

# ARCHIVED REPORT

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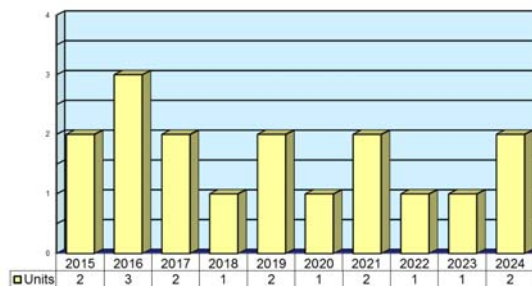
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## EL/L-8300

### Outlook

- Australia accepts first two Boeing Project Wedgetail 737 AEW&C aircraft equipped with EL/L-8300 into the RAAF fleet
- Although no new contracts have been announced in some time, the EL/L-8300 or an IAI-produced ESM/ELINT variant will likely remain in service for next several years

**Unit Production Forecast  
2015-2024**



### Orientation

**Description.** Signals intelligence (SIGINT) system for strategic electronic intelligence (ELINT) and communications intelligence (COMINT) operations.

#### Sponsor

Israeli Ministry of Defense  
Kaplan St  
Hakirya  
IS-67659 Tel Aviv  
Israel

**Licensee.** None identified.

**Status.** In production and service.

**Application.** The EL/L-8300 strategic ELINT system has been installed on Boeing 707 and 737; Lockheed Electra, P-3C, and C-130; and Fokker F-50 Enforcer aircraft to provide strategic surveillance of radio communications, radar emissions, and other electronic activity.

**Price Range.** The price of an EL/L-8300 varies according to the configuration requested by a client for a particular platform. For the purposes of this report, a unit price of \$3 million has been derived.

### Contractors

#### Prime

**IAI Elta Systems Ltd**

<http://www.iai.co.il>, 100 Yitzhak Hanasi Blvd, PO Box 330, Ashdod, 77102 Israel,  
Tel: + 972 8 857 2312, Email: [ilicht@elta.co.il](mailto:ilicht@elta.co.il), Prime

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EL/L-8300

## Technical Data

**Design Features.** The EL/L-8300 is an ELINT/COMINT/SIGINT suite formed by the combination of several subsystems. The EL/L-8312A ELINT system intercepts, analyzes, and locates non-communications transmissions such as radar. The detection, monitoring, and location of communications transmissions are the responsibility of the EL/K-7032 COMINT system. An EL/L-8350 command and analysis station is tasked with mission monitoring and guidance.

The EL/L-8312A ELINT component is highly computerized and modular in construction. Key modules include the EL/L-8312R microwave receiver, EL/L-8321 pulse digitizer, EL/L-8610 computer, and EL/L-8570 display unit. The system is designed to function as part of an automated ELINT or SIGINT

system. It can also be used passively to detect target emitters and to produce target-location data for maneuver arms or weapons platforms.

Other elements of the EL/L-8300 include the EL/L-8352 ELINT post-mission analysis system, the COMINT Post-Mission Analysis System (nomenclature unidentified), the EL/L-8351 ELINT trainer-simulator, and maintenance facilities.

**Operational Characteristics.** The operation of the two subsystems from the EL/L-8350 station provides an integrated ELINT/COMINT capability. EL/L-8300 is equipped with real-time datalinks to permit fast use of tactical and strategic SIGINT after processing at the ground station. Integral analysis systems produce threat library updates throughout operations. Maximum detection range is claimed to be 450 kilometers.



Wedgetail AWACS

Source: Royal Australian Air Force

## Variants/Upgrades

**ALR-2001 Odyssey.** This is a derivative of the basic EL/M-8300 system designed for the Australian P-3C upgrade program and is produced by a partnership between Elta and BAE Australia (formerly AWA Defence Industries, which BAE purchased in April 1996). It consists of a series of antenna arrays

beneath the rear fuselage, in the nose, and in special fairings on the wingtips. The subsystems include a combined ESM (electronic support measures) / infrared-detection display console at the third sensor station, a display control processor, and a cockpit threat warning unit. The system is responsible for detecting

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and analyzing surface-ship, submarine, airborne, and land-based emitters while scanning for hostile weapons systems in the targeting mode. It also provides over-the-horizon targeting for Harpoon missiles.

**Santiago/SCAPA.** The Spanish Air Force ordered an airborne electronic surveillance system, designated Santiago, in 1990. It incorporated an enhanced version of the basic EL/L-8300 technology, with increased processing power and improved workstations. The

Boeing 707 had been selected as Santiago's airframe the previous year, and one such aircraft was delivered in 1991. In early 1996, the Santiago system was renamed SCAPA. At that time, it was revealed that the SCAPA installation included a long-range electro-optical surveillance system (produced by IAI's Tamam division) as an adjunct to its ELINT, COMINT, and SIGINT subsystems. SCAPA's prime contractor was the CESELISA subsidiary of the Indra Group, with IAI Elta supplying the upgraded EL/L-8300.

## Program Review

In the early 1980s, Elta Electronics began developing the EL/L-8300 system and its EL/K-7032 and EL/L-8312A subsystems to meet Israeli defense requirements. The basis for the system is believed to have been the equipment installed on various versions of U.S. RC-135 aircraft. The Israeli Air Force purchased six ELINT Boeing 707 aircraft equipped with the EL/L-8300, which were delivered in 1981.

A repackaged variant of the EL/L-8300 was installed on the three Boeing 737 Surveillers delivered to the Indonesian Navy in 1983. The Argentinian Air Force bought three Boeing 707s converted for ELINT/ECM operations, and two similarly converted Lockheed Electras were ordered by the Argentinian Navy. Deliveries to both these services were made in 1985. In addition, four EL/L-8300-equipped Boeing 707 aircraft were purchased for the South African Air Force; these were delivered in 1987.

The Royal Thai Air Force placed a contract with IAI for the conversion of at least six C-130 aircraft to the combined tanker/ELINT configuration in 1989. This conversion was carried out using a palletized version of the appropriate equipment. At least some were to be equipped with the EL/L-8300, and the DC-8F conversion was probably a testbed for them. This program appears to have fallen victim to changes in Thai defense priorities, and no aircraft have been modified to the new configuration since 1992.

### *Israel's International Partnerships Drive Program Success*

In 1991, Singapore ordered four systems to equip its F-50 Enforcer fleet. That same year, the Australian Air Force ordered 20 EL/L-8300s to equip its force of another maritime patrol aircraft, the P-3C Orion. The system hardware trial was first conducted in an IAI Boeing 707, and the prototype installation was delivered in 1994 following 300 hours of flight tests. By mid-1995, nine aircraft installations had been completed for the Australian program.

The Spanish Air Force ordered an airborne strategic ESM system under the designation Santiago in 1990. This requirement appears to have been initiated as early as 1984, but only got underway in 1989, when the Boeing 707 was selected as the host airframe. The electronics for this aircraft were a joint development between the Spanish and Israeli electronics industries. Changes to the basic EL/L-8300 system as used in Santiago included the provision of new processors with substantially increased power, new workstations to improve user friendliness, and increased frequency coverage and sensitivity. The first of the Santiago aircraft was severely damaged in a heavy landing in 1994.

EL/L-8300 was selected for the U.K. Royal Air Force's Replacement Maritime Patrol Aircraft (RMPA) project in 1997. The \$70 million deal went to upgrade the tactical command systems of 21 MR.2 Nimrod maritime reconnaissance aircraft to the Nimrod 2000 standard. As reported in the June 1997 issue of the *Journal of Electronic Defense*, personnel from the U.K. Ministry of Defence were impressed with the ESM equipment that Elta had supplied to the Royal Australian Air Force for its P-3 upgrade program.

### *Sale to U.K. a Historic First*

The sale of the EL/L-8300 to the U.K. represented the first time Elta was contracted to provide electronic warfare equipment to that country. Deliveries for the U.K. Royal Air Force EL/L-8300 order began in 1999 and continued for the next several years.

In August 2001, IAI was awarded a \$60 million contract from Boeing to supply a variant of the EL/L-8300 for Australia's Wedgetail fleet. The systems were slated to be installed by BAE Systems, with the first of four aircraft ordered up to that point to be delivered to Australia by late 2006.

During 2002, work continued on producing and installing the EL/L-8300 for contracts awarded in 1997 and 2001.

## EL/L-8300

The first Project Wedgetail aircraft rolled out of its hangar in a November 2002 ceremony. This marked the start of a new round of advanced testing for the aircraft.

The government of Australia announced in June 2004 that it would purchase two additional Wedgetail aircraft. This would bring the total number of the EL/L-8300 systems to equip these aircraft to six. These two aircraft had a completion target date of 2008. It was presumed that these added platforms would be equipped with the EL/L-8300.

In August 2005, the first Wedgetail completed its performance and flight-handling test program. In July 2006, Boeing announced that it expected to fall behind some 18 months in delivering the first Wedgetail aircraft due to hardware and software problems detected during testing. An announcement by Boeing in June 2008 confirmed that the program would be delayed to 2010.

In May 2008, the Indian Air Force forwarded to the Defence Ministry a proposal to order three new Airborne Early Warning and Control System (AWACS) aircraft. The aircraft would be fitted out in Israel with Elta Phalcon mission sensors, ELINT systems, communications systems, and management suites.

The RAAF received the first of its Wedgetail AWACS in November 2009 after passing several critical

milestones. These included the Federal Aviation Administration's certification and successful air-to-air refueling trials.

In April 2010, Australia accepted the first two Boeing Project Wedgetail 737 AWACS aircraft into the RAAF fleet. Acceptance of the two Wedgetail aircraft meant ground and flight operations and maintenance of the aircraft were now fully under RAAF control.

In June 2010, IAI reported that its subsidiary Elta Systems had been awarded contracts worth \$35 million from two international customers for intelligence, surveillance, and reconnaissance and communications payloads for unmanned aerial vehicles (UAVs). IAI/Elta reported that its UAV payloads included synthetic aperture radar, ELINT and COMINT systems, line-of-sight systems, datalinks, satellite communications, and more.

In November 2010, Boeing and personnel from the Royal Australian Air Force reported that they had provided the first Wedgetail AEW&C mission crew training course at RAAF Base Williamtown, New South Wales.

In 2011 the U.K. government scrapped the Nimrod program to save costs.

## Funding

Development of the EL/L-8300 was funded under an Israeli government contract; the exact funding amounts have not been released.

## Contracts/Orders & Options

| <u>Contractor</u> | <u>Award<br/>(\$ millions)</u> | <u>Date/Description</u>   |
|-------------------|--------------------------------|---|
| IAI Elta          | 60                             | Aug 2001 – Contract from Boeing for EL/L-8300 variant for Australia's four Wedgetail AEW&C aircraft. Systems to be integrated aboard the aircraft by BAE Systems. First aircraft delivered in 2006. |

## Timetable

| <u>Year</u> | <u>Major Development</u>   |
|-------------|--|
| 1981        | Israeli ELINT Boeing 707s delivered  |
| 1983        | Indonesian Boeing 737 aircraft delivered   |
| 1985        | Argentinean Air Force receives Boeing 707 ELINT aircraft; Argentinian Navy receives Electra ELINT aircraft |
| 1987        | South African Boeing 707 aircraft delivered  |
| 1990        | Royal Thai Air Force begins conversion of C-130 to tanker/ELINT  |
| 1990        | EL/L-8300 ordered by Spain as Santiago   |
| 1991        | Australia orders EL/L-8300 for P-3 upgrade; Singapore for F-50 Enforcers                                   |
| 1996        | Spanish Santiago program renamed SCAPA   |

| <b>Year</b> | <b>Major Development</b>   |
|-------------|--|
| 1997        | U.K. EL/L-8300 contract for Nimrod 2000 (RMPA)                                 |
| 2001        | Boeing orders EL/L-8300 for Australia's Wedgetail                              |
| 2004        | Australia orders an additional two Wedgetail aircraft                          |
| 2006        | First Wedgetail aircraft with EL/L-8300 to be delivered to Australia           |
| 2007        | U.K. RMPA project scheduled for completion                                     |
| 2008        | EL/L-8300 possibly part of new AWACS aircraft being sought by Indian Air Force |
| 2011        | U.K. Nimrod program scrapped   |
| 2015-       | Ongoing production of EL/L-8300  |

## Worldwide Distribution/Inventories

Through September 2006:

|                     |                               |
|---------------------|-------------------------------|
| <b>Argentina</b>    | 3 on Boeing 707, 2 on Electra |
| <b>Australia</b>    | 6 for Wedgetail               |
| <b>Indonesia</b>    | 3 on Boeing 737               |
| <b>Israel</b>       | 6 on Boeing 707               |
| <b>Singapore</b>    | 4 on Fokker F-50 Enforcer     |
| <b>South Africa</b> | 4 on Boeing 707               |
| <b>South Korea</b>  | 4 on Wedgetail                |
| <b>Spain</b>        | 1 on Boeing 707               |
| <b>Thailand</b>     | 2 on C-130                    |
| <b>Turkey</b>       | 4 on Wedgetail                |

## Forecast Rationale

Israel's EL/L-8300 ESM/ELINT system is a key component of Australia's Wedgetail AWACS aircraft program. The EW suite has been installed on Boeing 707 and 737; Lockheed Electra, P-3C, and C-130; and Fokker F-50 Enforcer aircraft, as well as additional maritime patrol aircraft used by security forces throughout the world.

Although no new contracts have been announced in some time, the EL/L-8300 or an IAI-produced ESM/ELINT variant will likely remain in service through the forecast period, driven by the need to equip special mission military aircraft worldwide.

## Ten-Year Outlook

| ESTIMATED CALENDAR YEAR UNIT PRODUCTION |                 |      |      |      |      |                 |      |      |             |      |      |       |
|---|-----------------|------|------|------|------|-----------------|------|------|-------------|------|------|-------|
| Designation or Program                  | High Confidence |      |      |      |      | Good Confidence |      |      | Speculative |      |      |       |
|   | Thru 2014       | 2015 | 2016 | 2017 | 2018 | 2019            | 2020 | 2021 | 2022        | 2023 | 2024 | Total |
| <b>IAI Elta Systems Ltd</b>             |                 |      |      |      |      |                 |      |      |             |      |      |       |
| <b>EL/L-8300</b>                        |                 |      |      |      |      |                 |      |      |             |      |      |       |
| Note: Worldwide                         |                 |      |      |      |      |                 |      |      |             |      |      |       |
|   | 56              | 2    | 3    | 2    | 1    | 2               | 1    | 2    | 1           | 1    | 2    | 17    |
| <b>Total</b>                            | 56              | 2    | 3    | 2    | 1    | 2               | 1    | 2    | 1           | 1    | 2    | 17    |