

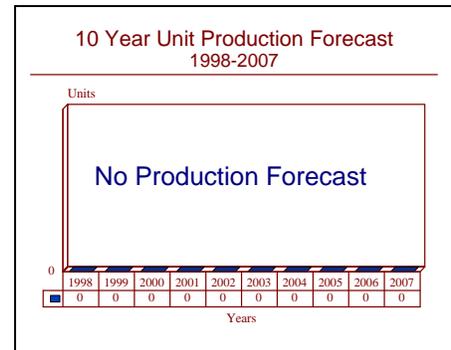
ARCHIVED REPORT

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

RAMSES - Archived 7/99

Outlook

- No additional production foreseen
- This report will be dropped next year, 1999



Orientation

Description. Reprogrammable multimode jammer with multitarget handling capability tasked with countering missile and acquisition radars.

Sponsor

Hollandse Signaalapparaten BV
Zuidelijke Havenweg 40
PO Box 42
NL-7550 GD Hengelo
The Netherlands
Tel: +31 74 248 81 11
Fax: +31 74 242 59 36

Ministry of Defense
Plein 4
PO Box 20701
NL-2500 The Hague
The Netherlands

Contractors

Hollandse Signaalapparaten BV
(subsidiary of Thomson-CSF)
Zuidelijke Havenweg 40
PO Box 42
NL-7550 GD Hengelo
The Netherlands
Tel: +31 74 248 81 11
Fax: +31 74 242 59 36

Lockheed Canada Inc
3001 Solandt Road
Kanata
Ontario K2K 2M8
Canada
Tel: +1 613 599 3270
Fax: +1 613 599 3282

Licensee. Unisys (now Lockheed Martin) was chosen as a subcontractor in 1989.

Status. In service; production believed to be complete.

Total Produced. An estimated 44 systems were produced.

Application. RAMSES was designed to act as part of an integrated EW package for frigates and larger warships.

Price Range. The cost of RAMSES was about US\$2.5 million, based on the Canadian Halifax-class order of 1989 (dollars unadjusted for inflation).

Technical Data

	<u>Metric</u>	<u>US</u>
Dimensions		
Antenna Module		
width:	762 mm	30 in
height:	1,560 mm	62 in
depth:	997 mm	39.5 in
weight:	100 kg	220 lb
RF cabinet		
width:	938 mm	37.2 in
height:	2,058 mm	81.7 in
depth	915 mm	36.3 in
weight	526 kg	1157 lb
Processing unit		
width:	650 mm	25.7 in
height:	1,540 mm	61 in
depth:	747 mm	29.6 in
weight:	250 kg	550 lb
Control panel		
width:	284 mm	11.2 in
height:	321 mm	12.7 in
depth:	135 mm	5.4 in
weight:	2.5 kg	5.5 lb
Frequency coverage	I/J-band	

Design Features. The SLQ-503 RAMSES (Reprogrammable Advanced Multi-mode Shipborne ECM System) is an integrated noise and deception jammer with the ability to jam at long ranges and deceive at closer distances. Its components weigh a total of about 1,933 lb (877 kg), and the system is stabilized for naval use.

Operational Characteristics. RAMSES operates in the I/J-band. The jamming parameters can be updated as the result of information analyzed during engagements. RAMSES can operate continuous wave and high-pulse jamming with high effective radiated power. Multiple mode and multiple target jamming is possible.

Variants/Upgrades

None identified.

Program Review

Background. The RAMSES system was developed by MEL and Signaal in a private venture designed to improve both companies' range and coverage in their EW product lines. The RAMSES system was intended to complement the SLQ-501 CANEWS ESM/RWR system.

The first RAMSES contracts appeared in 1975 and 1981; they covered 10 systems for Kortenaer class and two for Jacob van Heemskerck class, respectively, for the Royal Netherlands Navy. Signaal was the recipient of these awards, as well as a 1985 deal for eight systems for Karel Doorman-class ships. RAMSES was initially intended to equip the 10 Kortenaer-class frigates built and commissioned between 1975 and 1983, but these

ships were actually completed with a derivative of the Italian Newton system and only received their RAMSES sets upon undergoing their mid-life upgrades. Signaal was later sold to Thomson-CSF.

In 1983, MEL Defense Systems was awarded a US\$20 million contract to supply seven systems to Canada for Halifax-class frigates. RAMSES was also chosen for Canada's Tribal Class Upgrade and Modernization Project (TRUMP) in 1986. These successes were followed by contracts from the Canadian Ministry of Defense for naval electronic warfare equipment in March 1989. These major awards, totaling US\$122 million, were subcontracted with Unisys (US\$42 million worth) and covered the supply of six SLQ-501 CANEWS and six SLQ-503 RAMSES systems for the second batch of Royal Canadian Navy Halifax-class frigates, along with spares and support for in-service systems. MEL Defense Systems was subsequently acquired by Lockheed Canada. Unisys was sold to Loral in 1995; Lockheed Martin bought Loral the following year.

At the end of 1992, the Netherlands sold three existing Kortenaer-class frigates to Greece, to join the two ships

of that type already in service with the Greek Navy. These unmodified Kortenaer-class frigates retained their original equipment.

Though originally chosen (along with Rapids) to fit the first group of Turkish Yavuz (MEKO 200) frigates in 1982, RAMSES was declined for the next group in favor of an advanced version of the Racal Cutlass/Scorpion system. This was quickly followed by news that the second batch of four Dutch Karel Doorman-class frigates would be equipped with the Argo APECS-II integrated electronic warfare suite. Forecast International was able to confirm reports that APECS-II was being retrofitted to the first four ships. An analyst visited the frigate *Tjerk Hiddes*, originally completed with RAMSES, and obtained photographic confirmation of the installation of APECS-II antennas in place of RAMSES.

In 1996, the United Arab Emirates procured two Kortenaer-class ships from the Netherlands. According to the September 1997 issue of the *Journal of Electronic Defense*, it had not been determined whether the RAMSES systems aboard would be retained, or replaced as part of an EW upgrade.

Funding

The system was designed and developed by MEL and Signaal. Specific figures have not been identified.

Recent Contracts

The last known contracts for RAMSES appeared in 1989:

<u>Contractor</u>	<u>Award (\$ millions)</u>	<u>Date/Description</u>
MEL Defense Systems	64.0	Mar 1989 – Royal Canadian Navy 6 SLQ-501 CANEWS and 6 SLQ-503 RAMSES systems for Halifax-class frigates plus spares and support.
Unisys	42.0	Mar 1989 – Subcontract for above order.
MEL Defense Systems	16.0	Mar 1989 – Royal Canadian Navy contract for spares and support for RAMSES in Canadian service.

Timetable

<u>Year</u>	<u>Major Development</u>
1975	Netherlands ordered RAMSES for Kortenaer frigates
1981	Netherlands ordered RAMSES for Heemskerck frigates
1982	Turkey ordered RAMSES for first-group Yavuz frigates
1983	Canada ordered SLQ-503 for first-group Halifax frigates
1985	Netherlands ordered RAMSES for Karel Doorman frigates
1986	Canada ordered SLQ-503 for Tribal destroyer upgrade
1989	Canada ordered SLQ-503 for second-group Halifax frigates

Worldwide Distribution

Known recipients of the SLQ-503 RAMSES system include **the Netherlands, Canada** and **Turkey**. Some Kortenaer-class frigates operated by the Netherlands were later distributed to **Greece** (three ships) and the **UAE** (two ships).

Forecast Rationale

Enough RAMSES ECM systems, and their associated CANEWS ESM/RWRs, were sold to equip the majority of Canadian surface combatants. But the last of the Halifax-class frigates was completed in mid-1996, nullifying the largest segment of the Canadian market that brought prosperity to the system.

The elimination of RAMSES from the Karel Doorman class in favor of the Argo APECS-II strongly suggests that additional RAMSES sales will not emerge from the Netherlands either. The 1985 sale of eight systems for the first batch of these ships (later replaced) was the last to be identified for Dutch requirements, and mention of RAMSES has since been absent from this quarter.

About the only significant RAMSES export was to Turkey for the first group of Yavuz-class (MEKO 200) frigates. Yet this was over 15 years ago, and the Rapids/RAMSES combination was replaced for the second group by the Racal Cutlass/Scorpion system. This change reduced the credibility of RAMSES on the export market.

The following forecast of no future production reflects the fact that installations for publicized contracts have long been completed and that there are no new orders to supply forward workload. RAMSES has reached the point in its career where older systems are vanishing from service, as their platforms are decommissioned or the equipment is replaced through upgrade programs.

Ten-Year Outlook

No additional production is forecast. This report has been reissued in 1998 to incorporate final corrections and updates and will be dropped next year (1999).

* * *