Coastal Surveillance Radar

1.0 Description of Technology

The Costal Surveillance Radar is the primary sensor for Integrated Costal Surveillance System (ICSS). It is capable of detecting sub 20 meter boats such as county boats, dinghies and fishing vessels in heavy sea clutter environment in all weather conditions. The radar is capable of operating 24x7. It has networking facility to operate either remotely or locally. Primarily, radar operates in X band and resorted to S band during inclement weather. The radar is designed according to IALA specifications with instrumented range of 50 Km. The radar detection range for small county boats (RCS 1sqm) are up to 20 km. Radar has been successfully evaluated as a part of "Proof-of-Concept" trials of ICSS and recommended for transfer-of-technology (ToT).

It is a modern generation of coastal surveillance radar with high duty solid state power amplifier (SSPA), sophisticated signal processing and sea clutter mitigation techniques. High resolution, both in azimuth and range, enables the radar to track dense fishing vessels in the vicinity of coastal area. Further, the radar has advanced tracking algorithms to track up to 1500 sea surface targets. The track information can be transmitted over IP network to control stations.

The radar is configured as a modular design; so that it can put on tower, existing light house or any suitable structure. The major sub-systems of the radar are Dual band antenna, Pedestal, Transceiver rack (SSPA, Exciter, Receiver, and Signal Processor), Radar Controller, Data Processor, and Display server.

CSR during PoC Trails

CSR installed in East Coast

2.0 Current Status

Four CSRs have been developed as a part of ICSS program. The indigenous CSR met the operational requirement as per IALA recommendations. Currently, three radars are in operation at Balasore area which will be integrated with Coastal Surveillance Network of Indian Coast Guard (ICG). Towards the production of indigenous CSR, the Cost Estimation Committee (CEC) has recommended for two licenses (non-exclusive) for ToT as per DRDO guidelines.

3.0 Potential users

(a)The Indian Coast Guard (ICG) for coastal security

(b) Indian Navy for surface target surveillance

(c) Director General of Light Houses and Light Ships (DGLL)

(d) Ministry of Shipping for National Coastal Vessel Traffic Services (NCVTS)

(e) Vessel Traffic Services (VTS) of public/private ports/facilities

4.0 Application Areas

The primary aim of CSR design is to detect and track small fishing vessels for Coastal surveillance application. However, the radar can also be directly used for **VTS** (Vessel Traffic management Services) application, harbor surveillance and navigational purposes. By mounting on ship, it can also be tuned to the role of **Sea Surface Target Surveillance Radar**. It can be used for **Airport Surface Target Surveillance** as it is solid state coherent radar with Doppler processing.