**RADAR DISPLAY AND CONTROLS**

**Introduction**

Radar displays and controls are crucial components in a radar system, providing operators with the necessary tools to navigate and maintain situational awareness.

**Components of Radar Display**

**Plan Position Indicator**

A Plan Position Indicator (PPI) is a type of circular radar display that represents the radar antenna in the center of the display, giving the distance from it and angle relative to ship’s heading or The True North. As the radar antenna rotates, a radial trace on the PPI sweeps in unison with it about the center point.

**Radar Range Rings:**

Radar Range Rings are a feature of radar displays that show a set of concentric circles labeled by distance from the central point. The distance between circles depends on the radar range. They are useful in quickly determining the approximate distance between the own ship and other objects. The rings could be turned on and off.

**Bearing Scale:**

It provides angular information on the radar display, enabling to quickly determine the approximate bearing to an object.

**Electronic Chart Overlay:**

Integrating radar data into the ECDIS can significantly improve situational awareness. This integration is a game-changer, providing critical information that can make all the difference in high-pressure situations.

**A Radar Head-Up Display**

This specialized display system is a valuable tool utilized in the aviation and maritime industries to present radar information in a head-up format. This allows for enhanced situational awareness as operators can maintain their head-up and eyes-out orientation while still receiving critical radar data

**Key features and benefits of a Head-Up Display**

Marine Head-Up Display (HUD) is a transparent display that presents data without requiring watch-keeping officers to look away from their usual viewpoints. They receive real-time radar data, including target positions, headings, speeds, and other relevant information. This technology provides real-time radar data that is accurate and reliable. Data Includes information like target positions, headings, speeds, and other relevant data that can help OOW make informed decisions.

**Radar Controls**

**Gain Control**

The Gain Control function in radar is a crucial feature that adjusts the receiver sensitivity for the optimal reception of signals of widely varying amplitudes. The watch-keeping officer can increase Gain to improve target detection or decrease it to clean the image from noise.

**Tuning Control**

Tuning control optimizes radar performance by fine-tuning its frequency in specific conditions.

**Rain and Sea Clutter Control**

On the radar screen, small targets like boats and buoys may be hidden by severe sea and rain clutter. To separate targets from clutter, radars use various types of suppression techniques.

Rain clutter control filters out echoes from the radar display caused by rain and precipitation.

The Sea Clutter Control feature helps in minimizing the interference caused by the waves and reflections from the sea.

**Range Control**

Radar Range Control allows the operator to adjust the distance at which the radar can detect objects. When a detailed image is required, such as in ports or situations with heavy traffic, the range is set to a small area. On the other hand, big coverage is usually utilized for short observations at far distances or when there are no other objects nearby.

**Electronic Bearing Line and Variable Range Marker**

Operators can use Electronic Bearing Line (EBL) to measure angles and bearings with high accuracy, while Variable Range Marker (VRM) can be used to measure high-accuracy distances or set safety circles.

**A/C (Automatic Clutter) Control**

Automatic Clutter Control is a solution for a seamless and optimal display. This feature automatically adjusts clutter settings based on the environment, ensuring that the display stays clear from any unwanted echoes. With Automatic Clutter Control, operators can run hassle-free and efficiently, without any manual adjustments. However, operators should be watchful and not over-trust automatic settings.

**Conclusions:**

Maritime navigation demands precision, accuracy, and reliability, and radar displays and controls are the key to achieving both. Without these essential tools, a simple journey can turn into a risky venture. Radar displays and controls is crucial for safe and successful voyages.