Sampson

Advanced multi-function air defence radar

BAE Systems radar teams have been developing, manufacturing, integrating and supporting military radar systems for more than 70 years. From state of the art signal processing algorithms to advances in ballistic missile defence, we never stop innovating to ensure that our customers maintain their advantage.

Sampson is the primary surveillance and dedicated tracking sensor on the UK Royal Navy's Type 45 destroyers. It's fully software-configurable and features adaptive digital beamforming techniques to manage complex clutter and high electronic countermeasure environments.

Trusted for its concurrent air and missile detection and tracking capabilities, this versatile radar provides a comprehensive air picture and high-quality track data in challenging conditions. It can home-in on hundreds of targets for point and area defence and enables fully automatic threat engagement.

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BAE SYSTEMS

Precision tracking of multiple targets

Evolved from the successful Multi-Function Electronically Scanned Adaptive Radar (MESAR) collaborative research and development programme, Sampson supports point and area defence against current and future complex air threats including supersonic sea skimmers and anti-ship ballistic missiles in heavily cluttered environments.

Software-controlled coverage and radar operation automatically adapts to the operating environment.

Compatible with both active and semi-active homing missile systems, Sampson provides mid-course guidance and supports fully automatic operation where rapid reaction is required.

Operational availability is high. The design uses multiple parallel paths and operation is maintained even if several sub-systems fail. Repair is simple, faults are diagnosed using built-in test facilities. There are no high voltage, high-power microwave parts or associated water cooling systems, enhancing maintainability of the equipment.

Operating costs are minimised by the use of high-reliability solid-state transmitters. Initial purchase price and through-life costs are significantly lower than systems employing separate surveillance and tracking radars.

Its flexible modular design enables Sampson to be tailored to individual applications. It features programmable signal, plot and track processing, with antenna rotation of 30rpm. Two arrays, each with more than 2000 radiating elements, provide hemispherical coverage and high-power aperture for optimum surveillance.

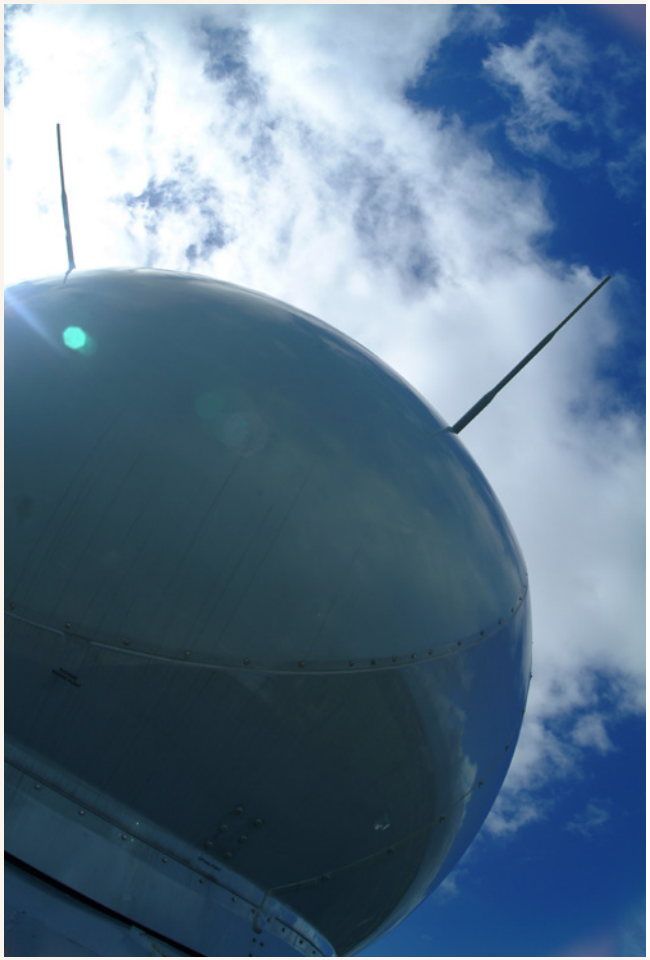
Sampson enables search and precision tracking of multiple targets, together with weapon control functions; accurate 3D target data and variable data rate for enhanced threat tracking; stealth aircraft and missiles target detection; high electronic countermeasures (ECM) immunity; high search rates in clutter thanks to its S-band frequency; and fault-tolerant design.

Features include:

- GaAs transmitters and receivers for each array element with digital phase control for beam steering
- Air cooling of antenna
- Negligible microwave losses
- Receive elements combined in sub-arrays via stripline
- Independent array processing chains
- Digital beam-forming processes suppress multiple jammers
- Azimuth and elevation monopulse
- High pulse compression ratio
- Multi-mode doppler processing
- Environmental analysis
- Adaptive track processing
- Radar management computer to control beam and waveforms
- Local control console
- Interface to weapon systems.

Anti-jamming features

- Adaptive nulling
- Very low antenna sidelobes
- Monopulse accuracy maintained
- Very high bandwidth
- Frequency agility
- Pulse compression.



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