

# Vessel Traffic Patterns

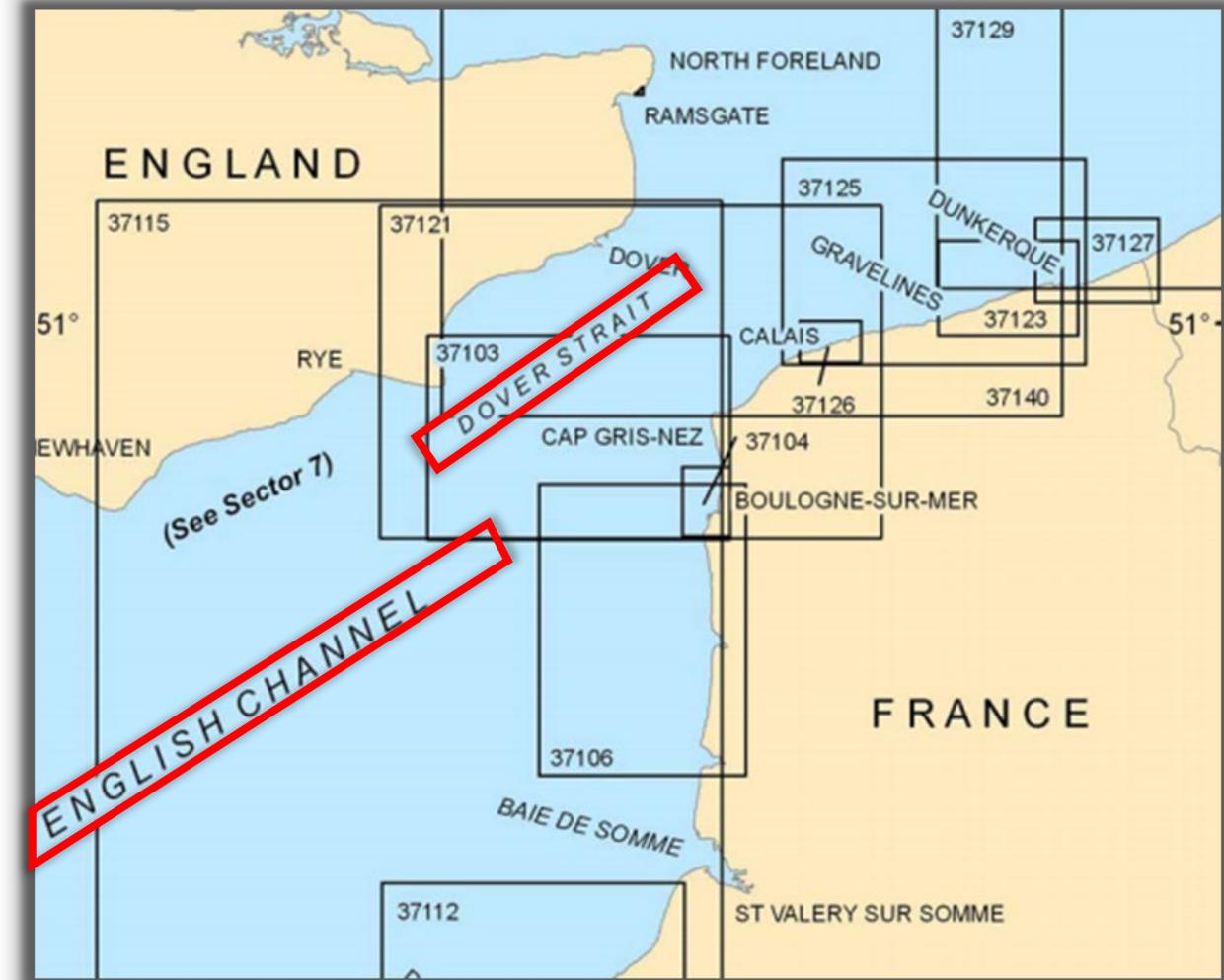
# Learning Objectives

Upon successful completion of this lesson, the student will be able to:

- Define a strait
- Define a Traffic Separation Scheme (TSS)
- Recognize normal/unusual vessel maneuvering during strait transits and verify vessels are following an approved TSS

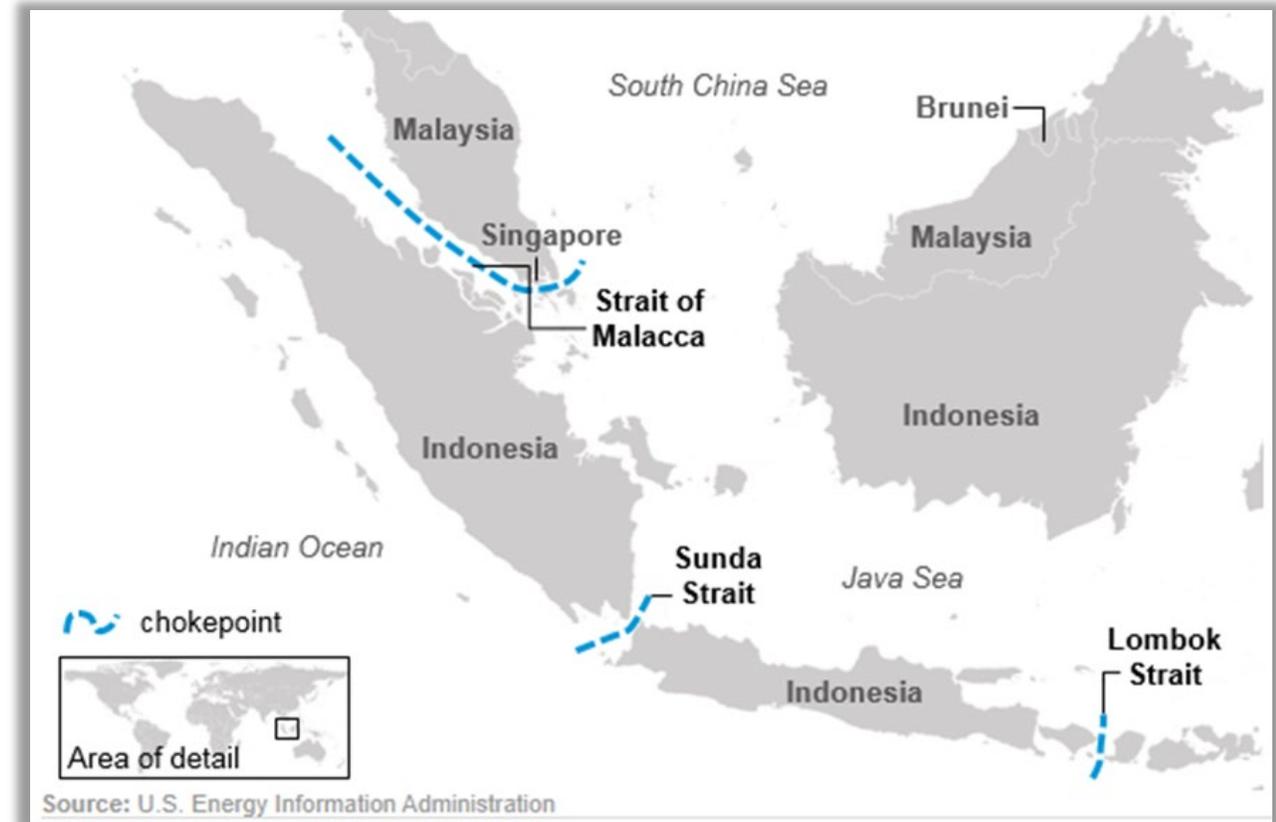
# Straits vs. Channels

- Strait
  - Naturally formed
  - Narrow passage of water
  - Connects two seas or two large bodies of water
- Channel
  - Elongated body of water
  - Between two landmasses



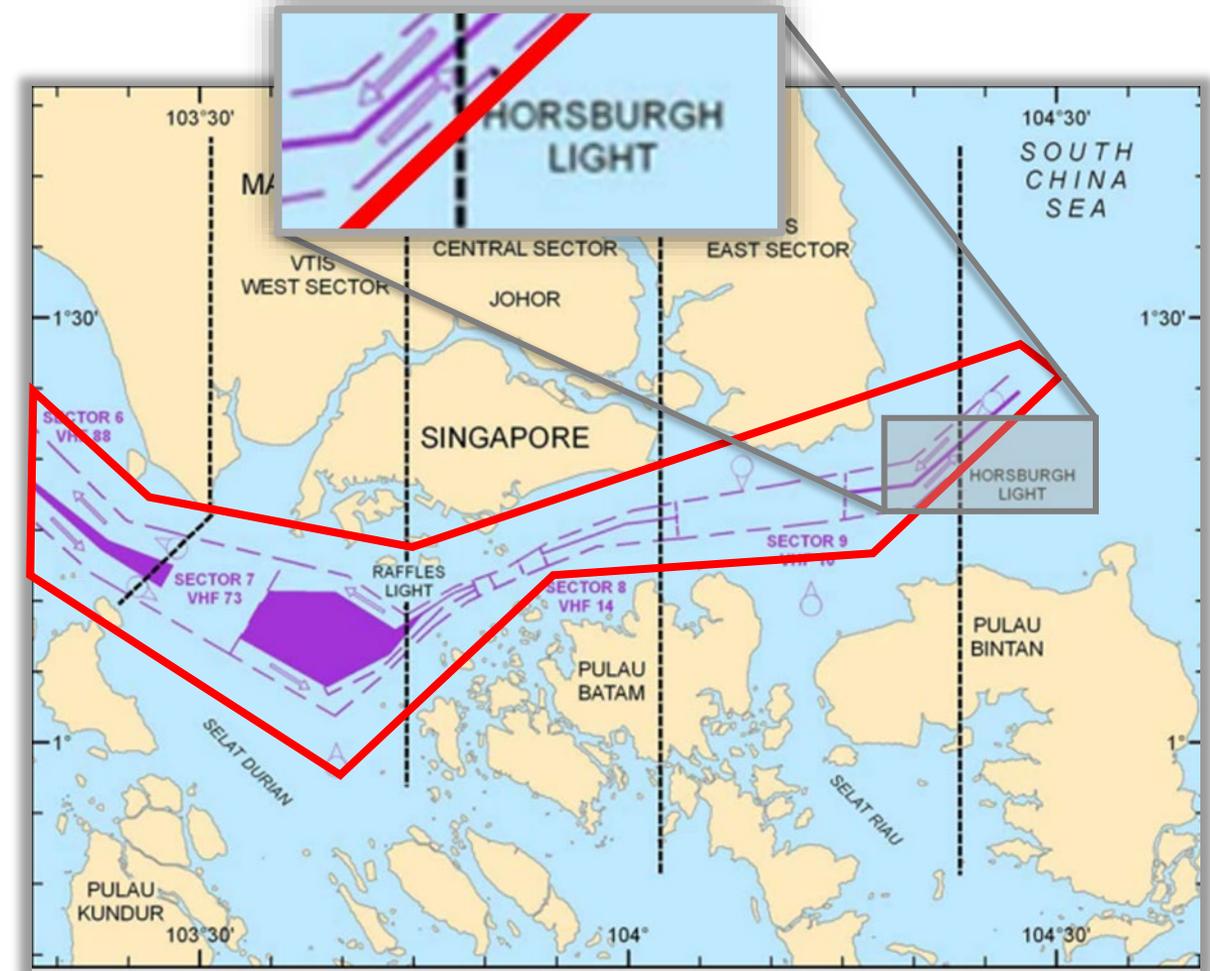
# Major Straits

- Some Major Straits of the World
  - Strait of Malacca
  - Strait of Gibraltar
  - Sunda Strait
  - Strait of Hormuz
  - Bering Strait
  - Strait of Bab-el-Mandab
- Due to high-traffic or natural hazards, many straits have established traffic separation schemes (TSS)



# Traffic Separation Scheme

- Traffic Separation Scheme (TSS):
  - Aimed at separating opposing streams of traffic
  - Accomplished the establishment of traffic lanes
- Rules for operation in TSS
  - Governed by the Convention on the International Regulations for Preventing Collisions at Sea (COLREGS)



# COLREGS

- A vessel using a traffic separation scheme shall:
  - Proceed in the appropriate traffic lane in the general direction of traffic flow for that lane
  - So far as practicable, keep clear of a traffic separation line or separation zone
  - Join or leave a traffic lane at the termination of the lane
    - If joining or leaving from either side, shall do so at as small an angle to the general direction of traffic flow as practicable



# COLREGS

- Additionally, COLREGS requires vessels to avoid doing the following:
  - Shall not normally enter a separation zone or cross a separation line except:
    - In cases of emergency to avoid immediate danger
    - To engage in fishing within a separation zone
    - To cross or join a TSS
  - Anchoring in a TSS
    - Or in areas near the termination of a TSS

# COLREGS

- Additionally, COLREGS requires vessels to avoid doing the following (cont.):
  - Crossing
    - If a vessel must cross, do so at as close to a right angle to the flow of traffic as possible
  - A vessel engaged in fishing shall not impede the passage of any vessel following a traffic lane

# So what does that mean?

- A TSS is like a road or, more specifically, a highway
  - Proceed in the correct lane for the direction you are going
  - Join at shallow angles
  - Do not park in the middle of the lane, the median, or in the area near the ends
  - Do not drive in or on the median unless it is an emergency
  - Avoid crossing. If you must cross, make it obvious by doing so at as close to a right angle to the flow of traffic as possible

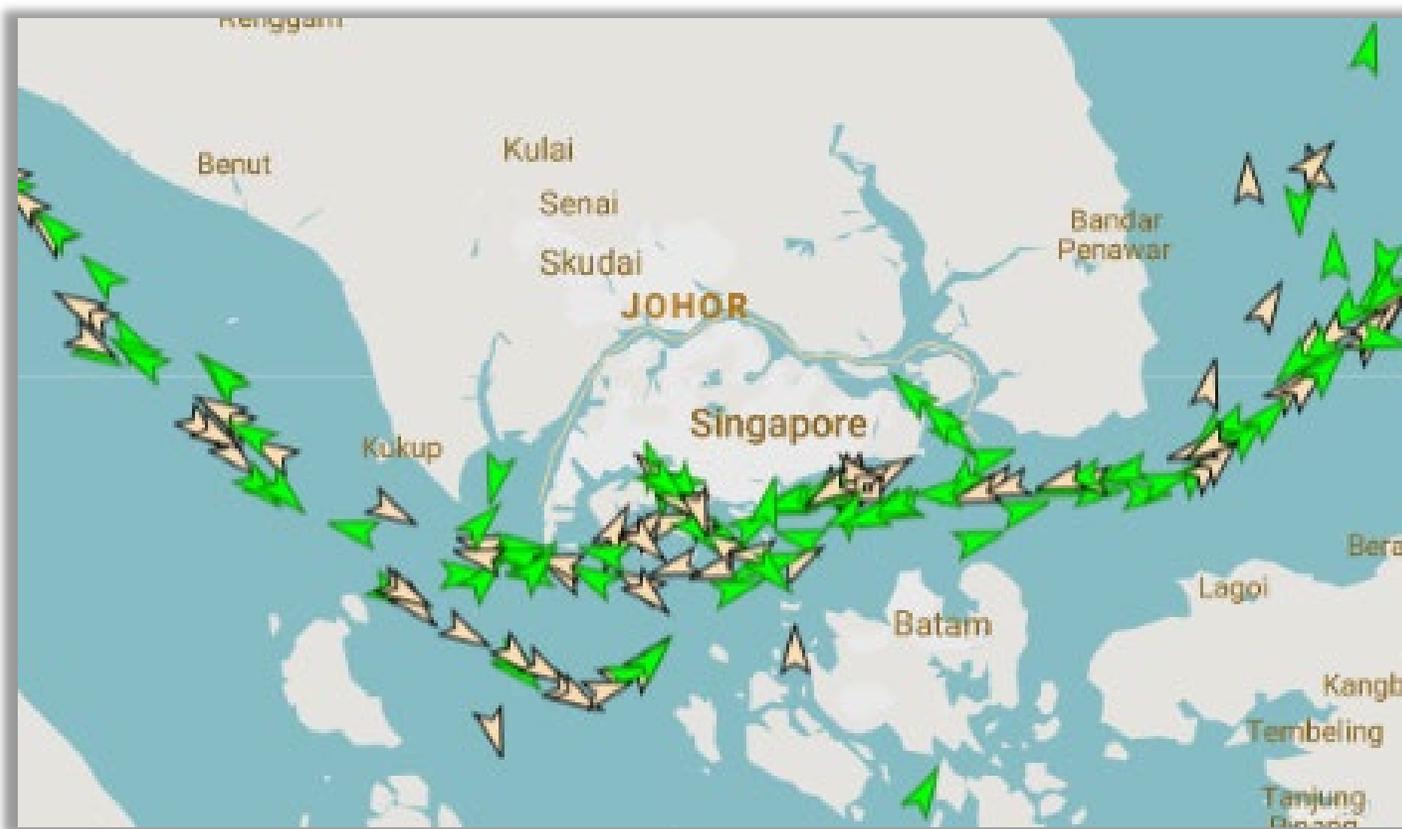
# How can an Analyst use this with SeaVision?

The screenshot displays the SeaVision interface with the following components:

- Top Navigation Bar:** Includes 'Map', 'Dashboard', 'Search', 'Chat', 'Pacifc', 'Help', and '20:30 UTC'.
- Map Area:** Shows a map with green tracks for three vessels. A 'Vintage' dropdown is set to 'Count: 3 in 0.5 seconds'.
- Left Panel (Vessel 405000232):**
  - Source: TERRESTRIAL AIS
  - Time: 2019 Dec 20 23:54:00 UTC
  - Age: 644h 35m 29s ago
  - Position: 1° 19' 20" N, 104° 3' 59" E
  - Speed: — kts
  - Heading: 64°
  - Course: °
  - MMSI: 405000232
  - IMO Number: —
  - Flag: Bangladesh
  - Call Sign: —
  - Ship Type: —
  - Length: — m
  - Beam: — m
  - Draft: — m
  - Navigation Status: —
  - Destination: —
  - ETA: —
- Middle Panel (Vessel 419555000):**
  - Source: TERRESTRIAL AIS
  - Time: 2019 Dec 20 23:35:31 UTC
  - Age: 644h 54m 16s ago
  - Position: 1° 17' 34" N, 104° 4' 47" E
  - Speed: 0.1 kts
  - Heading: 77°
  - Course: °
  - MMSI: 419555000
  - IMO Number: —
  - Flag: India
  - Call Sign: —
  - Ship Type: —
  - Length: — m
  - Beam: — m
  - Draft: — m
  - Navigation Status: —
  - Destination: —
  - ETA: —
- Right Panel (Vessel 374262000):**
  - Source: TERRESTRIAL AIS
  - Time: 2019 Dec 20 23:51:42 UTC
  - Age: 644h 38m 14s ago
  - Position: 1° 18' 13" N, 104° 20' 39" E
  - Speed: 8.8 kts
  - Heading: 48°
  - Course: °
  - MMSI: 374262000
  - IMO Number: —
  - Flag: Panama
  - Call Sign: —
  - Ship Type: —
  - Length: — m
  - Beam: — m
  - Draft: — m
  - Navigation Status: —
  - Destination: —
  - ETA: —
- Bottom Playback Bar:**
  - TIME MACHINE PLAYBACK
  - December 20, 2019 23:59 UTC
  - TAKE NEW SNAPSHOT
  - Last snapshot taken for 2019/12/20 23:5

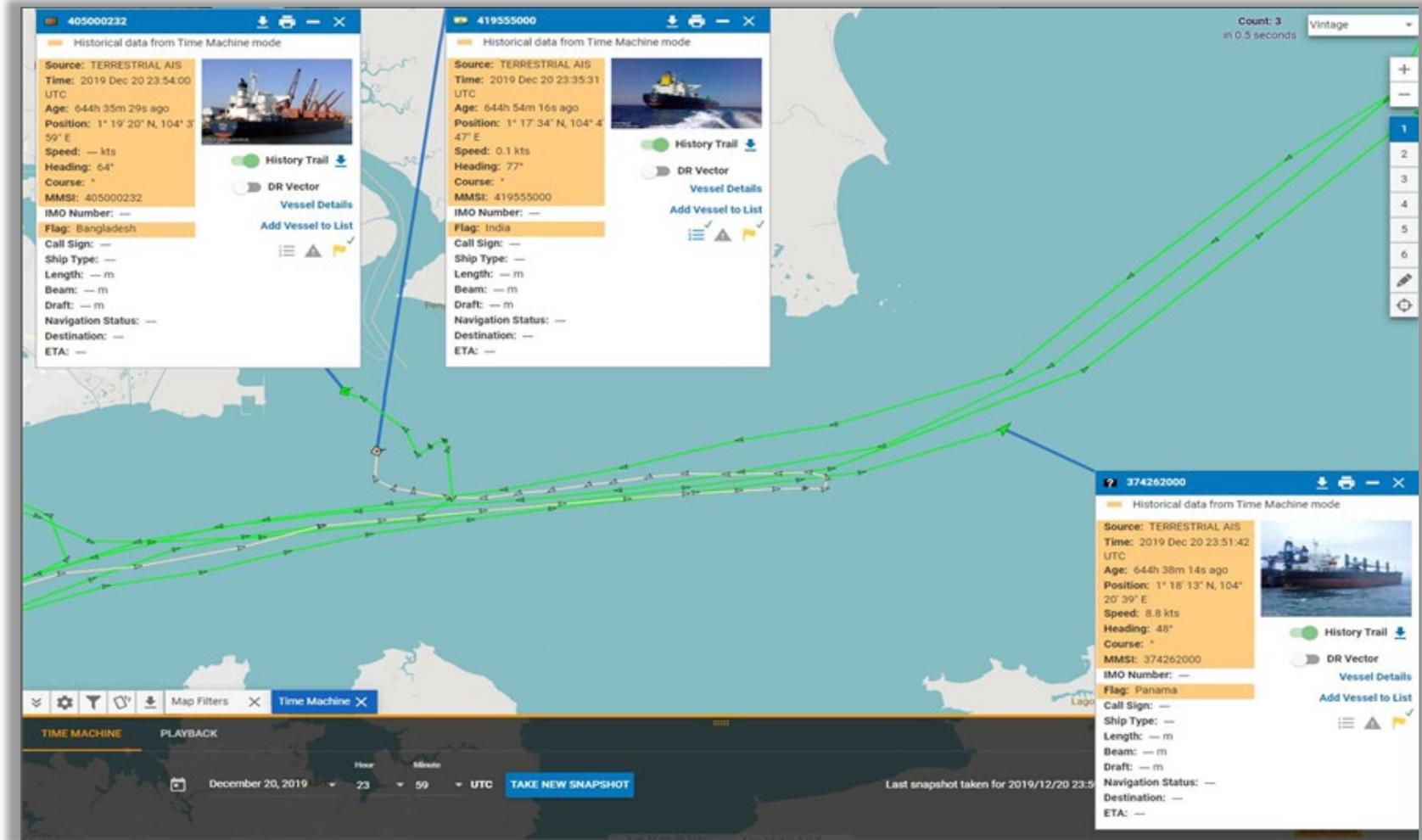
# Piracy Incident Details

- Date: 20 December 2019
- Incident: Three vessels report piracy events in the vicinity of Singapore in the Strait of Malacca
- Method of Analysis: Time Machine feature of SeaVision



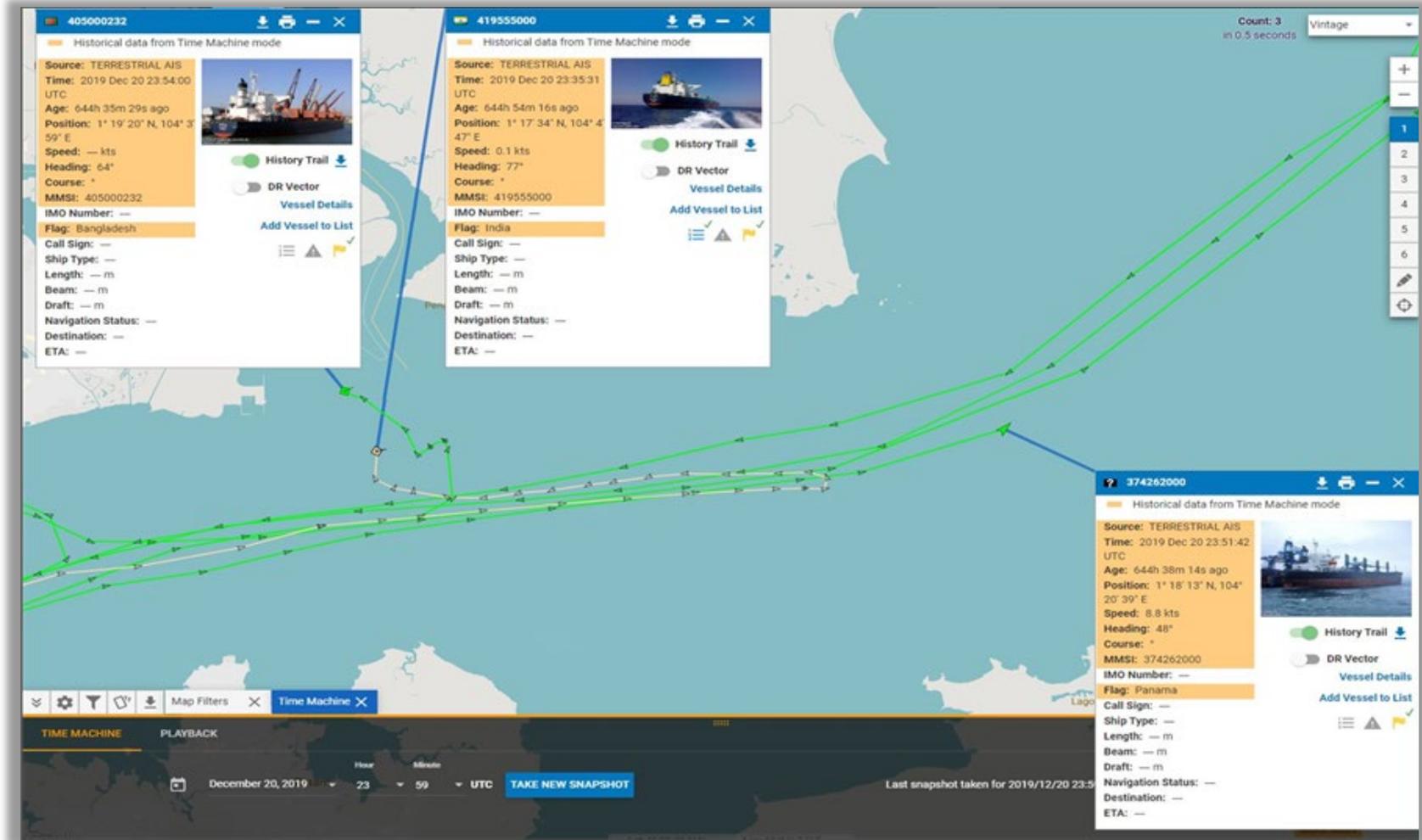
# Analyzing Piracy Reports in SeaVision

- Question 1: Were the vessels transmitting AIS as required?
- Answer 1: Yes



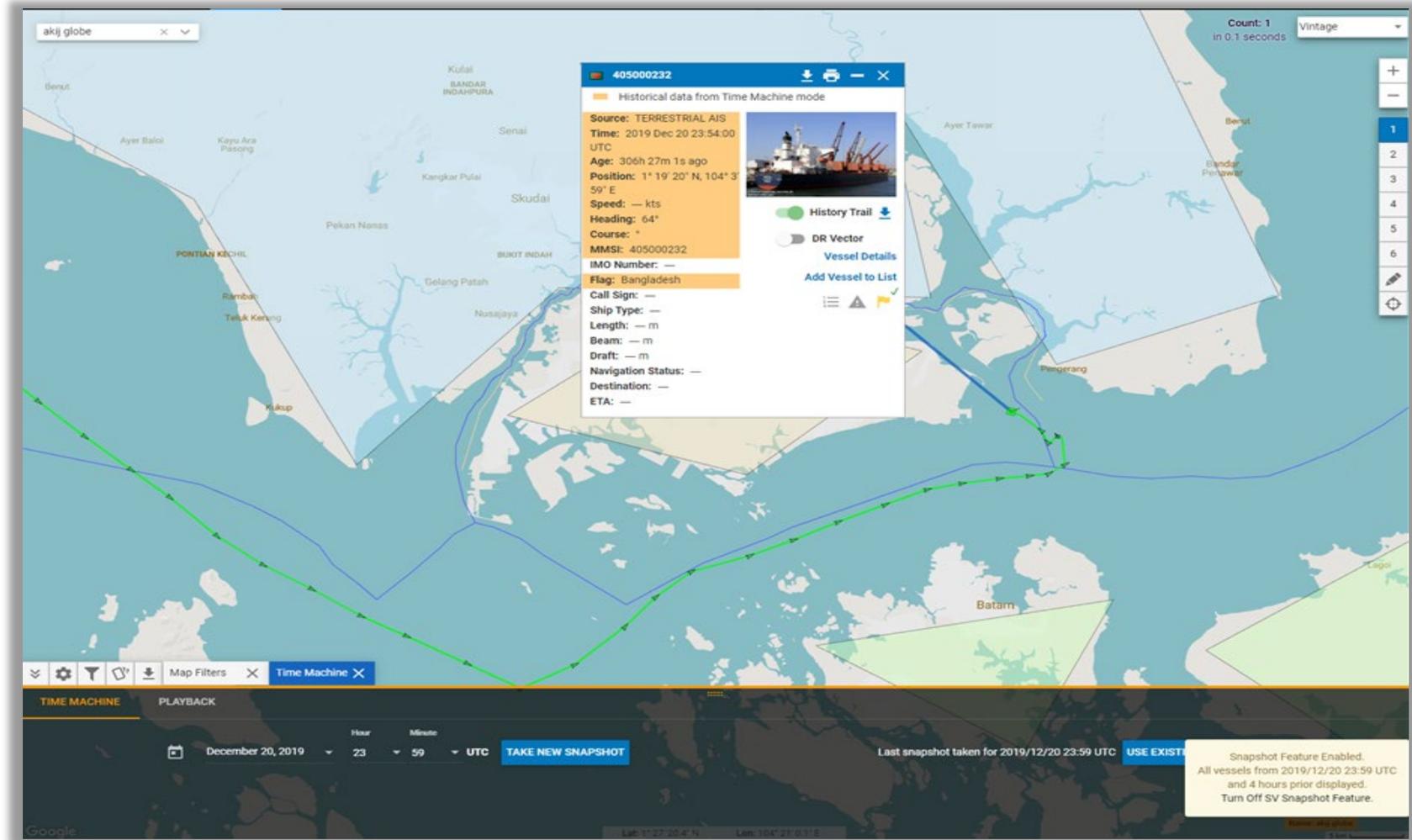
# Analyzing Piracy Reports in SeaVision

- Question 2:  
Are the vessels transiting as expected?
- Before answering, look at each vessel track individually



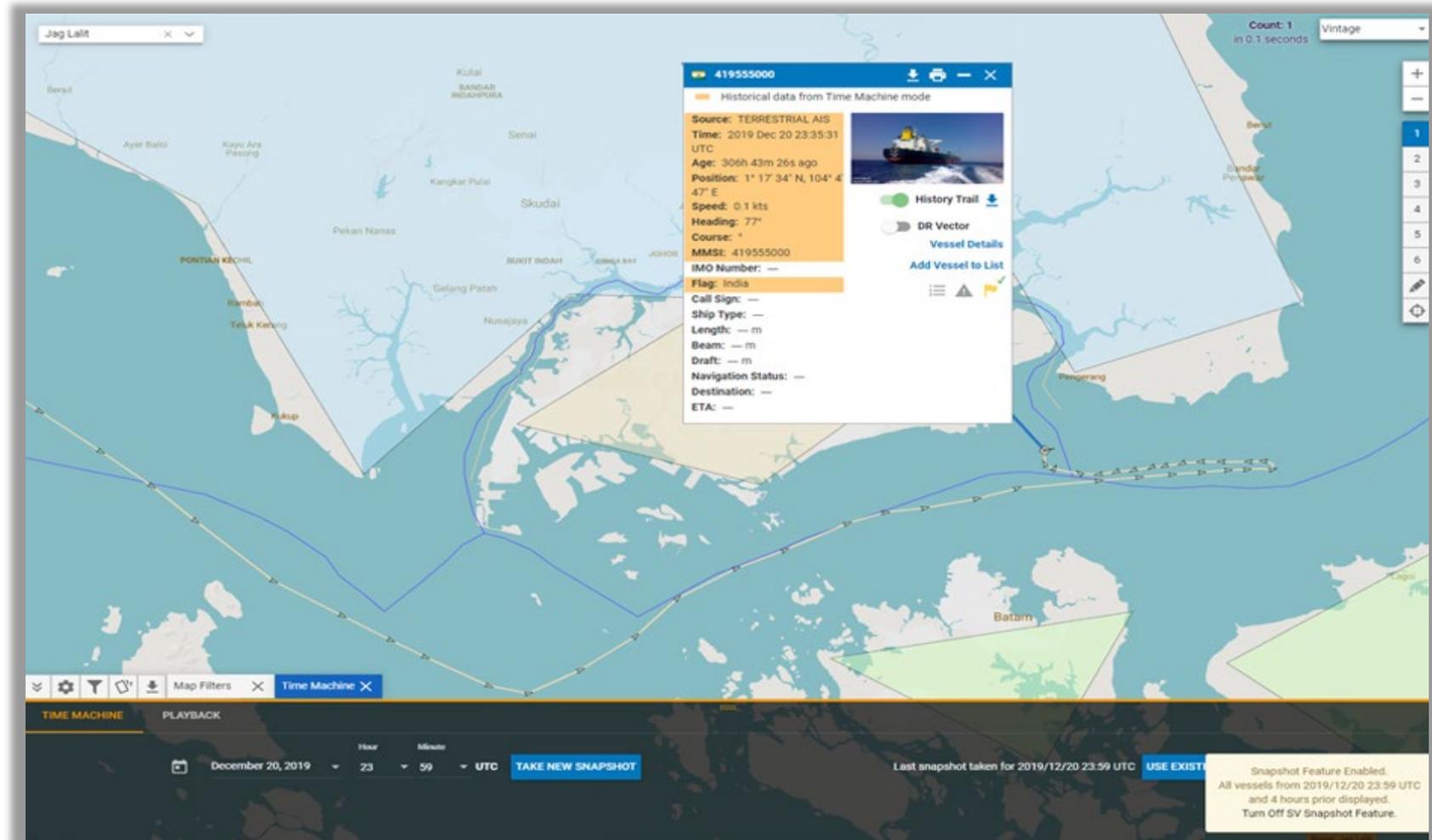
# Analyzing Piracy Reports in SeaVision

- Question 2: Are the vessels transiting as expected?
- Vessel Name: Akij Globe
- MMSI: 405000232
- Answer 2: Yes, considering they reported a piracy incident



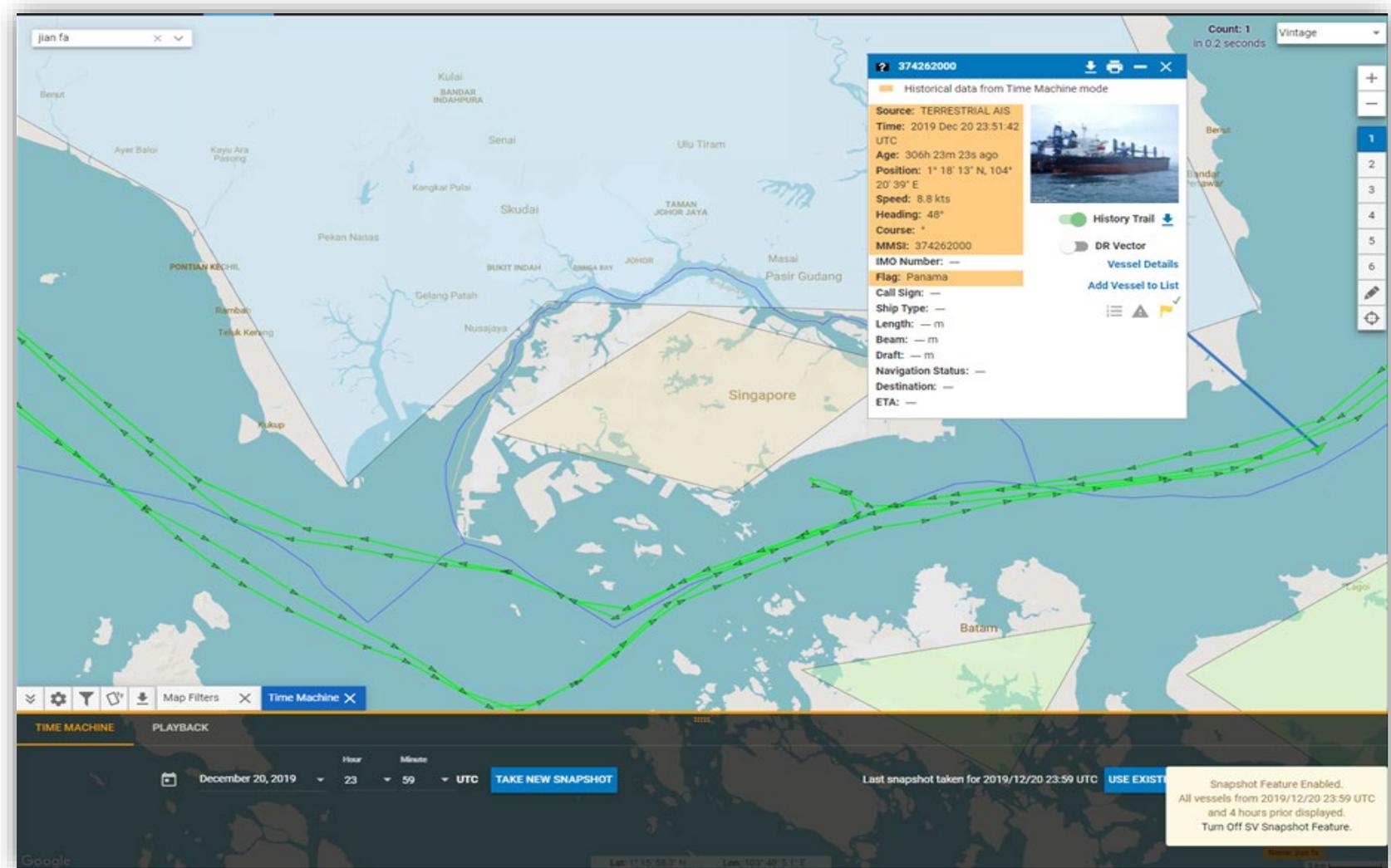
# Analyzing Piracy Reports in SeaVision

- Question 2: Are the vessels transiting as expected?
- Vessel Name: Jag Lalit
- MMSI: 419555000
- Answer 2: Yes, considering they reported a piracy incident to Singapore VTIS and were re-directed to ensure safety of the crew



# Analyzing Piracy Reports in SeaVision

- Question 2: Are the vessels transiting as expected?
- Vessel Name: Jian Fa
- MMSI: 419555000
- Answer 2: This track requires closer inspection.

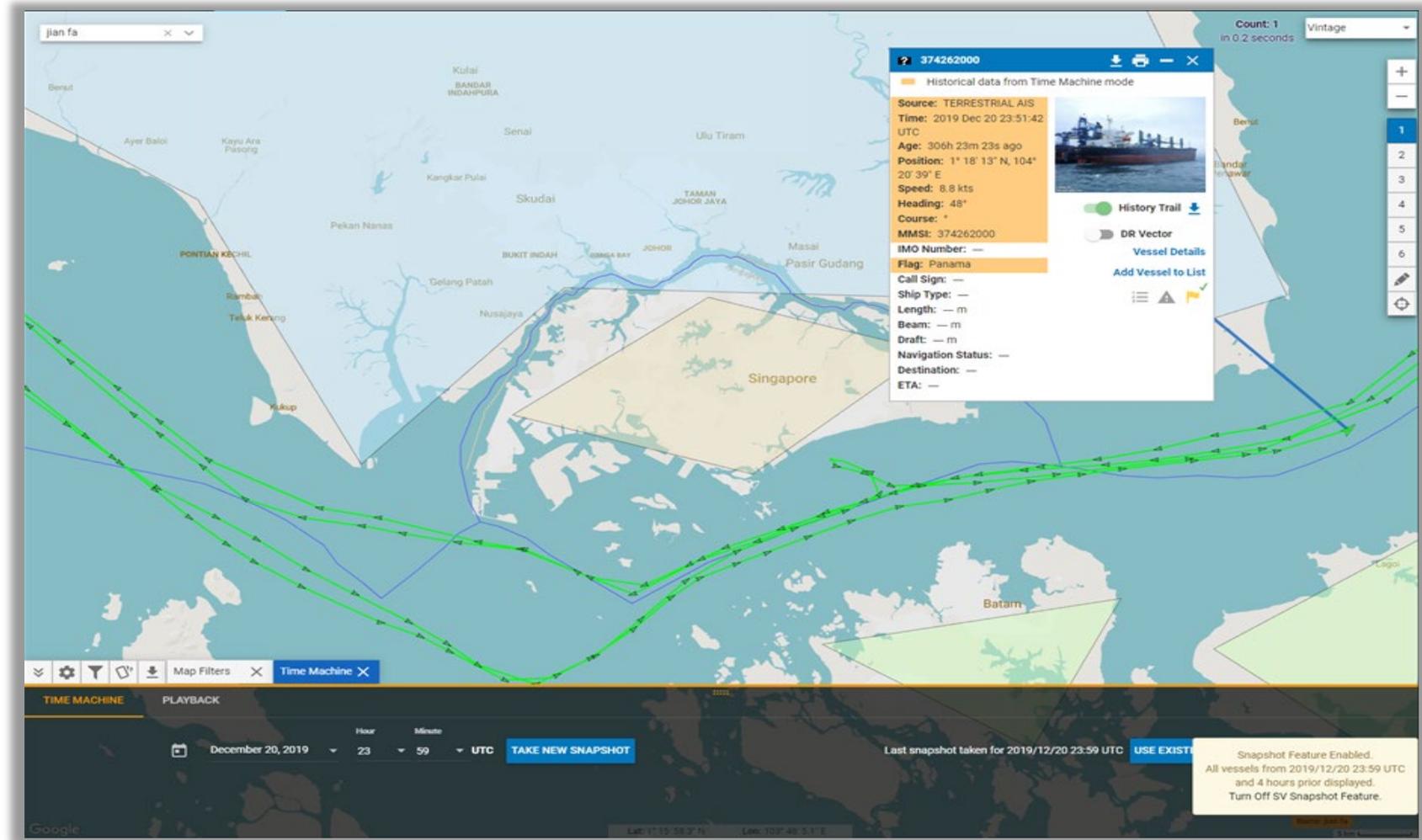


# Analyzing Piracy Reports in SeaVision



# Analyzing Piracy Reports in SeaVision

- Question 2: Are the vessels transiting as expected?
- Vessel Name: Jian Fa
- MMSI: 419555000
- Answer 2: No, the Jian Fa did not transit as expected, considering they reported a piracy incident



# Analyzing Piracy Reports in SeaVision

- What can be decisively concluded from the reported incidents and what was displayed in SeaVision?
  - Akij Globe and Jag Lalit experienced an incident that required them to make abnormal maneuvers in a TSS within a strait
- Can a conclusion be made about Jain Fa?
  - Possibly, more investigations would need to be made, possibly outside of SeaVision

# Summary

In this lesson, we covered:

- Definition of a strait
- Definition of a Traffic Separation Scheme (TSS)
- Recognizing normal/unusual vessel maneuvering during strait transits and verifying vessels are following an approved TSS