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Factsheet – The RSAF E-2C Hawkeye

The Republic of Singapore Air Force (RSAF) E-2C Hawkeye is a sophisticated Airborne Early Warning and Control (AEW&C) platform employed to enhance air defence. It is capable of providing air and surface surveillance, as well as tactical control of air assets.

The E-2C aircraft was acquired from the US in the mid-1980s. Together with the Defence Science and Technology Agency (DSTA), the RSAF upgraded the entire computer and software systems of the E-2C. State-of-the-art equipment was adapted to the harsh military environment and millions of codes were rewritten. The RSAF and DSTA also designed and enhanced the interfaces between the various E-2C subsystems.

E-2C Sub-Systems

The E-2C is equipped with several sub-systems that enable the aircraft to detect, track and identify both air and surface targets:

a) APS 138 Radar - The dish-shaped surveillance radar is the back-bone of the E-2C target detection capability. The radar provides automatic detection and tracking of targets over water and over land up to 200 nautical miles (nm).

b) Identification Friend or Foe (IFF) System - The IFF system integrates the information collected from the APS 138 Radar to allow the Weapon System Officers (WSOs) to identify targets, and to distinguish between friendly and unknown aircraft up to 250 nm.

c) Passive Detection System (PDS) - The E-2C is also equipped with a PDS, capable of detecting electronic signals and correlating these signals with key signal parameters of known electronic emitters. This allows the WSOs to identify and classify possible aircraft types encountered.

d) Communications - The communications suite onboard the E-2C comprises three UHF/VHF, three UHF and two HF radios. The radios facilitate communications with other aircraft.

e) Upgraded Mission Control System (MCS) - The RSAF and DSTA replaced the E-2C's aged Command and Control (C2) system with modern computers and displays, and developed a new real-time command and control software. The E-2C MCS comprises a Mission Computer, which processes all information from the APS 138 radar, IFF System and PDS. The computer tracks and fuses the relevant information to maintain a correlated situation picture. The information is presented to the E-2C WSOs via the console displays. The upgraded MCS includes the following features:

1) Upgraded Computer - The new computer comprises multiple commercial-off-the-shelf (COTS) processors (the "brains" of computers) that give the E-2C the capability to crunch more numbers in a shorter time. The new system is also designed to be rugged to withstand the stringent E-2C operating environment. Due to extensive use of COTS components, the new system is more power-efficient, lighter and dissipates less heat. The new system is also more reliable and easier to maintain and upgrade.

2) Upgraded Operator Consoles - The old monochrome display (10" in diameter) is replaced by a 19" high-resolution colour monitor. The modern larger colour battle display helps operators analyse information more quickly and accurately. The use of standard keyboard and trackball reduces the workload but increases the operational effectiveness of the WSOs as they are familiar with the use of these devices. The old system used non-standard input devices.

3) New C2 Software - The real-time C2 software was designed to handle the high volume of raw sensor data from all the existing avionics systems and the global positioning system. With more processing power and storage available, the software is now able to carry out split-second calculations in real-time. The new software is also easier to maintain compared to the old system that was built using an older generation of programming language.

4) Upgraded cockpit - The addition of a Global Positioning System (GPS) and a Cockpit Display Unit (CDU) was part of the avionics upgrade in the cockpit. The GPS further enhances the navigation accuracy of the E-2C while the CDU allows the E-2C pilots to better appreciate the surrounding air situation.

Technical Specifications

Length : 57 ft 7 in
Wingspan : 80 ft 7 in, 29 ft 4 in (Folded)
Height : 18 ft 4 in
Maximum Cruise Speed : 280 knots
Service Ceiling : 35,000 ft
Maximum Endurance : 6 hours
Radar Detection Range : 200 nm
Crew : Two pilots & three WSOs