

ARCHIVED REPORT

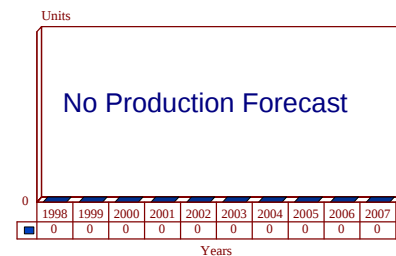
For data and forecasts on current programs please visit
www.forecastinternational.com or call +1 203.426.0800

CEIEC 408-C - Archived 6/99

Outlook

- In service with China and export clients
- Production likely to have tapered off, but this cannot be verified

10 Year Unit Production Forecast
1998-2007



Orientation

Description. A-band, mobile, long-range air warning radar.

Sponsor

China National Electronics Import and
Export Corporation (CEIEC)
Electronics Building A23
PO Box 140
100036 Beijing
China
Tel: +86 106 829 63 09
Fax: +86 106 821 23 61

Contractors

China National Electronics Import and
Export Corporation (CEIEC)
Electronics Building A23
PO Box 140
100036 Beijing
China
Tel: +86 106 829 63 09
Fax: +86 106 821 23 61

Licensee. No information on production licenses is available.

Status. In service; production status uncertain.

Total Produced. A very roughly estimated 34 radars have been produced.

Application. The CEIEC 408-C radar provides long-range air surveillance coverage from the ground. It serves as prime sensor in an integrated air defense system.

Price Range. Indeterminate.

Technical Data

	<u>Metric</u>	<u>US</u>
Characteristics		
Maximum range:	600 km	375 miles
Range resolution:	0.5 km	550 yd
Angular resolution:	0.5°	
High-band operating frequency:	150-180 MHz	
Low-band operating frequency:	100-120 MHz	
Characteristics		
Transmitter peak power:	800 kW	
Pulse length:	10 µsec	
PRF:	200 Hz	
Horizontal beamwidth:	8-12°	
Maximum rotation speed:	6 rpm	

Design Features. The CEIEC 408-C is a dual-channel radar designed to operate in the very high-frequency (VHF) A-band. The full system contains an antenna, transmitter, receiver, display and remote-control subsystem, and a video processing subsystem. Advanced MTI and wind velocity compensation circuits are included.

The 408-C has two transmitter/receiver units, feeder lines and video processing units corresponding to the dual channels. The radar echo signals received within the two operating bands can be simultaneously displayed on the screens. The two planar-array antennas are mounted back-to-back on the antenna pedestal.

The whole radar system is deployed in a convoy of eight vehicles forming four transportation units. The vehicles are composed of one display unit vehicle, one antenna unit vehicle, two power supply vehicles (one spare), two transport vehicles and two transmitter/receiver unit vehicles.

Operational Characteristics. The CEIEC 408-C has a wide operating frequency range within each band. Rapid switching within this frequency band can be used to counter active jamming. Modulation of the transmitter PRF is used to counter repeater pulse jamming.

The antenna subsystem is a cruciform back-to-back array of dipoles, 20 feet high and 52 feet wide. The two arrays operate simultaneously in a high band and a low band and are rotated mechanically at up to 6 rpm. The transmitter system is designed to yield high power combined with wide operating frequencies and high frequency stability. The operating frequencies of the transmitter system are continuously adjustable. Air-cooled triode valves are

employed, utilizing coaxial Hi-Q cavity tanks to improve frequency stability.

The receiver subsystem is optimized for high sensitivity by using both channels for distinguishing various moving targets in ground clutter or jamming. Advanced anti-jamming circuits are provided, including sensitivity time control, fast time constant, pulse width discrimination and logarithmic IF amplification. A sensitive automatic frequency control that automatically tracks transmitter frequency to optimize receiver performance is also included.

The display and remote control subsystem consists of a single A/R display and three plan-position indicators which scan in two opposite directions and display the opposite echo signals received at the same time by the two antenna bands. The three PPI operators can observe the air targets in the interested zone within the coverage and report the data derived. Using the radar, multi-batch and multi-direction target information can be achieved. Switching the transmitter/receiver system on and off and modifications to operating status can be controlled remotely from the display vehicle. Remote operations are possible from a range of up to 50 meters.

In contrast to the valve-based transmitter and receiver subsystems, the MTI and video integrator subsystems use both transistorized and integrated circuits. Single and double cancellation techniques can be adopted as necessary. The video integrator is used to suppress nonsynchronous pulse jamming by enhancing the signal-to-clutter ratio. This also serves to increase range and improve target resolution.

Variants/Upgrades

None identified.

Program Review

Background. Information on the CEIEC 408-C first became available in late 1985. Models were subsequently demonstrated at the October 1986 Defendory exhibition, by which time the equipment was already in Chinese service.

In January 1989, it was reported that the Chinese offered the CEIEC 408-C radar as one option for the Thai Eastern Seaboard Industrial Project (ESIP) defense system. The front-runner for this contract was a consortium of British companies whose defense scheme was based on the Marconi S-711 radar. The entire project was ultimately abandoned.

Zimbabwe ordered an integrated air defense system in June 1989 from China at a cost of US\$105 million. This

included aircraft and missiles valued at about US\$97 million, and radar equipment valued at US\$8 million. The initial components of the system were expected to be delivered in October 1990. The radars in this package were believed to include two CEIEC 408-C long-range surveillance systems. Chinese representatives at the 1990 Farnborough Air Show confirmed this and also revealed that at least one CEIEC 408-C had been supplied to Iraq.

In 1994, Iran purchased a large package of military equipment from China, including coastal defense missiles, missile-armed fast-attack craft, air defense guns, missiles and radars. It was reported that two CEIEC 408-C radars were included in this package and that these were set up to cover the southern reaches of the Persian Gulf and the Gulf of Oman.

Funding

Information concerning the value and source of funding for these radars is not disclosed.

Recent Contracts

None identified since the following:

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
CEIEC	105.0	Jun 1989 – Zimbabwe integrated air defense system, which included two CEIEC 408-Cs for long-range surveillance.

Timetable

<u>Month</u>	<u>Year</u>	<u>Major Development</u>
	1985	CEIEC 408-C radar first announced
Jun	1989	Ordered by Zimbabwe
	1994	Iranian purchase of package including CEIEC 408-C

Worldwide Distribution

Recipients of the 408-C are believed to include **China, Iraq, Iran and Zimbabwe.**

Forecast Rationale

While a significant number of long-range air surveillance radar sales have been reported since the CEIEC 408-C sale to Iran in 1994, these have focused on advanced, high-capability Western radars, such as the GEC-Marconi Martello and Alenia RAT-31. Absent from the news for some time now, the 408-C may have reached the end of

production, or may still be available for limited domestic or export requirements. As a Chinese-produced system, this information is not readily disclosed. A forecast is therefore withheld and, unless a change in the program's activity level becomes apparent, this report will be archived next year.

* * *