PCC 10/3/3

MPA
SINGAPORE

Update on Straits Project 9

Maritime and Port Authority of Singapore

10th Project Co-ordination Committee Meeting

4 October 2017

SCOPE OF PRESENTATION

- **OBJECTIVES**
- **PARTNERS & CONCEPT OF OPERATIONS**
- **SYSTEM DESIGN**
- **SEA TRIAL RESULTS**

OBJECTIVES

The objectives of the STMS project are to demonstrate:

- New concept of operations on shared situational awareness between ship and shore
- Use of new technologies leveraging on existing systems/equipment to facilitate information exchange between ship and shore

PARTNERS

- **Project members**: MPA, DGST, MDM, NCA, IMO, IALA, IHO, RCN, University College of South East Norway, Navtor, SINTEF Oceans, SimPlus, KONGSBERG

CONCEPT OF OPERATIONS

2. Satellite/VDES digital data exchange

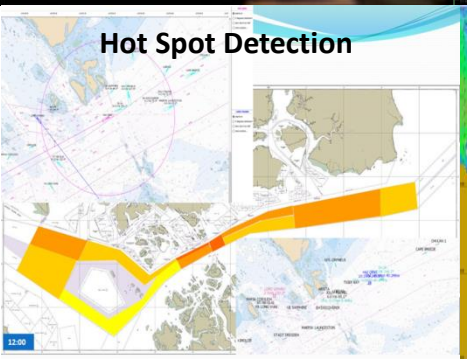
1. Ship submit passage plan and pre-arrival information to VTS

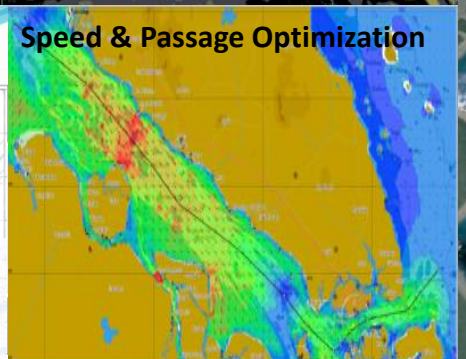
4. Ship receive traffic picture from VTS

3. VTS analyse traffic info and transmit traffic hotspot picture and info on port services to ship

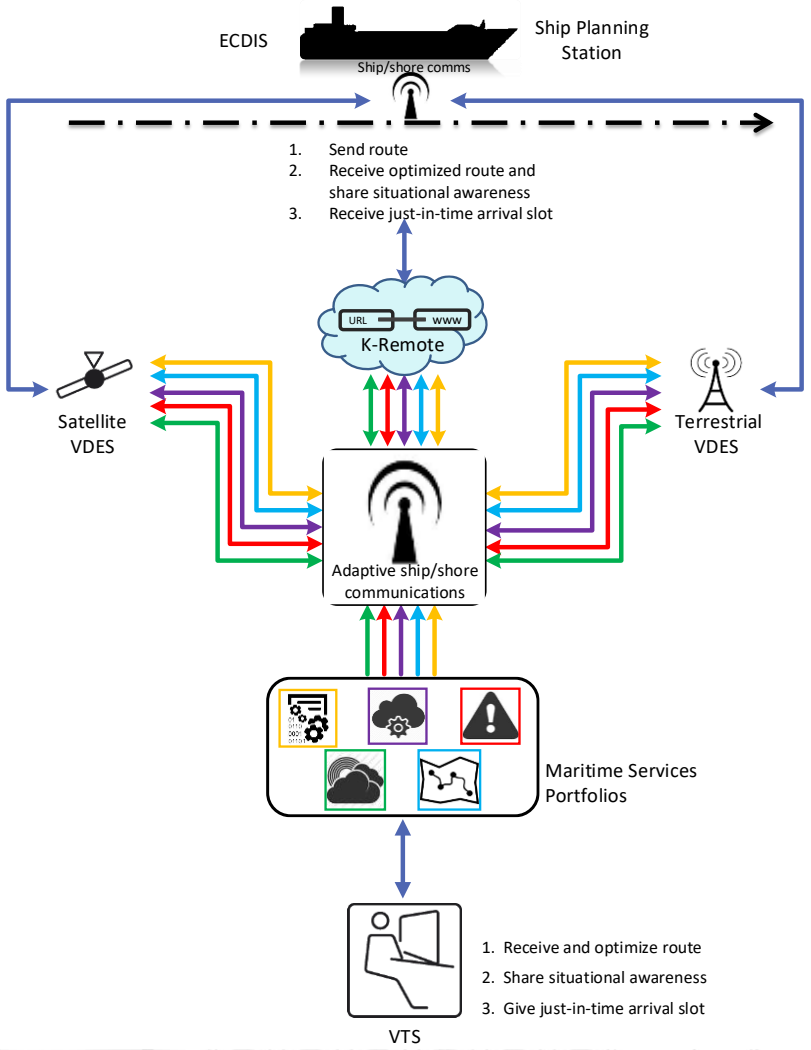
5. Ship adjust speed/passage for safe and optimal arrival

Straits of Malacca and Singapore



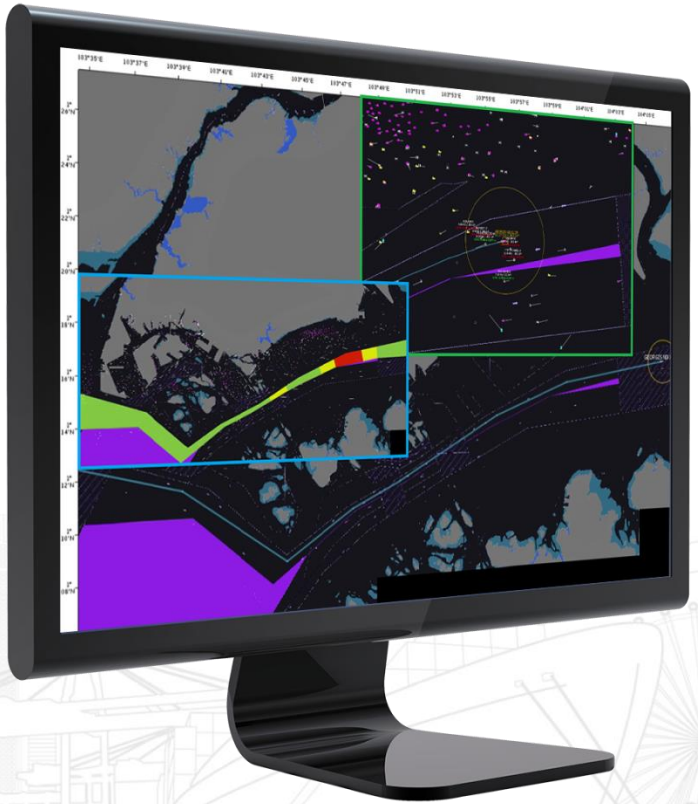


SYSTEM DESIGN



TRAFFIC SIMULATOR

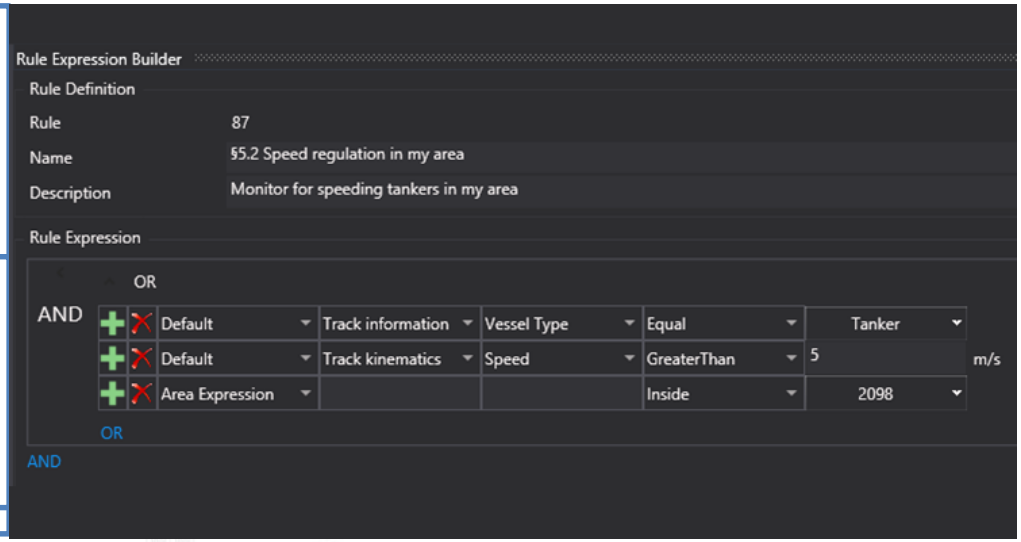
- Exploits current traffic data as well as historical data
- Predicts hot spots along a vessel's route
- Integrated with the VTS
- Data presented on the ECDIS



COLLABORATIVE DECISION SUPPORT TOOLS (FOR VTS)

Developed new decision support configuration tool

Developed route exchange functionality in the VTS

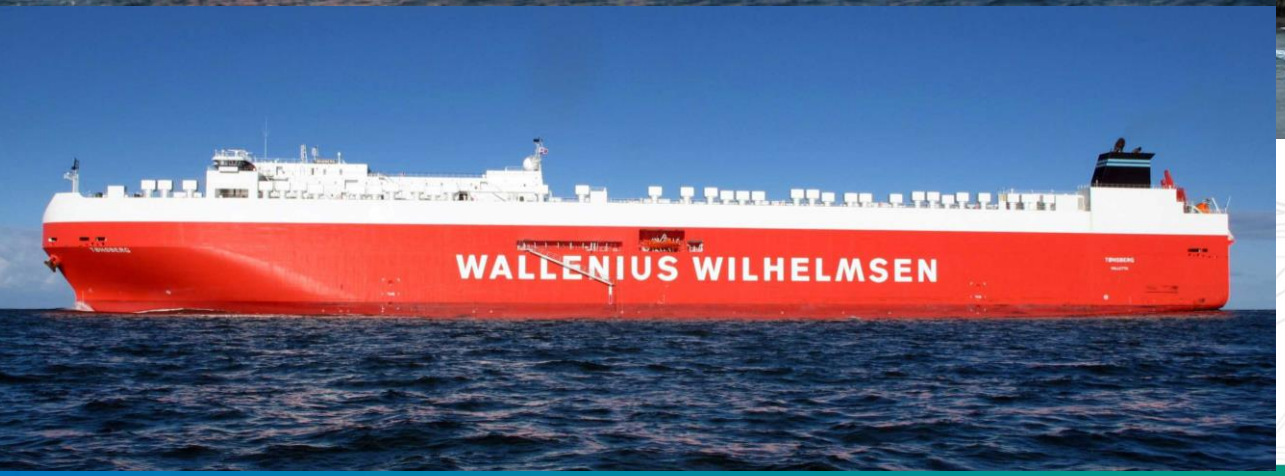


SHIP/SHORE DATA COMMS - VDES

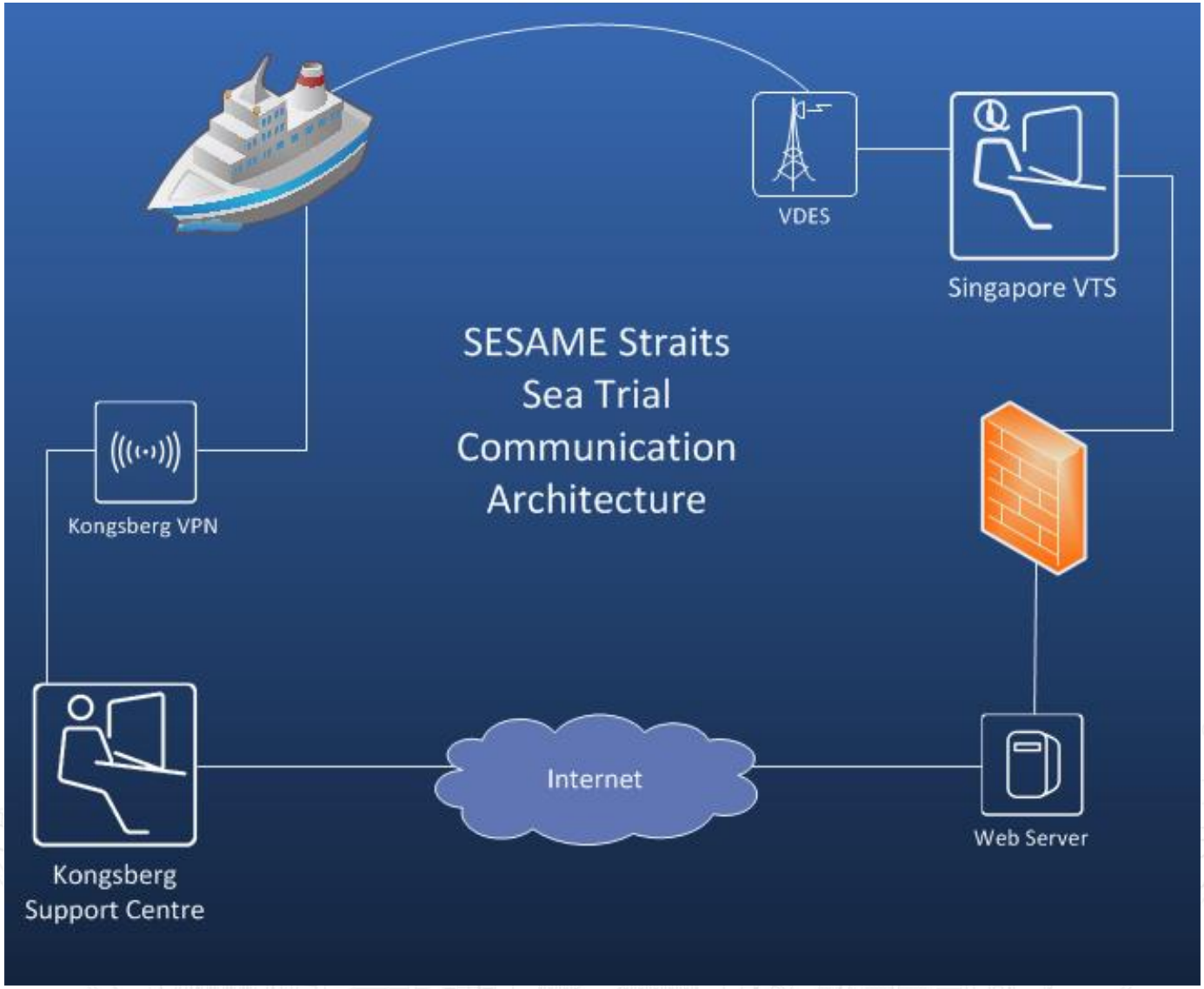
Channel plan A (upper and lower leg), 2*50KHz channels was used for VDE
4W TX power
Data was compressed and retransmission supported, giving high throughput.
Modulation; π/4 QPSK
VDE upper leg is close to AIS channels and co-localization between AIS & VDE will be a challenge (standardization issue).
Assessed ASM but message size is not suitable. Coordination is needed between AIS & ASM to avoid interference.

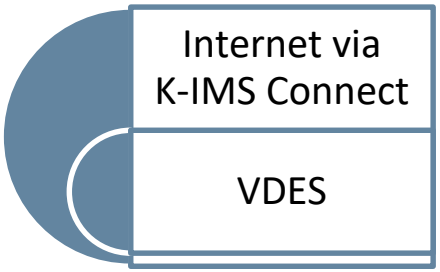
UPGRADED PLANNING STATION

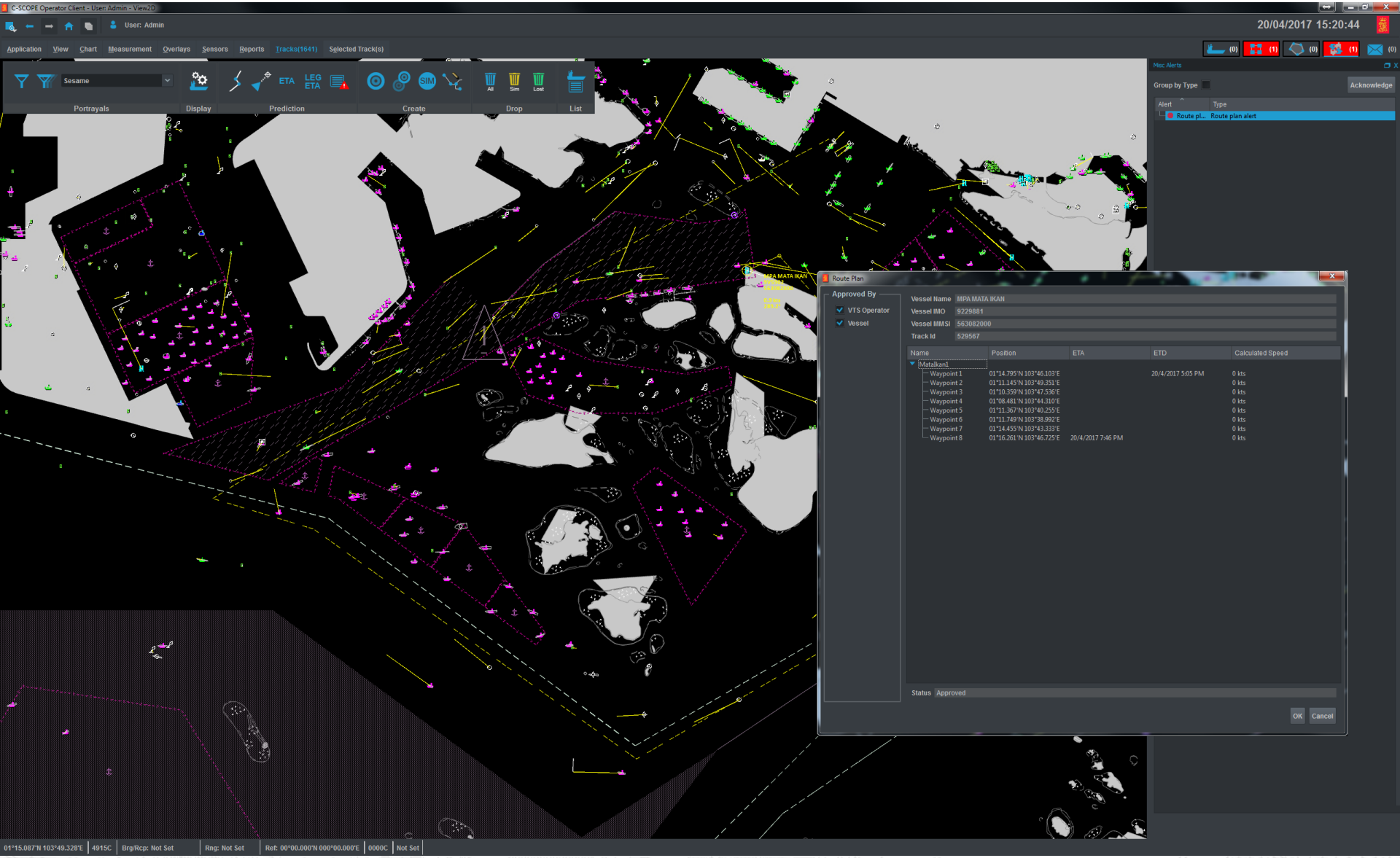
SEA TRIAL DESCRIPTION

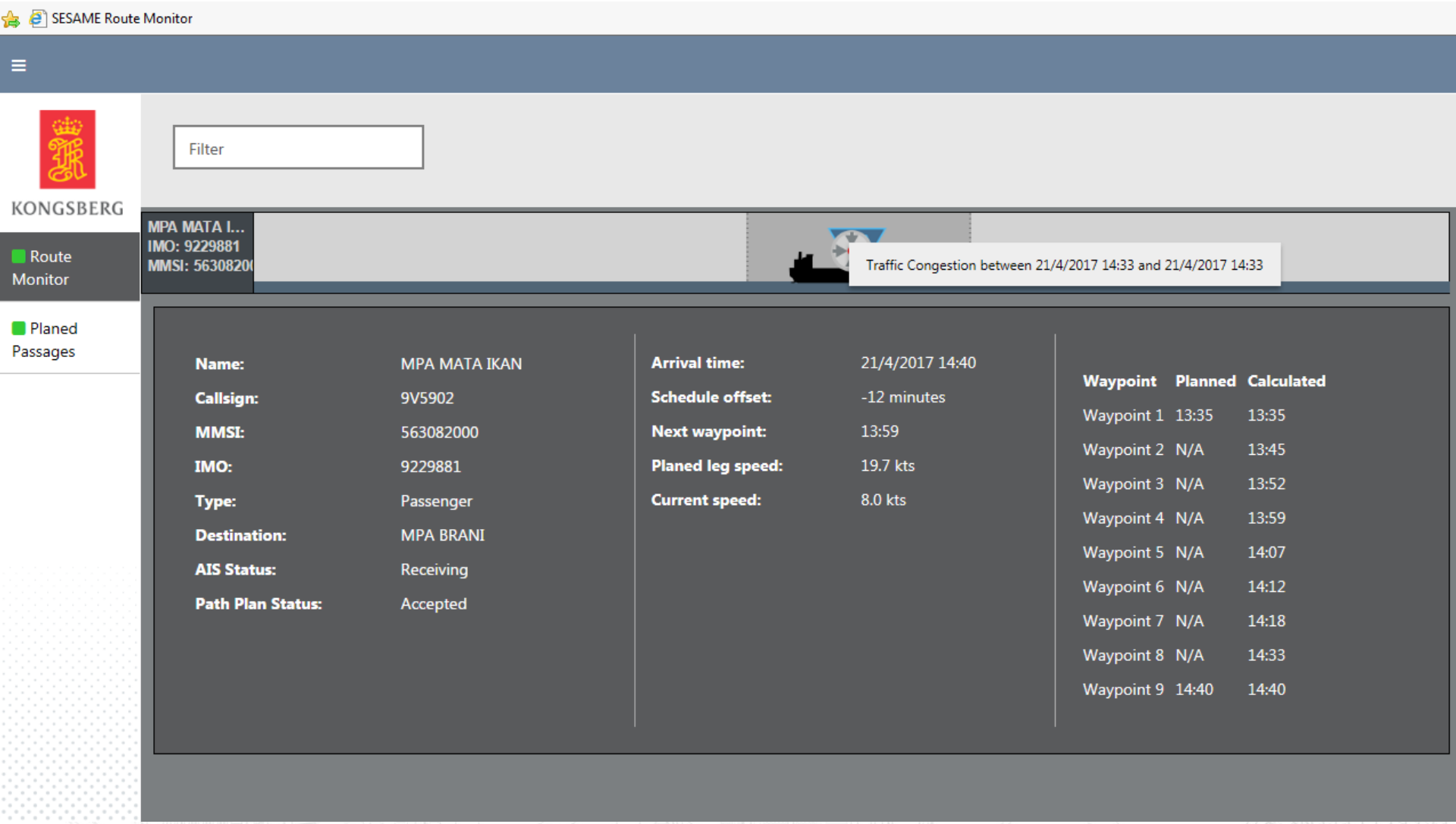


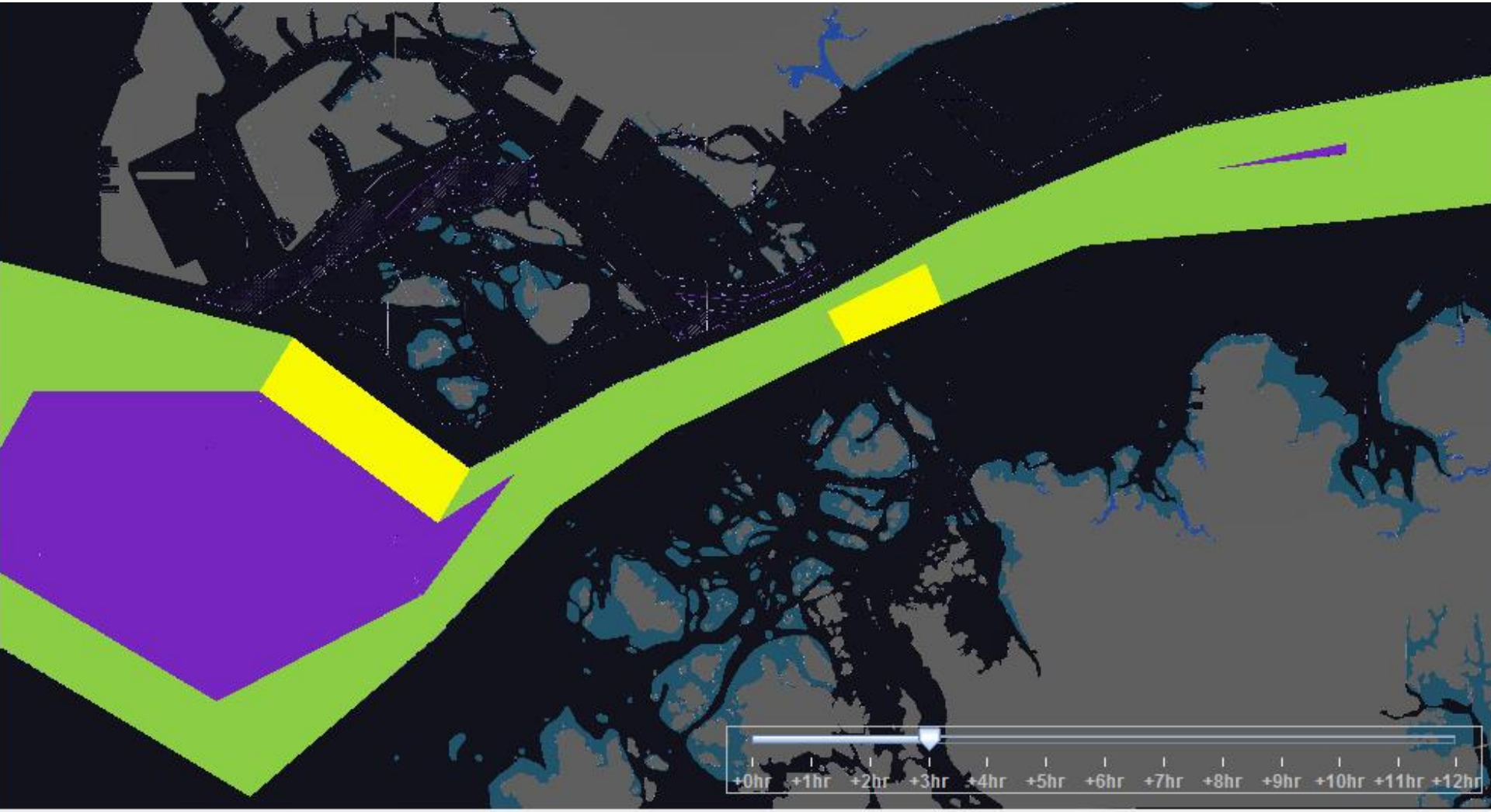
- MV Titania
- MV Torino
- Mata Ikan

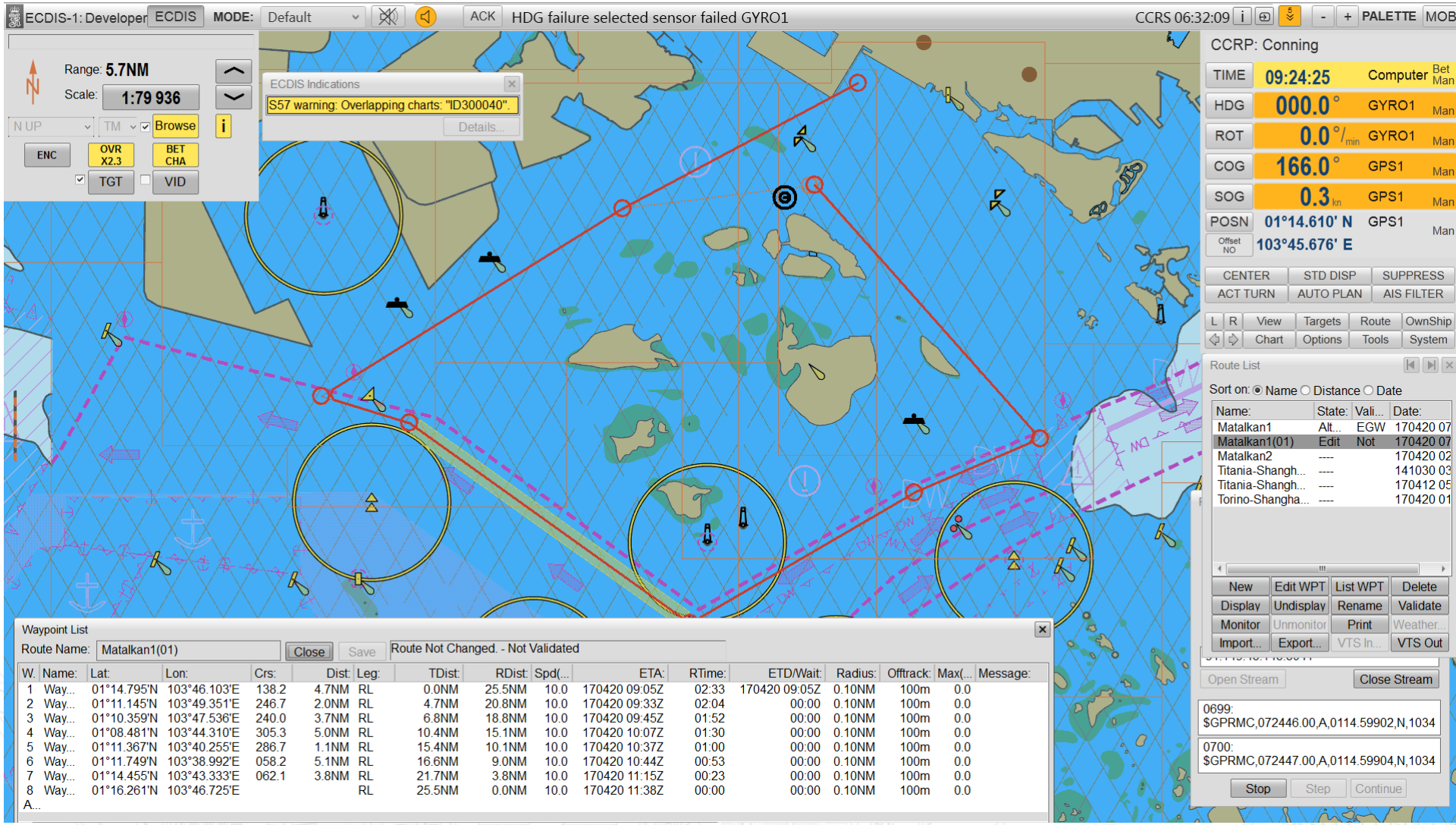

VDES
Singapore VTS
SESAME Straits
Sea Trial
Communication
Architecture
Kongsberg VPN
Internet
Kongsberg
Support Centre
Web Server


Internet via
K-IMS Connect
VDES


C-SCOPE Operator Client - User: Admin - View2D
User: Admin
20/04/2017 15:20:44
Application View Chart Measurement Overlays Sensors Reports Tracks(1641) Selected Track(s)
Sesame
Portrayals Display Prediction Create Drop List
ETA LEG ETA
Misc Alerts
Group by Type
Acknowledge
Alert Type
Route pl... Route plan alert
Route Plan
Approved By
VTS Operator
Vessel
Vessel Name MPA MATA IKAN
Vessel IMO 9229881
Vessel MMSI 563082000
Track Id 529567
Name Position ETA ETD Calculated Speed
Matalkan1
Waypoint 1 01°14.795'N 103°46.103'E 20/4/2017 5:05 PM 0 kts
Waypoint 2 01°11.145'N 103°49.351'E 0 kts
Waypoint 3 01°10.359'N 103°47.536'E 0 kts
Waypoint 4 01°08.481'N 103°44.310'E 0 kts
Waypoint 5 01°11.367'N 103°40.255'E 0 kts
Waypoint 6 01°11.749'N 103°38.992'E 0 kts
Waypoint 7 01°14.455'N 103°43.333'E 0 kts
Waypoint 8 01°16.261'N 103°46.725'E 20/4/2017 7:46 PM 0 kts
Status Approved
OK Cancel
MPA MATA IKAN
01°15.087'N 103°49.328'E 4915C Brg/Rcp: Not Set Rng: Not Set Ref: 00°00.000'N 000°00.000'E 0000C Not Set


SESAME Route Monitor
KONGSBERG
Route Monitor
Planed Passages
Filter
MPA MATA I...
IMO: 9229881
MMSI: 5630820(
Traffic Congestion between 21/4/2017 14:33 and 21/4/2017 14:33
Name: MPA MATA IKAN
Callsign: 9V5902
MMSI: 563082000
IMO: 9229881
Type: Passenger
Destination: MPA BRANI
AIS Status: Receiving
Path Plan Status: Accepted
Arrival time: 21/4/2017 14:40
Schedule offset: -12 minutes
Next waypoint: 13:59
Planed leg speed: 19.7 kts
Current speed: 8.0 kts
Waypoint Planned Calculated
Waypoint 1 13:35 13:35
Waypoint 2 N/A 13:45
Waypoint 3 N/A 13:52
Waypoint 4 N/A 13:59
Waypoint 5 N/A 14:07
Waypoint 6 N/A 14:12
Waypoint 7 N/A 14:18
Waypoint 8 N/A 14:33
Waypoint 9 14:40 14:40


+0hr
+1hr
+2hr
+3hr
+4hr
+5hr
+6hr
+7hr
+8hr
+9hr
+10hr
+11hr
+12hr


ECDIS-1: Developer
ECDIS
MODE: Default
ACK
HDG failure selected sensor failed GYRO1
CCRS 06:32:09
PALETTE
MOB
Range: 5.7NM
Scale: 1:79 936
N UP
TM
Browse
ENC
OVR X2.3
BET CHA
TGT
VID
ECDIS Indications
S57 warning: Overlapping charts: "ID300040".
Details...
CCRP: Conning
TIME 09:24:25 Computer
HDG 000.0° GYRO1
ROT 0.0°/min GYRO1
COG 166.0° GPS1
SOG 0.3kn GPS1
POSN 01°14.610' N GPS1
103°45.676' E
CENTER
STD DISP
SUPPRESS
ACT TURN
AUTO PLAN
AIS FILTER
View
Targets
Route
OwnShip
Chart
Options
Tools
System
Route List
Sort on: Name Distance Date
Name: State: Vali... Date:
Matalkan1 Alt... EGW 170420 07
Matalkan1(01) Edit Not 170420 07
Matalkan2 ---- 170420 02
Titania-Shangh... ---- 141030 03
Titania-Shangh... ---- 170412 05
Torino-Shangha... ---- 170420 01
New
Edit WPT
List WPT
Delete
Display
Undisplay
Rename
Validate
Monitor
Unmonitor
Print
Weather...
Import...
Export...
VTS In...
VTS Out
Open Stream
Close Stream
0699: $GPRMC,072446.00,A,0114.59902,N,1034
0700: $GPRMC,072447.00,A,0114.59904,N,1034
Stop
Step
Continue
Waypoint List
Route Name: Matalkan1(01)
Close
Save
Route Not Changed. - Not Validated
W. Name: Lat: Lon: Crs: Dist: Leg: TDist: RDist: Spd(... ETA: RTime: ETD/Wait: Radius: Offtrack: Max(... Message:
1 Way... 01°14.795'N 103°46.103'E 138.2 4.7NM RL 0.0NM 25.5NM 10.0 170420 09:05Z 02:33 170420 09:05Z 0.10NM 100m 0.0
2 Way... 01°11.145'N 103°49.351'E 246.7 2.0NM RL 4.7NM 20.8NM 10.0 170420 09:33Z 02:04 00:00 0.10NM 100m 0.0
3 Way... 01°10.359'N 103°47.536'E 240.0 3.7NM RL 6.8NM 18.8NM 10.0 170420 09:45Z 01:52 00:00 0.10NM 100m 0.0
4 Way... 01°08.481'N 103°44.310'E 305.3 5.0NM RL 10.4NM 15.1NM 10.0 170420 10:07Z 01:30 00:00 0.10NM 100m 0.0
5 Way... 01°11.367'N 103°40.255'E 286.7 1.1NM RL 15.4NM 10.1NM 10.0 170420 10:37Z 01:00 00:00 0.10NM 100m 0.0
6 Way... 01°11.749'N 103°38.992'E 058.2 5.1NM RL 16.6NM 9.0NM 10.0 170420 10:44Z 00:53 00:00 0.10NM 100m 0.0
7 Way... 01°14.455'N 103°43.333'E 062.1 3.8NM RL 21.7NM 3.8NM 10.0 170420 11:15Z 00:23 00:00 0.10NM 100m 0.0
8 Way... 01°16.261'N 103°46.725'E RL 25.5NM 0.0NM 10.0 170420 11:38Z 00:00 00:00 0.10NM 100m 0.0
A...

RESULTS OF SEA TRIAL

Proof of Concept ✓

Use of Technology: Prototype VDES and Planning Station ✓

Leverage on Existing System and Equipment ✓

MPA SINGAPORE

MARITIME SINGAPORE

For Information