so I can better understand what kind of emitter it is.

**Accept Criteria:**

[BNC514] I want received EW bearing lines to have their own entry in the Track List.

[BNC515] I want received EW bearing lines to have their own Extended Track Cards.

[BNC516] I want Extended Track card to contain data pertinent to the EW bearing line. Specifically, I want the extended track card to include TrackID, Bearing, TrackStatus, EmitterName and SpotNumber.

**Stakeholder Requirement:**

[BNCS182] As an EW Operator, I want to create an EW track based on cross-point calculation for two bearing lines from different sources, so I can see the emitter as a track.

**Accept Criteria:**

[BNC808] I want to be able to cross-correlate at least two bearing lines so that I can see and monitor a fully resolved position of an object, e.g. a transmitter.

[BNC812] I want to be able to create manual bearing lines.

[BNC813] I want to be able to update foot-point, bearing, time, category and identity of a manual bearing line.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. | EW bearing line information | | | |
| 90.1 |  | **Simulator PC**  In the sensorsim-phobos navigate to the “**Entities**” tab.  Add an EW bearing line by clicking on the “**Add**” button. | **Simulator PC**  “**Add Entity**” window is opened. |  |
| 90.2 |  | **Simulator PC**  In the “**Add Entity**” window input the following values into the input fields:   * **ID:** test * **Position:** 563046N/0113123E * **Emitter name:** Bearing * **Identity:** Generic * **Bearing:** 45 * **Spotnumber:** 808 | **MFCC**  EW bearing Line is generated on the Situation Display. |  |
| 90.3 | #BNC514  #BNC515  #BNC516 | **MFCC**  In the Track List find the created EW bearing line and go to track details, by clicking on the ‘**>**’.  In the Extended Track Card, check that the following values are:   * **Bearing:** 045 deg * **Spot Number:** 808 * **Emitter Name:** Bearing * **Platform Name:** Generic   Ensure that the following fields are denoted with valid input:   * **ESM Track ID** (e.g. 1 or 2) * **Track Status:** (is set to Active) * **Track Number:** (e.g. ESM0001) | **MFCC**  The Extended Track Card of the EW bearing line denotes the correct values from the Sensor. |  |
| Comm. | Cross-Point Correlation of EW Bearing Lines | | | |
| 90.4 | #BNC812 | **MFCC**  In the ActionMenuList click on the “**New Manual track**”.  In the ActionPanel, uner the section: **Selected Entity Type**, ensure that “**Bearing Line**” is marked.  Under the **Details** section, fill in the following fields:   * **Name:** Manual Test * **Position:** 56°41'53"N - 011°24'44"E * **Bearing:** 090   Click the green Save button to create the EW bearing line. | **MFCC**  On the Situation Display, the newly created manual EW bearing line appears and crosses with the EW bearing line created in test step 90.2.  Example output: |  |
| 90.5 | #BNC808 | **MFCC**  Navigate to the Track List, and select the two EW bearing lines created.  Once selected, click on the “**Merge**” button at the bottom of the Track List. | **MFCC**  The two EW bearing lines are merged into a system track, which is positioned at the intersection point of the original bearing lines. |  |

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## Test Case : Track label

### Description

This Test Case is testing the System’s ability to display track labels.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the Simulator PC start the following Simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS186] As a Picture Compiler, I want to terminate tracks that have been created erroneously or are irrelevant to my ship.

**Accept Criteria:**

[BNC673] I want to be able to terminate selected tracks.

**Stakeholder Requirement:**

[BNCS143] As a Picture Compiler, I want the system to handle track numbering and relations to external track numbers from e.g. Link, in order to have a unique reference for each track.

**Accept Criteria:**

[BNC622] The track numbers shall always be viewable, so that tracks can be cross read with other systems on the vessel.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 91.1 | #BNC622 | **Simulator PC**  In the SCANTER6002 Simulator, navigate to the “**Scripts**” tab.  Run the “**Common\_Square.js**” script. | **Simulator PC**  Verify, that the Script is running and the tracks are listed under “Entities” in the “Entities” tab.  **MFCC**  Verify, that the tracks are shown on the Sit. Display and listed in the track list.  Verify, that all the Tracks have a visible and unique track number. |  |
| 91.2 |  | **MFCC**  In the ActionMenuList, navigate to the “Track List”. Select one of the tracks and navigate into its “Track Details”. | The Track Details of the selected track is opened. |  |
| 91.3 | #BNC673 | From the “Track List”, select one or more tracks, then press “**Delete**”. | Verify, that the Tracks have been terminated, and are now deleted from the Sit. Display and the Track list.  Note: After er few seconds, the Sit. Display will be updated with new information from the Scanter simulator and new tracks will appear in the same position, but with new system numbers. |  |

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## Test Case : Place holder











## Test Case Place holder











## Test Case : See local tracks from radar and IFF plots

### Description

This Test Case is testing the Systems ability to display data from the IFF plots that were associated with the system track.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-mssr2000

### Requirements

**Stakeholder Requirement:**

[BNCS139] As a Picture Compiler, I want the system to automatically fuse track data from available sources into one system track to show the best information for the track.

**Accept Criteria:**

[BNC602] I want to be able to see the data from the IFF plots that were associated with the system track.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 94.1 |  | **Simulator PC**  In the GPS simulator, navigate to the “**Scripts**” tab and run the “**!Own\_Unit.js**” script. | **Simulator PC**  Verify, that the script is running.  **MFCC**  Verify, that Own Unit has changed position and is placed correctly on the Sit. Display. |  |
| 94.2 |  | In the IFF Interrogator MSSR2000 Simulator, navigate to “**Position/ Range**”.  Set the “**Range**” to 5000 km and click “**Apply**”. | **Simulator PC**  Verify, that the range is set to 5000 km. |  |
| 94.3 |  | In the IFF Interrigator MSSR2000 Simulator, navigate to “**Entites**”.  Click “**Add**” and insert the following values in the “**Add Entity**” window:   * **ID**: IFF * **Position**: 565000N/0110000E * **Speed**: 10 * **Course**: 90 * **Role**: Track + Plot   Click “**OK**” to add the entity. | In the Entity tab verify that the IFF plot has been added.  **MFCC**  Verify, that the track is shown on the Sit. Display and listed in the Track list. |  |
| 94.4 | #BNC602 | **MFCC**  In the ActionMenuList, click on “**Track List**”.  Navigate to the “**Track Details**” of the IFF track created in test step 4.3. | Verify, that the position, speed and course of the track are displayed accordingly to the information send from the IFF simulator. |  |

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## Test Case : Single Representation of Each Physical Entity

### Description

This Test Case tests the System’s ability to correlate and decorrelate tracks manually.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002
3. sensorsim-ais

### Requirements

**Stakeholder Requirement:**

[BNCS137] As a Picture Compiler, I want to manually support the correlation and decorrelation process to include visual sightings.

**Accept Criteria:**

[BNC658] I want to be able to manually correlate tracks.

[BNC662] I want to be able to decorrelate track data.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 95.1 |  | **Simulator PC**  In the Scanter6002 Simulator, navigate to the “Entities” tab and click “Add”.  In the “Add Entity” window insert the following values:   * **ID**: SCANTER * **Position**: 56°50'00"N - 011°00'00"E * **Include sim**: SCANTER   Click “**OK**” to add the track. | **Simulator PC**  Verify that the Track is listed under Entities in the Entities tab.  **MFCC**  Verify, that the track is visible on the Sit Display and listed in the Track list. |  |
| 95.2 |  | In the AIS Simulator, navigate to the “**Position/ Range**” tab and set the range to 5000. – Click “**Apply**”. | Verify, that the range has been set to 5000 km. |  |
| 95.3 |  | In the AIS Simulator, navigate to the “Entities” tab. Click “Add” and insert the following values:   * **ID**: AIS * **Position**: 56°50'00"N - 011°00'00"E * **Include sim**: AIS * **MMSI**: 220000000   Click “**OK**” to add the track. | **Simulator PC**  Verify that the Track is listed under Entities in the Entities tab.  **MFCC**  Verify, that the track is visible on the Sit Display and listed in the Track list.  Verify, that the track has automatically correlated with the Scanter track. |  |
| 95.4 | #BNC662 | **MFCC**  In the ActionMenuList, navigate to the “**Track** **List**”.  Hook the correlated track and click on “**Split**”. | The tracks are decorrelated into two tracks (One Scanter and one AIS). |  |
| 95.5 | #BNC658 | In the “**Track** **List**” action panel, hook the two tracks and click on “**Merge**”. | The two tracks are manually correlated back into one track with two sources. |  |

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## Test Case 96 Place holder

## Test Case : Automatically Categorize Tracks as Surface\_Ground

### Description

This Test Case is testing the System’s ability to fuse tracks and display the most relevant track data.

### Test Environment

C-Flex Patrol release under test must be installed.

### Test Data

N/A

### Automation Level

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-arpa
3. sensorsim-gps

### Requirements

**Stakeholder Requirement:**

[BNCS139] As a Picture Compiler, I want the system to automatically fuse track data from available sources into one system track to show the best information for the track.

**Accept Criteria:**

[BNC605] I want that the system presents category of system tracks (i.e. air, surface, subsurface, ground, space, reference point, emergency point) according to the capability of the physical entity.

**Stakeholder Requirement:**

[BNCS170] As a Picture Compiler, I want to get and view tracks from one or more ARPA radars, so that I get surface situational awareness without having to switch on my (conspicuous) naval surveillance radar.

**Accept Criteria:**

[BNC748] I want that the system can receive tracks from an ARPA Radar.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 97.1 |  | **MFCC**  In the ActionMenuList click on “**New Manual Track**”.  Under “Select Entity Type” click on “**Track**”.  Under “Details”, insert the following:   * Name: “**Helicopter**” * Position: “**55°32'32"N - 011°49'52"E**” * Altitude: “**20,000 f**”   Under “Classification” expand the “Category” and click on “**air**”.  Click “**Save**”. | **MFCC**  A New Manual Track appears on the SD with an air track Icon and the name of the track. |  |
| 97.2 |  | In the ActionMenuList click on “**New Manual Track**”.  Under “Select Entity Type” click on “**Track**”.  Under “Details”, insert the following:   * Name: “**Boat**” * Position: “**56°17'32"N - 011°18'04"E**”   Under “Classification” expand the “Category” and click on “**surface**”.  Click “**Save**”. | A New Manual Track appears on the SD with an surface track Icon and the name of the track. |  |
| 97.3 |  | In the ActionMenuList click on “**New Manual Track**”.  Under “Select Entity Type” click on “**Track**”.  Under “Details”, insert the following:   * Name: “**Yellow Submarine**” * Position: “**56°39'42"N - 012°08'11"E**”   Under “Classification” expand the “Category” and click on “**subsurface**”.  Click “**Save**”. | A New Manual Track appears on the SD with an subsurface track Icon and the name of the track. |  |
| 97.4 |  | In the ActionMenuList click on “**New Manual Track**”.  Under “Select Entity Type” click on “**Track**”.  Under “Details”, insert the following:   * Name: “**Bike**” * Position: “**55°18'23"N - 010°21'55"E**”   Under “Classification” expand the “Category” and click on “**ground**”.  Click “**Save**”. | A New Manual Track appears on the SD with a ground track Icon (same icon as surface track) and the name of the track. |  |
| 97.5 |  | In the ActionMenuList click on “**New Manual Track**”.  Under “Select Entity Type” click on “**Track**”.  Under “Details”, insert the following:   * Name: “**Voyager**” * Position: “**56°16'09"N - 009°00'34"E**”   Under “Classification” expand the “Category” and click on “**space**”.  Click “**Save**”. | A New Manual Track appears on the SD with an space track Icon and the name of the track. |  |
| 97.6 |  | In the ActionMenuList click on “**New Manual Track**”.  Under “Select Entity Type” click on “**Track**”.  Under “Details”, insert the following:   * Name: “**Light house**” * Position: “**55°36'49"N - 010°36'29"E**”   Under “Classification” expand the “Category” and click on “**reference point**”.  Click “**Save**”. | A New Manual Track appears on the SD with an reference point track Icon (same icon as surface track) and the name of the track. |  |
| 97.7 |  | In the ActionMenuList click on “**New Manual Track**”.  Under “Select Entity Type” click on “**Track**”.  Under “Details”, insert the following:   * Name: “**Coast Guard**” * Position: “**55°49'08"N - 010°37'15"E**”   Under “Classification” expand the “Category” and click on “**emergency point**”.  Click “**Save**”. | A New Manual Track appears on the SD with an emergency point (same icon as surface track) track Icon and the name of the track. |  |
| 97.8 | #BNC605 | In the ActionMenuList click on “**Track List**”.  For each track listed under Track List, view the “Track Details” by clicking on “**>**”.  Check that the Category of each Track is listed under their Track Details | The Track Details of each Track can be viewed, and the category of each Track is displayed under Track Details. |  |
| 97.9 |  | **Simulator PC**  In the sensorsim-gps navigate to the “Scripts” tab.  Locate the Script: “**!OwnUnit.js**”andrun it by clicking the “Start” button**.** | **Simulator PC**  Under the “Entities” tab, a new entity has been created with the ID: OWN\_UNIT |  |
| 97.10 |  | **MFCC**  Open the Burger Menu and select “Own Unit Management”.  Under “Own Unit Management”, “Position and Course/ Speed” are toggled to Sensor.  View the “Own Unit Source Status” section. | **MFCC**  Verify, that under “Own Unit Management”, “Position and Course/ Speed” are toggled to Sensor.  Verify, that the system shows it is receiving data from the GPS source via a green icon under “Position, Velocity(RMC)”. |  |
| 97.11 |  | **Simulator PC**  In the sensorsim-arpa navigate to the “**Poistion/Range**” tab.  Under the section “Range” set the input field to be: **5000.00**.  And click on “**Apply**”  Now navigate to the “Entities” tab.  Add an ARPA track by clicking on the “**Add**” button. | **Simulator PC**  “Add Entity” window is opened. |  |
| 97.12 | #BNC748 | In the “Add Entity” window input the following values into the input fields:   * **ID:** ARPA * **Position:** 570000N/0110000E * **Include Sim:**   Click OK to create the track. | Under the “Entities” tab, a new entity has been created with the ID: ARPA  **MFCC**  An ARPA Track is now created and shown on the situation display as a surface track. |  |



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## Test Case 98: Place holder

## Test Case 99: Place holder











## Test Case : AIS sensor receiving NMEA VDM messages

### Description

This Test Case is testing the AIS sensors ability to receive NMEA VDM messages.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-ais

### Requirements

**Stakeholder Requirement:**

[BNCS166] As a Picture Compiler, I want the system to read tracks from an AIS unit so that I can get comprehensive data about cooperative surface vessels.

**Accept Criteria:**

[BNC725] I want that the system supports AIS Class A with message types 1, 2, 3 and 5.

[BNC726] I want that the system supports AIS Class B with message types 18, 19 and 24.

[BNC727] As a minimum the system shall support readout of identification data (AIS name – mandatory, MMSI, IMO) and communication data (IRCS).[BNC725] I want that the system supports AIS Class A with message types 1, 2, 3 and 5.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 100.1 |  | **Simulator PC**  In the sensorsim-ais navigate to the “Scripts” tab.  Locate the Script: “AIS-tracks.js” and run it by clicking the “Start” button. | **MFCC**  AIS tracks are added on the situation display. |  |
| 100.2 | #BNC725  #BNC727 | **MFCC**  In the ActionMenuList, navigate to “**Track List**”.  Find one of the AIS tracks from the track list created in step 100.1 and open the “**Track Details**” by clicking “**>**”. | **MFCC**  Verify the following fields are filled, which is based on AIS Class A messages types 1, 2, 3 and 5.  In the bullets below are referenced the C-Flex naming convension as **bold**, and the equivilant AIS class A message type parameter in brackets:  **Messages types 1, 2 and 3 falls under:**   * **Position** – (*Latitude*) and (*Longitude*) * **MMSI** – (*User ID*) * **Navigational Status** – (*Navigational status*) * **Course/Speed** – (*COG*) and (*SOG*) * **Heading** – (*Heading*) * **Rate of Turn** – (*Rate of Turn*)   **Messages type 5 falls under:**   * **MMSI** - (*User ID*) * **IMO** - (*IMO number*) * **AIS Name** - (*Name*) * **IRCS** - (*Call sign*) * **Dimensions** – (*Position of GNSS antenna*) * **Destination** – (*Destination*) * **ETA** – (*Expected time of arrival*) * **Country** – derived from (***MMSI***) |  |
| 100.2 | #BNC726  #BNC727 | Find one of the AIS tracks from the track list created in step 100.1 and open the “**Track Details**” by clicking “**>**”. | In the bullets below, the C-Flex naming convention is shown in **bold**, and the equivalent AIS Class B message field is shown in brackets.  **Message type 18 – Class B position report:**   * **Position** – (*Latitude*) and (*Longitude*) * **MMSI** – (*User ID*) * **Course/Speed** – (*COG*) and (*SOG*) * **Heading** – (*Heading*)   **Message type 19 – Extended Class B position report:**   * **Position** – (*Latitude*) and (*Longitude*) * **MMSI** – (*User ID*) * **Course/Speed** – (*COG*) and (*SOG*) * **Heading** – (*Heading*) * **AIS Name** – (*Name*) * **Dimensions** – (*Ship dimensions*)   **Message type 24 – Class B static data report:**   * **MMSI** – (*User ID*) * **AIS Name** – (*Name*) * **IRCS** – (*Call sign*) * **Dimensions** – (*Ship dimensions*) * **Country** – derived from (***MMSI***) |  |

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## Test Case : Tracks from AIS

### Description

This Test Case is testing the System’s ability to receive and display information sent form an AIS unit.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-ais

### BNC506

**Stakeholder Requirement:**

[BNCS166] As a Picture Compiler, I want the system to read tracks from an AIS unit so that I can get comprehensive data about cooperative surface vessels.

**Accept Criteria:**

[BNC728] The system should support readout of the following AIS fields: MMSI, IMO Number, Navigation Status, Call Sign, Vessel Name, Ship Type, Dimension, Destination and ETA.

**Stakeholder Requirement:**

[BNCS278] As an Operator, I want to easily view detailed track information i.e. a comprehensive set of data known about the track.

**Accept Criteria:**

[BNC506] I want to see track identification (track ID or AIS name), Track position (lat/lon, altitude), track category and type, track identity, AIS parameters (If available: IMO, MMSI, destination, …), course and speed, IFF parameters (if available), ADS-B parameters (if available: identification, position, altitude and velocity).

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 101.1 |  | **Simulator PC**  Open AIS simulator, go to scripts, start “AIS-tracks.js”. | **Simulator PC**  AIS Tracks added  **MFCC**  The Tracks are shown on the Sit. Display and listed in the Track List. |  |
| 101.2 | #BNCS166  #BNCS278 | **MFCC**  In the Action Menu List, click on “**Track List**” and navigate to “Track Details”. | Verify that the System Track is send from the AIS simulator, by looking if the AIS icon is highlighted in the top under “Track Details”.  Verify also, that the following information is presented under “Track Details”:   * AIS name / track ID present * Track position * (lat/lon, altitude), * track category * type * track identity * AIS parameters IMO, MMSI, destination |  |

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## Test Case : Processing of data from the AIS on and off

### Description

This Test Case is testing the System’s ability to receive and display information sent form an AIS unit.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-ais

### Requirements

**Stakeholder Requirement:**

[BNCS166] As a Picture Compiler, I want the system to read tracks from an AIS unit so that I can get comprehensive data about cooperative surface vessels.

**Accept Criteria:**

[BNC729] I want to be able to turn processing of data from the AIS on and off.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 102.1 |  | **MFCC**  In the Burger Menu, navigate to “**Settings Center**” and click on “**Sensors**”.  Make sure to set “**Enable AIS Source**” is turned “**On**”. | **MFCC**  Verify, that “Enable AIS Source” is turned “On”. |  |
| 102.2 |  | **Simulator PC**  In the AIS Simulator, create some AIS tracks. | **Simulator PC**  In the AIS Simulator the tracks are listed under “Entities” in the “Entity” tab.  **MFCC**  The Tracks are shown on the Sit. Display and listed in the Track List. |  |
| 102.3 | #BNC729 | **MFCC**  Open Settings Center and click on Enable AIS Source to turn  AIS “**Off**”.  Click “**Save**”.  Navigate back to the Sit. Display. | Verify, that AIS tracks that is not correlated will start blinking and disappear after a short while.  For Tracks that are correlated, only the symbol for AIS will get “unhighlighted” under Track Details. |  |
| 102.4 | #BNC729 | Open Settings Center and click on Enable AIS Source to turn  AIS “**On**”.  Click “**Save**”.  Navigate back to the Sit. Display. | Verify, that the AIS tracks will appear again on the Sit. Display after a short while.  The correlated tracks will show the AIS icon as highlighted under track details again. |  |

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## Test Case : Tracks from ARPA

### Description

This Test Case is testing the System’s ability to receive and display information sent form an ARPA unit.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-arpa
3. sensorsim-gps

### Requirements

**Stakeholder Requirement:**

[BNCS170] As a Picture Compiler, I want to get and view tracks from one or more ARPA radars, so that I get surface situational awareness without having to switch on my (conspicuous) naval surveillance radar.

**Accept Criteria:**

[BNC749] I want each available ARPA radar instance to have a distinct source name.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 103.1 |  | **Simulator PC**  Start ARPA simulator | Check that ARPA simulator is started |  |
| 103.2 |  | Using GPS simulator, go to scripts, run “own unit.js”  Using ARPA simulator, go to scripts, run “Load\_test\_random\_moving\_tracks, go to entities, choose an entity, edit, set altitude to zero, repeat with another entity. | **MFCC**  Check in Sit Disp that the track is added. |  |
| 103.3 |  | **MFCC**  Select the track added in step 104.2 and open the track details. | Check that ARPA symbol for track is present |  |
| 103.4 | #BNC749 | When opening the track details for the given track the ARPA track has a uniqe track identification (name) | TrackNumber is presented |  |
| 103.5 | #BNC749 | Check the tracking details of other ARPA track, to see another unique track name. | TrackNumber is presented |  |

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## Test Case : Setting up IFF

### Description

This Test Case tests the System’s ability to receive and display information sent form a MSSR2000 IFF interrogator.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-mmsr2000

### Requirements

**Stakeholder Requirement:**

[BNCS172] As a Picture Compiler, I want to receive tracks from the IFF interrogator so that I can get target information beyond the basic existence/position data provided by a radar.

**Accept Criteria:**

[BNC755] I want that the system can receive tracks from a MSSR2000 IFF interrogator.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 104.1 |  | **Simulator PC**  On simulator PC open MSSR2000 simulator | Check that simulatori started |  |
| 104.2 | #BNC755 | Using MSSR2000 simulator, go to scripts, run “Load\_test\_random\_moving\_tracks” | **MFCC**  Check that tracks are displayed on Patrol - Sit Disp. |  |

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## Test Case : IFF tracks and user alarm

### Description

This Test Case tests the System’s ability to receive and display information sent form a MSSR2000 IFF interrogator.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-mmsr2000
3. sensorsim-gps

### Requirements

**Stakeholder Requirement:**

[BNCS246] As an Operator, I want the system to present IFF plots and codes, so that I can detect e.g. a hijack code that is sent only once or twice and does not qualify as a track.

**Accept Criteria:**

[BNC445] I want to have IFF plots in case e.g. a hijack code is sent only once or twice and does not qualify as a track.

**Stakeholder Requirement:**

[BNCS176] As a Picture Compiler, I want to define alarm IFF codes, so I am notified about detection of important tracks.

**Accept Criteria:**

[BNC781] I want to have to have IFF alarm and emergency indications on tracks.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 105.1 |  | **Simulator PC**  In IFF set-up panel:   * Enable IFF Transmission * Set all modes to "On" | **MFCC**  Status LED is green in IFF setup panel  Track Cards contains an IFF track and IFF icon highlighted.  Situation Display contains a IFF track with the same symbol |  |
| 105.2 |  | Using IFF simulator create an IFF track with the following values:   |  | | --- | | "IFF Mode 3A" = 4003  "IFF Mode C" = 11  "IFF Mode S Callsign" = 'BRAVO'  "IFF Mode S ID" = 1235 | | Check that a thrack is created in Sit. Disp., IFF icon is highlighted and IFF details are the same as set in the simulator |  |
| 105.3 | #BNC445 | **MFCC**  Verify that the same IFF information is seen on SHIFT + mouseover | Track card details are the same as mouseover details for BRAVO |  |
| 105.4 |  | In Track Card details for BRAVO enter the name "Neptun" in Description field  Click Submit | The name is accepted and shown as the name for the Track Card.  On mouseover the name is in description field and Mode Call Sign is still BRAVO |  |
| 105.5 |  | In IFF panel.  Create an Alarm Code = 2100  mode 3/A | A IFF alarm is created |  |
| 105.6 | #BNC781 | **Simulator PC**  In the  IFF simulator change the following:  "IFF Mode 3A" = 4003 to  "IFF Mode 3A" = 2100 | **MFCC**  The created alert is shown in alert panel |  |
| 105.7 |  | Delete the created alarm | **MFCC**  Alarm is deleted |  |

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## Test Case : ADS-B tracks

### Description

This Test Case is testing the System’s ability to receive and display tracks from an ADS-B unit.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-adsb

### Requirements

**Stakeholder Requirement:**

[BNCS178] As a Picture Compiler, I want the system to receive tracks from an ADS-B unit so I can get relevant information from civilian aircrafts.

**Accept Criteria:**

[BNC788] I want that the system can receive tracks from an ADS-B Receiver.

[BNC789] As a minimum the system shall support readout of aircraft data: identification, current position, altitude, and velocity.

[BNC790] I want to be able to turn processing of the ADS-B reports on and off.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 106.1 |  | **Simulator PC**  In the ADSB simulator, click on “**Position/ Range**”. Set “Range” to “**5000.00**” km.  Click “**Apply**” | **Simulator PC**  Check, that the range is set to 5000.00 km. |  |
| 106.2 |  | Navigate to “**Entities**” and click “**Add**” to create a track.  Insert the following:   * **ID**: ADSB * **Altitude**: 10.000 (METERS) * **Speed**: 500.00 (KNOTS) * **Mode S Callsign**: 123 456 * **Mode S addr**: 123456   Click “**OK**” to add the Track. | Check, that a new track is created under Entities.  **MFCC**  Check that the new track is shown on the SD. |  |
| 106.3 | #BNC788 | **MFCC**  Under the ActionMenuList, navigate to the “**Track List**”.  Find the track that was just created in step 109.2. | Make sure the ADS-B icon is higlighted, to indicate that the system can receive tracks from an ADS-B Receiver. |  |
| 106.4 | #BNC789 | Click on “**>**” to view the Track Details and find the following:   * Position * Altitude * Bearing/ Range * Course/ Speed * Track Number * Category * Type * Identity | Check that the correct values under each category are displayed. |  |
| 106.5 | #BNC790 | In the BurgerMenu, navigate to the “**Settings Center**”.  On the left side of the screen click on “**Sensors**”.  Under the section: Standalone ADS-B:  Turn “**Off**” Enable ADS-B Source  Click “**Save**” | Make sure Enable ADS-B Source  Is turned off.  Navigate to the SD and make sure the system is not reporting any ADS-B tracks. |  |
| 106.6 | #BNC790 | In the BurgerMenu, navigate to the “**Settings Center**”.  On the left side of the screen click on “**Sensors**”.  Under the section: Standalone ADS-B:  Turn “**On**” Enable ADS-B Source  Click “**Save**” | Make sure Enable ADS-B Source  Is turned on.  Navigate to the SD and make sure the system is reporting the ADS-B track. |  |



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## Test Case : Change tracks - Set classification category and type for an existing track

### Description

This Test Case tests the System’s ability to identify and display information about tracks.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS141] As a Picture Compiler, I want to update track data manually to enhance the information available for the track.

**Accept Criteria:**

[BNC649] I want to be able to manually change the category and track type.

**Stakeholder Requirement:**

[BNCS242] As an Operator, I want to view tracks known by the system on a sea chart, so that I can quickly comprehend the situation.

**Accept Criteria:**

[BNC350] I want a track symbology that distinguishes between different identity, category, and type.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 107.1 |  | **MFCC**  Open the tracks action panel | Track panel open |  |
| 107.2 |  | Verify that there is different Categories   * air * emergency point * ground * refernce point * space * subsurface * surface * unknown   present for the tracks with gives a unique icon after selection | Categories are presented and chooseable |  |
| 107.3 | #BNC350 | Choose air and Types and the following list is of of Types are shown with unique icon type   * patrol * patrol craft escort * support * surface submarine * survey vessel * tanker/oiler * troop ship * unknown | Types presented and chooseable (might vary) |  |
| 107.4 |  | Verify that there is different types of identities with unique icon colors | Different identities present |  |
| 107.5 |  | Select a track and change its Category and Type  graphic | Verify the changes are shown on the icon |  |
| 107.6 |  | Click submit  graphic | Verify the changes to the icon takles place on the map view |  |
| 107.7 | #BNC649 | Ensure that both manual tracks and tracks by sensors have been tested | Both types verified |  |

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## Test Case : Create tracks - Manual track can be created

### Description

This Test Case tests the System’s ability to manually create tracks.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS184] As a Picture Compiler, I want to manually create a track, so I can complete the situation picture where my sensors cannot provide sufficient information.

**Accept Criteria:**

[BNC2569] I want to be able to create a manual track of a given category. The track shall automatically be deadreckoned based on its course and speed.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 108.1 |  | **MFCC**  In the ActionMenuList, navigate to the “**New Manual Track**” action panel. | Verify that “Create New Track” panel has opened and layout displayed by default is the one assigned to Track(under Selected Entity Type) Also verify that “**NewManualTrack**” icon is now highlighted |  |
| 108.2 |  | Verify that Details section have fields with the following default attributes:   * Name field is empty * Position field has value of 00°00'00"N - 000°00'00"E * Altitude is set to 0 f * Course/Speed set to 090° - 0 deg-knots | Verify that default attributes are as described |  |
| 108.3 |  | Under Classification, expand the 3 drop down lists, Category, Type and Identity. | Verify that the default attributes are set to unknown. |  |
| 108.4 |  | Insert a name in the “Name” field.  Enter **Position** coordinates into corresponding field: for ex: 56°00'04"N - 011°00'19"E (or use any other position coordinates following the supported format) | Verify that a name and position has been entered |  |
| 108.5 |  | Enter the **Course/speed** data:  e.g.: 180° - 25 deg-knots | Verify that course/speed data has been added |  |
| 108.6 | #BNC2569 | Set the classification of the track by clicking the **Category** dropdown menu and selecting any category | Verify that the correct symbol has been displayed for all classifications |  |
| 108.7 | #BNC2569 | Set the type by clicking the **Type** dropdown menu and selecting any option from the list | Verify that type specific icons has appeared |  |
| 108.8 | #BNC2569 | Click the **Identity** dropdown and selecting any option from the list | Verify that the color coding and icon type changed |  |
| 108.9 | #BNC2569 | Save the track by pressing the **Save** button in the bottom of the panel | Verify that the track has appeared on the SituationalDisplay as a track symbol at the designated position  e.g. Red hostile, subsurface track for a diesel sub.  Verify also over time that the track is moving in the given direction and with the given speed |  |
| 108.10 |  | In the ActionMenuList, navigate to the “**Track List**” action panel. | Verify that the “**Track List**” panel has been displayed. |  |
| 108.11 |  | In the “**TrackList**” panel navigate to the newly created manual track and press the forward navigation button on the track card to access “**TrackDetails**” panel. | Verify that the manual track has been displayed correctly (all the track data should be correct) and that it is possible to navigate to “**TrackDetails”** panel. |  |
| 108.12 |  | Update the following properties:   * **Position**(by entering new coordinates into corresponding field) * **Course/speed** data: f.ex change course from south to east for ex(instead of 180° set 090°), also update speed  Press **Save** button in the bottom of “**TrackDetails**” panel. | Verify that track data have been updated after **Save** button has been pressed  **Save** button becomes desselected after changes have been saved  Also changes have been applied to **SituationalDisplay** map |  |

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## Test Case : Placeholder











## Test Case : Placeholder











## Test Case : Track identity - Change track identity

### Description

This Test Case tests the System’s ability to manually edit tracks.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

Tracks with different type, category and identity need to be available in the track list.

### Requirements

**Stakeholder Requirement:**

[BNCS141] As a Picture Compiler, I want to update track data manually to enhance the information available for the track.

Comments: The idea is that the user utilizes the various tools he has available, e.g. radio, binoculars, database lookups, to determine what the real identity is the track is.

**Accept Criteria:**

[BNC650] I want to be able to manually change the track identity.

**Stakeholder Requirement:**

[BNCS242] As an Operator, I want to view tracks known by the system on a sea chart, so that I can quickly comprehend the situation

**Accept Criteria:**

[BNC350] I want a track symbology that distinguishes between different identity, category, and type.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 111.1 | #BNC350 | **MFCC**  Navigate to “**TrackList**” icon in the ActionMenuList and click on it.  Check the list with all of the tracks. | Verify that the “**TrackList**” panel has opened with the list of existing tracks (that were created prior to executing this test case).  Verify that track symbology can be properly displayed and distinguishes between different identity, category, and type. |  |
| 111.2 | #BNC650 | In the “**TrackList**” panel find a existing manually created track  Press the forward navigation button on the track card (>) and select new identity for the track  Then press the **Save** button in the bottom of the “**TrackDetails**” panel | Icon changes accordingly, both in the map view and in track list  **Save** button becomes desselected |  |



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## Test Cas e : Select and view live stream video on the vessel

### Description

This Test Case tests the System’s ability to display live stream video on the vessel.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. The relevant simulators for this test case

### Requirements

**Stakeholder Requirement:**

[BNCS290] As an Operator, I want to choose any live video feed from cameras and directors on the vessel, without having control over them, so that I can see and follow the actions of the operators controlling them.

**Accept Criteria:**

[BNC821] I want to be able to enter the video display management panel via an icon on the main panel.

[BNC822] I want to be able to choose any video feed to be shown on either the right or left docked video window.

[BNC823] I want to be able to choose and see two video feeds concurrently on the two individual docked video windows.

[BNC824] I want to be able to maximize any of the docked video windows in order to obtain a bigger picture.

[BNC825] I want to be able to minimize any of the docked video windows.

[BNC826] I want to be able to return to my previous selection of video feeds after leaving the video display management panel.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 112.1 |  | **On Simulator PC:**  Through VLC tool start video stream on port 8554, representing standalone video 1  Note:  Select "RTSP" as transcoding  Choose profile "Video - H.264 + MP3 (MP4 if not already selected  Any video will do |  |  |
| 112.2 |  | **On Simulator PC:**  Through VLC tool start video stream on port 8555, representing standalone video 2  Note:  Select "RTSP" as transcoding  Choose profile "Video - H.264 + MP3 (MP4 if not already selected  Any video will do |  |  |
| 112.3 | #BNC821 | **MFCC**  Navigate to “**Video streams**” Action Panel. | **MFCC**  Verify that by pressing the button it will be possible to enter the “Video streams selection” panel  Also verify that “**Video streams”** icon gets activated |  |
| 112.4 | #BNC823 | Toggle LEFT or RIGHT options for video 1 to "On" for stand alone video 1 group | Verify that it is possible to see two video feeds concurrently on the two individual docked video windows |  |
| 112.5 | #BNC824 | Use the maximize button for one of the two docked video windows. | Verify that is possible to maximize any of the docked video windows |  |
| 112.6 | #BNC822 | Select a video1 to be shown on the left side for and a video 2 to be shown on the right | Validate that it is possible  to choose any video feed to be shown on either the right or left docked video window |  |
| 112.7 | #BNC822 | Select a video1 to be shown on the left side. After that select video 2 to be shown also on the left side. | Verify that the video2 is the current video displayed on the left side |  |
| 112.8 | #BNC825 | Use the minimize button for one docked video windows. | Verify that is possible to  minimize any of the docked video windows |  |
| 112.9 | #BNC826 | Open "Video streams" and select to display 2 videos (one for left and one for right). Close the right menu or navigate to other options in the right menu. After that return to "Video Streams" option in the right menu. | Verify that the correct screens are opened and that the selected videos are still set to "On". |  |
| 112.10 |  | Repeat step 4-9 for standalone video 2 |  |  |
| 112.11 | #BNC823 | **MFCC:**  Toggle LEFT option for video 1 to "on" for stand alone video 1 group  Toggle RIGHT option for video 2 to "on for stand alone video 2 group | Verify that two video feeds on different ports and streaming channels can be displayed concurrently. |  |



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## Test Case : Manage Maps

### Description

This Test Case tests the System’s ability to manually manage the display of maps.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS199] As an Operator, I want to select a map projection that fits my area of operation in order to give me optimal situational awareness.

Comments: The information shown about a location is geo info in the map and any other GIS data loaded, i.e. wrecks, depth, wind, etc

**Accept Criteria:**

[BNC178] I want to be able to select the projection I prefer.

[BNC177] I want to be able to control the map scale, i.e. zoom in and out.

[BNC179] I want to be able to display maps using EPSG:4326 (Equidistant Cylindrical) projection.

[BNC182] I want to be able to display maps using EPSG:3395 (WGS84 / World Mercator) projection.

**Stakeholder Requirement:**

[BNCS473] As an Operator, I want the UI to support a day/dusk/night color scheme, so that I have a more appealing and consistent look-and-feel and do not unduly strain my eyes nor make my ship visible to others by using bright colors, when using the system at night.

**Accept Criteria:**

[BNC1924] I want the color scheme to be adaptable to the lighting conditions/time of day.

[BNC1925] I want to be able to select different predefined color scheme for the map e.g. for day, dusk and night.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 113.1 | #BNC177 | **MFCC**  Zoom in and out on the “**Situation Display**”, using the mouse wheel | Level of zoom is changed on the SD with more details shown when zoomed in and less when zoomed out. |  |
| 113.2 | #BNC1924  #BNC1925 | In the ActionMenuList, go to “**View Options**”  and click on the icon Under the ECDIS Chart Settings section, you will see three buttons labeled   * Day * Dusk * Night   Click on these buttons to switch the map’s display mode. | The “**Situation Display**” updates its color scheme to match the selected mode |  |
| 113.3 | #BNC178  #BNC179 | In the bottom of the “**View Options**”panel, navigate to “**Other Options**” click on Projection This opens **“Change Projection”** panel  Press the button “**Equidistant Cylindrical**” to display Equidistant Cylindrical projection | The map projection is changed to Equidistant Cylindrical projection.  Icon next to it gets selected(highlighted): |  |
| 113.4 | #BNC178  #BNC182 | Under “**Other Options**” click on Projection  This opens **“Change Projection”** panel  Press the button “**Mercator**” to display World Mercator projection | The map projection is changed to World Mercator projection. |  |



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## Test Case : Support of map types

### Description

This Test Case tests the System’s ability to manually switch between different maps.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

For step 117.3: Add this to config.xml on the server:

<Property name="viewoptionsui.debug.panel" value="true"/>

### Requirements

**Stakeholder Requirement:**

[BNCS201] As an Operator, I want to see and select among map and sea chart data, so that I can work with a map that suits the current situation.

**Accept Criteria:**

[BNC211] I want to be able to use both S57 and S63 sea charts.

### Test Execution



| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 114.1 | #BNC211 | **MFCC**  Navigate to “**View Options**” panel  Under **MapDetails** enable AllDetails by clicking on the icon  and check if SituationDisplay got all of the sea charts data | Verify on the map for the system that detailed view is accessible for the listed regions |  |
| 114.2 | #BNC211 | **MFCC PC**  Open the map folder on the file explorer for the system and verify that a folder is created for S57 and or S63 and verify the locations that is handled for the given maps | Verify that folder structure is present |  |
| 114.3 | #BNC211 | **MFCC** As pre-requisite for this step:  Add this property to config.xml on the server: <Property name="viewoptionsui.debug.panel" value="true"/>  Open C-Flex Patrol on MFCC  In the ActionMenuList, navigate to  “**Test&Debug**”Panel  Using the added debug layer Navigate to “**Layers**” tile and check which objects are set to be shown against on the “**Situation Display**”, the list in Annex A. | Verify that it is possible to select predefined set of layers |  |

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## Test Case : Placeholder











## Test Case : Select detail level of map

### Description

This Test Case tests the System’s ability to manually switch between different maps.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS201] As an Operator, I want to see and select among map and sea chart data, so that I can work with a map that suits the current situation.

**Accept Criteria:**

[BNC216] I want to see detailed information for data embedded into the sea charts as provided by the map supplier, by selecting them or via mouseover.  
  
[BNC217] I want to customize and visualize the sea chart water depth levels so as to achieve awareness related to where potential threats could be located, or potential illegal actions could occur.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 116.1 | #BNC216 | **MFCC**  In the ActionMenuList, navigate to “**View Options**” icon  Under "Map Details" select   * All details * Air details * Surface details * Minimum details * No Charts | Verify that details in “**Situation Display**”change accordingly |  |
| 116.2 | #BNC216 | Select "**All details**"  Find an navigationalt object in “**Situation Display**” and with mouse over the object hold SHIFT down | Verify that details about the object is shown |  |
| 116.3 | #BNC217 | Under “**ECDIS Chart Settings**“ section locate setting for Safety and set it to 1 | Verify that color changes in “**Situation Display**” |  |
| 116.4 | #BNC217 | Change this setting multiple times (exploratory test) | Verify that corresponding changes are seen on the chart |  |



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## Test Case : Placeholder











## Test Case : Predefined Sets of Layers

### Description

This Test Case tests the System’s ability to customize the map presentation.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS205] As an Operator, I want to control the sea chart detail level (i.e. how many and which chart features that are shown) so that my situation display is clean, and not cluttered with irrelevant features.

**Accept Criteria:**

[BNC226] I want to be able to select between shoreline and sea chart presentation.  
  
[BNC229] I want to be able to select a feature set with features suitable for surface warfare (i.e. a set of features with only surface relevant content).

[BNC230] I want to be able to select a feature set with features suitable for air warfare (i.e. a set of features, with only air relevant content, e.g. airports, towers/lighthouses etc.).

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 118.1 | #BNC226 | **MFCC**  In the **ActionMenuList** navigate to “**ViewOptions**” icon  and click on it  In **ViewOptions** panel under **MapDetails** click on **NoCharts** | **MFCC**  Verify that **SituationDisplay** is shown with sea in blue and countries in brown (only shoreline is displayed) Verify that icon next to NoCharts is now highlighted |  |
| 118.2 | #BNC226 | Under **MapDetails** enable **AllDetails** | Verify that now both shorelines and ECDIS charts are available in **SItuationDisplay** with details corresponding to a navigation profile |  |
| 118.3 | #BNC229 | Under **MapDetails** enable **SurfaceDetails** | Verify that now **SituationDisplay** is suitable for conducting a Surface surveillance(fewer air specific chart features are shown) |  |
| 118.4 | #BNC230 | Under **MapDetails** enable **AirDetails** | Verify that now SituationDisplay is suitable for conducting an Air surveillance(fewer surface specific chart features are shown) |  |

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## Test Case : Placeholder











## Test Case : Change orientation mode

### Description

This Test Case tests the System’s ability to customize and visualize map details.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS209] As an Operator, I want to select the orientation (rotation mode) of the map so that I can select the orientation that makes most sense for my current task.

Comments: Rotation mode can be North Up (fixed rotation with northernmost maps part towards the window top), Heading Up (rotation automatically follows the heading of OU) or free rotation, where the map rotation is directly controlled by the operator.

**Accept Criteria:**

[BNC191] I want to be able to switch between “North up”, "Heading up” and “Free rotation”.

[BNC192] I want to be able to see a compass indication with true north on the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 120.1 |  | **MFCC**  In the ActionMenuList, Click on "**View options**". | **MFCC**  Verify that the “View options” Action panel is opened. |  |
| 120.2 | #BNC192 | Under **Map Details**, disable and enable **ToggleCompass** button | Verify that when disabling the compass, **ToggleCompass** button is in its deselected mode  and the compass icon in the top left corner is disappearing   When enabling the **ToggleCompass**,  ,verify that compass should appear again in the top left corner on the Situational Display.  Make sure the Compass is shown on the SD before moving to the next step. If it is not shown, enable it. |  |
| 120.3 | #BNC191  #BNC192 | Under Heading, click on “**Free Rotation**”.  Move the pointing device to the Situational Display. Click and hold the right button on the pointing device and drag is across the SD. Release the right button on the pointing device. | Verify that the map and the compass is rotating simutanualisly with the drag of the pointing device. |  |
| 120.4 | #BNC191  #BNC192 | Under Heading click on “**North Up**”. | Verify that the map and the compass is rotated back to north pointing up. |  |
| 120.5 |  | In the Burger Menu, navigate to “**Own Unit Management**”.  In the “**Own Unit Management**” tab, expand “**Heading**”.  Insert the following value for Heading:   * **090 deg**   Click enter and “**Save**” | Verify thath the heading of the Own Unit is now set to 90 deg. |  |
| 120.6 | #BNC191  #BNC192 | Navigate back to the Situational Display.  In the “View Options” Action Panel, under Heading, click “**Heading Up**”. | Verify that the map and the blue compass needle is rotated upwards in the heading of the vessel. |  |

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## Test Case : I want to be able to select Relative motion

### Description

This Test Case tests the System’s ability to customize and visualize map details.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS213] As an Operator, I want to select the map movement mode, so that relevant parts of the map are automatically in view without requiring me to manually pan the map.

Comments: Movement mode can be True Motion (map panning is controlled directly by the operator) and Relative Motion (the map is continuously centered on OU).

**Accept Criteria:**

[BNC200] I want to be able to select True Motion (center is controlled by the operator).

[BNC201] I want to be able to select Relative motion (centered on own ship).

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 121.1 |  | **MFCC**  Open the "View options"  Under **Centering** three options with buttons should be displayed:   * Own Unit * Hooked Track * Unlock Center(default value) | Verify that “**ViewOptions**” panel opens Verify that **Unlock Center** button is selected by default: |  |
| 121.2 | #BNC200 | While **Unlock Center** is selected (by default)  Click on the left mouse button and hold it down, then move the mouse around to pan freely | Verify that free pan is possible |  |
| 121.3 | #BNC201 | Under **Centering** click on **Own Unit** button Click on the left mouse button and hold it down, then try to move the mouse same as a step above | Verify that **Own Unit** button is available at all times and after being clicked - is now selected:  Verify that the map centers on the own unit and that it is not possible to pan anymore |  |

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## Test Case : Info for focus point on map

### Description

This Test Case tests the System’s ability to customize and visualize map details.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS199] As an Operator, I want to select a map projection that fits my area of operation in order to give me optimal situational awareness.

**Accept Criteria:**

[BNC184] I want to be able to see the coordinates of the point that has been clicked.  
  
[BNC185] If additional information about the point is available, I want to see that information too.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 122.1 | #BNC184 | **MFCC**  Move mouse/pointing device over the Situation Display | Verify that the coordinates are displayed in the **bottom left widget** graphic  Based on the pointer movement on the map |  |
| 122.2 | #BNC184 | Press the shift key and move the pointing device over some item in Situation Display  Try with **OwnUnit** and also some other track | Verify that a semi-transparent panel with detailed item information is overlaid on the map  Verify that this panel also holds coordinates |  |
| 122.3 | #BNC185 | In **ViewOptions** Action panel, make sure **MapDetails** is set to **AllDetails** for ex (that provides us with ECDIS charts)  Locate red rectangular boxes and zoom in there in order to get further characteristics for the given area | Verify that the detail level for certain parts in the world has a higher degree of details than others(depends on the map).This is highlighted by red rectangular boxes |  |
| 122.4 | #BNC185 | Hover the mouse on a specific icon (bouye, vessel, city) and hold the left shift key down, and verify additional data appears for the topic | Verify that additional data is present   * coordinates of the point (mandatory) * more depending of sensor information |  |

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## Test Case : Placeholder











## Test Case : Vector creation and deletion

### Description

This Test Case tests the System’s ability to measure distance between entities and the relative/absolute angles.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS219] As an Operator, I want to measure distance between entities and the relative/absolute angles for getting a better situational awareness.

Comments: This information I can use to evaluate the risk of collision or simply as a measuring tool.

**Accept Criteria:**

[BNC256] I want to be able to create measurement vectors between any combination of two mobile (i.e. tracks) or fixed (i.e. map points) positions.

[BNC257] I want the vector and its labels/data to be rendered while I construct it (I may not always finish it) for maximizing interactivity.

[BNC266] I want to be able to show/hide measurement vectors.

[BNC267] I want to be able to update and delete measurement vectors.

[BNC262] I want to be able to move the start/end point of a measurement vector using the pointing device for maximizing interactivity.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 124.1 |  | **MFCC**  In the **ActionMenuList** navigate to **Tools** icon graphic and click on it | Verify that **Tools** ActionPanel opens up and its icon gets selected/highlighted in the **ActionMenuList** |  |
| 124.2 |  | Ensure a track is created in the vicinity of OU by using Scanter RadarSim | Verify that track has been created |  |
| 124.3 |  | In the **Tools** ActionPanel click on **Measurements** section  graphic | Verify that **Measurements** pane opens up |  |
| 124.4 | #BNC256  #BNC257 | Clcik on create measurement  graphic  Then click on **Measurement vector** | Verify if a measurement vector has been created in action panel: |  |
| 124.5 | #BNC256 #BNC257 | Click on the expanded info button next to newly created vector in **Measurements** action panel graphic | Verify that **MeasurementVector** action panel with additional information opens up |  |
| 124.6 | #BNC256 #BNC257 | Under “**Footpoint**” section:   * “**Type**” is by default set to **Fixed position**:      * “**From**” field contains coordinates (an operator selected geographical position)   If start point coordinates should be adjusted, place pointing device on the SD on the desired lat long location and press CTRL+S  Press **Save** button in the bottom of the **MeasurementVector** panel or click on another field and the change will be rendered in the map right away | Verify that vectors starting point correctly displayed on the map and data is rendered while it is being constructed |  |
| 124.7 | #BNC256 #BNC257 | Set the “**Apex**” to one of the following Types:   * **Fixed Position**   requires also adding coordinates for an end point of the vector in “**To**” field   * **Track**   when selected, changes “**To**” field into dropdown menu with all available tracks   * **Own Unit**   when selected, “**To**” field is set automatically to one possible option Own Unit Click **Save** in the bottom of the **MeasurementVector** panel | Verify that the vector is correctly displayed and continuosuly render the changes done while creating the vector after button **Save** has been pressed |  |
| 124.8 | #BNC256 #BNC257 | Redo steps 4 to 6 to ensure all combinations are tested | All comnbinations are verified  Verify that vector lable is made during the creation process and saved when finished |  |
| 124.9 | #BNC266 | In **Measurements** action panel each measurement vector card has a toggle button“**Visible/Hidden**”:  By default it is on **Visible** setting  Change to **Hidden** and check if the vector is NOT displayed in the map  Also click on one of the vectors and in **MeasurementVector** action panel this **Visibility** toggle is also present but with **On/Off** setting  Make sure those two toggle buttons are aligned(disable visibility on Measurements panel, then it should be set to **Off** then on MeasurementVector panel etc) | Verify that vector can be hidden and set to be visible again  Verify that vector is the top layer - not hidden by any other graphics  Verify that **Visibility** setting is set to **On** by default  Verify that both **Visibility** toggle buttons on both panels are aligned with each other |  |
| 124.10 | #BNC257  #BNC267  #BNC262 | MSelect an existing vector from the list in the Measurements action panel by clicking on  next to it Update the Name by typing in the corresponding field  Move the starting point or ending point of the created vector by editing (either enter coordinates manually or automatically using CTRL+S) for ex: change coordinates in From field Then click on any other field to render change of vector positionove the starting point or ending point of the created vector by editing (either in textbox or by using Ctrl s)  the end point. | Verify that changes in Name for ex will be applied to SituationDisplay only after pressing Save button  Verify that update of vectors start or end point is rendered while it is being constructed |  |
| 124.11 | #BNC267 | While in **Measurements** action panel, select by clicking on the existing vector card Click on **Delete Selected** button at the bottom of **Measurements** action panel:    There is also a way to delete measurement vector directly from MeasurementVector action panel In this case just click Delete button in the bottom of the panel and this should remove it: | Verify that vector has been deleted and thus not displayed in SItuationDisplay any longer |  |

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## Test Case : Radar - As an operator I want to be able to turn the radar power on and off

### Description

This Test Case tests the System’s ability to switch on/ off transmition of the scanter radar, independent of the rotation.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[NSES181] As an Operator, I want to control and monitor the SCANTER Radar to suit my mission goal.

**Accept Criteria:**

[NSE501] I want to be able to turn the radar power on and off (not supported for SCANTER 2602).

[NSE503] I want to be able to switch transmission on and off, independent of the rotation.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 125.1 |  | **Simuilator PC**  Start Scantar simulator | Scantar simulator started |  |
| 125.2 | #NSE501 | **MFCC**  In the ActionMenuList click on **Radar** graphic  Click on the radar on Scanter button in **Radar Control&Video** action panel | Verify that **Radar Control&Video** action panel opens up  Verify that Scanter action panel opens up and under Status section System is now shown as Operational with green marking:  also tracks will resemble the action as well as the status panel |  |
| 125.3 |  | **Simuilator PC**  In RadarSim navigate to **Parameters/Outgoing**   * set “Mains” to Off and click Send next to it * set "Overall System State" to Mains Off and click Send next to it   and verify the radar will start/stop | **MFCC**  Verify that after Mains set to Off on RadarSim side, it also switched Power off in Scanter action panel:  When Overall System State is set to Mains off, then System is off:  **Simulator PC**  Also verify in Radarsim  simualtor "Parameters" tab on "Incomming" tab that the radar is off, if radarsim is used |  |
| 125.4 | #NSE503 | **MFCC** Under Control section on Scanter action panel set “**Transmission**” to **OFF** | **MFCC**  Verify that tracks disappear(with some small delay) |  |
| 125.5 | #NSE503 | **MFCC**  Set “**Transmission**” back to **ON** | **MFCC**  Verify that tracks reappear, and remember there is a small latency for this |  |
| 125.6 | #NSE501 | **Simuilator PC**  Stop Scantar simulator | **MFCC**  Verify that in Scanter action panel  Status for System is marjked the following way:  Verify that tracks disappear(with some small delay) |  |

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## Test Case : Placeholder











## Test Case : Placeholder











## Test Case : IFF Replays in encrypted military modes

### Description

This Test Case tests the System’s ability to control and monitor the MSSR2000I IFF Interrogator.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-mssr2000

### Requirements

**Stakeholder Requirement:**

[NSES185] As an Operator, I want to control the MSSR2000I IFF Interrogator, so I can interrogate and receive information.

**Accept Criteria:**

[NSE543] Replies in at least the following IFF modes may result and shall be supported: 1, 2, 3/A, C, S.

[NSE544] Replies in at least the following encrypted military IFF modes may result and should be supported: 5.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 128.1 |  | **Simulator PC**  Start the IFF simulator and create a few tracks. | **MFCC**  IFF tracks created |  |
| 128.2 |  | In the IFF simulator select a track and edit the following values:  - Mode 1 & Mode 1E  - Mode 2  - Mode 3A  - Mode C  - Mode S  Save the changes | **MFCC**  Check the inserted IFF values are correctly updated in the track card of the selected card. |  |
| 128.3 |  | In the IFF simulator select a track and edit the following values:  - Mode 4 and 4E  - Mode 5 | **MFCC**  Check the inserted IFF values are correctly updated in the track card of the selected card. |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : IFF Import IFF codes

### Description

This Test Case tests the System’s ability to control and monitor the MSSR2000I IFF Interrogator.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-mssr2000

### Requirements

**Stakeholder Requirement:**

[NSES185] As an Operator, I want to control the MSSR2000I IFF Interrogator, so I can interrogate and receive information.

**Accept Criteria:**

[NSE540] As a configurator, I want to be able to set descriptive presentation names for each MIP. For example, that MIP 0 is "M1 + M2", MIP 1 is "M1 + M2 + MS", etc. The mapping is project/ship specific.

[NSE541] I want to be able to import descriptive presentation names for each MIP.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 129.1 |  | **MFCC**  Open "IFF" from right menu. | Check that "IFF" is opened and under "Transmision Modes" section, the following values are displayed by default:  - Mode 1+2  - Scan 3A  - Scan S |  |
| 129.2 |  | Log in on the server and edit the registration.xml file:  <ScanMIPConfig>  <MIPEntry                     id="1"                   name="Test 01"/>  <MIPEntry                   id="2"                  name="Test 02"/>  <MIPEntry                  d="3"                  name="Test 03"/>  <MIPEntry                  id="4"                  name="Test 04"/>  <MIPEntry                  id="5"                  name="Test 05"/>  <MIPEntry                  id="6"                  name="Test 06"/>  <MIPEntry                  id="7"                  name="Test 07"/>  <MIPEntry                  id="8"                  name="Test 08"/>  </ScanMIPConfig> | Save the changes |  |
| 129.3 |  | Open Cockpit and navigate to "Controls" page.  Stop the system and to “Checkup All” then restart the system. Wait until the restart is finalized and start the HMI. | Patrol system is restarted |  |
| 129.4 | [NSE540]  [NSE541] | Open "IFF" from right menu. | Check that "IFF" is opened and under "Transmision Modes" section, the following values are displayed by default:  - Test 01  - Test 02  - Test 03  - Test 04  - Test 05  - Test 06  - Test 07  - Test 08 |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : IFF tracks in Patrol

### Description

This Test Case tests the System’s ability to control and monitor the MSSR2000I IFF Interrogator.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-mssr2000

### Requirements

**Stakeholder Requirement:**

[NSES185] As an Operator, I want to control the MSSR2000I IFF Interrogator, so I can interrogate and receive information.

**Accept Criteria:**

[NSE545] I want to be able to see the status of the IFF interrogator.

[NSE539] On the MSSR2000 IFF, I want to be able to select 1 to 8 MIPs (Mode Interlace Patterns) to be executed in turn, with one antenna rotation each. A MIP is a combination of IFF modes, normally up to 3.

[NSE767] I want to be able to see the health status indicator of the radar, transmission and system time.

**Stakeholder Requirement:**

[BNCS176] As a Picture Compiler, I want to define alarm IFF codes, so I am notified about detection of important tracks.

**Accept Criteria:**

[BNC782] Whenever a reply code defined in an IFF alarm code (or in a predefined IFF emergency code) is received, I want to get a notification.

[BNC779] I want to be able to define and view a list of IFF alarm codes, i.e. the combination of an IFF mode, reply code and alias text.

### Test Execution

| **Patrol – System Test** | | | | |
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| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 130.1 |  | **Simulator PC**  Start IFF simulator. Tracks should be created using IFF simulator. | Tracks created |  |
| 130.2 |  | In IFF set-up panel:   1. Enable IFF Transmission 2. Set all modes to "On" | **MFCC**  Status LED is green in IFF setup panel.  On Track List, the created track card contains an IFF icon highlighted.  On Sit. Disp. the track displays the IFF symbol on mouse over. |  |
| 130.3 |  | **MFCC**  Select a track and check that the IFF information on the track card is the same as in the simulator | Data is the same in sim and track card |  |
| 130.4 |  | Verify that the same IFF information is seen on mouseover | Track card details are the same as mouseover details for the selected track |  |
| 130.5 |  | In IFF panel.  Create an Alarm Code = 7500 (HighJack) mode 3/A  Alias: test | A IFF alarm is created |  |
| 130.6 |  | **IFF Simulator**  Change Mode 3/A value to 7500 for one of the tracks | **MFCC**  The created alert is shown in alert panel |  |
| 130.7 |  | Delete the created alarm | Alarm is deleted |  |
| 130.8 | #NSE767 | **MFCC**  In the IFF Action Panel, in the top panel confirm the following indicators are visible:   * Radar Processor Load * Transmission Load * Time Sync Status | The health status indicators are set to:   * Radar Processor Load: Normal (green) * Transmission Load: Normal (green) * Time Sync Status: Active (green) |  |
| 130.9 | #NSE767 | **IFF Simulator**  In the simulator, navigate to the ”**Options”**, tab and find the ”**System Configuration & Status**” panel.  Set the following:   * **Uncheck**: *Time Source Valid* * **Check**: *RDP Overload* * **Check**: *XMT Overload* | The health status indicators are now set to:   * Radar Processor Load: Overloaded (red) * Transmission Load: Overloaded (red) * Time Sync Status: Inactive (red) |  |

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : IFF on and off

### Description

This Test Case tests the System’s ability to control and monitor the MSSR2000I IFF Interrogator.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-mssr2000

### Requirements

**Stakeholder Requirement:**

[NSES185] As an Operator, I want to control the MSSR2000I IFF Interrogator, so I can interrogate and receive information.

**Accept Criteria:**

[NSE537] As an operator I want to be able to turn IFF interrogator transmission on/off.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 131.1 |  | **Simulator PC**  Start IFF simulator. |  |  |
| 131.2 |  | **MFCC**  In IFF panel set all shown IFF modes to "off":  C+S  3A+C  1+3A+C  2+3A+C  1+3A+C+5  2+3A+C+S | All buttons are set to off |  |
| 131.3 |  | Set Transmission to "Off" | Status LED is set to orange and set to Standby |  |
| 131.4 |  | Set Transmission to "On" | Status LED is set to green and set to Status is set to "Transmit" |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : SAR - The pattern shall not block or clutter the SA view

### Description

This Test Case is testing the System’s ability to create patterns for SAR missions.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS388] As an Operator, I want to create patterns for SAR missions, so that the search participants are guided to move in a structured way maximizing the chance of finding the victims and minimizing the time to do so.

**Accept Criteria:**

[BNC1406] The design of the pattern display should take into consideration that the pattern should not block the view/clutter the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 132.1 |  | Needs to be verified by consensus decision by main stakeholders  In accordance to TEL | Decision on functionality achieved |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : SAR - Sector Search pattern

### Description

This Test Case is testing the System’s ability to create a sector search pattern.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS664] As an Operator, I want to create a sector search pattern, so I can search within a circular area and get a higher coverage factor at the search center.

**Accept Criteria:**

[BNC1425] I want to be able to define sector search patterns by entry of the following parameters: start position, initial course, and search radius.

[BNC1426] want to be able to define search speed or search time for a sector search pattern. When search speed is specified the search time shall be calculated and presented. When search time is specified the search speed shall be calculated and presented.

[BNC1427] I want to be able to update and delete a defined sector search pattern.

[BNC1184] I want to be able to hide/show each defined operational pattern on the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 133.1 |  | **MFCC**  In the ActionMenuList, click on tools:  graphic | **MFCC**  Tools ActionPanel tab opened. |  |
| 133.2 |  | In the Tools ActionPanel, click on the “Patterns” ActionPanel button: | Patterns ActionPanel tab is open. |  |
| 133.3 |  | Click on “**Create Pattern**”.  Select “**Sector Search**” pattern in the dropdown menu that unfolds. | The “**Sector Search**” HMI is displayed in the ActionPanel, and a predefined Sector Search pattern is created on The Situation Display. |  |
| 133.4 | #BNC1425  #BNC1427 | Edit the accessible fields:   * New Name * Position * Initial Course * Search Radius * Search Speed * Search Duration   Press the green “**Save**”-button. | The changes are carried out successfully on the Situation Display. |  |
| 133.5 | #BNC1426 | Open above created Sector search pattern.  Update “Search Duration” filed | Updating search duration , adds the calculated search time. |  |
| 133.6 | #BNC1184 | Under the “**Visibility**” setting, toggle the switch to the Off position to disable visibility. | The Sector Search pattern is no longer visible on the Situation Display. |  |
| 133.7 | #BNC1184 | Under the Visibility setting, toggle the switch to the On position to disable visibility. | The Sector Search pattern is shown on the Situation Display. |  |
| 133.8 | #BNC1427 | Press the “**Delete**”-button at the bottom of the ActionPanel. | The Sector Search pattern is deleted from the ActionPanel and on the Situation Display. |  |



### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : SAR - Parallel track search pattern

### Description

This Test Case is testing the System’s ability to create patterns.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS665] As an Operator, I want to create a parallel track pattern, so I can search within a rectangular area with equal coverage factor.

**Accept Criteria:**

[BNC1433] I want to be able to define parallel track patterns by entry of the following parameters: start position, initial course, lap length, port/starboard turn, and number of laps.

[BNC1434] I want to be able to define sweep width and coverage factor for a parallel track pattern. The track spacing shall then be calculated and presented to the operator. I also want to be able to define the track spacing manually.

[BNC1435] I want to be able to define search speed or search time for a parallel track pattern. When search speed is specified the search time shall be calculated and presented. When search time is specified the search speed shall be calculated and presented.

[BNC1436] I want to be able to update and delete a defined parallel track pattern.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 134.1 |  | **MFCC**  In the ActionMenuList, open “**Tools**”.  graphic  Navigate to “**Patterns**”.  graphic  In the Patterns Action panel, expand the drop down list “**Create Pattern**” and choose “**Parallel Track**”. | The “**Parallel Track**” Action Panel is open. |  |
| 134.2 | #BNC1433  #BNC1434 | Create a track pattern by inserting the following values:   * Position, * New Name * Initial course * Sweep width * Track spacing * Lap Length * No. of laps   Click “**Save**”. | Sector search pattern created on Situational Displa with added paremeters.  All parameters are correctly displayed.  Changing Sweep width automatically calculates and adds coverage factor and vice versa.  The track spacing is calculated and presented to the operator |  |
| 134.3 | #BNC1435 | From the Patterns list find the created Parallel track pattern and Opens it  Enter a value in “Search Speed” then press Enter or Save it | Verify updating Search Speed , automatically adds the calculated search duration and update it.  e.g. If 50 knots are enetred in Search speed then Search durtaion autimatically calculated to 26h00m00s |  |
| 134.4 | #BNC1435 | Go to the pattern editor of the above created pattern and Enter a vlue in “Search Duration” and Save it | Verify updating the “Search Duration“, automatically adds the calculated Search Speed and update it.  e.g. If 12h are enetred in Search Duration then Search Speed autimatically calculated to 108.33 knots. |  |
| 134.5 | #BNC1436 | Now change the values as following:   * **Position**: 57°00'00"N - 011°00'00"E * **Initial course**: 90 deg * **Lap Length**: 15 nm * **Search Direction**: Starboard * **No. of Laps**: 15   Click “**Save**”. | The Parallel Track pattern created in step 137.2 has been updated on the map. |  |
| 134.6 | #BNC1436 | Now navigate back to the “**Pattern**” Action Panel, where the new Parallel Track is listed.  Highlight the New track by clicking on it, and press “**Delete Selected**” | The Parallel Track Pattern has been deleted from the Pattern list and from the Situational Display |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : SAR – Expanding Square/Edit pattern

### Description

This Test Case is testing the System’s ability to create patterns for SAR missions.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS666] As an Operator, I want to create an expanding square pattern, so I can search within a square with equal coverage factor.

**Accept Criteria:**

[BNC1416] I want to be able to define expanding square patterns by entry of the following parameters: start position, initial course and search radius.

[BNC1417] I want to be able to define sweep width and coverage factor for an expanding square pattern. The track spacing shall then be calculated and presented to the operator. I also want to be able to define the track spacing manually

[BNC1418] I want to be able to define search speed or search time for an expanding square pattern. When search speed is specified the search time shall be calculated and presented. When search time is specified the search speed shall be calculated and presented.

[BNC1419] I want to be able to update and delete a defined expanding square pattern.

[BNC2627] I want that the expanding square pattern shall stop at the first crossing of the search radius

**Stakeholder Requirement:**

[BNCS388] As an Operator, I want to create patterns for SAR missions, so that the search participants are guided to move in a structured way maximizing the chance of finding the victims and minimizing the time to do so.

**Accept Criteria:**

[BNC1405] I want to be able to enter relevant SAR pattern parameters.

[BNC1407] I want to be able to show/hide each defined SAR pattern on the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 135.1 |  | **MFCC**  In the “ActionMenuList”, click on “**Tools**”.  And then click on “**Patterns**”. | **MFCC**  The tab “Patterns” opens. |  |
| 135.2 |  | In the “Patterns” tab click on the dropdown list, and select “**Expanding Square**”. | A “**Expanding Square**” window opens, in which a new expanding square can be created. |  |
| 135.3 | #BNC1416  #BNC1405  #BNC1417 | Insert the following values:   * Position: **56°00'00"N - 010°00'00"E** * Initial course: **100 deg** * Coverage factor: **10** * Search Radius: **10 nm**   Click “**Save**” | A expanding square is created on the SD.  Verify track spacing is auto-calculated from sweep width and coverage factor.  Verify it is posisible to add Track spacing manually and the manual input of track spacing overrides the Sweep width Coverage factor values to the calculated values. E.g. If 2nm is entered in Track spacing then  Sweep width and Coverage factors got the calculted values 5nm and 2.5. |  |
| 135.4 | #BNC2627 | In the Action Menu List, navigate to “**Tools**”.  Click on “**Measurements**”, expand the “**Create Measurement**” dropdown list and click on measurement vector.  Create a measurement vector, that has its footpoint at the starting point of the expaning square pattern and its endpoint at the end of the expanding square pattern. | Verify that a measurement vector has been created and is some what looking like this one:  Verify, that the length of the measurement vector is no longer than the “Search Radius of the expanding square pattern. |  |
| 135.5 | #BNC1418 | Go to the Expanding square pattern edit mode again and add a value in “Search speed” and Save it. | Verify updating Search speed , updates the calculated search duration automatically |  |
| 135.6 | #BNC1418 | Open above created Expanding square pattern to edit again and  Update “Search Duration” filed | Updating search duration , updates the calculated search time. |  |
| 135.7 | #BNC1407 | Under “Visibility” toggle the button to turn “**Off**” the visibility of the pattern. | Check that the pattern disappears from the SD. |  |
| 135.8 | #BNC1407 | Unter “Visibility” toggle the button to turn “**On**” the visibility of the pattern. | Check that pattern reappears on the SD. |  |
| 135.9 | #BNC1419 | In the bottom click on “Delete”, to delete the pattern | The pattern disappears from the SD |  |

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Helo Approach - I want to support Helo approach

### Description

This Test Case is testing the System’s ability to presented with information relevant for landing a helicopter on a ship.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Have C-Flex Patrol running.

On the simulators PC start the following simulators:

1. nmea2ownunitsimulator
2. sensorsim-scenariosimulator
3. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS394] As a Helicopter Control Officer, I want to be presented with information relevant for landing a helicopter on a ship, so that I can assist the helicopter in a safe landing.

**Accept Criteria:**

[BNC1381] I want to display pitch, roll and wind.

[BNC1383] I want to have helo overview when helo is being tracked (position, course, speed, distance) - VECTOR.

### Test Execution

| **Patrol – System Test** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | | | **OK** | |
| Comm. | Display pitch, roll and wind. | | | | | | |
| 136.1 |  | **Simulator PC**  In the nmea2ownunitsimulator navigate to the “**Wind MWV**” tab.   * In the “**Angle (deg)**” input field, enter: 60 * In the “**Speed**” input field, enter: 5 * Make sure the “**Reference**” field is set to: Relative (R) * Make sure the “**Unit**” field is set to: METERS\_PER\_SEC (M)   Enable the checkbox labeled “**Tx:**”, then click the “**Start**” button. | **Simulator PC**  After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. | | |  | |
| 136.2 | #BNC1381 | **MFCC:**  In the ActionMenuList, go to “**Own Unit**”.  Under the following sections, check the displayed values:   * Relative Wind * True Wind * Additional Wind Information | **MFCC:**  The values should be displayed as:   * **Relative Wind:** G060 - 5 rel-m/s * **True Wind:** 060° - 5 deg-m/s * **Additional Wind Information:** * **Rel. Mean Wind:** G060 - 5 rel-m/s * **Mean True Wind:** 060° - 5 deg-m/s * **Rel. Peak Wind:** G060 - 5 rel-m/s | | |  | |
| 136.3 |  | **Simulator PC**  In the nmea2ownunitsimulator navigate to the “**Heading, Roll and Pitch XDR**” tab, fill out the following in the input fields:   * **Heading:** 0 * **Roll:** 20 * **Pitch:** 30   Enable the checkbox labeled “**Tx:**”, then click the “**Start**” button. | **Simulator PC**  The after a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. | | |  | |
| 136.4 | #BNC1381 | **MFCC:**  In the ActionMenuList, go to “**Own Unit**”.  Under the following sections, check the displayed values:   * Heading * Attitude | **MFCC:**  The values should be displayed as:   * **Heading:** 000 deg * **Attitude:** * **Pitch:** 30 deg * **Roll:** 20 deg | | |  | |
| Comm. | Helo overview vector | | | | | | |
| 136.5 |  | **Simulator PC**  In the SCANTER 6002 simulator under Entities tab, click “**Add**” to add a manual track with the following values:   * **ID:** test * **Speed:** 50 Knots * **Course:** 25 Degrees | **MFCC:**  System Track is generated and displayed on the Situation Display. | | |  | |
| 136.6 |  | **MFCC:**  Navigate to the ActionMenuList, click on tools:  graphic | Tools ActionPanel tab opened. | | |  | |
| 136.7 |  | In the Tools ActionPanel, click on the “Helo Approach” ActionPanel button:  graphic | Helo Approach ActionPanel is open. | | |  | |
| 136.8 | #BNC1383 | Under the **“Landing Site”** section, ensure the checkbox **“Own Unit”** is selected.  Under the **“Helo Identification”** section, select the generated system track that was created in test step: 139.5  Toggle the **“Vector”** switch to the **On** position to enable the vector. | The vector display for the selected system track is activated and visible on the situational display.  Example output: | | |  | |
| 136.9 |  | Under “Approach Pattern” set the slider button “Pattern” to “On”. | The approach pattern is visible on the Situation Display, and the pattern has its origin at OU.  Example output:  graphic | | |  | |
| 136.10 |  | Under “Approach Pattern” set the slider button “Pattern” to “Off”. | The Helo Approach pattern disappears. | | |  | |
| 136.11 |  | Click on the slider again to verify that the pattern reappears. | The Helo Approach pattern shows up again. | | |  | |
| 136.12 |  | Under “Approach Pattern” edit the “Approach Angle”. | The change is carried out successfully on the Situation Display. | | |  | |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Choose helicopter tracked by AIS

### Description

This Test Case is testing the System’s ability to presented with information relevant for landing a helicopter on a ship.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Have C-Flex Patrol running.

On the simulators PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-mssr200

### Requirements

**Stakeholder Requirement:**

[BNCS394] As a Helicopter Control Officer, I want to be presented with information relevant for landing a helicopter on a ship, so that I can assist the helicopter in a safe landing.

**Accept Criteria:**

[BNC1382] I want to be able to define ID for the helo before tracking helo (IFF, AIS or ADSB identification) - SEARCH.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 137.1 |  | **MFCC**  Click on tools  graphic | Tools tab opened |  |
| 137.2 |  | Click on Helo Control  graphic | Helo Control open |  |
| 137.3 |  | At "Landing Site"  Click "Own unit "  At "Helo Identification"  Choose a halo from "Helo Track" dropdown  Set "Vector" = On  Set "Pattern" = On | Sit. Disp. show a blue line between Own Unit and chosen halo AIS track |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Choose helicopter tracked by AIS

### Description

This Test Case is testing the System’s ability to define ID for the helo before tracking helo.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenatiosimulator
2. sensorsim-gps
3. sensorsim-mssr2000
4. sensorsim-ais
5. sensorsim-adsb

### Requirements

**Stakeholder Requirement:**

[BNCS394] As a Helicopter Control Officer, I want to be presented with information relevant for landing a helicopter on a ship, so that I can assist the helicopter in a safe landing.

**Accept Criteria:**

[BNC1382] I want to be able to define ID for the helo before tracking helo (IFF, AIS or ADSB identification) - SEARCH.

[BNC1380] I want to display SHOL diagrams.

### Test Execution

| **Patrol – System Test** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** | |
| Comm. |  | | | | |
| 138.1 |  | **Simulator PC**  In the sensorsim-gps simulater, under “**Scripts**” run the script “**!OwnUnit.js**”. | **Simulator PC**  Under “Entities”, make sure the OWN\_UNIT script is running. |  | |
| 138.2 |  | **MFCC**  In the ActionMenuList navigate to “**Tools**”. Click on “**Helo Approach**”, and under Helo Search insert:   * **IFF Mode**: Mode C * **IFF CODE**: 1234 * **Enable Search**: “On” | **MFCC**  Make sure the Helo Search is enabled by checking if the indication light under “Enable Search” is on (Orange). |  | |
| 138.3 |  | **Simulator PC**  In the sensorsim-mssr2000 simulater, click on “Position/ Range” and set the “**Range**” to “**1000.00**” km.  Click “**Apply**” | **Simulator PC**  Make sure the Range is set to 1000.00 km. |  | |
| 138.4 | #BNC1382 | Navigate to “**Entities**” and Add a new track, by clicking on “**Add**”.  In the “Add Entity” window, insert the following:   * **ID**: IFF * **Position**: 570000N/0110000E * **Mode C**: 1234   Click “**OK**” to at the track. | Make sure the track is created  **MFCC**  Make sure the Track is shown on the SD. And check, that a vector line is created between the track and the Own unit. |  | |
| 138.5 |  | **MFCC**  In th ActionMenuList, navigate to “**Track List**”. Click on the created track, and click “**Delete**”. | **MFCC**  Make sure the Track is removed from the SD and is not listed in the Track List. |  | |
| 138.6 |  | In the ActionMenuList navigate to “**Tools**”. Click on “**Helo Approach**”, and under Helo Search insert:   * **AIS MMSI**: “219000000” * **Enable Search**: “On” | Make sure the Helo Search is enabled by checking if the indication light under “Enable Search” is on (Orange). |  | |
| 138.7 | #BNC1382 | **Simulator PC**  In the sensorsim-ais simulator  Navigate to “**Entities**” and Add a new track, by clicking on “**Add**”.  In the “Add Entity” window, insert the following:   * **ID**: AIS * **Position**: 570000N/0120000E * **Include Sim**: AIS * **Mode C**: 1234 * **MMSI**: 219000000 * **Changing Course**: Tick the box   Click “**OK**” to at the track. | Make sure the track is created  **MFCC**  Make sure the Track is shown on the SD. And check, that a vector line is created between the track and the Own unit. |  | |
| 138.8 |  | **MFCC**  In th ActionMenuList, navigate to “**Track List**”. Click on the created tracks, and “**Delete**” them. | **MFCC**  Make sure the Tracks are removed from the SD and are not listed in the Track List. |  | |
| 138.9 |  | In the ActionMenuList navigate to “**Tools**”. Click on “**Helo Approach**”, and under Helo Search insert:   * **Mode S**: 0FFFFFF * **Enable Search**: “On” | Make sure the Helo Search is enabled by checking if the indication light under “Enable Search” is on (Orange). |  | |
| 138.10 |  | **Simulator PC**  In the sensorsim-adsb simulator, click on “Position/ Range” and set the “**Range**” to “**1200.00**” km.  Click “**Apply**” | **Simulator PC**  Make sure the Range is set to 1200.00 km. |  | |
| 138.11 | #BNC1382 | Navigate to “**Entities**” and Add a new track, by clicking on “**Add**”.  In the “Add Entity” window, insert the following:   * **ID**: ADSB * **Position**: 560000N/0120000E * **Mode S Addr**: 0FFFFFF   Click “**OK**” to at the track. | Make sure the track is created  **MFCC**  Make sure the Track is shown on the SD. And check, that a vector line is created between the track and the Own unit. |  | |
| 138.12 | #BNC1380 | **MFCC**  In the ActionMenuList navigate to “**Tools**”. Click on “**Helo Approach**”, and switch “Display SHOL Diagram” to “**On**”. | **MFCC**  Make sure a window pop’s up with a display of a SHOL Diagram. |  | |

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## Test Case : Helo video stream

### Description

This Test Case is testing the System’s Helo functionalities.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC open the Task Manager.

### Requirements

**Stakeholder Requirement:**

[BNCS394] As a Helicopter Control Officer, I want to be presented with information relevant for landing a helicopter on a ship, so that I can assist the helicopter in a safe landing.

**Accept Criteria:**

[BNC1384] I want to show video (in H.264 format via LAN) from the helicopter deck.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 139.1 |  | **Simulator PC**  Make sure no VLC (media player)  is running using Task Manager  Launch VLC at Simulator PC  In “Media” click on "Stream"  Click Add button and choose a video (here ad-astra-trailer-2\_h480p.mov)  Click Stream button at the bottom of the screen  In the Stream Output window click Next  In the DestinationSetup window click on the NewDestination menu and choose RTSP option from the list, then click "Add"  Fill out Port = 8556 and Path = 192.168.200.157 (find the ip/port in config.xml under the functionality you want to test e.g helovideo.uri.)  Click Next  Uncheck "Activate Transcoding" Click Next In OptionSetup window check generated string and make sure it is correct:  :sout=#rtp{sdp=rtsp://192.168.200.157:8554/} :no-sout-all :sout-keep  Click Stream | Verify if VLC is streaming the video to Helo  (if it does not work then you can try to run VLC at the MFCC having same IP/port set up to catch the stream) |  |
| 139.2 | #BNC1384 | **MFCC**  In the ActionMenuList navigate to “Tools”  Click on “Helo Approach” card  Under Utility Window section set "Display Helo Video" = On | Verify if video stream (from VLC) is shown in "Helo Video" (new window) |  |

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## Test Case : Map details

### Description

This Test Case is testing the System’s Helo functionalities.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.  
On the simulator PC start the following simulators:

* + - 1. sensorsim-scenariosimulator
      2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS390] As a Helicopter Control Officer, I want to support final approach guidance of helicopters to the helicopter deck.

**Accept Criteria:**

[BNC1364] I want to be able to detect and track helicopters.

[BNC1365] I want a settings parameter that defines the approach angle.  
[BNC1366] I want to be able to select the most suitable radar profile for helo guidance.

[BNC1367] I want to be able to select a map detail level that is suitable to helo approach missions.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 140.1 | #BNC1367 | **MFCC**  In View Options you can select a detail level suitable for Air tracks. | View Options detail level suitable for Air tracks available. |  |
| 140.2 | #BNC1366 | **MFCC**  In ActionMenuList navigate to “**Radar Control&Video**” panel under  In Scanter section there will be a dropdown menu “**Profile**” In Patrol Cflex we cannot see which profile is a short-ranged one (suitable for landing a helicopter), but we can test changing profile for SCANTER the following way:  Click on the arrow to unfold the dropdown list under “Profile”, select any other profile than P0  **Simulator PC**  In the SCANTER 6002 Simulator navigate to **Parameters** tab  Click on **Incoming** tab Check **Current Profile**(has to be changed to the same profile number that we selected in MFCC) | **Simulator PC**  Verify that profiles changes can be seen in the simulator |  |
| 140.3 | #BNC1366 | **Simulator PC**  In the SCANTER 6002 Simulator navigate to **Parameters** tab  Click on **Outgoing** tab in Current Profile dropdown select any other profile than the current one in MFCC Click Send button next to the field | **MFCC**  Verify that profile changes can be seen in the Scanter 6002 action panel |  |
| 140.4 | #BNC1364 | **Simulator PC**  In the SCANTER 6002 Simulator start a script(Load\_test\_Random\_moving\_tracks.js for ex)  **MFCC**  In ActionMenuList navigate to “**Tools**” Click on “**Helo Approach**” card  Under “**Helo Identification**” there is a dropdown menu “Helo Track”, click on the arrow to unfold it | **MFCC**  Verify that tracks can be identified under “**Helo Identification**” |  |
| 140.5 | #BNC1365 | **MFCC**  Under “**Approach Pattern**” section there must be a setting “**Approach Angle**” | **MFCC**  Verify that “**Approach Angle**” setting is on HeloApproach action panel and default value is 000 deg |  |

### Comments

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## Test Case : Placeholder











## Test Case : Show Helo Approach Patterns on Situation Display

### Description

This Test Case is testing the System’s Helo functionalities.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS392] As a Helicopter Control Officer, I want to show the helo approach pattern on the situation display, so I can ensure safe landing.

**Accept Criteria:**

[BNC1376] I want to be able to show/hide the helo approach pattern.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 142.1 | #BNC1376 | **MFCC**  In ActionMenuList navigate to  "**Tools**"/"**Helo Approach**"  Under Landing site enable Own Unit  Under Helo Identification select a Track  Under Approach pattern section set Pattern to on | Verify that from Own Unit a Helo pattern is now shown: |  |
| 142.2 | #BNC1376 | Under Approach pattern section set Pattern to off | Verify that no Helo pattern is shown : |  |

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## Test Case : Get Quickly Within Range of a Target

### Description

This Test Case is testing the System’s “get quickly within range of target” functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

* + - 1. sensorsim-scenariosimulator
      2. sensorsim-scanter6002
      3. sensorsim-gps

### Requirements

**Stakeholder Requirement:**

[BNCS669] As an Operator, I want to calculate the course and time required to get as fast as possible within/outside a given range of the target.

**Accept Criteria:**

[BNC1150] Based on a specified interceptor speed and desired range to the target, I want to read the needed interceptor course and intercept time.

[BNC1151] I want that the intercept point resulting from the fastest inside/outside calculation is presented graphically on the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 143.1 |  | **Simulator PC**  In the GPS simulator run the following script: “!OwnUnit.js”  In the Scanter 6002 Simulator, create a track that is south east from Own Unit by navigating to the Entities tab:  Click “Add” and in the “Add Entity” window insert following values: **ID**: SCANTER **Position**: (south east from OU)  **Speed**: 1,00 knots Click “**OK**” to add the track | **MFCC**  On Sit. Disp check that the track is created. |  |
| 143.2 |  | Make sure that Own Unit is sailing with:  OWN\_UNIT  course=90.0 deg, speed = 1.0 m/s in RadarSim Can be done in GPS simulator by selecting OWN\_UNIT and clicking on Edit button and adjusting values if needed and clicking OK | **MFCC**  Verify that Own Unit has the same data for course and speed as seen in the simulator when accessing it through TrackList or through OwnUnit action panel |  |
| 143.3 |  | **MFCC**  In ActiveMenuList navigate to "Tactical Calculations"  Select "**Get In Range**" card | Verify that "**Get In Range**" action panel is shown |  |
| 143.4 | #BNC1150  #BNC1151 | In “**Get In Range**” active panel set  "**Calculate**" to On  In “Target track” dropdown select the track created in step 1  Set Own Unit speed to 3.00 knots  Set Range to 3 nm | Two Recommondation(sometimes only one) are made  Choosing between them will change the calculated:  - Entry Point  - Future target position  - Course  - ETA |  |
| 143.5 | #BNC1150  #BNC1151 | Keep "Calculate" = On  Target track = keep the same track  Own Unit speed = 0  Range = 3 | No Recommondation is made and "Not possible" is shown in "Get In Range" menu with a Red led. |  |
| 143.6 |  | **Simulator PC**  In GPS Sim edit Own Unit speed = 2, course = 180  Using one SCANTER simulators, creat a track at 10nm from OU, sailing not towards OU.  560247N/0110649E | **MFCC**  Tracks are moving near eachother |  |
| 143.7 | #BNC1150  #BNC1151 | **MFCC**  Patrol/Tatical Calculations/”**Get Out Of Range**” card  Choose Track "ENEMY" (or the one you made)  In menu "**Get Out Of Range**"  Set  - Own Unit Speed = 2  - Range = 12 nm | **MFCC**  Notice that Exit Point is filled out with a position that is not on collision cource  Notice that ETA is calculated |  |
| 143.8 | #BNC1150  #BNC1151 | Let track sail more than 12 nm from Own Unit (messure with Patrol functionality) | Verify that"**Now out of range**" is displayed with a green led. |  |
| 143.9 |  | **Simulator PC**  Keep Own Unit at speed = 2, course = 180  Using one of the simulators, create a track that is on collision course with Own Unit south of Own Unit with Speed = 10, course = 0. | **MFCC**  Tracks are moving against each other |  |
| 143.10 | #BNC1150  #BNC1151 | **MFCC**  Patrol/Tatical Calculations/Get Out Of Range  Choose Track you just moved in Target Track  Set Own Unit Speed = 0  Set Range = 4 nm | Verify that LED = green (it will not be red if either OU or the track is moving, as there will always be a time when distance will be greater than the range |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Placeholder











## Test Case : Placeholder











## Test Case : Placeholder











## Test Case : Use a UAS as an Inspection Tool

### Description

This Test Case is testing the System’s “UAS” functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following:

* + - 1. Local Disc (C:)

### Requirements

**Stakeholder Requirement:**

[BNCS396] As an Operator, I want to use an UAS (Unmanned Aircraft System) to search areas for interesting objects and to inspect other vessels and crews.

**Accept Criteria:**

[BNC1390] I want to be able to view the live video from a UAS.

[BNC1391] I want to be able to turn on and off the live video window from a UAS.

[BNC1392] I want to be able to monitor the live status of the UAS such as its Altitude, Heading, Pitch, Roll and Location.

[BNC1393] I want to be able to monitor the live status of the camera sensor on the UAS such as its Location, Altitude, Horizontal FOV, Vertical FOV, relative heading, relative roll, and relative elevation (relative to UAS heading).

[BNC1394] I want to be able to see the current location of the UAS on the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 147.1 |  | **Simulator PC:**  Navigate to C: -> Product -> UAS\*\*\*\*\*\*- > bin  Execute "start\_stream.bat" | UAS starts streaming |  |
| 147.2 | #BNC1390 #BNC1391 | **MFCC:**  Open menu "UAS datalink" | Check that is possible to turn on and off the UAS video.  Check that data from the above video stream is shown:  - Live video feed is shown in the lower left corner.  - The Drone location can be seen in the SD.  - Metadata from the UAS can be seen in the action panel on the right. |  |
| 147.3 | #BNC1393 | Open menu "UAS datalink" | Data - Sensor section   1. Location 2. Altitude 3. Horizontal FOV 4. Vertical FOV 5. relative heading 6. relative roll  * relative elevation (relative to UAS heading)   from the above video stream is shown |  |
| 147.4 | #BNC1392 | Open menu "UAS datalink" | Data  - Platform section   * Heading * Roll * Pitch   from the above video stream is shown |  |
| 147.5 | #BNC1394 | Through the action panel, navigate to  "Video Streams" and toggle LEFT and RIGHT options for group "UAS" to "On" | Verify that video can be streamed for UAS group |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Intercept a Target for Boarding

### Description

This Test Case is testing the System’s “intercept a target for boarding” functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

* + - 1. sensorsim-scenariosimulator
      2. sensorsim-gps

### Requirements

**Stakeholder Requirement:**

[BNCS358] As an Operator, I want to perform a collision course/intercept calculation i.e. calculate the course to steer to get adjacent to a target, so that I can board it.

**Accept Criteria:**

[BNC1157] Based on a specified interceptor speed and target, I want to read the intercept course to steer and the estimated time to get to the target.

[BNC1159] I want the intercept point and ETA to be visualized on the situation display, and continuously updated until I remove it.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 148.1 |  | **Simulator PC**  Create a track south east from Own Unit | Track created |  |
| 148.2 |  | Make sure that Own Unit is sailing with:  In GPS Sim set OWN\_UNIT  course=90.0 deg, speed = 1.0 m/s | **MFCC**  Own Unit has the same data for course and speed as seen in the simulator. |  |
| 148.3 |  | **MFCC**  In the ActionMenuList navigate to "Tactical Calculations"  Click on "Intercept" card | Verify that "Intercept" action panel is shown |  |
| 148.4 | #BNC1157  #BNC1159 | Set  "Calculate" = On  Target track = "You created track"  Own Unit speed = 4 | One (at least) recommondation is made  Showing:  - Intercept Point  - Course  - ETA  On the Situation Display there is a graphical representation of the intercept points and ETA |  |
| 148.5 | #BNC1157  #BNC1159 | Change Own unit speed to greater number like 10 | Verify that ETA is re-calculated to be less than with OwnUnit speed 4 |  |
| 148.6 | #BNC1157  #BNC1159 | Change Own unit speed to 0 | Verify that led is red and it says Not possible |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Create and Use Ad-hoc Graphic - polygon & polylines

### Description

This Test Case is testing the System’s ability to create and show map overlays on the SD.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC1 and MFCC2.

### Requirements

**Stakeholder Requirement:**

[BNCS223] As an Operator, I want to create and show map overlays on the situation display, so that I can illustrate geographical objectives.

**Accept Criteria:**

[BNC288] I want to create a named map overlay.

[BNC289] I want polygon-defined areas and polylines to be available as graphics primitives.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 149.1 |  | **MFCC1**  In the ActionMenuList navigate to **Area and Zones** and click on it | Verify that **Area and Zones** action panel is open |  |
| 149.2 |  | Click "**Create area**" dropdown box, select "**Create line area**" and fill out the following:  Name: "test"  Start position: "56°00'00"N - 011°12'33"E"  End position: "56°20'00"N - 011°12'33"E"  Save the changes and after that  toggle the field "**Visible**" | Check that the line area is visually presented on the situation display: |  |
| 149.3 | #BNC289 | Click "**Create area**" dropdown box, select "**Create polygon area**" **Name**: test2 Make sure “**Add points using mouse**” click is set to On  Click on a few spots on Situation display in order to indicate your desired area  Save the changes  Toggle the field "**Visible**" to on and save the changes. | Check that the polygon area is visually presented on the situation display: |  |
| 149.4 |  | Navigate to **Tools** > **Map Overlays** through the action panel | **Map overlays** action panel is open |  |
| 149.5 | #BNC288 | Click "**Create overlay**" dropdown box Select "**Polyline**"  Click on a few spots on situation display in order to indicate your desired area  Give it a name  Toggle the field "**Visible**" to On Save changes | Check that the polyline area is visually presented on the situation display |  |
| 149.6 |  | **MFCC2**  In the ActionMenuList navigate to **Area and Zones** and click on it | **Area and Zones** tab is open |  |
| 149.7 | #BNC289 | Check that the areas, lines and ad-hoc graphics previously created on MFCC1 are present in the action panel but hidden Enable them to be visible by toggling the button | Verify that they are visually present in the action panel and after being enabled they are displayed on SituationDisplay |  |
| 149.8 | #BNC288 | Navigate to **Tools** > **Map Overlays** through the action panel | **Map Overlays** action panel is open |  |
| 149.9 | #BNC288 #BNC289 | Check that the polyline previously created on MFCC1 are available | Verify that it’s visually present in the action panel and after being enabled it is displayed on SituationDisplay |  |

### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Create and Use Ad-hoc Graphic - position

### Description

This Test Case is testing the System’s ability to create and show map overlays on the situation display.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS223] As an Operator, I want to create and show map overlays on the situation display, so that I can illustrate geographical objectives.

**Accept Criteria:**

[BNC292] I want to be able to reference the graphic to a geographical position (applicable only for circle pattern).

[BNC1203] I want to be able to define a track as center for a circle pattern. The circle pattern shall then follow the track. I want to be able to define sector bearings relative to the course of the track.

[BNC1204] I want to be able to update and delete a defined circle pattern.

### Test Execution

| **Patrol – System Test** | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | | **Expected Output** | | **OK** | |
| Comm. | Attach circle pattern to system track | | | | | | |
| 150.1 |  | **MFCC:**  Navigate to the ActionMenuList, click on tools:  graphic | | **MFCC:**  Tools ActionPanel tab opened. | |  | |
| 150.2 |  | In the **Tools** ActionPanel, click on the “**Patterns**” ActionPanel button: | | **Patterns** ActionPanel tab is open. | |  | |
| 150.3 |  | Click on “**Create Pattern**”.  Select “**Circle**” pattern in the dropdown menu that unfolds.  In the Circle card details for the created Circle pattern click on the green Save button. | | Generic **Circle** Pattern is created and displayed on the Situation Display. | |  | |
| 150.4 | #BNC292  #BNC1204 | In the Circle card details, in the “**Position**” field, add a new geographical position on the situation display.  Click on the green Save button. | | The Circle pattern has changed it’s position on the situation display to the chosen position. | |  | |
| 150.5 |  | **Simulator PC**  In the SCANTER 6002 simulator under Entities tab, click “**Add**” to add a manual track with the following values:   * **ID:** test * **Speed:** 50 Knots * **Course:** 25 Degrees | | **MFCC**  System Track is generated and displayed on the Situation Display. | |  | |
| 150.6 | #BNC1203 | **MFCC**  In the Circle card details, in the “**Track**” drop down field, choose the generated system track from test step: 153.5  .  Then toggle the “**Attach to Track**” switch to “**Yes**”.  Click on the green Save button. | | The Circle pattern is now centered around the system track and is following it each track update.  Example output: | |  | |
| Comm. | Update circle pattern | | | | | | |
| 150.7 | #BNC1204  #BNC1203 | **MFCC**  In the Circle card details, update the following fields:   * **From:** 000 deg * **To:** 045 deg * **Inner Range:** 2 nm * **Outer Range:** 10 nm   Click on the green Save button. | | **MFCC**  The Circle Pattern is updated on the Situational Display, matching the entered values.  Example output: | |  | |
| 150.8 | #BNC1204 | **MFCC**  In the Circle card details press the red Delete button. | | The pattern is deleted from the ActionPanel and on the Situation Display. | |  | |

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## Test Case : Create and Use Ad-hoc Graphic - graphic individually per console

### Description

This Test Case is testing the System’s ability to create and show map overlays on the SD.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC1 and MFCC2.

### Requirements

**Stakeholder Requirement:**

[BNCS223] As an Operator, I want to create and show map overlays on the situation display, so that I can illustrate geographical objectives.

**Accept Criteria:**

[BNC294] I want to be able to show/hide each map overlay individually per console.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 151.1 | #BNC294 | **MFCC1**  Navigate to the ActionMenuList, click on **Tools**: graphic Click on **Map Overlays** card  Click **Create overlay** dropdown box Select **Polyline** Make sure field "**Visible**" is set to On(by default)  Click on a few spots on SituationDisplay in order to indicate your desired area  Give it a name Save changes | **MFCC1**  Check that the created area is visible on Sit. Disp  **MFCC2**  Verify that created map overlay is present in the action panel so it is possible to toggle the visibility button and make it visible on MFCC2 SituationDisplay as well |  |
| 151.2 | #BNC294 | **MFCC2**  Set Visibility for the created area to Off | **MFCC1**  Check that the created area is visible on Sit. Disp.  **MFCC 2**  Check that the created area is NOT displayed on Sit. Disp. |  |

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## Test Case : Create and Use Ad-hoc Graphic - polygon change

### Description

This Test Case is testing the System’s ability to create and show map overlays on the situation display.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS223] As an Operator, I want to create and show map overlays on the situation display, so that I can illustrate geographical objectives.

**Accept Criteria:**

[BNC295] I want to be able to update and delete map overlays.

[BNC1072] I want to be able to update and delete a previously defined geographical shape

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 152.1 |  | **MFCC:**  In the ActionMenuList navigate to **Areas and Zones** and click on it | **Areas and Zones** tab is open |  |
| 152.2 |  | Click on **Create area** | Area drop-down tab is expanded with three options: -Create sector area -Create line area  -Create polygon area |  |
| 152.3 |  | Click on “**Create a line area**”  Insert the following values:   * Name: “**123**” * Start posiotion: “**56°30'00"N - 011°30'00"E**” * End position: “**56°00'00"N - 011°00'00"E**”   Click on “**Save**”.  And turn on the following, under the section “**Properties**”:   * Active * Visible   And turn on the following, under the section “**Criteria**”:   * Air * Ground * Subsurface * Surface   Click on “**Save**”. | Verify that the line and all the settings made on the line are saved. |  |
| 152.4 | #BNC1072 | Select the line created in test step 155.3 and turn off the following criteria:   * Subsurface.   Change the value for the “End position”  Click on “**Save**” | Verify that is possible to update previously created line and changes will be shown accordingly on SItuationDisplay |  |
| 152.5 | #BNC1072 | Select this line by highlighting its card in **Areas and Zones** action panel Then click **Delete Selected** in the bottom of the panel Or Access the card of this line by clicking on the arrow on its card  Then click on **Delete** button in the bottom of this Line area details action panel | Check that the line is removed |  |
| Comm. | Update and Delete Map Overlays | | | |
| 152.6 |  | **MFCC**  In the ActionMenuList, click on **Tools**: graphic | **MFCC**  **Tools** ActionPanel tab opened |  |
| 152.7 |  | In the **Tools** ActionPanel, click on the “**Map Overlays**” ActionPanel button: | **Map Overlays** ActionPanel tab is open. |  |
| 152.8 |  | Click on “**Create Overlay**”.  Select “**Polyline**” pattern in the dropdown menu that unfolds. | The “**Polyline**” HMI is displayed in the ActionPanel. |  |
| 152.9 |  | Edit the accessible fields:   * New Name   Ensure the button: “**Add points using mouse click**” is On.  Now click on the Situation Display using the mouse – *e.g. click four times different places on the Situation Display.*  After this click on the Green “**Save**”-button at the bottom of the ActionPanel. | The user is able to update the New Name field for this specific Polyline Map Overlay.  Black lines are drawn on the Situation Display, based on the location of the mouse clicks.  A Table of filled out in parallel with the mouse clicks, denoting the geographical position of the Polyline Map Overlay. |  |
| 152.10 |  | Navigate back to “**Map Overlays**” ActionPanel, by clicking on the back-button, in the top-left of the panel, denoted by the “**<**” button. | Map Overlays ActionPanel tab is open.  The Polyline Map Overlay Card is displayed in the card list. |  |
| 152.11 |  | Find the created card in the list and click on the arrow “**>**” to open the Card Details. | The Card Details of the Polyline is presented. |  |
| 152.12 | #BNC295 | Right-click on one of the rows in the table.  Navigate to the “**Remove**” option on the list of actions, and click.  Click on the “**Save**” button | The row with the position is removed, and the the Map Overlay on the Situation Display is updated. |  |



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## Test Case : Create and Use Ad-hoc Graphic - restart Patrol

### Description

This Test Case is testing the System’s ability to create and show map overlays on the SD.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.  
Have some map overlays created(as described in Test Case for Create and Use Ad-hoc Graphic - polygon & polylines)

### Requirements

**Stakeholder Requirement:**

[BNCS223] As an Operator, I want to create and show map overlays on the situation display, so that I can illustrate geographical objectives.

**Accept Criteria:**

[BNC296] I want the system to persist defined map overlays across restarts.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 153.1 |  | **MFCC:**  Navigate to **Tools**>**Map Overlays** panel and make sure items are created there and Visibility toggle is ON | Map overlays visible at Sit. display |  |
| 153.2 | #BNC296 | **Cockpit**  Launch Cockpit app and log in with cmsadmin In the “Controls” tab press “Restart System” | **MFCC:**  Check that after restart the area created in step 1 can still be seen in the Area and Zones list.  ***NOTE:*** *the “On” state of the Visible button is not persistent after restart.* |  |

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## Test Case : Zoom, point and rotate using pointing device

### Description

This Test Case is testing the System’s ability to use the pointing device for navigating maps.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS466] As an Operator, I want to use the pointing device for navigating maps in the same way as in e.g. Google Maps, in order to make the navigation more intuitive for new users.

**Accept Criteria:**

[BNC1890] I want to be able to use the pointing device to control the pointing device symbol on the map.

[BNC1891] I want to be able to use the pointing device to zoom and rotate the map.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 154.1 | #BNC1890 | **MFCC:**  Use the pointing device and drag it around on the SD. | **MFCC:**  The pointing device symbol on the map is moving around simultaneously. |  |
| 154.2 | #BNC1891 | In the ActionMenuList select “**View options**”.  Under Heading, click on “**Free Rotation**”.  Move the pointing device over to the the SD, click on right mouse button and drag the mouse around, to rotate the map. | The map rotates freely. |  |
| 154.3 | #BNC1891 | Use the mouse wheel to zoom in and out of the map | Zooming in and out on the map |  |
| 154.4 |  | Click on the map and drag it around | Map is being dragged around |  |



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## Test Case : Menu activation

### Description

This Test Case is testing the System’s ability to use the pointing device for navigating maps.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS466] As an Operator, I want to use the pointing device for navigating maps in the same way as in e.g. Google Maps, in order to make the navigation more intuitive for new users.

**Accept Criteria:**

[BNC1892] I want the coordinates of the point I hover on the map to be shown.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 155.1 | #BNC1892 | **MFCC:**  Hover on a point of interest on the map (track, city, etc) and hold the left shift key down | If the pointing device’s position coincide with items represented on the map, that support mouse over function, a semi-transparent panel with detailed item information is overlaid on the map : |  |
| 155.2 | #BNC1892 | Point at track and hold the left shift key down | Verify that semi-transparent panel with more details is overlaid on the map: |  |

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## Test Case : Placeholder











## Test Case : Persistence of settings

### Description

This Test Case is testing the System’s persistence of settings.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS476] As an Operator, I want all my per-operator longer-term settings to be persisted across startups, so I will not have to adapt the settings to my needs every time I start the system.

**Accept Criteria:**

[BNC1348] I want to be able to customize some visual aspects of the Situation display which is persisted across startups, e.g. ECDIS settings and Radar Video settings.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 157.1 | #BNC1348 | **MFCC**  From the “Action Menu List” select “View Options”.  Change settings for the following:  ECDIS chart: Day/night/dusk  Depth setting: 4 level with fx. 3, 5, 10, 15m  Projection: Change to another type fx. Mercator (if not already selected) | Visual updates are taken effect |  |
| 157.2 |  | **Cockpit**  Launch Cockpit application  Use cmsadmin password to log in In the Controls tab press Restart system or a specific system element | Console restarts and this will shut down the Patrol CFlex which is expected |  |
| 157.3 | #BNC1348 | **MFCC**  Navigate back to **View Options** | The changes made are still in effect after the console restart |  |
| 157.4 | #BNC1348 | Repeat previous 2 steps several times and on different consoles | Each time, the settings that are changed are still in effect on that particular console only |  |
| 157.5 |  | Change ECDIS setting on console 1 to Day, console 2 to Night | Console 1 set to Day, console 2 set to Night |  |
| 157.6 |  | Wait 30 minutes |  |  |
| 157.7 |  | Restart console 1 and 2 | Both restart |  |
| 157.8 | #BNC1348 | Verify setting | Console 1 stays in Day and console 2 stays in Night mode |  |

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Record Operational Data

### Description

This Test Case is testing the System’s recording functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

At least one track and EW-line must be created.

### Requirements

**Stakeholder Requirement:**

[BNCS424] As an Operator, I want to record operational data such as weather, tracks and tactical events in a named and timestamped collection, so that it can e.g. be replayed for debriefing purposes.

**Accept Criteria:**

[BNC1726] I want to have recorded own ship data (e.g. position, course and speed).

[BNC1728] I want to have recorded track data.

[BNC1729] I want to have recorded bearing line data.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 158.1 |  | Tactical recording starts automatically, let it run for a while | Verify that tactical recording starts automatically after 5 min. Before 5 min, start it manually by accessing Tactical recording panel by clicking  icon |  |
| 158.2 | #BNC1726 | **Any MFCC:**  Open Burger menu and select Tactical Replay.  Select the recording in step 2 and press on Start Replay button.  On Sit. Disp. press "shift" and "mouse over" over Own unit. | Check that the following details are displayed for OU:   * Course * Speed |  |
| 158.3 | #BNC1728 | Use the same recording like in step 162.2. Press Start Replay button (if record is not playing).  On Sit. Disp. press "shift" and "mouse over" over a track. | Check that the following details are displayed for a track:  **For Tracks**  - Course/Speed  - Track number  - Category  - Identity  - Type |  |
| 158.4 | #BNC1729 | Use the same recording like in step 162.2. Press Start Replay button (if record is not already playing).  On Sit. Disp. press "shift" and "mouse over" over a track. | Check that the following details are displayed for a track:  **For EW lines.**  - Source  - Category,  - Type  - Identity  - Footpoint  - Bearing  - Lastupdate  - Track number |  |

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Tactical recording

### Description

This Test Case tests the System’s ability to record operational data in a named and timestamped collection.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS420] As an Operator, I want to record operational data in a named and timestamped collection, so that it can e.g. be replayed for debriefing purposes or exported for use ashore as evidence in court.

**Accept Criteria:**

[BNC1703] I want the recording to start automatically after system start.

[BNC1704] I want to be able to stop an ongoing recording.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 159.1 |  | **MFCC**  Open the Tactical Recording Management HMI | HMI opened |  |
| 159.2 | [BNC1704] | Stop the current recording | Recording stopped |  |
| 159.3 |  | **Cockpit**  Restart the system | System restarted |  |
| 159.4 | [BNC1703] | **MFCC**  Open the Tactical Recording Management HMI again. | A new recording has been started automatically. |  |



### Comments

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| *Date* |  | *Time* |  | *Testers* |

## Test Case : Drone Detection

### Description

Identify suspicious tracks as drones

### Test Environment

* C-Flex Patrol release under test
* Scanter6002 Simulator

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

* Start C-Flex Patrol
* Start Scenario Simulator
* Start Scanter6002 Simulator

### Requirements

**Stakeholder Requirement**:

[BNCS845] As an Operator, I want to be notified of tracks that are likely to be drones and be able to classify and manage them so that I can take appropriate actions and declutter the situational display.

**Acceptance Criteria:**

[BNC2604] I want to be able to use pre-defined rules to determine when a track which is "Pending" or "Unknown" is considered likely to be a drone and setting that track as Identity "Suspect".  
[BNC2606] I want to be able to specify the probability thresholds that define when a track is considered likely to be a drone or a bird.

[BNC2607] I want to be able to configure the default values for probability thresholds.

[BNC2608] I want to be able to enable or disable these detection rules for either or both drones and birds.

[BNC2609] I want to be able receive notifications when a track fulfills the drone detection rule, including details about the fulfilled rule.

[BNC2610] I want to be able to enable or disable drone detection rule notifications.

[BNC2611] I want to highlight any track that fulfills the drone detection rule.

[BNC2612] I want to be able to enable or disable drone detection rule highlighting.

[BNC2613] I want the system to be able to automatically classify any track that meets the drone rule as Category "Air" and Type "Drone".

[BNC2615] I want to be able to show or hide tracks that have been classified as Type "Drone".

[BNC2617] I want the drone and bird rule settings to be persisted.

[BNC2619] I want the drone and bird filter settings to be persisted.

**Stakeholder Requirement:**

[NSES219] As an Operator, I want to get target classification from the SCANTER, so I better understand what the Radar is tracking.

**Acceptance Criteria:**

[NSE761] I want to be able to monitor target classification probabilities for SCANTER tracks.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 160.1 | #NSES219 #NSE761 | **Scanter Simulator:**   * Navigate to the Scripts tab * In Folder list, select scripts/birdsanddrones * Start the script “BirdDroneClassificationChange.js” * Go to Entities tab | **Scanter Simulator:**  Tracks are visible under Entities |  |
| 160.2 | #NSES219 #NSE761 | **MFCC1:**  In C-Flex Patrol, Check tracks on the Situtional Display | **MFCC1 and MFCC2:**  Tracks are visible on SD |  |
| 160.3 | #NSES219 #NSE761 | Navigate to the “Track List” from the Action Menu List | **MFCC1:**  All Tracks are visible |  |
| 160.4 | #NSES219 #NSE761 | **Scanter Simulator:**  In Entities tab, click on any track in the list e.g. track3 and check the Entity info | **Scanter Simulator:**  Entity info shows track’s classification and probability |  |
| 160.5 | #NSE761 | **MFCC1:**  In C-Flex Patrol, Check the track details of the same track you checked in the Simulator | **MFCC1:**  You can see the most likely and second most likely classification and the associated probability of the track |  |
| 160.6 | #BNC2607 | Navigate to the Track’s details of any track and check the “Identity” field | You can see “Identity” is either” Unknown” or “Pending” |  |
| 160.7 | #BNC2607 | Go to the Setting Center and select “Track Rules” | On the Track Rules panel, there are two options to change the threshold:   * Bird   Bird Classifier Threshold   * Drone   Drone Classifier Threshold   * Bird Classifier Threshold has default value 85% * Drone Classifier Threshold has default value 85%   Note: Threshold value is based on the configuration value and it can be changed in configuration |  |
| 160.8 | #BNC2606 | Change percentage of   * Bird Classifier Threshold to 50% * Drone Classifier Threshold to 50%.   Save the changes | Percentage is changed |  |
| 160.9 | #BNC2606 | Restart Cflex.  Go to “Track Rules” in “Setting Center”  Check both Bird Classifier Threshold and Drone Classifier Threshold | Both “Bird Classifier Threshold” and “Drone Classifier Threshold” have values saved before restarting Cflex (i.e. 50%) |  |
| 160.10 | #BNC2606 | Go to Situational Display  Open Track Rules Panel and Select Drone  Check that by changing the classifier threshhold of Drone in Setting center also changed it in DroneTrack Rules card | You can see a rule “Notify and set classification of a track as a drone when its probability of being drone exceeds 50%” with three On/Off options, under Drone category   * Enable rule * Enable Notifications/Highlighting * Auto-set track as: air, drone |  |
| 160.11 | #BNC2604 | On the “Notify and set classification of a track as a drone when its probability of being drone is 50%” rule card, turn on:   * Enable Rule | **MFCC1:**  By Enabling the rules:   * All tracks fulfilling the rule, classified as Suspect. * On SD, Tracks fulfilling the rule changed to suspects. * In Track Details card of a suspected track, Identity is changed from “Pending” or “Unknown” to “Suspect” and both Type and Category doesn’t change   **MFCC2:**  By Enabling the rules:   * All tracks fulfilling the rule, classified as Suspect. * On SD, Tracks fulfilling the rule changed to suspects. |  |
| 160.12 | #BNC2609  #BNC2610 #BNC2611 | On the “Notify and set classification of a track as a drone when its probability of being drone is 50%” rule card, turn on:   * Enable Notifications/Highlighting | **MFCC1:**   * On SD, Tracks fulfilled the rule and not classified as suspect before highlighted and an alert/notification trigger when a track fulfills the rule. * On SD, Tracks classified as suspect, are not highlighted as their identities are not Pending or Unknown anymore. * Tracks don’t fulfill the rule are not classified as Suspect and also not highlighted and there is no notification for them.   **MFCC2:**  Check that "Enable Notification/Highlights" toggle button is off and By Enabling the rules:   * On SD, suspected tracks are not highlighted. * No alert/notification triggers when a track fulfills the rule. |  |
| 160.13 | #BNC2609  #BNC2610 #BNC2611 | On the “Notify and set classification of a track as a drone when its probability of being drone is 50%” rule card, turn on:   * Auto-set track as: air, drone | **MFCC1:**  By Enabling the rules:   * All tracks fulfilling the rule and were not identified as suspect before are classified as Drones. * On SD, Tracks classified as drones changed to drones symbols and are highlighted. * An alert/notification trigger when a track fulfills the rule. * Tracks don’t fulfill the rule are not classified as Drone and also not highlighted.   **MFCC2:**  Check that "Enable Notification/Highlights" toggle button is off and By Enabling the rules:   * All the tracks fulfilling the rule, classified as Drones. * On SD, Tracks fulfilling the rule changed to drones and are not highlighted. * No alert/notification triggers when a track fulfills the rule. |  |
| 160.14 | #BNC2613  #BNC2604 | Navigate to the “Track Details” of one of the tracks fulfilling above rule and classified to a drone | **MFCC1:**  In Tracks details, track Identity is set as “Suspect”.  Track Category is set as” Air” and Type as “Drone” |  |
| 160.15 | #BNC2612 | Click on “Remove Highlight” button, in “Tracks Details” | Suspected Track is no longer highlighted. |  |
| 160.16 | #BNC2612  #BNC2610 | On the “Notify and set classification of a track as a drone when its probability of being drone is 50%”” rule card, disable both:   * Rule Enabled * Enable Notifications/Highlighting   Go to the Track Details of any one track classified as a drone earlier.  Change and save it’s Category “Air”, Type ”Drone” and Identity “friendly”  Now enable the “Notify and set classification of a track as a drone when its probability of being drone is 50%” rule again also enable “Enable Notifications/Highlighting”  Check the SD. | **MFCC1 and MFCC2:**   * Rule doesn’t work means Track is not a suspect and it’s not highlighted and there is no notification for it * Rule works only for the tracks having Identity either Pending or Unknown |  |
| 160.17 | BNC2613 | Disable above rule along with the Notifications and Highlights  Go to the Track Details of any one track classified as a drone earlier.  Change it’s Category “Ground”, Type ”Fighter” and Identity “unknown” and Save the changes  Now enable the “Notify and set classification of a track as a drone when its probability of being drone is 50%” rule again and also enable “Enable Notifications/Highlighting”  Check the SD. | **MFCC1:**  By Enabling the rules:   * Track fulfilling the rule, classified as Drone. * On SD, Track fulfilling the rule, is highlighted and changed to a drone symbol. * An alert/notification trigger when a track fulfills the rule.   **MFCC2:**  Check that "Enable Notification/Highlights" toggle button is off and By Enabling the rules:   * Track fulfilling the rule, classified as Drone and it’s symbol changed to a drone. * On SD, Track fulfilling the rule, is not highlighted. * No alert/notification triggers when a track fulfills the rule. |  |
| 160.18 | **BNC2612** | **MfCC1:**  On the “Notify and set classification of a track as a drone when its probability of being drone is 50%” rule card,  - Turn Off “Enable Notifications/Highlighting”  Remove all Tracks from the Track List and the SD  Check the tracks on SD | On SD,   * Tracks fulfilling the rule, classified as Drone and identified as a suspect. * There is no notification for the new suspected tracks fulfilling the rule and they are not highlighted. |  |
| 160.19 | [BNC2615] | On the “Notify and set classification of a track as a drone when its probability of being drone is 50%” rule card,  - Turn Off “Enable Notifications/Highlighting”  - Turn Off “Auto set track as:air, drone “  **Scanter Simulator:**   * Remove all the tracks * Re start the script “BirdDroneClassificationChange.js” | * New Tracks are no longer classified as Drone and there is no notification and tracks are not highlighted |  |
| 160.20 | BNC2606 | **MfCC1:**  Go to the Setting Center and select “Track Rules” | On the Track Rules panel, there are two options to change the threshold:   * Bird   Bird Classifier Threshold   * Drone   Drone Classifier Threshold | . |
| 160.21 | #BNC2606 | Change percentage of   * Bird Classifier Threshold to 50% * Drone Classifier Threshold to 10%.   Save the changes | Percentage has been changed |  |
| 160.22 | [BNC2609] [BNC2611] | Go to Situational Display  Open Track Rules Panel and Select Drone  Check that changing the classifier threshhold of Drone in Setting center also changed it in DroneTrack Rules card  Enable “Notify and set classification of a track as a drone when its probability of being drone is 10%” rule also enable Notifications and highlights | **MFCC1:**  Changing the classifier threshhold of Drone in Setting center also changed it in DroneTrack Rules card.  By Enabling the rules:   * All tracks fulfilling the rule, classified as Drone. * On SD, Tracks fulfilling the rule, are highlighted. * An alert/notification trigger when a track fulfills the rule. * Tracks don’t fulfill the rule are not classified as Drone and also not highlighted.   **MFCC2:**  Check that "Enable Notification/Highlights" toggle button is off and By Enabling the rules:   * All the tracks fulfilling the rule, classified as Drone. * On SD, Tracks fulfilling the rule, are not highlighted. * No alert/notification triggers when a track fulfills the rule. |  |
| 160.23 | [BNC2608] | GO to Track Rules panel and disable the Drone rule along with the notification and highlights  Delete all the tracks from the Track List.  In Setting Center, change Drone classifier threshold to 100 and Save it | * Drone detection rule is disabled * Drone classifier Threshold changed to 100% |  |
| 160.24 | [BNC2609] [BNC2611] | Go to Situational Display  Open Track Rules Panel and Select Drone  Check that changing the classifier threshhold of Drone in Setting center also changed it in DroneTrack Rules card  Enable “Notify and set classification of a track as a drone when its probability of being drone is 100%” rule also enable Notifications and highlights | **MFCC1:**  Changing the classifier threshhold of Drone in Setting center also changed it in DroneTrack Rules card.  By Enabling the rules:   * All tracks fulfilling the rule, classified as Drone. * On SD, Tracks fulfilling the rule, are highlighted. * An alert/notification trigger when a track fulfills the rule. * Tracks don’t fulfill the rule are not classified as Drone and also not highlighted.   **MFCC2:**  Check that "Enable Notification/Highlights" toggle button is off and By Enabling the rules:   * All the tracks fulfilling the rule, classified as Drone. * On SD, Tracks fulfilling the rule, are not highlighted. * No alert/notification triggers when a track fulfills the rule. |  |
| 160.25 | [BNC2610] [BNC2608 [BNC2612] | In Track Rules panel, turned off Drone rule along with notification and highlights  **Scanter Simulator:**   * Remove all the tracks * Restart the script “BirdDroneClassificationChange.js”   **MFCC1:**  Check the tracks on SD | New Tracks are no longer classified as Drone and there is no notification and track are not highlighted |  |
| 160.26 | [BNC2604] | * Navigate to the rule card panel. * Enable Drone detection rule and Enable notifications and highlighting for it. * Now Enable any other rule. * Navigate to the Operational Notifications | **MFCC1:**  Multiple rules can be enabled together.   * Get the notifications for all Tracks fulfilling the enabled rules and Tracks are Highlighted |  |
| 160.27 | [BNC2613] | * Turn off all Enabled rules. * Delete all Tracks from the Track List * Go to the Track Details of anyone track and in Description field write “AØÆÆ / %67test) name ??” and save it * Create one Manual track with Category “Air”, Type “Unknown” and Identity “Unknown/ Pending” * Now in Track Rules panel, turn on Drone rule along with notification and highlights * Check the notification for the track with changed name | * All rules are disabled * All Tracks deleted from SD and then reappears * Track name is changed on SD * Manual track is created on SD * Rules is enabled and suspected tracks are notified and highlighted except the Manual track,as Drone rule doesn’t work for manual track   Notification has the changed name “AØÆÆ / %67test) name ??” |  |
| 160.28 | [BNC2613] | **Scanter SIM.**  Start script Load\_test\_Random\_moving\_tracks.js  **MFCC1 and MFCC2:**  Check SD on both MFCCs | Script started and there are moving tracks on SD of MFCC1 And MFCC2 |  |
| 160.29 | #BNC2615 | **MFCC1:**  In “Track Filters” panel , go to the “Exclude Track Filters” and turn on Drone filter. Check SD | After turning on Drone Exclude filter, all tracks fulfilling drone rule are not visible on the situational display anymore. |  |
| 160.30 | #BNC2617 #BNC2619 | * Restart Cflex * Check Drone rules * Check Exclude Drone filter in Track Filters panel | * Cflex restarted * Drone rules that was enabled before the restart is still enabled * Exclude drone filter is still On in Track filters panel. * On SD, no track fulfilling the drone rule, is visible. |  |
| 160.31 | #BNC2617 #BNC2619 | Turn off Drone Exclude filter from the Track Filters panel and Check SD | After turning off Drone Exclude filter, all tracks fulfilling drone rule are visible again on the situational display |  |

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## Test Case : Standalone ADS-B

### Description

This test case is testing if tracks from a ADS-B Sim. are readable.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

* Start C-Flex Patrol.
* Start Scenario Simulator.
* Start Sensorsim ADS-B Simulator.

### Requirements

**Stakeholder Requirement:**

[BNCS178] As a Picture Compiler, I want the system to receive tracks from an ADS-B unit so I can get relevant information from civilian aircrafts.

**Accept Criteria:**

[BNC789] As a minimum the system shall support readout of aircraft data: identification, current position, altitude, and velocity.

[BNC790] I want to be able to turn processing of the ADS-B reports on and off.

**Stakeholder Requirement:**

[BNCS736] As a System Configurator, I want that the system implements the specified ADS-B interface, so I can ensure proper integration with the subsystem.

**Accept Criteria:**

[BNC2173] I want the system to implement the ADS-B Receiver interface in compliance with AN101-PlaneTRack\_Asterix\_formats-ApplicationNote.

### Test Execution

| **Patrol – System Upgrade** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 161.1 |  | **MFCC1:**   * Open Burger Menu * Go to the Settings Center * Check Standalone ADS-B Source is turned ON   **ADS-B Simulator:**  Add a track  **MFCC1 and MFCC2:**  Check the track on SD | **MFCC1 and MFCC2:**  ADS-B track is visible |  |
| 161.2 |  | **ADS-B Simulator:**  In Entiy tab, click on track and check the Entity Info  **MFCC1 and MFCC2:**  Open the Track details of the ADS-B track. | * Track is showing the same info as shown in the ADS-B simulator. * Track Category is set as Air |  |
| 161.3 |  | **MFCC1:**   * Open Burger Menu * Go to the Settings Center * Disable Standalone ADS-B Source * Save it * Go to the SD again * Wait for the tracks from ADS-B to disappear | After turning Off “Standalone ADS-B source”, track from ADS-B disappears from the SD  Check that track disappears from mfcc2 also |  |
| 161.4 |  | **ADS-B Simulator**  Create a Track with following data   * Course, * position, * altitude, * speed * Mode S Addr. * Mode 3A * Mode C * Mode S CallSign * Inculde Sim: ADS-B * Exclude Sim: Scanter,IFF   **MFCC1 and MFCC2:**  Check the SD | No track is coming from ADS-B |  |
| 161.5 |  | **MFCC1:**   * Open Burger Menu * Go to the Settings Center * Enable Standalone ADS-B Source * Save it * Go to the SD again | Tracks from ADS-B are visible now |  |
| 161.6 |  | Open Track Details of the above ADS-B track | Following info is same as it’s in the ADS-B Sim.   * Course, * position, * altitude, * speed * Mode S Addr. * Mode 3A * Mode C * Mode S CallSign |  |
| 161.7 |  | In Track Details, turn on   * Designate to Camera * Designate to Effector | It’s possible to designate the ADS-B trac to the camera and the effector |  |
| 161.8 |  | In Track Details, click Hook | It is possible to Hook and Unhook the ADS-B track |  |
| 161.9 |  | **ADS-B Simulator:**  Delete the tracks in ADS-B  **MFCC1 and MFCC2:**  Check tracks on SD | ADS-B Tracks are no longer available on SD |  |

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## Test Case : Bird Filter

### Description

Filtering of tracks classified as Bird.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

* Start C-Flex Patrol
* Start Scenario Simulator
* Start Scanter6002 Simulator
* All Rules are disabled in Cflex

### Requirements

**Stakeholder Requirement**:

[BNCS845] As an Operator, I want to be notified of tracks that are likely to be drones, and be able to classify and manage them so that I can take appropriate actions and declutter the situational display.

**Acceptance Criteria:**

[BNC2605] I want to be able to use pre-defined rules to determine when a track which is "Pending" or "Unknown" is considered likely to be a bird.   
 [BNC2606] I want to be able to specify the probability thresholds that define when a track is considered likely to be a drone or a bird.

[BNC2607] I want to be able to configure the default values for probability thresholds.

[BNC2608] I want to be able to enable or disable these detection rules for either or both drones and birds.

[BNC2609] I want to be able receive notifications when a track fulfills the drone detection rule, including details about the fulfilled rule.

[BNC2610] I want to be able to enable or disable drone detection rule notifications.

[BNC2614] I want the system to be able to automatically classify any track that meets the bird rule as Category "Air" and Type "Bird".

[BNC2616] I want to be able to show or hide tracks that have been classified as Type "Bird". [BNC2617] I want the drone and bird rule settings to be persisted.

[BNC2619] I want the drone and bird filter settings to be persisted.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 162.1 |  | **Scanter Simulator:**   * Navigate to the Scripts tab * In Folder list, select scripts/birdsanddrones * Start the script “BirdDroneClassificationChange.js” * Go to Entities tab | **Scanter Simulator:**  Tracks are visible under Entities |  |
| 162.2 |  | **MFCC1:**  In C-Flex Patrol, Check tracks on the Situtional Display | **MFCC1 and MFCC2:**  Some tracks are visible on SD |  |
| 162.3 |  | Navigate to the “Track List” from the Action Menu List | **MFCC1:**  All Tracks are visible |  |
| 162.4 |  | **Scanter Simulator:**  In Entities tab, click on any track in the list e.g. track3 and check the Entity info | **Scanter Simulator:**  Entity info shows track’s classification and probability |  |
| 162.5 |  | **MFCC1:**  In C-Flex Patrol, Check the track details of the same track you checked in the Simulator | **MFCC1:**  You can see the most likely and second most likely classification and the associated probability of the track |  |
| 162.6 |  | Navigate to the Track’s details of any track and check the “Identity” field | You can see “Identity” is either” Unknown” or “Pending” |  |
| 162.7 |  | Go to the Setting Center and select “Track Rules” | On the Track Rules panel, there are two options to change the threshold:   * Bird   Bird Classifier Threshold   * Drone * Drone Classifier Threshold   Both Bird Classifier Threshold and Drone Classifier Threshold has default value 85%  Note: this default value is based on what has been set in configuration. It can be changed |  |
| 162.8 |  | Change percentage of   * Bird Classifier Threshold to 50% * Drone Classifier Threshold to 50%. * Save the changes | Percentage has been changed |  |
| 162.9 |  | Go to Situational Display  Open Track Rules Panel and Select Bird  Check that changing the classifier threshhold of Bird in Setting center also changed it in BirdTrack Rules card | -You can see a rule   * Set classification of a track as a bird when its probability of being a bird exceeds 50%”, with two options, under Bird category   -Above bird rule has one On/Off options   * Auto set track as: air,bird |  |
| 162.10 |  | Enable the “Set classification of a track as a bird when its probability of being a bird exceeds 50%” rule | **MFCC1:**  By Enabling the rules:   * All tracks fulfilling the rule, classified as birds. * On SD, Tracks fulfilling the rule, change to birds icons. * No alert/notification triggers when a track fulfills the rule. * Tracks don’t fulfill the rule are not classified as birds and icon on SD doesn’t change to birds   **MFCC2:**  Check that by Enabling the rules:   * All the tracks fulfilling the rule, classified as birds. * On SD, Tracks fulfilling the rule, are not highlighted. * No alert/notification triggers when a track fulfills the rule. |  |
| 162.11 |  | Navigate to the “Track Details” panel of any one of the tracks fulfilling above enabled rule | **MFCC1:**  In “Tracks details”,   * Track Identity is either “Pending” or “Unknown”. * Track Category is set as” Air”   Type as “Bird” |  |
| 162.12 |  | Check “Remove Highlight” button, in “Tracks Details” | “Remove Highlight” button is Inactive. |  |
| 162.13 |  | Navigate to the track doesn’t fulfill the rule and check it’s “Track Details” | Track’s most likely classification is not a bird and that’s why rule doesn’t work for it |  |
| 162.14 |  | In Track Rules Panel, enable Drone rule along with notifications and highlights | * On SD, tracks fulfilling the Drone rule, change to Drone from Birds * Tracks changed to drones are highlighted * An Operational notification triggers when a track fulfills the drone rule |  |
| 162.15 |  | Go to the Track Details card of the track converted to a drone | Track has a   * Type set as a Drone. * Identity set as Suspect * Category set as air |  |
| 162.16 |  | In Track Rule Panel disabled all enabled rules | Rules are disabled |  |
| 162.17 |  | Delete all tracks from SD and from the Track List | Tracks are deleted and new tracks appeared |  |
| 162.18 |  | In Track Rules Panel enable “Track most likely classified as a bird” | **MFCC1:**  By Enabling the rules:   * All tracks fulfilling the rule, classified as birds. * On SD, Tracks fulfilling the rule, change to birds’ icons. * No alert/notification triggers when a track fulfills the rule. * Tracks don’t fulfill the rule are not classified as birds and icon on SD doesn’t change to birds   **MFCC2:**  Check that by Enabling the rules:   * All the tracks fulfilling the rule, classified as birds. * On SD, Tracks fulfilling the rule, are not highlighted. * No alert/notification triggers when a track fulfills the rule. |  |
| 162.19 |  | Navigate to the “Track Details” panel of any one of the tracks fulfilling above enabled rule | **MFCC1:**  In “Tracks details”,   * Track Identity is either “Pending” or “Unknown”. * Track Category is set as” Air”   Type is set as “Bird” |  |
| 162.20 |  | Disable above rule .  Go to the Track Details of the track having scanter’s most likely classification as a Bird.  Change it’s Category “Air”, Type ”Fighter” and Identity “unknown”  Now enable the “Track most likely classified as a bird” rule again.  Check the SD. | **MFCC1:**  Track changes to a bird after fulfilling the rule  In “Tracks details”,   * Track Identity is either “Pending” or “Unknown”. * Track Category is set as” Air”   Type as “Bird” |  |
| 162.21 |  | **MfCC1:**   * Disable all enabled rules * Delete all Tracks both from Sd and from the Track List * Go to the Track rules panel in Setting Center and change “Bird Classifier Threshold” to 100% and save it | * All rules are disabled * All tracks are deleted and new track reappeared * Bird Classifier Threshold is 100% now |  |
| 162.22 |  | Enable the “Set classification of a track as a bird when its probability of being a bird exceeds 100%” rule | **MFCC1:**  By Enabling the rules:   * All tracks fulfilling the rule, classified as birds. * On SD, Tracks fulfilling the rule, change to birds icons. * No alert/notification triggers when a track fulfills the rule. * Tracks don’t fulfill the rule are not classified as birds and icon on SD doesn’t change to birds   **MFCC2:**  Check that by Enabling the rules:   * All the tracks fulfilling the rule, classified as birds. * On SD, Tracks fulfilling the rule, are not highlighted. * No alert/notification triggers when a track fulfills the rule. |  |
| 162.23 |  | Navigate to the “Track Details” panel of any one of the tracks fulfilling above enabled rule | **MFCC1:**  In “Tracks details”,   * Track Identity is either “Pending” or “Unknown”. * Track Category is set as” Air”   Type as “Bird” |  |
| 162.24 |  | **Scanter SIM.**  Start script Load\_test\_Random\_moving\_tracks.js  **MFCC1 and MFCC2:**  Check SD on both MFCCs | Script started and there are moving tracks on SD of MFCC1 And MFCC2 |  |
| 162.25 |  | **MFCC1:**  In “Track Filters” panel, go to the “Exclude Track Filters” and turn on Bird filter. Check SD | After turning on Bird Exclude filter, all tracks fulfilling bird rule are not visible on the situational display anymore |  |
| 162.26 |  | * Restart Cflex * In Track Rules panel, Check Bird rule * In Track Filter panel, check Exclude Bird filter in Track Filters panel | * Cflex restarted. * Bird rule is still On * Exclude bird filter is still On in Track filters panel. * On SD, no track fulfilling the bird rule, is visible |  |
| 162.27 |  | Turn off Bird Exclude filter from the Track Filters panel and Check SD | After turning off Bird Exclude filter, all tracks fulfilling bird rule are visible again on the situational display |  |
| 162.28 |  | Go to the Track Rules panel and enable some other rules along with notifications and highlight, from “Default” drop down list. | * Other rules are enabled together with Bird rule * There is a notification for the track when it fulfills any other rule   Track is highlighted on SD when it fulfills any other rule |  |
| 162.29 |  | Turn off all enbaled rules and filters | All rules and filters are turned off |  |

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## Test Case 163: Operator guide

### Description

This Test Case is testing the systems ability to use the Operator guide.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

User manual corresponding to the system in test is available in C-flex Patrol.

### Requirements

???

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 163.1 |  | **MFCC**  In the burger menu at the top right, select “Help Center” | The “C-flex Patrol, Operator Guide” opens op. |  |
| 163.2 |  | Search for all the new or updated features introduced in the system under test to check that they are documented in the Operator Guide. | New and updated features has their functionality correctly descriped in the Operator Guide. |  |

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## Test Case 164: Load test

### Description

This Test Case is testing the system’s load test.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Start logviewer

### Requirements

???

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 164.1 |  | **MFCC:**  Create one of each type of patterns and polygons with attached alerts. | Patterns and polygons created. |  |
| 164.2 |  | Create three areas and one with attached alerts. | Areas are created. |  |
| 164.3 |  | Set sea chart to show all details. | All details are shown on the situations display |  |
| 164.4 |  | Enable two to three rules in ‘Track Rules’ and activate ‘Highlight and Notification’ for them. | All rules enabled with ‘Highlight and Notification’. |  |
| 164.5 |  | Enable Sudden Course/Speed change rules with the following values:  **Air**  Course: 90 deg  Speed: 15 knots  Period: 5 sec | Enable CPA and Sudden Course/Speed change rules enabled. |  |
| 164.6 |  | **Simulator:**  In the scenario simulator run the  Performance testing script.js | **MFCC:**  Tracks shows up on the situation display |  |
| 164.7 |  | Let the script run for 2 weeks. |  |  |
| 164.8 |  | **MFCC:**  Check Patrol for usability issues (any lag/latency when using the system) | No usability issues |  |
| 164.9 |  | **MFCC:**  Check that no erroneous alerts relating to the interface or application are received in Patrol | No errors |  |
| 164.10 |  | **Log viewer:**  Check that no error log regarding the interface or application occur in the log viewer | No errors |  |

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## Test Case 165: Track Correlation

### Description

This Test Case is testing the System’s ability to automatically correlate tracks.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-scanter6002
4. sensorsim-arpa
5. sensorsim-ais

### Requirements

**Stakeholder Requirement:**

[BNCS133] As a Picture Compiler, I want the system to automatically correlate track measurements from available sources into one system track, so I see the correct number of entities in the area.

**Accept Criteria:**

[BNC573] I want that the system does not automatically correlate a source track to a system track conflicting category. The only exception is the category Unknown which doesn't generate a conflict.

[BNC574] I want that the system does not automatically correlate a source track to a system track containing a conflicting unique IFF track identification (Mode S Address).

[BNC577] I want that a source track only correlates automatically into a system track with a track quality above a configurable correlation quality threshold.

[BNC578] I want that the system uses available track source measurement accuracies to determine possible correlations. The best matching system track shall be chosen for automatic correlation of the source track.

[BNC579] If a new source track does not match any existing system track, I want the system to generate a new system track correlated with this source track.

[BNC580] I want that the system for a recently generated system track, tries to correlate the source track to another existing system track. If successful, the newly generated system track shall be cancelled.

[BNC581] I want that a source track is only correlated to one system track.

**Stakeholder Requirement:**

[BNCS711] As an Operator, I want to have a good overview of the status of connected subsystems, so that I can determine the overall combat/mission readiness of the platform.

**Accept Criteria:**

[BNC1004] I want to be able to view the status of connections to integrated systems (and the operational status to the extent it is available), for e.g. sensors, effectors and link systems.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. | Best match correlation | | | |
| 165.1 | #BNC1004 | **Simulator PC**  In the sensorsim-gps navigate to the “Scripts” tab.  Locate the Script: “**!OwnUnit.js**”andrun it by clicking the “Start” button**.** | **Simulator PC**  Under the “Entities” tab, a new entity has been created with the ID: OWN\_UNIT  **MFCC**  Open the Burger Menu and select “Own Unit Management”.  View the “Own Unit Source Status” section.  The system shows it is receiving data from the GPS source via a green icon. |  |
| 165.2 |  | **Simulator PC**  In the sensorsim-ais navigate to the “Entities” tab.  Add AIS track by clicking on the “Add” button. | **Simulator PC**  “Add Entity” window is opened. |  |
| 165.3 | #BNC579 | **Simulator PC**   1. In the “Add Entity” window input the following values into the input fields:  * **ID:** AIS * **Position:** 570000N/0110000E * **Include Sim:** AIS * **MMSI\*:** 219000000  1. Select Role(s):  * **Note**: *The* ***Role*** *field is a multi-select list.* * *To select multiple entries, hold down the Ctrl key while clicking each option.* * Ensure both **Track** and **AIS:Class\_A** are highlighted.  1. Enable "**Changing Course**":  * Locate the Changing Course checkbox. * Ensure it is checked (ticked).   Click **OK** to create the track. | **Simulator PC**  Under the “Entities” tab, a new entity has been created with the ID: AIS  **MFCC**  AIS system track is added to the situation display, with the track name: 219000000.  In the Track List, the track is denoted with the Source Icon asscociated with the AIS Sensor.  Under the Track Card details the TQ of the track can be seen to be: 11. |  |
| 165.4 |  | **Simulator PC**  In the sensorsim-arpa navigate to the “Poistion/Range” tab.  Under the section “Range” set the input field to be: 5000.00  Now navigate to the “Entities” tab.  Add an ARPA track by clicking on the “Add” button. | **Simulator PC**  “Add Entity” window is opened. |  |
| 165.5 | #BNC578  #BNC579  #BNC581 | **Simulator PC**  In the “Add Entity” window input the following values into the input fields:   * **ID:** ARPA * **Position:** 570000N/0110000E * **Include Sim:** ARPA   Click **OK** to create the track. | **Simulator PC**  Under the “Entities” tab, a new entity has been created with the ID: ARPA  **MFCC**  An ARPA Track is now created on the situation display and is correlated into the existing system track “219000000” created in Test Step 165.3.  This can be seen by navigating to the “**Track List**” and seeing that the system track now has Source Icons from both AIS and ARPA.  Example output:    Under the Track Card details the TQ of the track can be seen to be: 12. |  |
| Comm. | Minimum quality threshold | | | |
| 165.6 |  | **Simulator PC**  In the sensorsim-scenariosimulator navigate to the “Entities” tab.  Remove all entities except OWN\_UNIT.  In the sensorsim-adsb navigate to the “Entities” tab.  In the “Add Entity” window input the following values into the input fields:   * **ID:** ADSB * **Position:** 560000N/0120000E * **Include Sim:** ADSB * **NACp:** 1 (*equivalent to TQ: 2-3*) * **Mode S Addr:** 1   Click **OK** to create the track. | **MFCC**  Existing tracks are lost from the situation display.  ADSB system track is created in the situation display.  The source of the created track can be seen by navigating to the Track List and seeing that the system track now has Source Icons from ADS-B. |  |
| 165.7 | #BNC577 | **Simulator PC**  In the sensorsim-mssr2000 navigate to the “**Poistion/Range**” tab.  Under the section “**Range**” set the input field to be: 5000.00  Now navigate to the “Entities” tab and click on “**Add**”  In the “Add Entity” window input the following values into the input fields:   * **ID:** IFF * **Position:** 560000N/0120000E * **Include Sim:** MSSR2000   Click **OK** to create the track. | **MFCC**  System track is created in the situation display.  The source of the created track can be seen by navigating to the Track List and seeing that the system track now has Source Icons from IFF.  The two tracks are not automatically correlated and are unique. |  |
| Comm. | Re-correlation on position | | | |
| 165.8 |  | **Simulator PC**  In the sensorsim-scenariosimulator navigate to the “Entities” tab.  Remove all entities except OWN\_UNIT.  In the sensorsim-arpa navigate to the “**Entities**” tab.  Add an ARPA track by clicking on the “**Add**” button.  In the “**Add Entity**” window input the following values into the input fields:   * **ID:** A1 * **Position:** 563000N/0120000E * **Include Sim:** ARPA   Click **OK** to create the track. | **MFCC**  Existing tracks are lost from the situation display.  An ARPA Track is now created on the situation display. |  |
| 165.9 |  | **Simulator PC**  In the sensorsim-scanter6002 navigate to the “**Entities**” tab.  Add a Scanter track by clicking on the “**Add**” button.  In the “**Add Entity**” window input the following values into the input fields:   * **ID:** S1 * **Position:** 563050N/0120000E * **Include Sim:** SCANTER   Click **OK** to create the track. | **MFCC**  A Scanter system track is created on the situation display a little further way from the system track created in Test Step 165.6. |  |
| 165.10 |  | **Simulator PC**  In the sensorsim-scanter6002 navigate to the “Entities” tab.  Highlight the Entity “S1” and click on “Edit”. | **Simulator PC**  The Edit Entity window opens. |  |
| 165.11 | #BNC580 | **Simulator PC**  Update the input field to be:   * **Position:** 563012N/0120000E   Click **OK** to update the track.  (*Closer to the system track created in Test Step* 165.6). | **MFCC**  The Scanter track is now automatically correlated with the system track which was created in Test Step 165.6, and the Scanter system track diserpears. |  |
| Comm. | Static data conflict | | | |
| 165.12 |  | **Simulator PC**  In the sensorsim-scenariosimulator navigate to the “Entities” tab.  Remove all entities except OWN\_UNIT.  In the sensorsim-adsb navigate to the “**Entities**” tab.  Add an ADS-B track by clicking on the “**Add**” button.  In the “**Add Entity**” window input the following values into the input fields:   * **ID:** ADSB * **Position:** 570000N/0120000E * **Altitude:** 3000 (*air track*) * **Include Sim:** ADSB * **NACp:** 11 * **Mode S Callsign:** 1 * **Mode S Addr:** F00000   Click **OK** to create the track. | **MFCC**  Existing tracks are lost from the situation display.  An ADSB Air track is created on the situation display. |  |
| 165.13 | #BNC574 | **Simulator PC**  In the sensorsim-mssr2000 navigate to the “Entities” tab.  Add an IFF track by clicking on the “Add” button.  In the “Add Entity” window input the following values into the input fields:   * **ID:** IFF * **Position:** 570000N/0120000E * **Altitude:** 3000 (*air track*) * **Include Sim:** MSSR2000 * **Mode S Callsign:** 1 * **Mode S ID (ICAO Address):** F00001   Click **OK** to create the track. | **MFCC**  The IFF (MSSR2000) track does not correlate with the existing ADSB system track.  The IFF system track is generated at the same position with different ICAO address (*This can be checked on the track details of each individual track*). |  |
| 165.14 |  | **Simulator PC**  In the sensorsim-adsb remove the ADSB track and wait until the ADSB track is terminated. | **MFCC**  The ADSB system track is terminated and removed from the situation display.  The IFF (MSSR2000) track is still displayed. |  |
| 165.15 | #BNC573 | **Simulator PC**  In the sensorsim-arpa navigate to the “**Entities**” tab.  Add an ARPA track by clicking on the “**Add**” button.  In the “**Add Entity**” window input the following values into the input fields:   * **ID:** ARPA * **Position:** 570000N/0120000E * **Altitude:** 0.0 (*surface track*) * **Include Sim:** ARPA   Click **OK** to create the track. | **MFCC**  The ARPA track is not correlated with the IFF (MSSR2000) track.  A new ARPA system track is created with category: Surface, on the situation requirement. |  |

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## Test Case 166: Track Correlation

### Description

This Test Case is testing the System’s ability to automatically correlate tracks.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-arpa
4. sensorsim-phobos

### Requirements

**Stakeholder Requirement:**

[BNCS133] As a Picture Compiler, I want the system to automatically correlate track measurements from available sources into one system track, so I see the correct number of entities in the area.

**Accept Criteria:**

[BNC575] I want that the system does not automatically correlate a source track to a system track containing a conflicting unique AIS track identification (MMSI).

[BNC582] I want that only one source track from the same source is automatically correlated to a given system track.

[BNC583] I want that the system can correlate a bearing line into an existing system track.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. | EW Line correlation | | | |
| 166.1 |  | **Simulator PC**  In the sensorsim-gps navigate to the “Scripts” tab.  Locate the Script: “**!OwnUnit.js**”andrun it by clicking the “Start” button**.** | **Simulator PC**  Under the “Entities” tab, a new entity has been created with the ID: OWN\_UNIT  **MFCC**  Open the Burger Menu and select “Own Unit Management”.  View the “Own Unit Source Status” section.  The system shows it is receiving data from the GPS source via a green icon. |  |
| 166.2 |  | **Simulator PC**  Under the “Entities” tab, highlight the OWN\_UNIT entitiy and click on “Edit”.  Edit Entity window opens.  Under the field “**Position**” change the position to: 565000N/0110000E | **MFCC**  Own Unit is visible on the situation display at the given location. |  |
| 166.3 |  | **Simulator PC**  In the sensorsim-arpa navigate to the “Poistion/Range” tab.  Under the section “Range” set the input field to be: 5000.00  Now navigate to the “Entities” tab.  Add an ARPA track by clicking on the “Add” button. | **Simulator PC**  “Add Entity” window is opened. |  |
| 166.4 |  | **Simulator PC**  In the “Add Entity” window input the following values into the input fields:   * **ID:** ARPA * **Position:** 570000N/0110000E   Click **OK** to create the track. | **Simulator PC**  Under the “Entities” tab, a new entity has been created with the ID: ARPA  **MFCC**  An ARPA Track is now created on the situation display.  Example output: |  |
| 166.5 |  | **Simulator PC**  In the sensorsim-phobos navigate to the “Entities” tab.  Add an EW bearing line by clicking on the “Add” button. | **Simulator PC**  “Add Entity” window is opened. |  |
| 166.6 | #BNC583 | **Simulator PC**  In the “Add Entity” window input the following values into the input fields:   * **ID:** PHOBOS * **Emitter name:** 1 * **Identity:** 2 * **Spotnumber:** 3   Click “OK” to add the track. | **MFCC**  EW bearing Line is generated on the Situation Display, emanating from the own unit track.  And after a split second it auto-correlates with the ARPA system track. This can be seen on the “Track List”.  Example output: |  |
| Comm. | Track correlation behavior demonstration. | | | |
| 166.7 | #BNC582 | **Simulator PC**  In the sensorsim-arpa navigate to the “Entities” tab.  Add an ARPA track by clicking on the “Add” button.  “Add Entity” window is opened.  In the “Add Entity” window input the following values into the input fields:   * **ID:** ARPA\_2 * **Position:** 570000N/0110000E   Click **OK** to create the track. | **MFCC**  An ARPA Track is now created on the situation display and it is not automatically correlated with the existing system track. |  |
| 166.8 | #BNC582 | **MFCC**  Highlight the two system tracks created in test step 166.6, and 166.7.  In the bottom of the “Track List”, click on “**Merge**”, to manually correlate the highlighted system tracks. | **MFCC**  The two systems tracks cannot be correlated as they contain local tracks from the same source (*ARPA*).  A notification will appear denoting that: *Source tracks from same sources present in correlation*. |  |

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## Test Case 167: Track Correlation

### Description

This Test Case is testing the System’s ability to automatically correlate tracks and fuse track data.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-gps
3. sensorsim-scanter6002
4. sensorsim-arpa
5. sensorsim-mssr2000

### Requirements

**Stakeholder Requirement:**

[BNCS135] As a Picture Compiler, I want the system to monitor track correlations and automatically decorrelate no longer matching data into separate system tracks to show the correct number of entities in the area.

**Accept Criteria:**

[BNC593] I want that, when a source track measurement no longer matches the system track, the source track including its static data is decorrelated from the system track. A decorrelated source track shall either be correlated to another existing system track or result in generation of a new system track.

[BNC594] If a track decorrelates from a system track, I want that the existing system track stays with the older source track.

**Stakeholder Requirement:**

[BNCS139] As a Picture Compiler, I want the system to automatically fuse track data from available sources into one system track to show the best information for the track.

**Accept Criteria:**

[BNC603] I want that the system track is kept updated with data from the correlated source tracks.

[BNC606] I want that when source tracks contributing to a system track have different categories, the highest severity shall be chosen (i.e. Space, Air, Subsurface, Ground, Surface, Reference Point, Emergency Point, Unknown).

[BNC607] I want that the system presents identity of system tracks (i.e. Friendly, Hostile, Suspect, Assumed Friendly, Neutral, Unknown, Pending) according to the behavior of the physical entity. The default identity for new tracks shall be Pending.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 167.1 |  | **Simulator PC**  In the GPS simulator run the following script: “**!OwnUnit.js**”. | **Simulator PC**  In the Entities tab, “OWN\_Unit” is listed under entities.  **MFCC**  The Own Unit has moved to the correct position on the Sit. Display. |  |
| 167.2 |  | In the ARPA Simulator, navigate to the Position/Range tab.  Under “**Range**” insert 5000.00 km in the range field and click “**Apply**”.  Navigate to the “Entities” tab and click “**Add**”.  In the “Add Entity” window insert the following values:   * **ID**: ARPA\_1 * **Position**: 570000N/0110000E * **Include Sim**: ARPA   Click “**OK**” to add the track. | **Simulator PC**  The source track, is listed under “Entities” in the “Entities” tab.  **MFCC**  The Track is shown on the Sit. Display as a System Track and listed in the Track List.  Under Track Details, the ARPA symbol is highlighted.  **Note**: Make sure to write down the “Track Number” of the track. |  |
| 167.3 |  | In the ARPA Simulator, add another track with the following values:   * **ID**: ARPA\_2 * **Position**: 570000N/0120000E * **Speed**: 1.00 * **Include Sim**: ARPA   Click “**OK**” to add the track. | **Simulator PC**  The source track, is listed under “Entities” in the “Entities” tab.  **MFCC**  The Track is shown on the Sit. Display as a System Track and listed in the Track List.  Under Track Details, the ARPA symbol is highlighted.  **Note**: Make sure to write down the “Track Number” of the track. |  |
| 167.4 | #BNC603 | In the SCANTER 6002 Simulator, navigate to the Entities tab.  Click “**Add**” and in the “Add Entity” window insert the following values:   * **ID**: SCANTER6002 * **Position**: 570000N/0120000E * **Speed**: 1.00 * **Include Sim**: SCANTER   Click “**OK**” to add the track. | **Simulator PC**  Both the SCANTER track and the two ARPA tracks are now listed under “Entites” in the Entity tab as three different source tracks.  **MFCC**  On the Sit. Display, the SCANTER- and the ARPA\_2 source tracks are automatically correlated into one system track.  The system track is listed in the Track List, with both the SCANTER and the ARPA icon highlighted.  The system track is kept updated with data from the correlated source tracks.  Verify, that the Track Number of the system Track has not changed, although the SCANTER track has correlated with the existing ARPA\_2 track. |  |
| 167.5 | #BNC593 | In the SCANTER 6002 Simulator, navigate to the the Entities tab.  Click on the SCANTER source track and then click “**Edit**”.  Change the following values:   * **Position**: 570000N/0110000E * **Speed**: 0.0   Click “**OK**” to edit the track. | **Simulator PC**  In the Entites list, the position of the SCANTER source track has changed to 570000N/0110000E.  **MFCC**  On the Sit. Display, the SCANTER and the ARPA\_2 source track are automatically decorrelated. The SCANTER source track is correlated with the ARPA\_1 track.  Verify, that the Track Number of the system Track has not changed, although the SCANTER track has correlated with the existing ARPA\_1 track. |  |
| 167.6 | #BNC593  #BNC594 | In the SCANTER 6002 Simulator, navigate to the the Entities tab.  Click on the SCANTER source track and then click “**Edit**”.  Change the following values:   * **Position**: 560000N/0120000E   Click “**OK**” to edit the track. | **Simulator PC**  In the Entites list, the position of the SCANTER source track has changed to 560000N/0120000E.  **MFCC**  On the Sit. Display, the SCANTER- and the ARPA source tracks are automatically decorrelated and a third System Track is created.  The three System tracks are listed in the track list.  Verify, that the new System Track has a new Track Number, and the previous has kept its number. |  |
| 167.7 | #BNC607 | **MFCC**  In the **ActionMenuList** navigate to “**Track List**”.  Select a track and open its “**Track Details**”. | The Track Details Action panel is opened.  Verify, that the Identity of the track is set to “pending” by default.  Verify that the category is set to “surface” by default. |  |
| 167.8 | #BNC607 | Expand the “**Identity**” drop-down list. | Verify, that the following categories are available:   * Assumed friendly * Friendly * Hostile * Neutral * Pending * Suspect * Unknown |  |
| 167.9 |  | **Simulator PC**  In the MSSR2000 Simulator, navigate to the “**Position / Range**” tab and set the range to “**5000.00**”.  Click “**Apply**”. | **Simulator PC**  Verify, that the range has been set to 5000 kilometers. |  |
| 167.10 |  | Navigate to the Entities tab and click “**Add**”.  In the “Add Entity” window inser the follwing values:   * **ID**: IFF * **Position**: 563000N/0113000E * **Exclude sim**: SCANTER and ARPA * **Role**: Track   Click “**OK**” to add the track. | The source track, is listed under “Entities” in the “Entities” tab.  **MFCC**  A system track has been created on the Sit. Display |  |
| 167.11 |  | **MFCC**  In the ActionMenuList, navigate to the “**Track** **List**”.  Find the source newest track and expand to “**Track Details**”. | Verify, that the “**IFF**” Icon is highlighted in the top.  Verify, that the category of the track is set to “**Air**”. |  |
| 167.12 |  | **Simulator PC**  In the SCANTER 6002 Simulator, navigate to the the Entities tab.  Click on the SCANTER source track and then click “**Edit**”.  Change the following values:   * **Position**: 563000N/0113000E   Click “**OK**” to edit the track. | **Simulator PC**  In the Entites list, the position of the SCANTER source track has changed to 560000N/0120000E.  **MFCC**  Verify, that the track has changed position. |  |
| 167.13 | #BNC606 | **MFCC**  In the “**Track** **List**”, highligt the “**IFF**” and the “**SCANTER**” track, by clicking on them.  In the bottom of the action panel click “**Merge**”. | Verify, that the system tracks have been merged, and the category of the track is now the one with the highest severity (Air). |  |

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## Test Case 168: System Track Information and Updates

### Description

This Test Case is testing the System’s ability to automatically fuse track data from available sources into one system track,

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulators PC start the following simulators:

1. sensorsim-scenariosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[BNCS139] As a Picture Compiler, I want the system to automatically fuse track data from available sources into one system track to show the best information for the track.

**Accept Criteria:**

[BNC616] I want that a system track changes state to Lost when all the source tracks are terminated or Lost.

**Stakeholder Requirement:**

[BNCS143] As a Picture Compiler, I want the system to handle track numbering and relations to external track numbers from e.g. Link, in order to have a unique reference for each track.

**Accept Criteria:**

[BNC623] I want that the system allocates a unique track number for each system track.

**Stakeholder Requirement:**

[BNCS162] As a Picture Compiler, I want the system to receive tracks from a Surveillance Radar, so that I can detect all entities within my radars detection range.

**Accept Criteria:**

[BNC700] I want to be able to monitor the following information from the SCANTER radar: Tracking quality, SCANTER lacks, track id, type and update time.

**Stakeholder Requirement:**

[BNCS242] As an Operator, I want to view tracks known by the system on a sea chart, so that I can quickly comprehend the situation.

**Accept Criteria:**

[BNC2430] I want that lost tracks are presented blinking at the latest registered position on the situation display.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 168.1 |  | **MFCC:**  Click in the action panel on track list. | **MFCC:**  Track list opens and the tracks shown on the SD are listed. |  |
| 168.2 |  | **Simulator PC**  In the SCANTER 6002 simulator under Entities tab, click ‘Add’ to add a manual track. Fill out the ID (e.g. ‘xxx’) and set the position to 563000N/0110000E. Set role to ‘track’ and click ‘OK’ to add the track.  **MFCC:**  Remember the unique track number that is shown on the SD (e.g. ‘SYS0001’) | **MFCC:**  Track is generated and with a unique track number it is shown on the SD and listed in the track list. |  |
| 168.3 | #BNC700 | **MFCC:**  In the track list find the track and go to track details, by clicking on the ‘>’. | **MFCC:**  Detailed information about the track are shown on the action panel.   * Tracking quality (TQ) * SCANTER Lacks * SCANTER TrackId * SCANTER Type * SCANTER Update Time |  |
| 168.4 | #BNC616  #BNC2430 | **Simulator PC**  In the SCANTER 6002 simulator click on the manually added track so it is marked blue.  Click then on the ‘Remove’ button, to terminate the simulation and wait 15 seconds. | **MFCC:**  In the track list the scanter Icon under the track changes to ‘- - -‘ when the connection is lost.  And the track starts blingking on the SD. After around 45 seconds the track disapears on the SD and on the track list. |  |
| 168.5 | #BNC623 | **Simulator PC**  Repead step 168.2.  **MFCC:**  Check if the unique track number (e.g. SYS0002) is different from the one created in step 168.2. | **MFCC:**  A track is generated and with a unique track number shown on the SD and listed in the track list. |  |

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## Test Case 169: Recording and Replay

### Description

This Test Case is testing the System’s recording and replay functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS420] As an Operator, I want to record operational data in a named and timestamped collection, so that it can e.g. be replayed for debriefing purposes or exported for use ashore as evidence in court.

[BNCS424] As an Operator, I want to record operational data such as weather, tracks and tactical events in a named and timestamped collection, so that it can e.g. be replayed for debriefing purposes.

**Accept Criteria:**

[BNC1705] I want to be able to start a new recording.

[BNC1768] I want to be able to start replay from any point in time within a recording sequence

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. | Starting a new recording | | | |
| 169.1 |  | **MFCC**  In the ActionMenuList navigate to Tactical Recording. | **MFCC**  Tactical Recording ActionPanel is opened. |  |
| 169.2 |  | **MFCC**  Observe the recording button and its status | **MFCC**  The status is “Off” |  |
| 169.3 | #BNC1705 | **MFCC**  Press the recording button.  OPTIONAL: In the Name text field, give the recording a name of your own choosing.  NB: It is recommended to make a recording that is between 45 seconds and a minute | **MFCC**  Status is switched to “On”, and recording time is updated every second. |  |
| 169.4 |  | **MFCC**  Press the toggle button for recording again. | **MFCC**  The “Recording” is toggled as “Off”, and the fields for name, recording time and remaining time are cleared and reset. |  |
| Comm. | Replaying a recording | | | |
| 169.5 |  | **MFCC**  Under the burger menu, click on the “Tactical Replay” option | **MFCC**  The “Tactical Replay” canvas screen is opened |  |
| 169.6 |  | **MFCC**  In the ActionMenuList, navigate to the “Tactical Replay” button and click it | **MFCC**  The recording(s) made earlier show up as a list, with the correct card name, as well a start and end time for recording. |  |
| 169.7 |  | **MFCC**  For the specific tactical recording, press the arrow icon “**>**” at the right end of the card view. | **MFCC**  C-Flex navigates to the action menu details for the specific tactical recording. |  |
| 169.8 |  | **MFCC**  Observe the contents of the menu | **MFCC**  The menu should contain the data for the tactical recording:   * Name (the one that was entered earlier when creating the recording) * Start time * End time   Additionally, there is the option in the menu to generate the data as a report.  The second sub-menu titled “**Replay Control**” is also in this view, and contains a panel allowing the user to play, stop, skip and backtrack recordings. Also, the menu has a read-only textfield that shows the timestamp of what is replayed in real time. Finally, the menu also allows users to edit the time interval of the skip functions, and to increase or decrease the replay speed of the recording. |  |
| 169.9 |  | **MFCC**  Press the replay button | **MFCC**  The recording is playing at normal speed, showing all the movements on the map happening in real time – if any. |  |
| 169.10 | #BNC1727 | **MFCC**  Press the pause button | **MFCC**  The recording stops, and the screen no longer replays the flow of actions, and time no longer updates. |  |
| 169.11 |  | **MFCC**  Press skip forward button | **MFCC**  The timestamp skips 10 seconds ahead and proceeds as usual with replay. |  |
| 169.12 |  | **MFCC**  Press skip backwards button. | **MFCC**  The replay time is reversed to ten seconds earlier, then proceeds as usual with replay. |  |
| 169.13 |  | **MFCC**  Press the stop button | **MFCC**  The replay sequence will pause, and all other buttons except for the play button will be disabled. |  |
| 169.14 |  | **MFCC**  When at the very start of the replay session, press the skip backwards button | **MFCC**  The replay time will simply backtrace to the start time of the recording, if within ten seconds of the starting time. |  |
| 169.15 |  | **MFCC**  When within ten seconds of the end of the replay, press the skip forward button. | **MFCC**  The replay time will simply reach the end of the recording. |  |
| 169.16 |  | **MFCC**  In the text field for skip interval(s), adjust the time to be 15 seconds instead of 10 (the default value). | **MFCC**  The skip interval value is now 15 instead of 10 |  |
| 169.17 |  | **MFCC**  Pause the replay sequence, then press the skip forward button. | **MFCC**  The time of the replay sequence button is now 15 seconds later than what it was before the button was pressed. |  |
| 169.18 |  | **MFCC**  Adjust the replay speed to 3x normal. | **MFCC**  The replay sequence plays at a 3x accelerated speed. |  |

### Comments

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## Test Case 170: Radar Suppression Zones

### Description

This Test Case is testing the System’s Radar Suppression Zones functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenatiosimulator
2. sensorsim-scanter6002

### Requirements

**Stakeholder Requirement:**

[NSES182] As an Operator, I want to control the SCANTER Radar tracker to optimize its tracking capabilities to my mission.

**Accept Criteria:**

[NSE524] I want to be able to define geographically fixed polygon-type Non-Tracking Zones for Normal mode and for MTI mode independently for the SCANTER Radar.  
[NSE525] I want to be able to define geographically fixed polygon-type Non-Automatic Acquisition Zones for Normal mode and for MTI mode independently for the SCANTER Radar.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 170.1 |  | **MFCC**  In the ActionMenuList, open “**Areas and Zones**”.  Expand the drop down list “**Create Area**” and click on “**Create Polygon Area**”. | **MFCC**  The “**Polygon area details**” Action Panel is opened. |  |
| 170.2 |  | In the “**Polygon area details**” Action Panel, create a area:   * **Name**: “Zone 1” * **Add points using mouse click**: is toggled to “On” * **Add points**: Use the pointing device to mark a area, by clicking on its corner points.   Click “**Save**”.  Under “**Properties**” toggle “Visible” to “**On**”.  Click “**Save**” | A polygon area is created and shown on the situational display. |  |
| 170.3 |  | In the ActionMenuList, open “**Radar Control & Video**”.  Click on “**Scanter 6002**”. | The “**Scanter 6002**” Action Panel is opened. |  |
| 170.4 |  | Under “Control” click on “**Suppression Zone Settings**”.  Then click on “**Create Suppression Zone**”. | The “**Suppression Zones**” Action Panel is opened. |  |
| 170.5 | [BNCXXXX] | Expand the “**Polygon Area**” drop down list and click on “Zone 1”.  Toggle the “**NTZ-Surface**” button to “**On**”.  Click “**Save**”. | The “Suppression Zones” Action Panel opens.  “Zone 1” created in step 170.2, is now defined as a normal Non-Tracking Zone. |  |
| 170.6 | [BNCXXXX] | Expand the “**Zone 1**” suppression Zone by clicking on “**>**”.  Toggle the “**NTZ-Surface**” button to “**Off**” and the “**NTZ-Air**” button to “**On**”.  Click “**Save**”. | The “Suppression Zones” Action Panel opens.  “Zone 1” created in step 170.2, is now defined as a MTI Non-Tracking Zone. |  |
| 170.7 | [BNCXXXX] | Expand the “**Zone 1**” suppression Zone by clicking on “**>**”.  Toggle the “**NTZ-Air**” button to “**Off**” and the “**NAAZ-Surface**” button to “**On**”.  Click “**Save**”. | The “Suppression Zones” Action Panel opens.  “Zone 1” created in step 170.2, is now defined as a normal Non-Automatic Acquisiton Zone. |  |
| 170.8 | [BNCXXXX] | Expand the “**Zone 1**” suppression Zone by clicking on “**>**”.  Toggle the “**NAAZ-Surface**” button to “**Off**” and the “**NAAZ-Air**” button to “**On**”.  Click “**Save**”. | The “Suppression Zones” Action Panel opens.  “Zone 1” created in step 170.2, is now defined as a MTI Non-Automatic Acquisiton Zone. |  |

### Comments

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## Test Case 171: GLL and VTG NMEA Messages for OU Integration

### Description

This Test Case is testing the System’s ability to support standard interfaces for navigation data.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. NMEA2OwnUnit Simulator

### Requirements

**Story:**

[BNCS743] As a System Configurator, I want the system to support standard interfaces for navigation data, so I can select between different subsystems.

**Accept Criteria:**

[BNC2629] I want the system to be able to support position data, as provided by the standard NMEA GLL sentence.

[BNC2630] I want the system to be able to support course over ground and ground speed, as provided by the standard NMEA VTG sentence.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 171.1 |  | **MFCC**  In the ActionMenuList, open “**Own Unit**”. | **MFCC**  Make sure the following categories are set to calculated (indicated by the calculator icon):   * Position * Positional Dilution * Course / Speed |  |
| 171.2 |  | In the BurgerMenu, navigate to “**Own Unit Management**”.  Open the “**Own Unit Management**” tab. | Make sure the following categories are set to calculated:   * Position * Course / Speed |  |
| 171.3 |  | Open the “**Own Unit Source Status**” tab. | The “Own Unit Source Status” tab is opened.  All indication lights are red, since the sensors do not send any information. |  |
| 171.4 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator navigate to the “**Position GLL**” tab and insert the following values:   * **Latitude**: 5600   + **Direction**: NORTH (N) * **Longitude**: 01100   + **Direction**: EAST (E) * **Tx**: Check   Click “**Start**”. | **Simulator PC**  After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. |  |
| 171.5 |  | In the NMEA2OwnUnit Simulator navigate to the “**Course and Speed VTG**” tab and insert the following values:   * **Course True, T**: 000 * **Course Magnetic, M**: 350 * **Speed Knots, N**: 7 * **Speed Km/h, K**: 12.96 * **Tx**: Check   Click “**Start**”. | After a short while the Port Status indicator changes from red to green.  Status text updates to:  Server started, Tx enabled, Connected. |  |
| 171.6 | #BNC2629  #BNC2630 | **MFCC**  In the “**Own Unit Source Status**” tab expand the “**Geographic Position (GLL)**” field and the “**Course Over Ground and Ground Speed (VTG)**” field. | **MFCC**  Verify that the indication light for GLL and VTG has changed to **green**.  Check that the position data and the course and speed, provided by the standard NMEA simulator is correct. |  |
| 171.7 | #BNC2629  #BNC2630 | Open the “**Own Unit Mangement**” tab. | Verify that the following categories have changed to sensor:   * Position * Course / Speed   Check that the position data and the course and speed, provided by the standard NMEA simulator is correct. |  |
| 171.8 | #BNC2629  #BNC2630 | Navigate back to the SD and in the ActionMenuList, open the “**Own Unit**” action panel. | Verify that the following categories have changed to sensor (the calculator symbol disappeared):   * Position * Positional Dilution * Course / Speed   Check that the position data and the course and speed, provided by the standard NMEA simulator is correct. |  |
| 171.9 |  | **Simulator PC**  In the NMEA2OwnUnit Simulator navigate to the “**Position GLL**” and click “**Stop**”. | **Simulator PC**  After a short while the Port Status indicator changes from green to red.  Status text updates to:  Server stopped, Tx enabled, Disconnected. |  |
| 171.10 |  | In the NMEA2OwnUnit Simulator navigate to the “**Course and Speed VTG**” and click “**Stop**”. | After a short while the Port Status indicator changes from green to red.  Status text updates to:  Server stopped, Tx enabled, Disconnected. |  |
| 171.11 |  | **MFCC**  In the ActionMenuList, open “**Own Unit**”. | **MFCC**  Make sure the following categories have changed back to calculated (indicated by the calculator icon):   * Position * Positional Dilution * Course / Speed |  |
| 171.12 |  | In the BurgerMenu, navigate to “**Own Unit Management**”.  Open the “**Own Unit Management**” tab. | Make sure the following categories have changed back to calculated:   * Position * Course / Speed   Verify that the values can now be changed manually |  |
| 171.13 |  | Open the “**Own Unit Source Status**” tab. | The “Own Unit Source Status” tab is opened.  Verify that all indication lights are changed back to red, and the sensor is not reporting anything. |  |

### Comments

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## Test Case 172: Change the Size of Track Symbols

### Description

This Test Case is testing the System’s ability to change the size of track symbols.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC1 and MFCC2.

### Requirements

**Stakeholder Requirement:**

[BNCS242] As an Operator, I want to view tracks known by the system on a sea chart, so that I can quickly comprehend the situation.

**Accept Criteria:**

[BNC2628] I want to be able to adjust the size of track symbols on the situational display, with changes saved per console and persisting across operational use.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 172.1 |  | **MFCC1**  In the ActionMenuList, navigate to “**Tactical Recording**”.  Insert a name and toggle recording to “On”. | **MFCC1**  Check, that a recording has started |  |
| 172.2 |  | In the ActionMenuList, open “**Create New Track**” and insert the following:   * **Track**: Tick it * **Name**: Track 1 * **Position**: 56°00'00"N - 011°00'00"E   Click “**Save**”. | A track is created, shown on the Situational Display and listed in the Track List. |  |
| 172.3 | #BNC2628 | In the ActionMenuList, open “**View Options**”.  Under Track Detail Graphics change the “**Track Symbol Size**” to 100. | All tracks on the screen are turned up to 100% visibility. |  |
| 172.4 |  | **MFCC2**  In the BurgerMenu, navigate to “**Tactical Replay**”.  Open the tactical replay created in step 172.1 and press play. | **MFCC2**  The tactical replay is playing. |  |
| 172.5 | #BNC2628 | Navigate to “**View Options**” in the tactical replay and change the “**Track Symbol Size**” to 0. | Make sure the track symbol size is set to 0%. |  |
| 172.6 |  | Wait 5-6 minutes, then in the Burger Menu click “Exit Application” to close down C-Flex Patrol.  If needed close the Application down in the task manager aswell. | Make sure the application is fully closed down. |  |
| 172.7 |  | Start C-Flex Patrol again. | Patrol is up and running |  |
| 172.8 |  | **MFCC1**  In the ActionMenuList, open “**Create New Track**” and insert the following:   * **Track**: Tick it * **Name**: Track 2 * **Position**: 56°00'00"N - 011°00'00"E   Click “**Save**”. | **MFCC1**  A track is created, shown on the Situational Display and listed in the Track List. |  |
| 172.9 | #BNC2628 | In the ActionMenuList, open “**View Options**”. | Under Track Detail Graphics make sure the “**Track Symbol Size**” is already set to 100% visibility by default. |  |
| 172.10 |  | **MFCC2**  In the BurgerMenu, navigate to “**Tactical Replay**”.  Open the tactical replay created in step 172.1 and press play. | **MFCC2**  The tactical replay is playing |  |
| 172.11 | #BNC2628 | Navigate to “**View Options**” in the tactical replay. | Under Track Detail Graphics make sure the “**Track Symbol Size**” is already set to 0% visibility by default. |  |

### Comments

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## Test Case 173: IFF Silent Sector Functionality

### Description

This Test Case is testing the System’s IFF Silent Sector Functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

On the simulator PC start the following simulators:

1. sensorsim-scenatiosimulator
2. sensorsim-gps
3. sensorsim-mssr2000

### Requirements

**Story:**

[NSES185] As an Operator, I want to control the MSSR2000I IFF Interrogator, so I can interrogate and receive information.

**Accept Criteria:**

[NSE550] I want to be able to define north-referenced silence sectors and switch them on and off.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. |  | | | |
| 173.1 |  | **Simulator PC**  In the GPS Simulator, navigate to “**Scripts**”.  Click on “**!OwnUnit.js**” and then click “Start”. | **Simulator PC**  Navigate to the Entities tab and make sure the simulation is running. |  |
| 173.2 |  | In the IFF Interrogator MSSR2000 Simulator, navigate to “**Position/ Range**”.  Make sure the Position is set to OWN\_UNIT  Set the range to 5000 km.  Click “**Apply**” | Check, that the position and range are set correctly. |  |
| 173.3 |  | In the IFF Interrogator MSSR2000 Simulator, navigate to “**Scripts**”.  Run the following simulation: “**Load\_test\_Random\_mooving\_surface\_tracks.js**” | In the Entities tab make sure the simulation is running.  **MFCC**  Verify that the tracks are shown on the situational display. |  |
| 173.4 |  | **MFCC**  In the ActionMenuList, open “**IFF**”.  Navigate to “**IFF Silent Sectors**”. | **MFCC**  “**IFF Silent Sector**” Action Panel is opened.  Verify that 8 different Silent Sectors can be defined in the Action Panel. |  |
| 173.5 | #NSE550 | Expand “**Silent Sector 1**” by clicking on “**>**”.  And insert the following values:   * **From**: 270 deg * **To**: 090 deg   Toggle Activate to “**On**” and click “**Save**”. | Verify that the Silent sector has been defined, and is turned on.  The radar symbol in the “Silent Sector 1” box is now green, indicating that the silent sector has been activated.  Verify that all tracks within the defined Silent Sector are starting to blink, until they fully disappear from the situational display and the track list. |  |
| 173.6 | #NSE550 | **MFCC**  Wait until the tracks within the range of the defined silent sector have disappeared.  Then, epand “**Silent Sector 1**” by clicking “**>**”.  Turn “**Off**” the Silent sector and click “**Save**”. | **MFCC**  Verify that the Silent Sector is turned off and tracks are showing up on the SD again. |  |

### Comments

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## Test Case 174: Link 16 compliance

### Description

This Test Case is testing the systems Link 16 compliance functionality.

### Test Environment

C-Flex Patrol release under test must be installed.

### Automation Level

N/A

### Test Data

N/A

### Test Prerequisites

Open C-Flex Patrol on MFCC.

### Requirements

**Stakeholder Requirement:**

[BNCS139] As a Picture Compiler, I want the system to automatically fuse track data from available sources into one system track to show the best information for the track.

**Accept Criteria:**

[BNC611] I want that the system supports track types compliant with Link 16.

### Test Execution

| **Patrol – System Test** | | | | |
| --- | --- | --- | --- | --- |
| **TS** | **Ref.** | **Input / Action** | **Expected Output** | **OK** |
| Comm. | View supported track types | | | |
| 174.1 | #BNC611 | **MFCC:**  Generate a manual air track.  Select the track and open the expanded track data pull-down menu and view track types. | **MFCC:**  Among other, the following air track types are supported:   1. fighter 2. missile 3. helicopter 4. attack helicopter 5. patrol |  |
| 174.2 | #BNC611 | Generate a manual surface track.  Select the track and open the expanded track data pull-down menu and view surface track types. | Among other, the following surface track types are supported:   1. aircraft carrier 2. frigate 3. patrol 4. tanker/oiler 5. fishing vessel 6. merchant vessel |  |
| 174.3 | #BNC611 | Generate a manual sub-surface track.  Select the track and open the expanded track data pull-down menu and view sub-surface track types. | Among other, the following sub-surface track types are supported:   1. attack submarine 2. surface vessel 3. cruise missile launcher 4. nuclear ballistic missile submarine |  |
| 174.4 | #BNC611 | Generate a manual ground track.  Select the track and open the expanded track data pull-down menu and view ground track types. | Among other, the following ground track types are supported:   1. tank 2. surface-to-air missile site 3. fortification 4. artillery 5. convoy |  |

### Comments

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# Annex A

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| Basis for geografisk retvisende kort | | | |  |
| **Object class name** | **Surf** | **Air** | **Name** | **Desc** |
| COALNE | Y | Y | Coastline | Omrids |
| DEPARE | Y | Y | Depth area | Kystområder der vises som land, men ER vand. Viser også dybder hvilket giver lidt clutter |
| DRGARE | Y | Y | Dredged area | Havneomr der vises som land men er udgravet så det er vand |
| LNDARE | Y | Y | Land area | Kystområder der vises som vand, men ER land |
| LAKARE | Y | Y | Lake |  |
| RIVERS | Y | Y | River |  |
|  |  |  |  |  |
| Additionally selected | |  |  |  |
| **Object class name** | **Surf** | **Air** | **Name** | **Desc** |
| AIRARE | Y | Y | Airport/airfield |  |
| BERTHS | Y | Y | Berth |  |
| BRIDGE | Y | Y | Bridge |  |
| BUAARE | Y | Y | Built-up area | Viser byområder - skal det med. |
| LNDMRK | Y | Y | Landmark |  |
| OBSTRN | Y | Y | Obstruction |  |
| OFSPLF | Y | Y | Offshore platform |  |
| OSPARE | Y | Y | Offshore production area |  |
| PYLONS | Y | Y | Pylon/bridge support |  |
| RESARE | Y | Y | Restricted area | Bruger man dette |
| UNSARE | Y | Y | Unsurveyed area |  |
| UWTROC | Y | Y | Underwater/awash rock |  |
|  |  |  |  |  |
| BCNCAR | Y | N | Beacon, cardinal | En god del clutter |
| BCNISD | Y | N | Beacon, isolated danger |  |
| BCNLAT | Y | N | Beacon, lateral |  |
| BCNSAW | Y | N | Beacon, safe water |  |
| BCNSPP | Y | N | Beacon, special purpose/general | Stående gul firkant |
| DWRTCL | Y | N | Deep water route centerline |  |
| DWRTPT | Y | N | Deep water route part |  |
| FERYRT | Y | N | Ferry route |  |
| TSELNE | Y | N | Traffic separation line |  |
| TSEZNE | Y | N | Traffic separation zone |  |
| TSSBND | Y | N | Traffic separation scheme boundary | |
| TSSCRS | Y | N | Traffic separation scheme crossing |  |
| TSSLPT | Y | N | Traffic separation scheme lane part |  |
| TSSRON | Y | N | Traffic separation scheme roundabout | |
|  |  |  |  |  |
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| Out! |  |  |  |  |
| **Object class name** | **Surf** | **Air** | **Name** | **Desc** |
| $AREAS | N | N | Cartographic area |  |
| $COMPS | N | N | Compass |  |
| $CSYMB | N | N | Cartographic symbol |  |
| $LINES | N | N | Cartographic line |  |
| $TEXTS | N | N | Text |  |
| ACHARE | N | N | Anchorage area |  |
| ACHBRT | N | N | Anchor berth |  |
| ADMARE | N | N | Administration Area (Named) |  |
| ARCSLN | N | N | Archipelagic sea lane |  |
| ASLXIS | N | N | Archipelagic sea lane axis |  |
| BOYCAR | N | N | Buoy, cardinal | Giver meget clutter - skal snakke med Torkil om præcis hvilke der skal på |
| BOYINB | N | N | Buoy, installation |  |
| BOYISD | N | N | Buoy, isolated danger |  |
| BOYLAT | N | N | Buoy, lateral |  |
| BOYSAW | N | N | Buoy, safe water |  |
| BOYSPP | N | N | Buoy, special purpose/general |  |
| BUISGL | N | N | Building, single | Good landmark or clutter? |
| C\_AGGR | N | N | Aggregation |  |
| C\_ASSO | N | N | Association |  |
| C\_STAC | N | N | Stacked on/stacked under |  |
| CANALS | N | N | Canal |  |
| CANBNK | N | N | Canal bank |  |
| CAUSWY | N | N | Causeway |  |
| CBLARE | N | N | Cable area |  |
| CBLOHD | N | N | Cable, overhead |  |
| CBLSUB | N | N | Cable, submarine |  |
| CGUSTA | N | N | Coastguard station |  |
| CHKPNT | N | N | Checkpoint |  |
| CONVYR | N | N | Conveyor |  |
| CONZNE | N | N | Contiguous zone |  |
| COSARE | N | N | Continental shelf area |  |
| CRANES | N | N | Crane |  |
| CTNARE | N | N | Caution area |  |
| CTRPNT | N | N | Control point |  |
| CTSARE | N | N | Cargo transhipment area |  |
| CURENT | N | N | Current - non-gravitational |  |
| CUSZNE | N | N | Custom zone |  |
| DAMCON | N | N | Dam |  |
| DAYMAR | N | N | Daymark |  |
| DEPCNT | N | N | Depth contour | Måske til ASW sub warfare, men nok for meget clutter til ASuW |
| DISMAR | N | N | Distance mark |  |
| DMPGRD | N | N | Dumping ground |  |
| DOCARE | N | N | Dock area |  |
| DRYDOC | N | N | Dry dock |  |
| DYKCON | N | N | Dyke |  |
| EXEZNE | N | N | Exclusive economic zone |  |
| FAIRWY | N | N | Fairway |  |
| FLODOC | N | N | Floating dock |  |
| FNCLNE | N | N | Fence/wall |  |
| FOGSIG | N | N | Fog signal |  |
| FORSTC | N | N | Fortified structure |  |
| FRPARE | N | N | Free port area |  |
| FSHFAC | N | N | Fishing facility |  |
| FSHGRD | N | N | Fishing ground |  |
| FSHZNE | N | N | Fishery zone |  |
| GATCON | N | N | Gate |  |
| GRIDRN | N | N | Gridiron |  |
| HRBARE | N | N | Harbour area (administrative) |  |
| HRBFAC | N | N | Harbour facility |  |
| HULKES | N | N | Hulk |  |
| ICEARE | N | N | Ice area |  |
| ICNARE | N | N | Incineration area |  |
| ISTZNE | N | N | Inshore traffic zone |  |
| LAKSHR | N | N | Lake shore |  |
| LIGHTS | N | N | Light | Vildt meget clutter |
| LITFLT | N | N | Light float |  |
| LITVES | N | N | Light vessel |  |
| LNDELV | N | N | Land elevation |  |
| LNDRGN | N | N | Land region |  |
| LOCMAG | N | N | Local magnetic anomaly |  |
| LOGPON | N | N | Log pond |  |
| LOKBSN | N | N | Lock basin |  |
| M\_ACCY | N | N | Accuracy of data |  |
| M\_COVR | N | N | Coverage |  |
| M\_CSCL | N | N | Compilation scale of data |  |
| M\_HDAT | N | N | Horizontal datum of data |  |
| M\_HOPA | N | N | Horizontal datum shift parameters |  |
| M\_NPUB | N | N | Nautical publication information |  |
| M\_NSYS | N | N | Navigational system of marks |  |
| M\_PROD | N | N | Production information |  |
| M\_QUAL | N | N | Quality of data |  |
| M\_SDAT | N | N | Sounding datum |  |
| M\_SREL | N | N | Survey reliability |  |
| M\_UNIT | N | N | Units of measurement of data |  |
| M\_VDAT | N | N | Vertical datum of data |  |
| MAGVAR | N | N | Magnetic variation |  |
| MARCUL | N | N | Marine farm/culture |  |
| MIPARE | N | N | Military practice area | Nyttigt nok - hælder til nej |
| MORFAC | N | N | Mooring/Warping facility |  |
| NAVLNE | N | N | Navigation line |  |
| NEWOBJ | N | N | New object |  |
| OILBAR | N | N | Oil barrier |  |
| PILBOP | N | N | Pilot boarding place |  |
| PILPNT | N | N | Pile |  |
| PIPARE | N | N | Pipeline area |  |
| PIPOHD | N | N | Pipeline, overhead |  |
| PIPSOL | N | N | Pipeline, submarine/on land |  |
| PONTON | N | N | Pontoon |  |
| PRCARE | N | N | Precautionary area |  |
| PRDARE | N | N | Production/storage area |  |
| RADLNE | N | N | Radar line |  |
| RADRFL | N | N | Radar reflector |  |
| RADRNG | N | N | Radar range |  |
| RADSTA | N | N | Radar station |  |
| RAILWY | N | N | Railway |  |
| RAPIDS | N | N | Rapids |  |
| RCRTCL | N | N | Recommended route centerline |  |
| RCTLPT | N | N | Recommended traffic lane part |  |
| RDOCAL | N | N | Radio calling-in point |  |
| RDOSTA | N | N | Radio station |  |
| RECTRC | N | N | Recommended track |  |
| RETRFL | N | N | Retro-reflector |  |
| RIVBNK | N | N | River bank |  |
| ROADWY | N | N | Road |  |
| RSCSTA | N | N | Rescue station |  |
| RTPBCN | N | N | Radar transponder beacon |  |
| RUNWAY | N | N | Runway |  |
| SBDARE | N | N | Seabed area |  |
| SEAARE | N | N | Sea area/named water area |  |
| SILTNK | N | N | Silo/tank |  |
| SISTAT | N | N | Signal station, traffic |  |
| SISTAW | N | N | Signal station, warning |  |
| SLCONS | N | N | Shoreline construction | Principielt med, men for småt til at være vigtigt i AW og SW |
| SLOGRD | N | N | Sloping ground |  |
| SLOTOP | N | N | Slope topline |  |
| SMCFAC | N | N | Small craft facility |  |
| SNDWAV | N | N | Sand waves |  |
| SOUNDG | N | N | Sounding |  |
| SPLARE | N | N | Sea-plane landing area |  |
| SPRING | N | N | Spring |  |
| SQUARE | N | N | Square |  |
| STSLNE | N | N | Straight territorial sea baseline |  |
| SUBTLN | N | N | Submarine transit lane |  |
| SWPARE | N | N | Swept Area |  |
| T\_HMON | N | N | Tide - harmonic prediction |  |
| T\_NHMN | N | N | Tide - non-harmonic prediction |  |
| T\_TIMS | N | N | Tide - time series |  |
| TESARE | N | N | Territorial sea area |  |
| TIDEWY | N | N | Tideway |  |
| TOPMAR | N | N | Topmark |  |
| TS\_FEB | N | N | Tidal stream - flood/ebb |  |
| TS\_PAD | N | N | Tidal stream panel data |  |
| TS\_PNH | N | N | Tidal stream - non-harmonic prediction | |
| TS\_PRH | N | N | Tidal stream - harmonic prediction |  |
| TS\_TIS | N | N | Tidal stream - time series |  |
| TUNNEL | N | N | Tunnel |  |
| TWRTPT | N | N | Two-way route part |  |
| VEGATN | N | N | Vegetation |  |
| WATFAL | N | N | Waterfall |  |
| WATTUR | N | N | Water turbulence |  |
| WEDKLP | N | N | Weed/Kelp |  |
| WRECKS | N | N | Wreck |  |