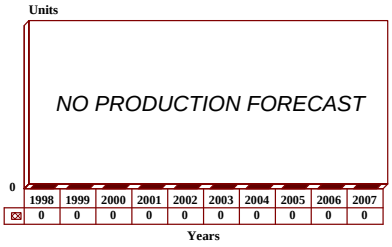
Zeus - Archived 9/99

Outlook

- Last known orders delivered in 1992
- Zeus has generated little interest in export markets
- UK Harrier GR. 5/7 fleet is only major platform to be fitted with Zeus
- **BARRING VERIFIED CONTRACT AWARDS THIS REPORT WILL BE DROPPED IN 1999**

10 Year Unit Production Forecast
1998-2007



Orientation

Description. Fully integrated internal ECM system comprised of a radar warning receiver (RWR) and multimode jammer.

Sponsor

United Kingdom Ministry of Defence
Procurement Executive
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Contractors

GEC-Marconi Radar & Defence Systems Limited
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Middlesex HA7 4LY
United Kingdom
Tel: + 44 181 954 2311
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Northrop Grumman Corporation
2301 West 120th Street
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USA
Tel: +1 213 600 3000
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Licensee. No known production licenses have been awarded.

Status. Believed to be out of production, but still in service.

Total Produced. It is estimated that 113 Zeus system have been manufactured through 1997. The majority (94) have gone to the UK Harrier GR.5/7 fleet with the remainder being comprised of test systems.

Application. Zeus was designed to provide an internal modularized ECM system primarily for the British Aerospace (BAe) Harrier and Lockheed Martin F-16 series. The system is for capable of intercepting, identifying, and jamming a variety of threats including search, fire control, gun control, and airborne intercept radar and of initiating and controlling decoy release.

Price Range. Based on analysis of 1990 contract values, the estimated unit cost of Zeus is US$1.7 million (1990 dollars.)

Technical Data

Design Features. Zeus is a multipurpose, electronic warfare suite consisting of proven, in-service Northrop and GEC-Marconi components in a platform-optimized configuration. Northrop supplies the complete system of transmitter LRUs as packaged units. The system is composed of an IFM and superheterodyne receiver system which serves dual functions as an RWR and jammer set-on system, and the Zeus jammer itself. The Zeus jamming system is controlled by the radar-warning receiver digital processor and all jamming functions are initiated through the central digital processing unit. Having measured the threat parameters, the radar type is identified and the information displayed on the radar screen. The Zeus transmitter chains have alternate configurations to meet the specific tasks of each type of aircraft to which it is fitted. Zeus incorporates a number of different jamming modes and other jammers can be interfaced to the system, providing they are digital databus compatible. Zeus can be supplied in either air-cooled or water-cooled variants.

Variants/Upgrades

ARI 23333/1. UK designation of Zeus.

Program Review

Background. Zeus was developed as a concept by GEC-Marconi Defence Systems (GEC-MDS) with some aspects of engineering undertaken in cooperation with Northrop Grumman. The system was initially developed to meet a United Kingdom requirement for a passive defensive system for the British Aerospace Harrier GR.5 and GR.7 aircraft. A US$170 million contract was received by GEC-MDS from the UK Ministry of Defence in 1984 for the supply of systems for that requirement. The first production Zeus systems were delivered to the Royal Air Force.

The Zeus system was the subject of a joint proposal between GEC-MDS and Northrop to the US Department of Defense. The US Navy evaluated the system as an alternative to a podded version of the ITT/Westinghouse ALQ-164 airborne self-protection jammer for installation onboard US Marine Corps AV-8Bs. Marconi Defense Systems also shipped a Zeus system to the US Navy for evaluation and ground trials during February 1988. However, after evaluations the USMC decision was to stay with the ALQ-164 system. Proposals have also been made for the incorporation of the Zeus into the F-16, F-18 and Tornado aircraft.

The system was offered for deployment on the Tornado mid-life upgrade (MLU), but was subsequently turned down in favor of the Skyshadow/BOZ-107 chaff/flare combination or Ariel towed decoy system. There has been no known operational deployment of Zeus on an F-18.

During 1990, Zeus was subjected to criticism in a House of Commons Defense Committee report on equipment reliability which claimed that the system failed to meet specifications by 20 percent. The trials conducted were to determine the outer limits of the system's performance and tolerance levels. Most products are usually built well over the specifications laid down in order to pass the base minimum required, but Zeus was unable to perform to these specifications.

Early in 1992 the Eurodass consortium, headed by Marconi Defense Systems, was awarded a development contract for the Defensive Aids Sub System (DASS) for the European Fighter Aircraft. While the Zeus system may have provided a base with which to develop DASS, it is doubtful that a system approaching 20 years since development would be deployed on a cutting-edge fighter.

In April 1996, the Turkish Government released its long-awaited RFP for self-protection jammers to equip up to 80 new F-16 aircraft being acquired under the Peace Onyx II program. The Peace Onyx II program is estimated to be worth approximately US$3.5 billion. As stated previously the Turkish Air Force is believed to have procured the ALQ-178 (V) 3 Rapport III system.

The best chance for Zeus to be incorporated into the F-16 continues to rest with the Turkish Air Force. An additional 40+ F-16 C/Ds need to be outfitted with an ECM system, but the current front runner is the ALQ-178 (V) 3 Rapport III system. Systems bid for the contract include the ALQ-178 Rapport system. The ALQ-165, Carapace and Zeus (with Apollo as an external option) systems were also offered.

Delivery of the selected system will be required within two years of contract signature. As of mid 1998, no known decision had yet been made.

Funding

Development of the Zeus system was funded by the UK Ministry of Defence with a US$170 million development and initial production contract being awarded in 1983. A further production contract valued at US$68 million was placed in 1986. According to the 1992 Statement on the Defense Estimates, expenditure on Zeus during 1992 amounted to US$13.5 million following an expenditure of US$21 million in 1991.

Recent Contracts

There are no known recent contract awards.

Timetable

Month	Year	Major Development
	1983	Initial development of Zeus authorized
May	1984	Marconi selected to develop Zeus
Jul	1986	Repeat order for Zeus systems
Dec	1987	First production Zeus system delivered
Jan	1988	USA evaluated Zeus
Mar	1989	Zeus orders passed 100
	1992	Last known deliveries of Zeus

Worldwide Distribution

UK. At least 94 systems in service on UK Harrier GR.5/7.

Forecast Rationale

The Zeus system is an integrated airborne radar warning and jamming system. The system was initially made and deployed on the UK Harrier GR. 5/7 fleet. The system obtained small, but respectable sales from the UK MoD from approximately 1983 to 1992.

GEC-MDS tried to push the system for international sales including use on Turkish F-16s, Panavia Tornado mid-life upgrades (MLU), and the USMC AV-8B Harries. Most of these bid attempts ultimately failed. The only question is the Turkish contract, but the Turks appear to be leaning heavily towards a US system.

While some have claimed that Zeus was used in the Eurofighter Defensive Aids Suite this has not been confirmed. It is extremely doubtful that a relatively old system such as Zeus would be used as a baseline for a modern, cutting edge fighter program.

The last known deliveries for Zeus occurred in 1992 with final deliveries of the system for deployment on UK Harrier GR. 7s. Since that time no known orders have been placed with the possibility of a few units used for testing purposes.

The ten-year forecast indicates that no production will occur for this system barring any confirmed contract awards.

Ten-Year Outlook

No production has been forecast due to the lack of data regarding recent contract awards. **BARRING VERIFIED CONTRACT AWARDS THIS REPORT WILL BE DROPPED IN 1999.**

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