

Sampson

Next Generation Multi-function Radar

Working to become a dependable partner of choice

BAE Systems Insyte's radar solutions provide assured early threat detection, giving commanders the time to act rapidly and deliver optimum effect.

Sampson combines the roles of surveillance and dedicated tracking. Selected by the Royal Navy for the Type 45 Destroyer, Sampson is central to the Sea Viper air defence system.



SAMPSON is central to Type 45's air defence system

Features

- Provides search and precision tracking of multiple targets, together with weapon control functions
- Stealth target detection
- Variable data rate for threat tracking
- High electronic countermeasures (ECM) immunity
- S-band frequency enabling high search rates in clutter
- Fault-tolerant design.

Evolution

Sampson evolved from the successful MESAR collaborative research and development programme.

Operational capability

Sampson supports point and area defence against current and future air threats in heavy jamming land and sea clutter. Software controlled coverage and radar operation, automatically adapts to the operating environment.

The system is compatible with both active and semi-active homing missile systems, and provides mid-course guidance. Sampson 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 using high reliability solid-state transmitters. Initial purchase price and through-life costs are significantly lower than systems employing separate surveillance and tracking radars.

DATA SUMMARY

Technical description

- 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 beamforming processes suppresses 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.



Design features

- Flexible modular design enabling radar to be tailored to individual applications
- Programmable signal, plot and track processing
- Antenna rotation of 30rpm
- Two arrays each with more than 2000 radiating elements.

Performances features

- Hemispherical coverage
- Very high power aperture product for maximum coverage and high rate surveillance
- Excellent detection of stealth aircraft and missiles
- Accurate 3-D target data
- Enhanced track and initiation range
- Multiple target tracking
- High data rate for precise guidance and manoeuvre detection
- Mid-course guidance via integral missile up-link
- Kill assessment.

Anti-jamming features

- Adaptive nulling
- Very low antenna sidelobes
- Monopulse accuracy maintained
- Very high bandwidth
- Frequency agility
- Pulse compression
- Automatic waveform selection
- Sidelobe blanking
- Jammer strobe extractor and tracking
- Jammer burnthrough.

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