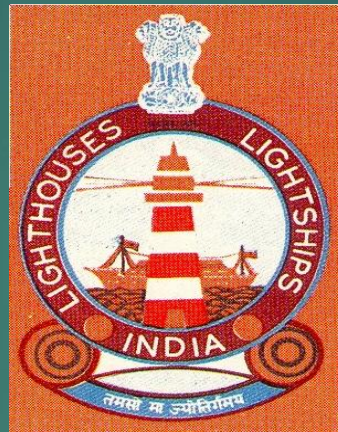


**Government of India
Ministry of shipping
Directorate General of Lighthouses and Lightships**



**ROLE OF DGLL
IN
COASTAL AND MARINE SECURITY**

PRESENTED BY:

**N.MURUGANADNAM, M.E., M.B.A.,
DY. DIRECTOR GENERAL**



INTRODUCTION



Geospatial :

'Relating to or denoting data that is associated with a particular location'

'Spatial refers to 'in space', meaning anything that can be represented in terms of position, coordinates, etc.'

Role of DGHS

Aids to Marine Navigation in Indian Coast for Mariners to fix their position and Assist safe navigation.



AIDS TO NAVIGATION SERVICES FOR POSITION FIXING, COASTAL AND MARINE SECURITY



Visual :

- ▶ Lighthouses
- ▶ Lightships
- ▶ Lighted Buoys

Radio:

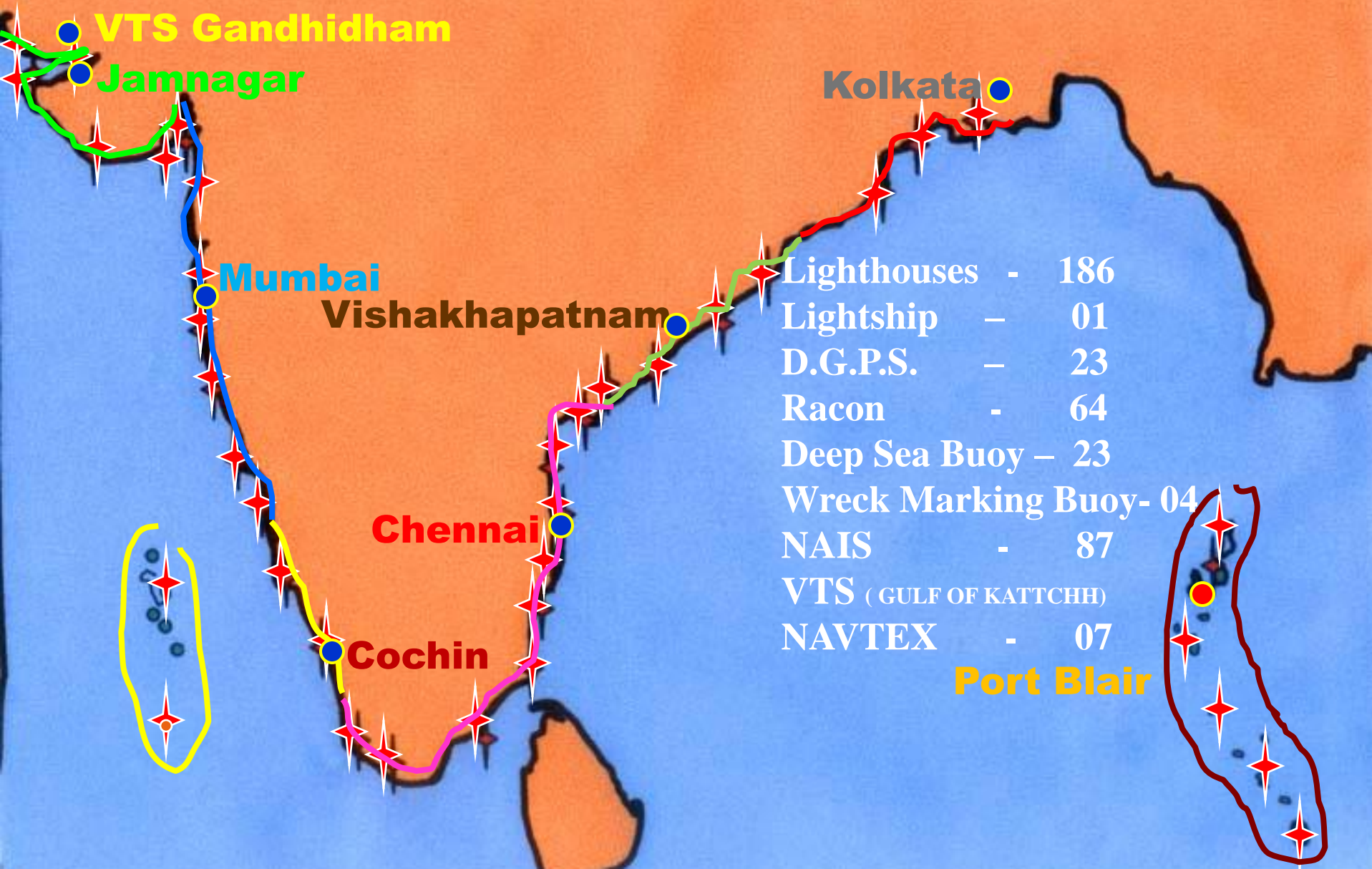
- ▶ Differential Global positioning system (DGPS)
- ▶ Radar transponder (Racon)
- ▶ Coastal Vessel Traffic Management system (CVTMS)
- ▶ Automatic Identification system (AIS)
- ▶ Navigational Text Messaging (Navtex)
- ▶ Tracking and Monitoring of Fishing boats –AIS(P)

Actively Participating in National Coastal maritime security:

- ▶ Provide Infrastructure facility to Coastal Surveillance (Radar and Camera)
- ▶ Networking of Coastal Ship Data for Maritime Domain Awareness



INDIA: AIDS TO MARINE NAVIGATION

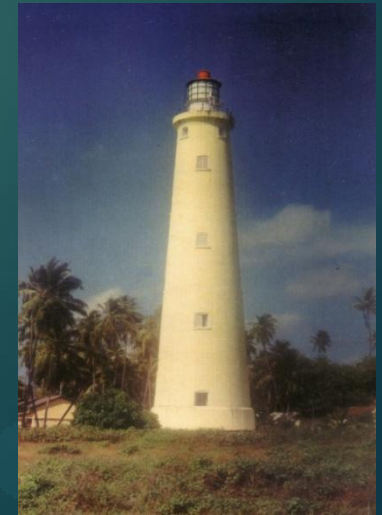
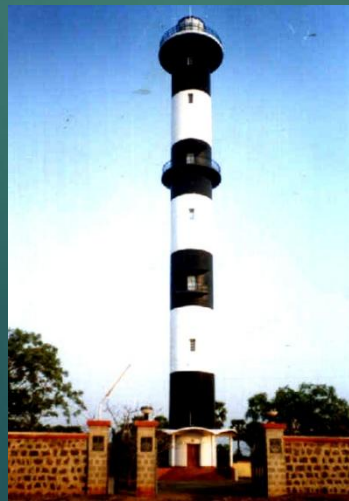


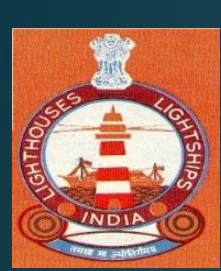


LIGHTHOUSE

5

- A Lighthouse is a conspicuous structure on land close to the shore line or in the water
 - It is used by mariners as day mark with its color schemes and specific light character during night time
 - The purpose of lighthouse is to indicate dangerous Shoals, Sand Bank, Rock etc, to obtain a Line of Position and to indicate Landfalls, Headlands, entrance to estuaries/ports etc.





BUOY



A buoy is a floating device that can have many purposes. It can be anchored (stationary) or allowed to drift with the sea wave. It is used to mark a location, warn a danger or indicate a navigational channel.



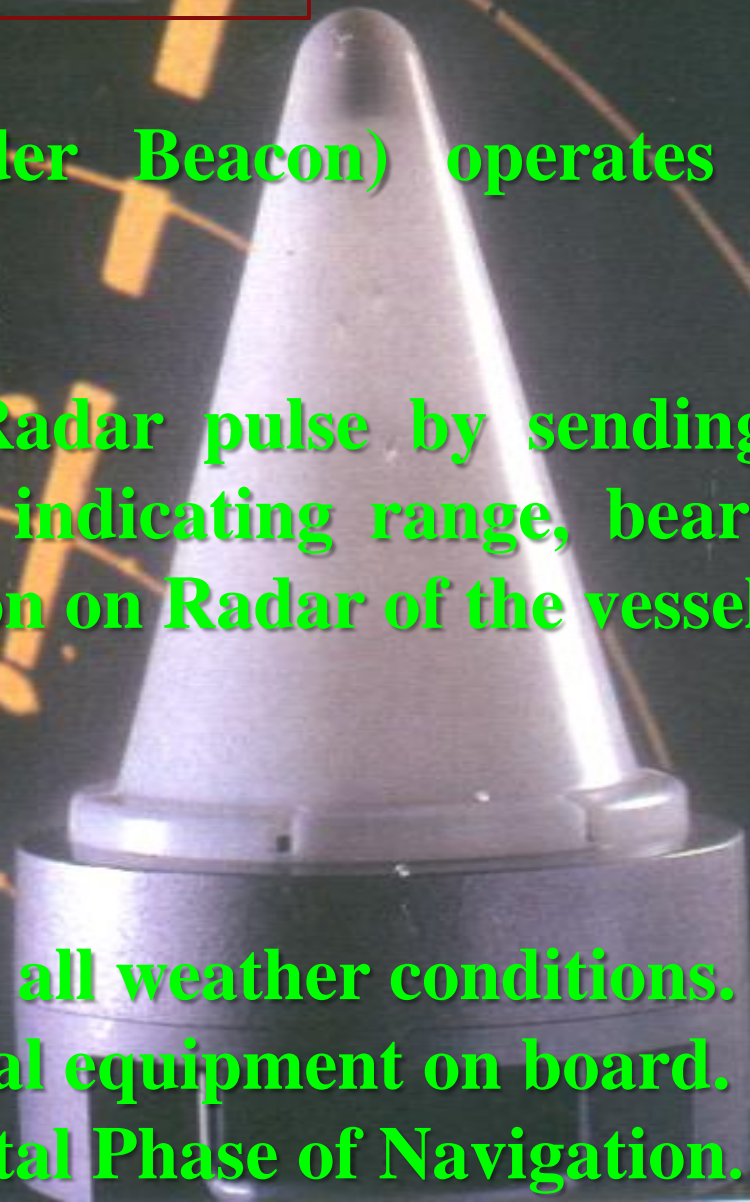


RACON

- **Racon (Radar Transponder Beacon) operates on Microwave frequency.**
- **A Racon responds to a Radar pulse by sending a characteristic pulse thereby indicating range, bearing and identification information on Radar of the vessel.**

Advantage of Racon-

- **Its signal can be received in all weather conditions.**
- **Does not need any additional equipment on board.**
- **A versatile aid during Coastal Phase of Navigation.**

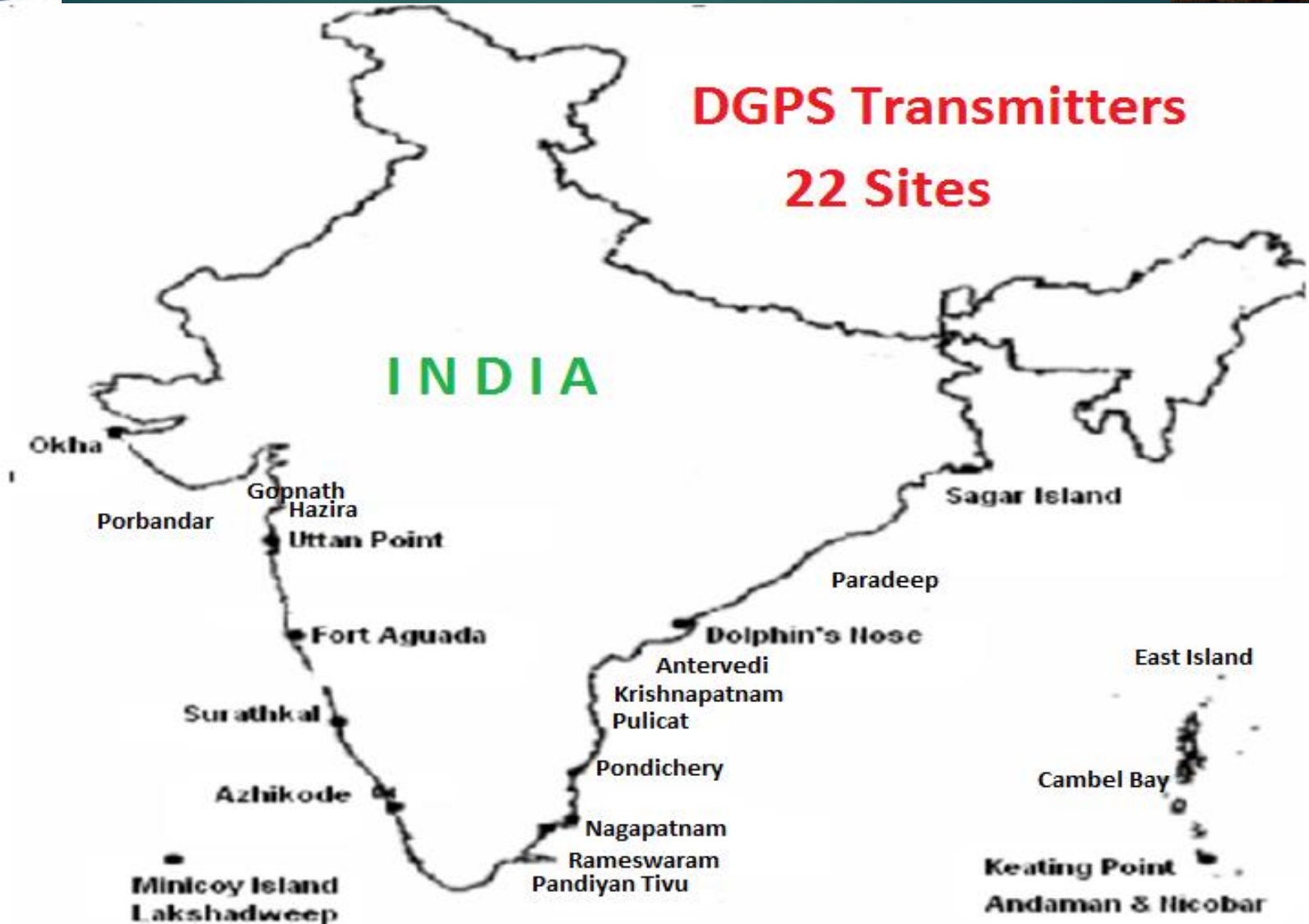




DIFFERENTIAL GLOBAL POSITIONING SYSTEM

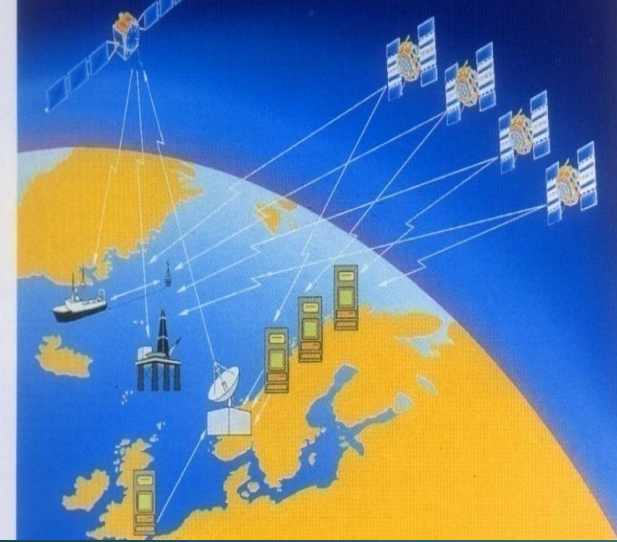


DGPS Transmitters 22 Sites





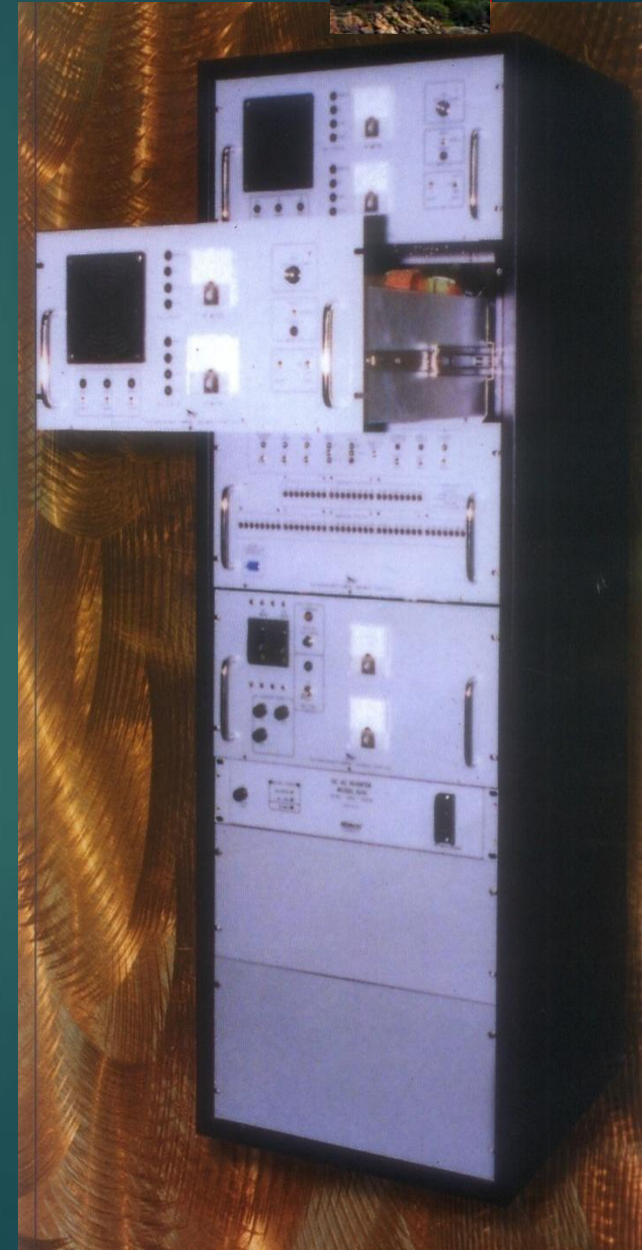
DIFFERENTIAL GLOBAL POSITIONING SYSTEM (DGPS)



It is a Satellite based system , where errors in Global Positioning System (GPS) are accurately calculated at a fixed surveyed point and then transmitted by MF Beacon (283.5 to 325 KHz Marine band). In the coverage area, which is generally 100 - 150 NM, the position can be fixed by mariners to an accuracy of better than 5 meter.

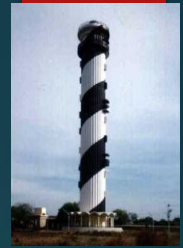


It is a state-of-the- art Aid for the modern day Navigation.





VESSEL TRAFFIC MANAGEMENT SYSTEM



► SAILENT FEATURES

- Maritime Management requirement
- Interactive Aids to Navigation service.
- Ship Arrival and Departure planning by ports
- Traffic guidelines, Control and Anchorage monitoring.
- Pilotage and resource management.
- Information & Disasters control for user departments.
- Support for \ maritime survey.
- Coastal surveillance.

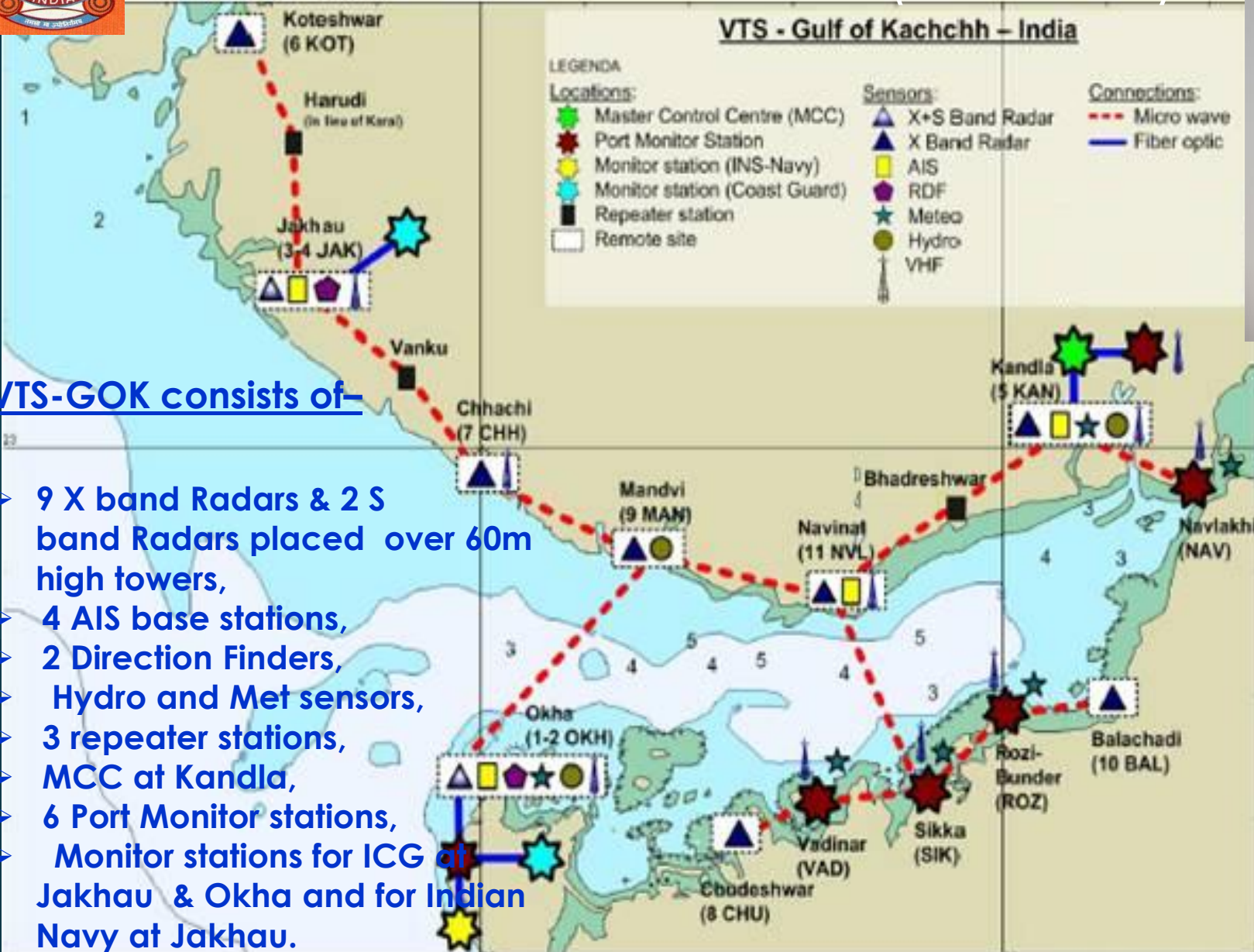


VESSEL TRAFFIC SERVICE – GULF OF KACHCHH (VTS-GOK)



VTS-GOK consists of–

- 9 X band Radars & 2 S band Radars placed over 60m high towers,
- 4 AIS base stations,
- 2 Direction Finders,
- Hydro and Met sensors,
- 3 repeater stations,
- MCC at Kandla,
- 6 Port Monitor stations,
- Monitor stations for ICG at Jakhau & Okha and for Indian Navy at Jakhau.

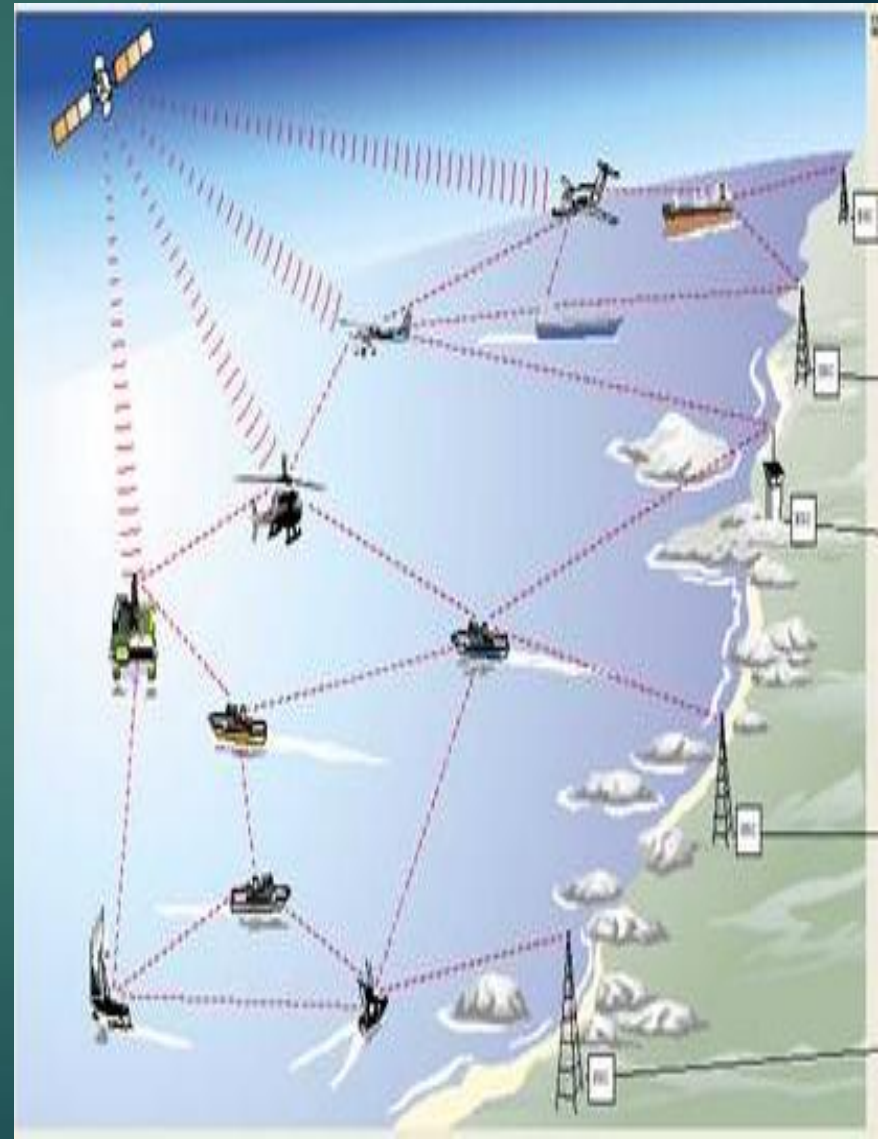




AUTOMATIC IDENTIFICATION SYSTEM (AIS)

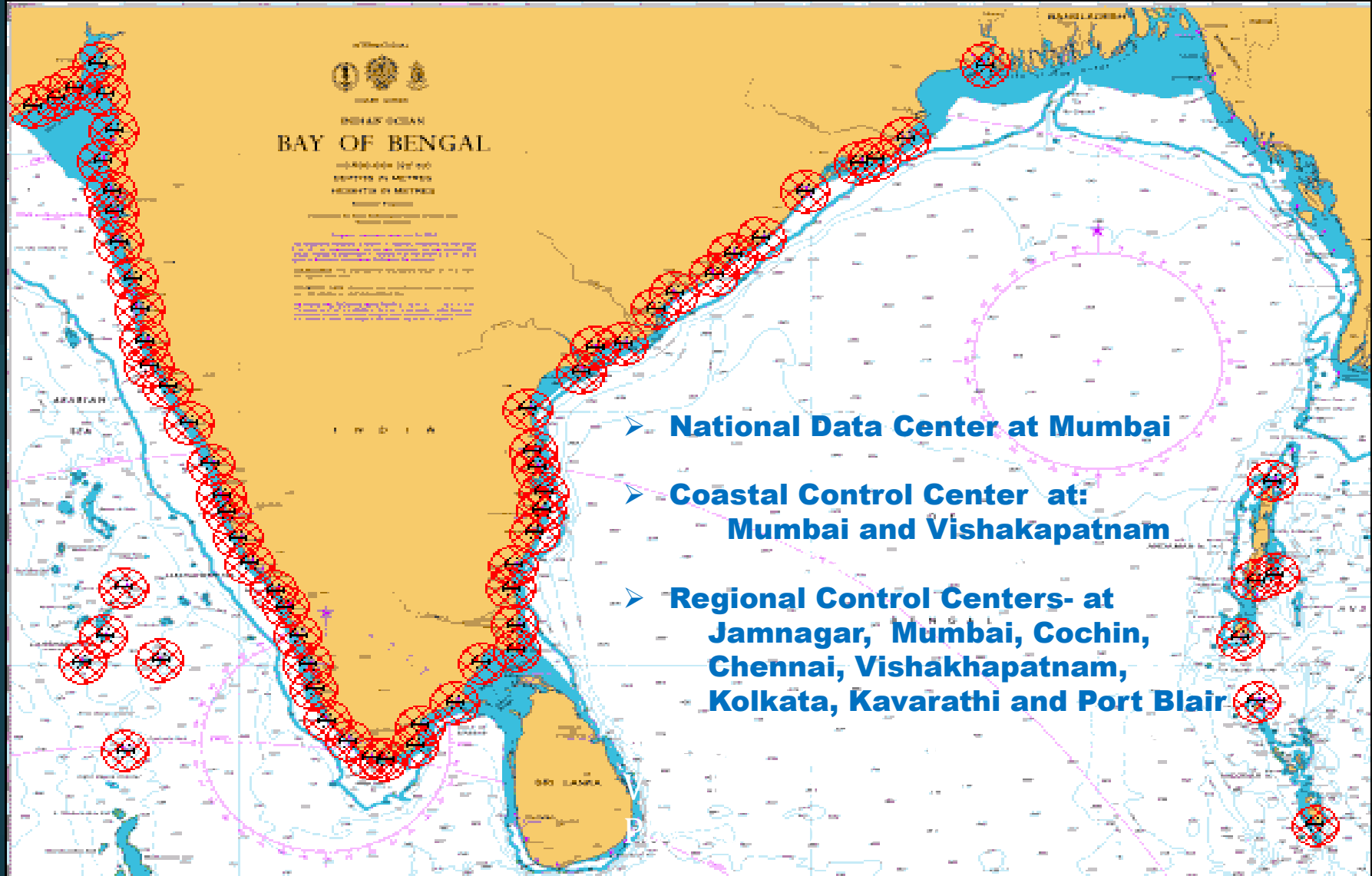
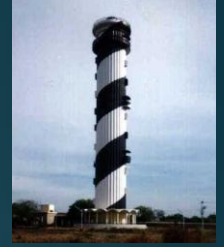


- It is a ship to ship and ship to shore based data broadcast system, operates on two dedicated frequencies 161.975 MHz and 162.025 MHz. in VHF marine band.
- Its characteristics and capability make it a powerful tool for enhancing situational awareness, thereby contributing to the safety of navigation and efficiency of shipping traffic management.
- Automatic Identification System (AIS) is considered to be effective tool for VTS system which minimizes the risk of collision.





INDIAN NAIS NETWORK





National AIS

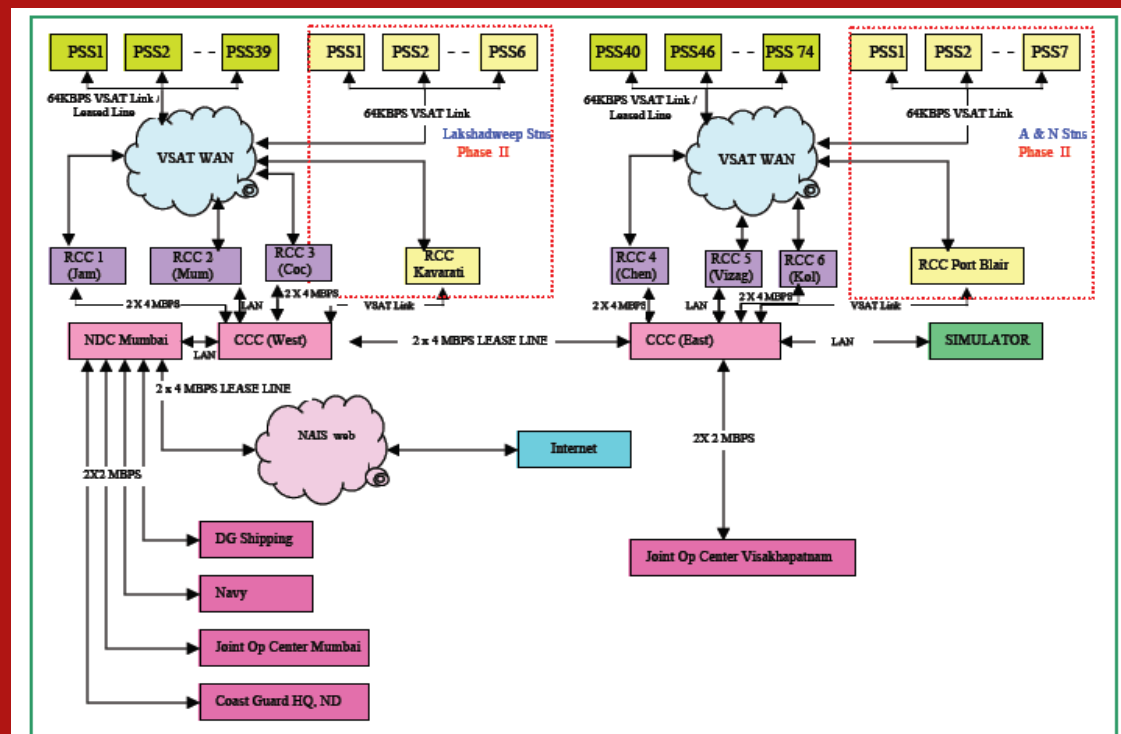


- To track all SOLAS vessels (more than 300 GRT) and any other vessel fitted with AIS above in the Indian water.
- The third frequency of the AIS may be used for the tracking of fishing vessels.

➤ 87 base stations, 8 RCCs, 2 CCCs and NDC,

➤ User Terminals for IN, ICG and DG Shipping for usage/processing of data.

➤ Web Client services for general public.



Network Architecture for National AIS System



MONITORING SYSTEM



Browser: <https://www.dgllnais.in/> | CoastWatch - Web Client

COASTWATCH | File | View | Window | 7/27/2014 7:34:19 PM UTC | 7/28/2014 1:04:19 AM | SAAB

Chart

Position: 04°15.2952' N 087°07.6311' E

Vessel List

Identity	Callsign	Ship Type
VTMS NMPT	B	Not Available
[4191005]		
[4192216]		
[4192217]		
ALLCARGO SUSHEELA	AVTC	Cargo Ship
[4191007]		
GAL CONSTRUCTOR	ATCG	Other
MV DHARM SAGAR	8UNI	Cargo Ship
AS_ATON		Not Available
[4192219]		
[256970000]		
[4192221]		
AMBUJA BHAVANI	AUPW	Cargo Ship
GURU PRASAD	VVJO	Cargo Ship
ANASTASIA	V7AX2	Cargo Ship
IN WARSHIP 2	VTNC	Law Enforcement

Selected Vessel

GURU PRASAD

Nationality	India
Callsign	VVJO
Transponder Type	Class A
MMSI	419172000
IMO	9129524
Ship Type	Cargo Ship
Latitude	20°28.4271' N
Longitude	070°43.4416' E
SOG	2.8 kn
COG	296.3 °
ROT	
Length	79 m
Width	15 m
Max Present Static Draught	3.4 m
Destination	KANDALA
ETA	7/29/2014 10...
Navigational Status	Under Way U...
Type of Position Fix Device	GPS
Position Accuracy	Low
True Heading	292 °
RAIM	Not In Use
AIS Version	0

EN | 1:04 AM | 7/28/2014



Tracking and monitoring of Fishing vessels



VERAVAL
FISHING HARBOUR



MANGROL
FISHING HARBOUR



PORBANDER
FISHING HARBOUR

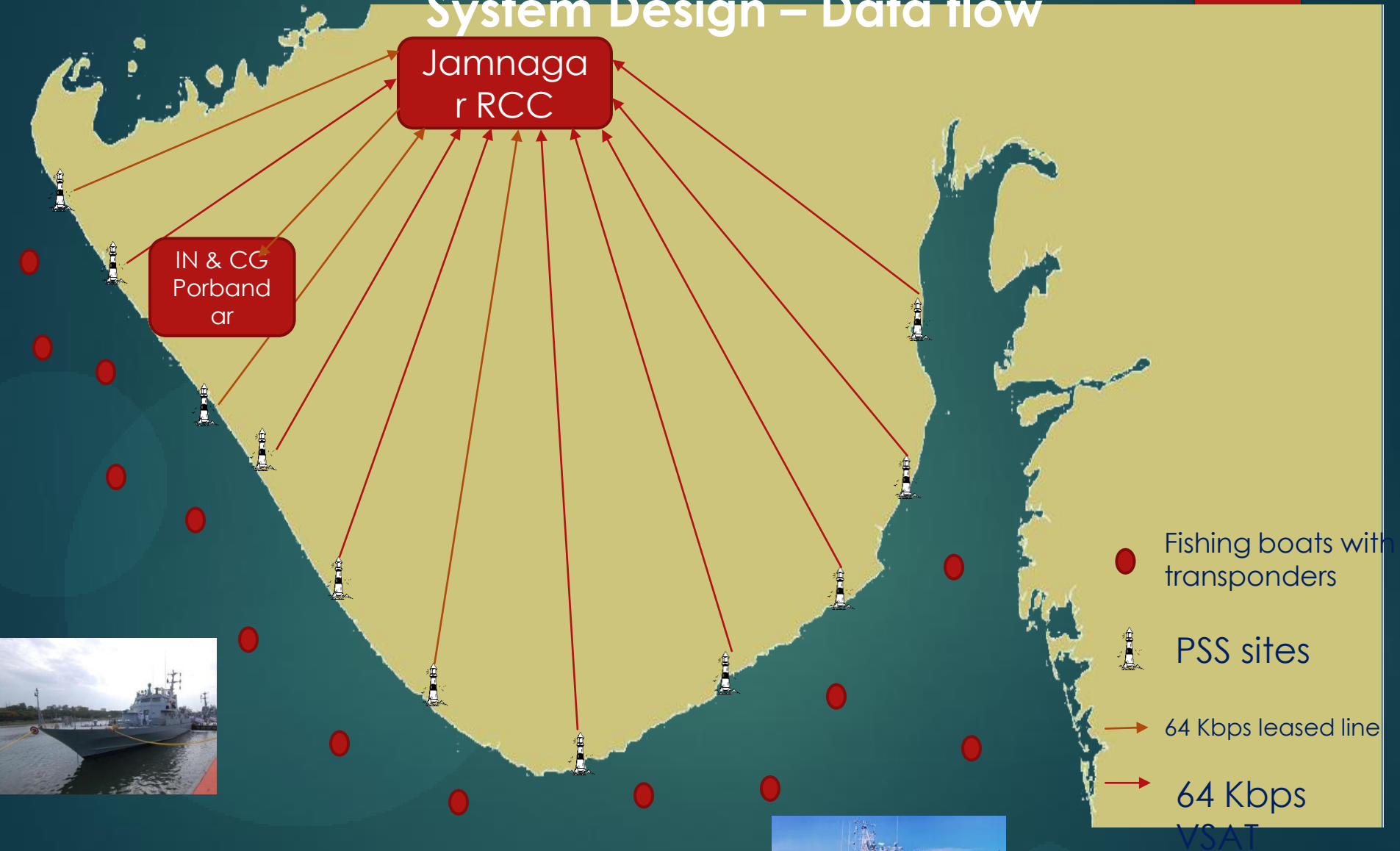


Serial No.	Boat Name	Boat Registration no	MMSI	Location	Serial no. of Trans.	Mobile Number
1	Rajmata	GJ-25-MM-2610	25002610	Porbandar	41700121230503	9904130225
2	Khusali Sagar	GJ-25-MM-745	25000745	Porbandar	41700121230436	9879931051
3	Jay Dasha Maa	GJ-25-MM-1390	25001390	Porbandar	41700121230023	9924150060
4	Aastha	GJ-25-MM-3405	25003405	Porbandar	41700121230222	8141500260
5	Siddhi Vinayak	GJ-11-MNM-07306	11007306	Porbandar	41700121230123	9925395443
6	Jai Sagar	GJ-25-MNM-2284	25002284	Porbandar	41700121230490	9925395443
7	Jay Khodiyar Krupa	GJ-11-MNM-7423	11007423	Porbandar	41700121230267	7567723533
8	Kismat	GJ-11-MNM-7261	11007261	Porbandar	41700121230294	7567723533
9	Hare Krishna	IND-GJ-25-MO-1598	25001598	Porbandar	41700121230411	9727478575
10	Chandi Sagar	GJ-25-MO-2427	25002427	Porbandar	41700121230218	9925169996
11	Bhav Millan	GJ-11-MNM-7398	11007398	Porbandar	41700121230184	7567723533
12	Kritika Sagar	IND-GJ-11-MO-6952	11006952	Porbandar	41700121230013	9989951599
13	Jay Sainath	GJ-11-MNM-07570	11007570	Porbandar	41700121230415	9712156070
14	Gajanan	IND-GJ-25-MO-3216	25003216	Porbandar	41700121230220	8141500260
15	Aasutosh	GJ-25-MO-10	25000010	Porbandar	41700121230205	9033361944
16	Aum Rameshvari	GJ-11-MNM-02162	11002162	Porbandar	41700121230155	9712156070
17	Ram Ratan	GJ-11-MNM-2141	11002141	Porbandar	41700121230522	9924038116
18	Ram Sagar	GJ-25-MNM-00840	25000840	Porbandar	41700121230456	9924038116
19	Jai Rozi Krupa	GJ-25-MO-3704	25003704	Porbandar	41000121230179	9924038116
20	Rozi Krupa	GJ-11-MNM-7106	11007106	Porbandar	41700121230259	9924038116
21	Arti	GJ-25-MO-1551	25001551	Porbandar	41700121230306	9712703864
22	Bhagya Vidhata	GJ-11-MNM-07329	11007329	Porbandar	41700121230057	9924038116
23	Shree Dhar	GJ-25-MO-1555	25001555	Porbandar	41700121230056	9712703864
24	Shree Nidhi	GJ-25-MO-1546	25001546	Porbandar	41700121230209	9712703864
25	Shree Jay Chamunda Ma	GJ-11-MNM-07202	11007202	Porbandar	41700121230227	9712703864



DIRECTORATE GENERAL OF LIGHTHOUSES AND LIGHTSHIPS

System Design – Data flow





MONITOR AND TRACKING



READ AND REPLAY FOR SAR



COASTWATCH

7/27/2014 7:34:19 AM UTC
7/28/2014 1:04:49 AM

Selected Vessel

Nationality	INDIA
Call Sign	VVOO
Transponder Type	Class A
MMSI	419170000
IMO	9129524
Ship Type	Corp Ship
Latitude	12°18.4317' N
Longitude	77°42.4415' E
SOG	2.8 kn
COG	286.3°
ROT	
Length	78 m
Width	13 m
Max Present Static Draught	3.4 m
Destination	KANDALA
ETA	7/29/2014 10:...
Navigation Status	Under Way U.L.
Type of Position Fix Device	GPS
Position Accuracy	Low
True Heading	282°
RADN	Not In Use
ISX Version	0

GEO FENSING



SOS

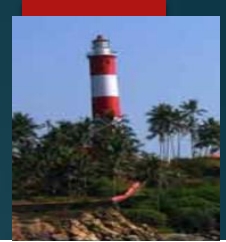


RESCUE



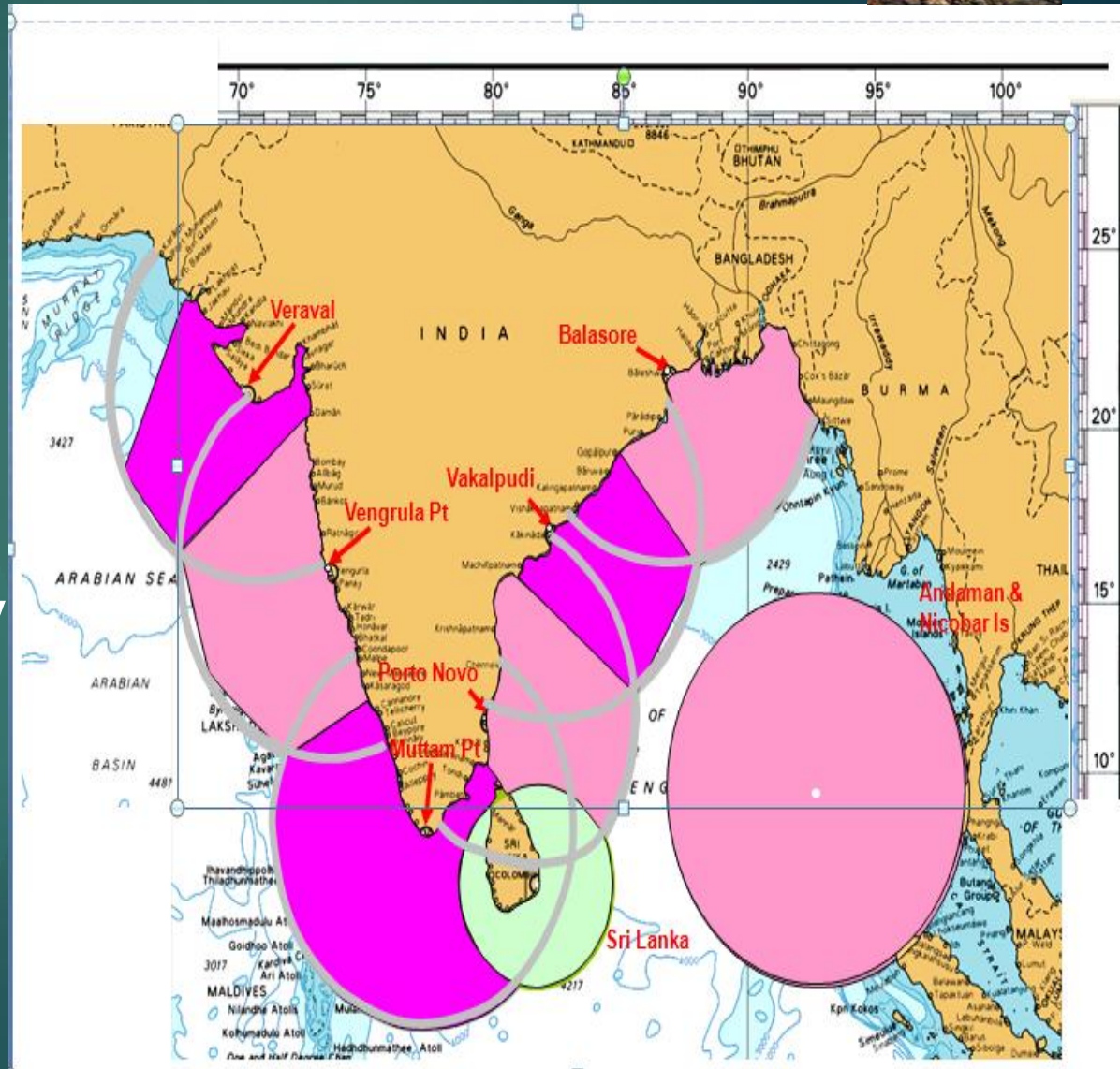


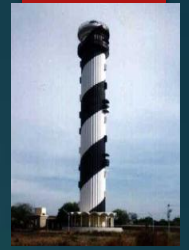
NAVTEX



➤ **Navigational Text message service telecasts Navigational & metrological warnings, weather forecast, search and rescue messages which are being established along the coast line of India to provide seamless coverage through 7 transmitting stations along the coast line of India.**

➤ **Navtex service is provided by using MF transmitters and transmitted for 10 minutes every 4 hrs.**





Thank you

Email id:

nm-dgll@nic.in