

FURUNO

INSTRUCTION MANUAL

LINE OF POSITION (LOP)

Model FMD-3005/3100/3200/3200-BB/3300



FURUNO ELECTRIC CO., LTD.

www.furuno.com

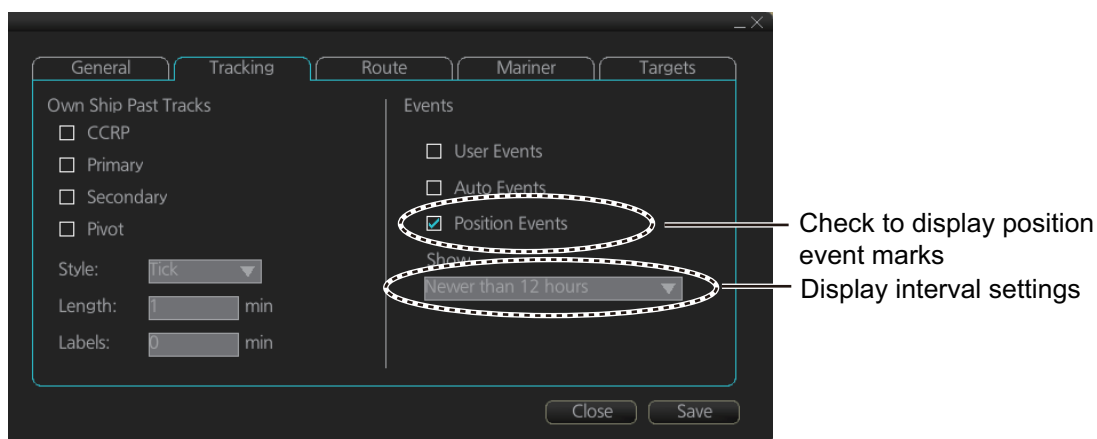
The purpose of this manual is to provide detailed instruction for the use of the Line of Positions (LOPs) function in the FMD-3005/3100/3200/3200-BB/3300.

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1. How to Show Line of Positions (LOPs)

Position event marks denote the position determined by an LOP on the chart. To show the position event marks, open the Symbol Display menu then the Tracking page. Check Position Events then click the Save button.



The Show drop down menu sets the display interval for all events (User event, Auto event and Position event). The choices are Newer than 12 hours, Newer than 24 hours, Newer than 1 week, Newer than 2 weeks, Newer than 1 month, Newer than 3 month, and All.

The purpose of the display interval setting is to limit the amount of events shown on the display. The log will not be erased.

2. LOP Function

How to use the LOP function

On the InstantAccess bar™, click LOG, Event Log and POSN Event to show the Position Event dialog box.

The screenshot shows the 'Position Event' dialog box. It has a title bar with a close button. Inside, there's a dropdown menu labeled 'LOP' (1) with two empty input fields below it (2). A message 'Too few observations.' is displayed. Below that are 'Record' (3) and 'DR' (4) buttons. A section titled 'LOP Observations' contains a dropdown menu (5) with 'Transfer off' selected, and 'Add' (6) and 'Delete' (7) buttons. Below these are 'new' (8) and '/0' (8) fields, an 'Object Name:' label (9), and two coordinate input fields (10) showing '00° 00.000' N' and '000° 00.000' W'. There are also 'True Bearing' (11) and 'True Bearing:' (12) fields, and a 'Distance:' field (14) showing '1.00 NM'. A timestamp '2018-01-16 10:05:48' is shown, along with a 'Clear All Lines' button (15) and a 'Close' button at the bottom right.

(1) Position Event

Select the type of position event.

LOP: Own ship position input by LOP

Position: Position input by navigation sensors.

Manual: Position input manually.

(2) Position input by LOP

- Two position lines: EP (Estimated Position)

- Three or more position lines: DR (Dead Reckoning Position)

(3) Record button

Save the position determined by LOP to the Voyage log. The position must be EP or DR to be saved to the log.

(4) DR button

Convert position to DR position. The position is converted regardless whether GPS data is received or not.

(5) Transfer setting

How to transfer LOPs. This setting is applied to all LOPs.

- Transfer OFF: LOPs are not transferred.

- Continuous Transfer: LOPs are transferred continuously.

- Transfer to Last: All LOPs are transferred to last inputted position.

(6) Add button

Click to add an LOP.

(7) Delete button

Click to delete the LOP selected at (8).

(8) LOP selection

Select an LOP. When a new LOP is added, all entered LOPs are shown. A maximum of six LOPs can be input.

(9) Object name

ENC chart: The name of the selected chart object appears.

ARCS chart: No display

(10) LOP reference position

Input reference latitude and longitude position of LOP.

(11) LOP setting method

Select the LOP setting method, among Bearing, Distance, or Bearing and Distance.

(12) LOP bearing (from own ship)

Input, change the true bearing (as measured from own ship) of the LOP. (The angle is the ship's bearing as viewed from LOP reference position.)

(13) LOP bearing (from object)

Input, change the true bearing (as measured from the object) of the LOP.

(14) LOP distance

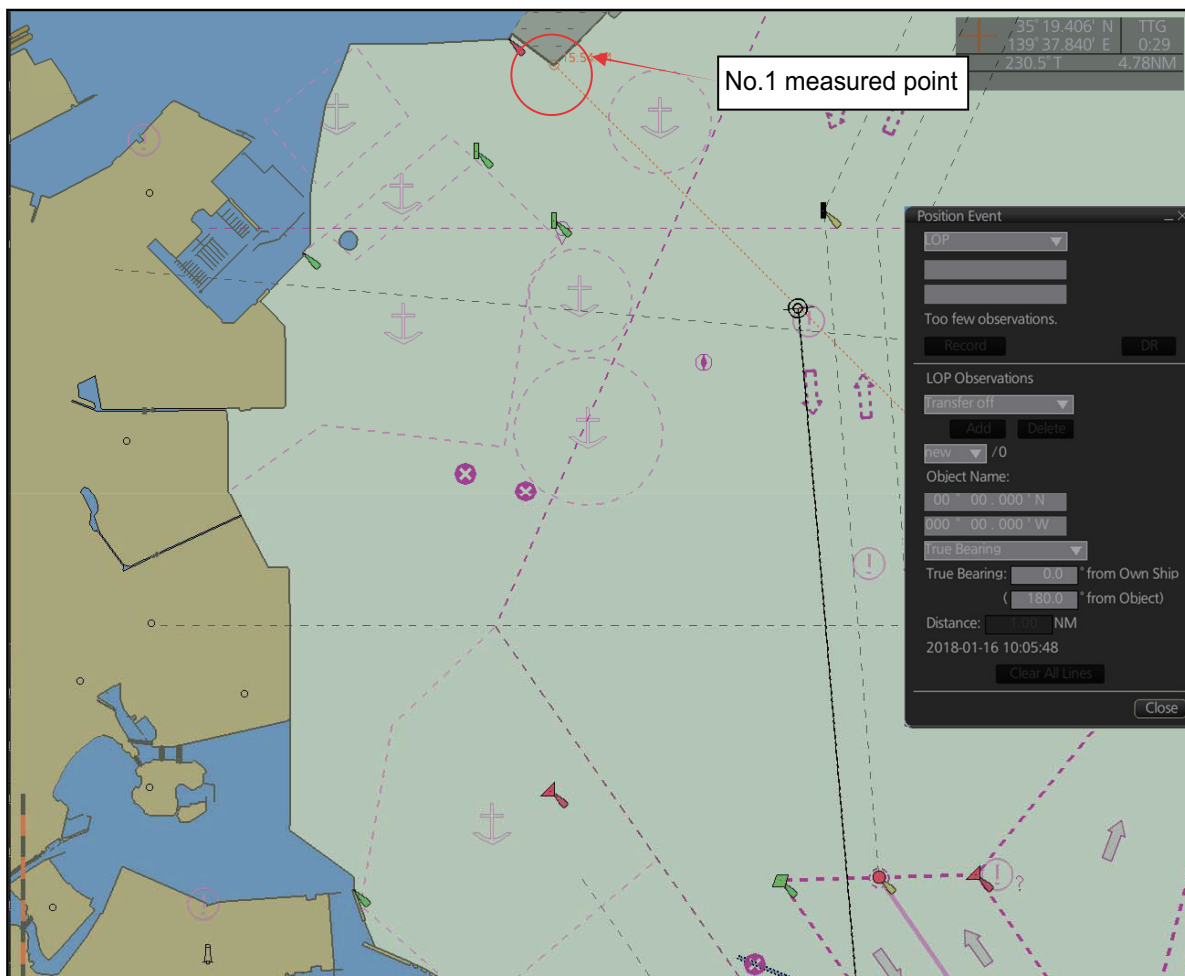
Input, change the distance from the LOP reference position.

(15) Clear All Lines

Clear all unconfirmed LOPs.

3. LOP Input Method

1. Open the Position Event dialog box.
2. Click the no. 1 measured reference point on the chart.

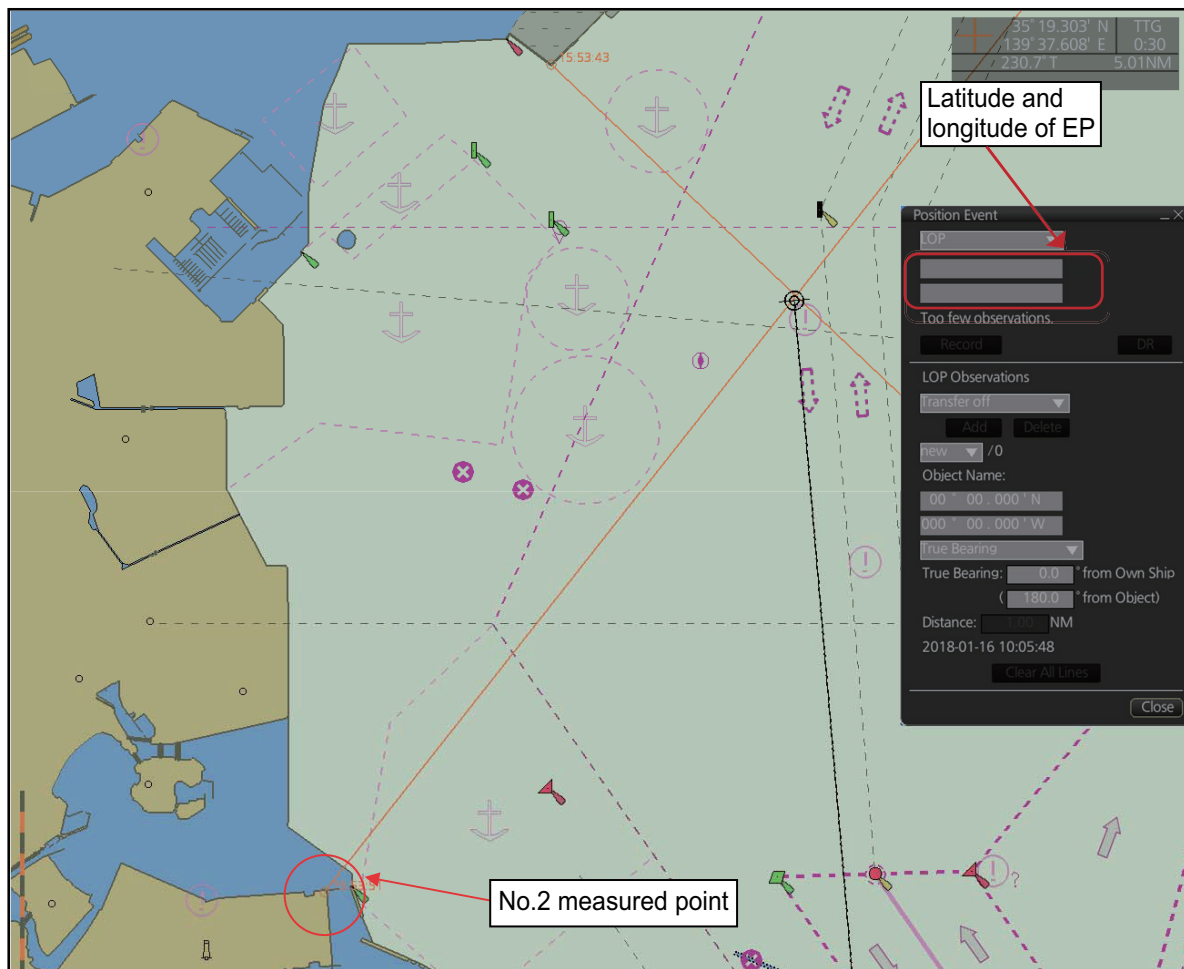


3. LOP is drawn towards own ship position from the reference position entered.
4. Adjust Transfer and LOP settings. The UTC time the LOP reference position (clicked position) was clicked is displayed.



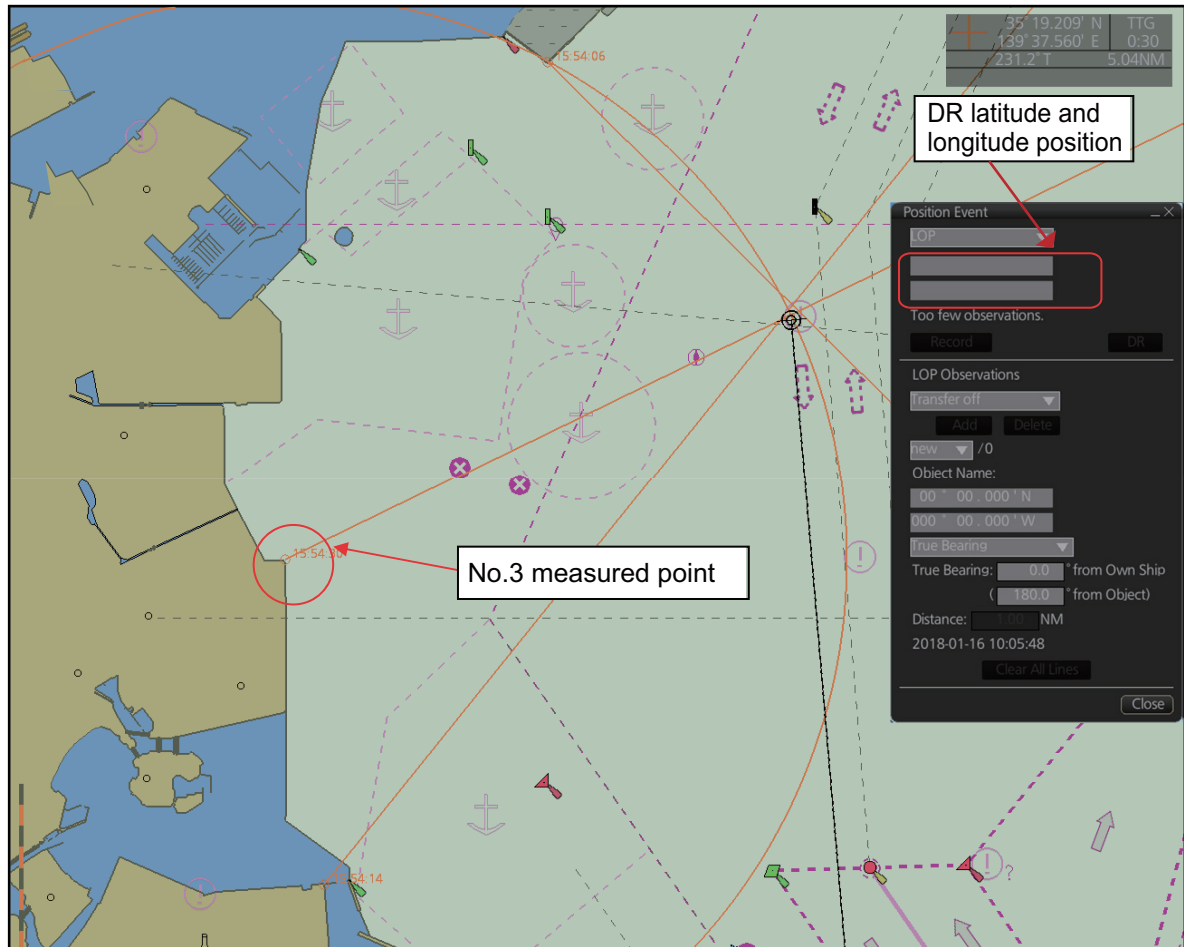
5. Adjust measured bearing of object or distance measured by radar. (For example, bearing only.)
6. Click the Add button to confirm the No.1 LOP.
7. Click the No.2 measured point and adjust the setting, value. (For example, bearing only.)
8. Click the Add button to confirm the No.2 LOP.

9. If the position is determinable, the latitude and longitude of the EP appears in the Event Position dialog box.



10. Click the Record button to send the position to the Voyage log, or go to step 11 to enter the no.3 measured reference position to get DR position.
Note: To continue entering points, do not click the Record button. Input is stopped once points are recorded (to the Voyage log).
11. Click the no. 3 measured point.
12. Adjust setting, value. (For example, bearing and distance.)
13. Click the Add button.

14. If the position is determinable, the latitude and longitude of the DR appears in the Event Position dialog box.



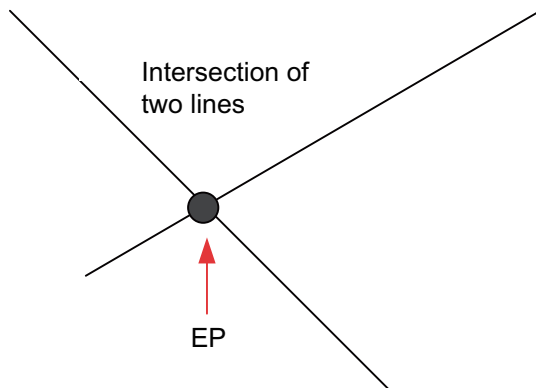
15. Click the DR button to set the DR position as own ship position. (The system automatically switches to the DR mode regardless of whether GPS data is being received or not.)
16. Click the Record button to send the position to the Voyage log and put the position event mark at the DR position on the chart.

Time of entry → 1044 ⊕
Accuracy of position → EP ↑ LOP
 EP: Low accuracy
 DR: High accuracy

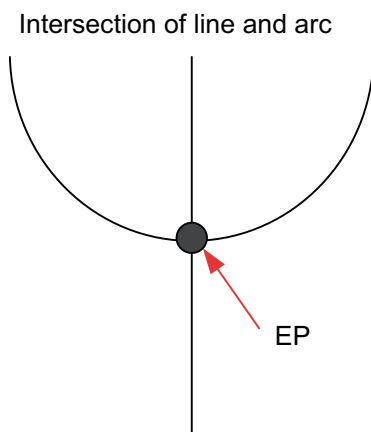
4. EP Conditions

The following are the conditions required to get EP.

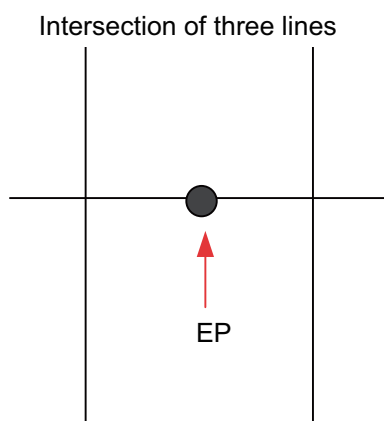
- Intersection of two lines



- Intersection of line and arc

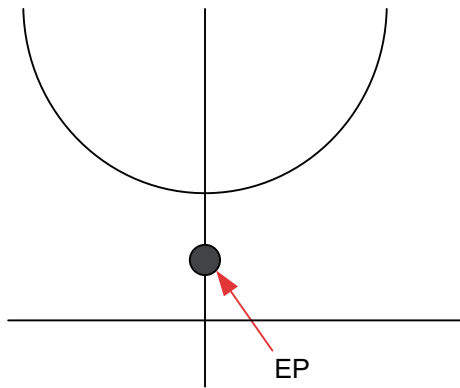


- Intersection of three lines



- Intersection of two lines and one arc

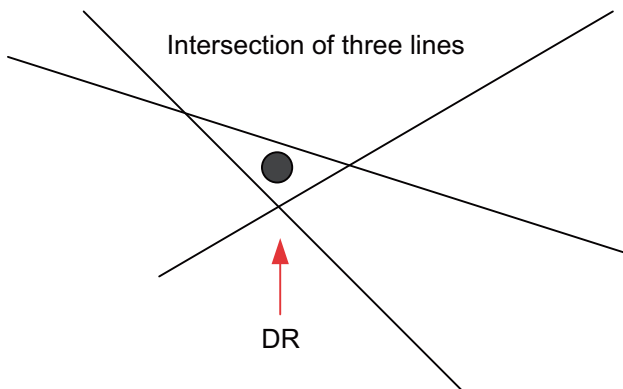
Intersection of two lines and one arc



5. DR Conditions

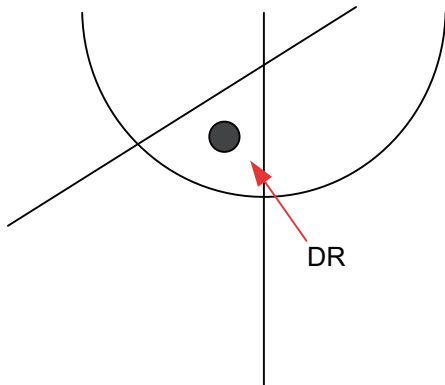
The following are the conditions required to get DR.

- Intersection of three lines



- Intersection of two lines and one arc

Intersection of two lines and one arc



6. Transfer Function

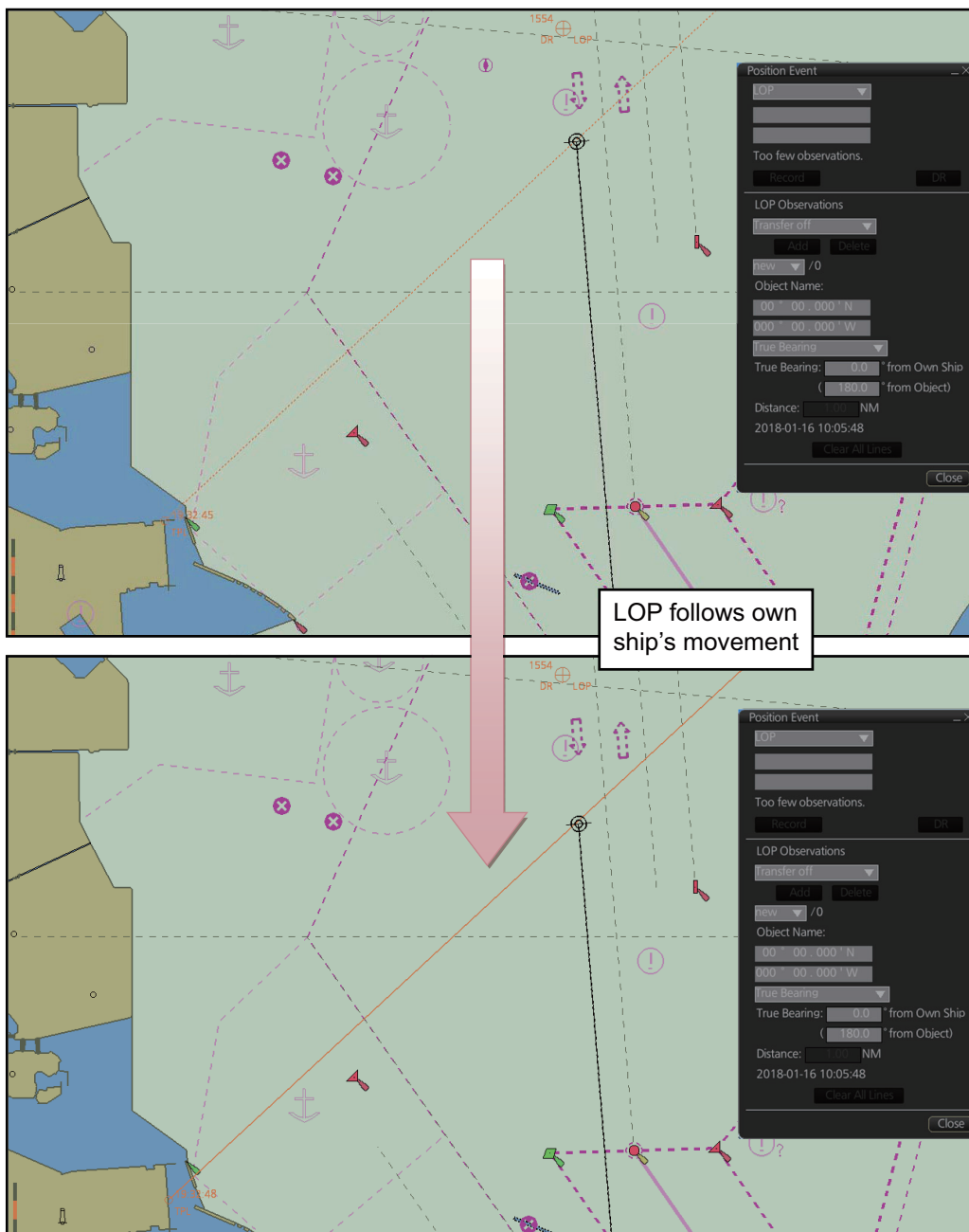
The transfer function is valid when the amount of objects for reference position is small or the angle of a measured position is insufficient. Sensor data or manual input of own ship data (heading, speed, position) is required.

The LOP reference position (clicked position) is marked with “TPL”.



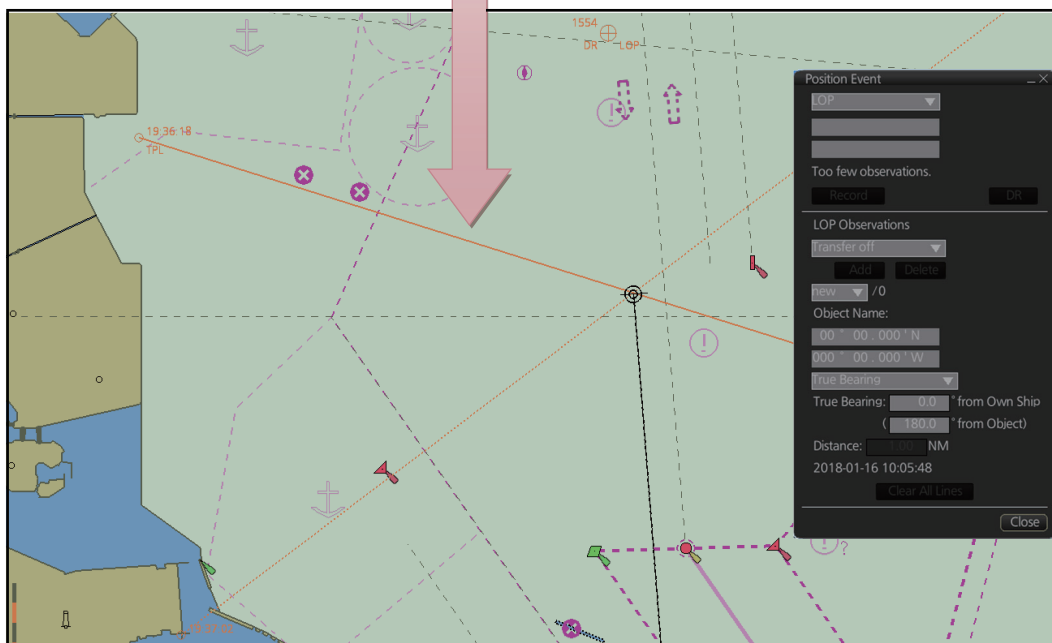
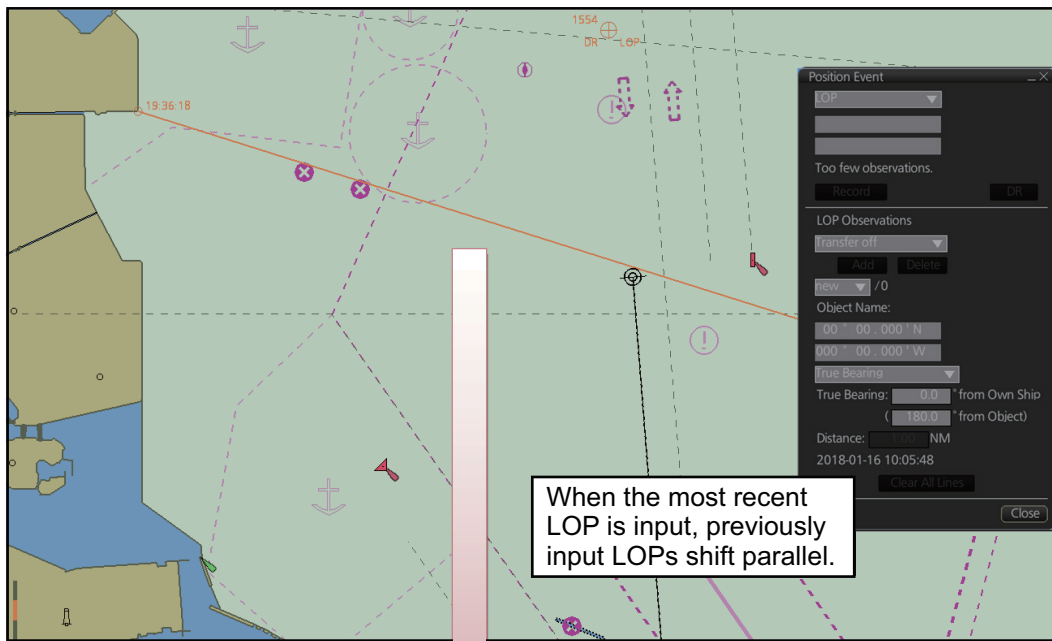
Continuous transfer

Click the Add button to confirm then the LOP follows own ship's movement.



Transfer to last

When the most recent LOP is input, previously input LOPs shift parallel.



7. LOP Information

After a position event mark is input, left click the mark to show event information, in the Event Information window.

