

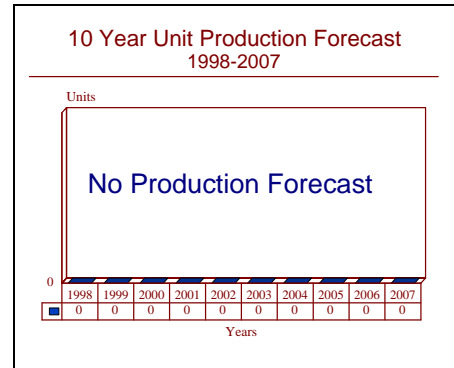
ARCHIVED REPORT

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WSN-3 - Archived 11/99

Outlook

- Production complete
- **THIS REPORT WILL BE ARCHIVED IN 1999**



Orientation

Description. Electrically Suspended Gyro Navigator (ESGN).

Sponsor
US Navy

Naval Sea Systems Command (NAVSEA)
2531 Jefferson Davis Highway
Arlington, Virginia (VA) 22242-5160
USA
Tel: +1 703 746 3100

Contractors

The Boeing Co
(formerly Rockwell International, Autonetics
Electronic Systems Div)
Electronic Systems & Missile Defense
3370 E Miraloma Avenue
Anaheim, California (CA) 92803
USA
Tel: +1 714 762 8111

Status. Production complete; in service.

Total Produced. Through the mid-1990s, an estimated 93 complete systems (two Inertial Measuring Units each) and 223 spare IMUs were produced.

Application. Tactical shipboard navigation systems used aboard US Navy SSN-21, SSN-647, and SSN-688 class attack submarines.

Price Range. The last contract for production models suggests a unit price of US\$4 million in 1990 dollars.

Technical Data

Design Features. The WSN-3 Electrically Suspended Gyro Navigator (ESGN) is a tactical, advanced inertial navigation system designed for attack submarines. The unit is a modified version of the Dual Miniature Inertial

Navigation System (DMINS) and is commonly referred to as the ESGN for shipboard applications.

The WSN-3 ESGN program permits the performance of navigational functions independent of a central computer complex. This standalone data processing effort is

required so that the Mk 117 and CCS Mk 1 fire control system can accommodate an over-the-horizon targeting capability as required for the deployment of the Tomahawk cruise missile. The ESGN system is an integral

navigation subsystem of the Submarine Advanced Combat System (SUBACS). The ESGN provides self-contained, worldwide, inertial navigation for attack submarines with a reset interval of 14 days.

Variants/Upgrades

None identified. A follow-on system based on IFOG technology is in development.

Program Review

The WSN-3 is based on the Electrically Suspended Gyro (ESG) technology developed by Rockwell International for its Electrostatically Supported Gyro Monitor. It has been the mainstay of the SSN-688 Los Angeles class attack submarines, the last of which was commissioned in September 1996. The WSN-3 also equips the SSN-21 Seawolf attack submarine, a major product of General Dynamics' Electric Boat Division.

The last known production contract was awarded to Rockwell in December 1990. It entailed US\$20.2

million for five ESGN systems for SSN-688 and SSN-21 class submarines, and was expected to be completed in March 1994.

In December 1996, Boeing bought the aerospace and defense units of Rockwell. As a result, Rockwell's Autonectics Electronic Systems Division became Boeing Electronic Systems & Missile Defense. Thus, any future WSN-3 support/repair contracts will go to Boeing.

Funding

Funding has not been identified within current procurement documents.

Recent Contracts

| <u>Contractor</u> | <u>Award (\$ millions)</u> | <u>Date/Description</u> |
|-------------------|----------------------------|--|
| Rockwell | 9.9 | Sep 1995 – CPFF delivery order contract for the repair of 168 ESGN Inertial Measuring Units (IMUs). Completion date was Mar 1997. (N00104-90-G-A016) |
| Rockwell | 6.0 | Sep 1996 – Modification to previously awarded contract (N00104-90-G-A016) for maintenance of test equipment and procurement of parts necessary to support the repair of 154 ESGN IMUs. Completion date was Sep 1997. |
| Rockwell | 10.0 | Sep 1996 – Modification to previously awarded contract (N00104-90-G-A016) for repair of 154 ESGN IMUs. Completion date was Sep 1997. |
| Boeing | 7.6 | Oct 1997 – Delivery to order contract for FY98 repair of 74 ESGN IMUs. |

Timetable

| <u>Month</u> | <u>Year</u> | <u>Major Development</u> |
|--------------|-------------|---|
| | FY75 | ESGN design contract |
| | FY84 | ESGN commenced operational evaluation, completed firmware certification, completed standalone ESGN integration with Central Computer Complex, completed technical evaluation, completed environmental/qualification testing |
| | FY86 | Completed at-sea testing of a marine-configured ring laser gyro and continued |

| | | |
|-----|------|---|
| Dec | 1990 | laboratory evaluation of submarine ring laser gyro |
| Mar | 1994 | Last known production contract for WSN-3 systems |
| Dec | 1996 | Planned completion date of last contract |
| | | Rockwell aerospace and defense units sold to Boeing |

Worldwide Distribution

The WSN-3 is exclusive to **US Navy** SSN-647 Sturgeon class, SSN-688 Los Angeles class, and SSN-21 Seawolf class attack submarines.

Forecast Rationale

Rockwell's last production contract called for the delivery of five WSN-3 systems by March 1994. Since that time, the only activity logged in the program has consisted of three contracts awarded to Rockwell for the repair of ESGN components. These should have been completed in 1997.

The only remaining opportunity for further WSN-3 production was contingent upon the New Attack Submarine program, a replacement for the Seawolf class. The New SSN, however, is slated to receive newly developed electronics. Boeing Electronic Systems & Missile Defense has stated that production of the WSN-3 is complete.

Ten-Year Outlook

There will be no further production. **THIS REPORT WILL BE ARCHIVED IN 1999.**

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