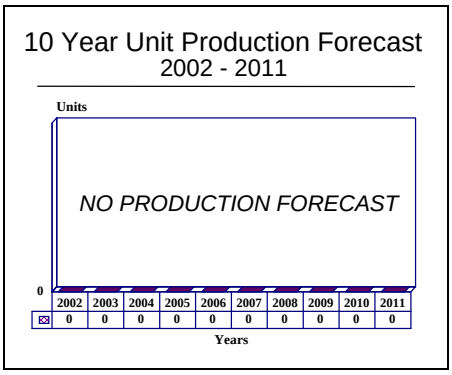
KMV - Archived 3/2003

Outlook

- Program status is most unclear
- Tactical requirement filled by upgrade to minehunters
- No evidence of any start to construction
- Planned schedule will now be very hard to fulfill



Orientation

Description. Coastal minesweeper (MSC).

Sponsor. The Belgian Ministry of Defense, through the Royal Belgian Navy.

Contractors

SKB Antwerp
Antwerp, Belgium
(prime; lead builder in joint shipbuilding team)

Thales Electronics
(Formerly Thomson-CSF)
Tubize/Charleroi/Hoboken, Belgium
(minesweeping equipment)

Thomson Marconi Sonar Systems
Sophia-Antipolis, France
(minesweeping equipment)

VSM
Rupelmonde, Belgium
(secondary responsibility in joint shipbuilding team)

Status. Program apparently suspended.

Total Produced. None

Mission. The primary mission of these ships was to sweep of sea mines in coastal and littoral regions. They would also have been capable of providing fast route survey. The secondary roles of the KMV class ships included measuring magnetic and acoustic ship signatures, minelaying, and the transport of ammunition. In addition, they were to serve as a diver support vessel and a command ship for anti-pollution operations, and function as fishery protection vessels in the national water areas.

Price Range. The prime contract for the construction of four ships in the program was quoted as being worth US$437 million in 1995, translating to a per-unit price of roughly US$109 million.

Technical Data

	Metric	US
Dimensions		
Length - Overall	52.4 m	171.8 ft
Length - Waterline	48 m	157.4 ft
Beam - Overall	10.4 m	34.1 ft

	Metric	US
Beam - Waterline	9.7 m	31.8 ft
Draft (with propellers)	3.6 m	12 ft
Displacement		
Full Load		644 tons
Performance		
Speed (max.)	28 km/h	15 kt
Max. Sweeping Speed	18 km/h	10 kt
Range	5,500 km at 22 km/h	3,000 nm at 12 kt
Crew	5 officers + 21 (+ 5 extra)	
	Type	**Number**
Armament		
Main Gun	20 or 30 mm 90 cal. Giat	1
Machine Gun	12.7 mm	2
Electronics		
Radar – Navigation	ARPA; I-band	1
Minesweeping equipment	Sterne sweep system	1
Combat Data System	SINPATS	
Propulsion		
Main Engines	Brons-Werkspoor diesels	2x1,088 hp (2x800 kW)
Propellers	Controllable pitch, 2 shafts	2

Design Features. The ship's design is a derivative of a 1989 feasibility study for a multinational program to build a coastal minesweeper. This originally included Belgium, the Netherlands and Norway, with Portugal participating for a period as an observer member. This common minesweeper was subsequently modified in 1990 as a Van der Giessen-de-Noord/Polyship design.

The fiberglass hull design is based on the already proven Tripartite concept, implementing the latest developments in fiberglass construction. Priorities for the hull structure were low acoustic and magnetic signatures, high shock resistance and small displacement. The fiberglass compound is the same as used on the Tripartite class. However, the structure is considered a hybrid where transverse stiffeners are built in the sides while longitudinal stiffening has been provided for the bottom (keel) and the decks. This particular structure has resulted in 20 percent weight savings compared with structures designed using traditional methods. Furthermore, the structure relies less on the labor-intensive crossings of longitudinal and transversal stiffeners.

Two Brons-Werkspoor diesel engines of 800 kW each are designed to give the ship a top speed of 15 knots and a sweeping speed of up to 10 knots. Accommodation is provided for a crew of 26, plus five extra bunks.

The ships will be equipped with Mk 9 mechanical sweep gear and the Sterne multi-influence mine-sweeping system. One difference between the KMV class and the Van der Giessen study is the inclusion of a mine-avoidance sonar to facilitate minehunting and sweeping, specifically in shallow waters. The inclusion of the Sterne meant that several changes had to be made to the original design – in particular, widening the afterdeck. Also, an A-frame (centerline crane) with a 9 tonne safe working load (SWL) capacity is fitted in the stern for the operation of the sweeping gear.

The gear consists of six different decoy bodies interconnected and towed in a linear array. The first unit is about 200 meters behind the ship's stern. The array can also incorporate an AP-5 acoustic sweep or an airgun. In addition, the ships may carry the French AP-4 acoustic sweep. They will be fitted with an integrated, automated mine countermeasures (MCM) command and control (C^2) suite.

The sensors on board the ship will include a navigation radar with an automatic radar plotting aid (ARPA). This is used for navigational purposes, surface picture compilation, and heading reference, and as a back-up to the sweep positioning systems. The ships will be also fitted with a differential GPS (DGPS) and radio navigation systems for positioning. The ships will employ the SINPATS (Ship Integrated and Navigation Presentation and Autotrack System) for the overall management of navigation functions.

Communications equipment consists of the usual array of VHF, UHF and HF systems. A fiber-optic databus with built-in redundancy will form the backbone of the SEWACO sensor, weapon and command combat system, which is designed to STANAG (Standard NATO Agreement) specifications. A large amount of COTS (commercial off-the-shelf) components will be used in the onboard systems, especially in the composition of satellite communications, VHF and weather station equipment.

A combined combat information center (CIC) and technical control station (TCS) will be built on the bridge, on shared or individual consoles. This "Bridge-CTIC" system is a key part of the Navy's efforts to automate as many functions on board as possible in order to reduce manning. The Bridge-CTIC is built with shock-absorbing floors and chairs. The crew spaces have been designed to allow the entire crew to be located above the main deck level during minesweeping operations.

Operational Characteristics. The KMV class vessels will use the latest techniques available for countering mine threats and will comply with the NATO requirements for shock resistance, magnetic signature and underwater noise. The vessels' main tasks will include the sweeping of modern influence mines, the disposal of moored mines, and deployments with NATO's Standing Naval Force Channel.

When operating the Sterne system in Target Simulation Sweeping Mode, the six bodies are towed in a linear configuration. The exact spacing of the bodies on the cable (10-20 meters) depends on the size and the speed of the ships being simulated by the bodies and on the speed of the sweeping action. Sterne is claimed to simulate the signatures of all vessel types and detonate even the latest mine types. The system generates the following influences: magnetic, acoustic, extremely low frequency electromagnetic (ELFE), and underwater electrical potential (UEP). Laser positioning systems will be used to localize the influence sweep.

The specifications call for the sweeps to detect mines buried inside the bottom sand or mud. At the maximum towing speed of 10 knots, the drag by the bodies on the ship is stated as less than 12 tonnes. The complete assembly is resistant to a charge of 1 tonne of dynamite at a depth of 30 meters.

Computerized systems are used to indicate position and provide data handling near ground and moored mines. Remotely operated vehicles (ROVs) with wire guidance are used for the safe destruction of the mines at a distance.

The fiber-optic databus links all sensors, navigation, weapons and sweep planning and evaluation systems (SPES) together during operation. A 24-hour, 360-degree surveillance for floating objects is carried out with a modified optronic fire-control director. This will also be used for tracking other close-distance contacts such as small craft or sweep floaters.

A maximum crew of seven will man the bridge at normal times. During standard influence sweep activity that number can be reduced to four. All seven operators are needed only when operationally necessary, i.e., during mechanical sweeping in zones contaminated by NBC (nuclear, biological, chemical), or in case of damage.

For fast-route survey missions, the ships will be fitted with very high-definition side scan sonars that provide more detail of the underwater environment than mine-sweep operations require. The conversion necessary for route survey missions requires the installation and replacement of equipment, which can be done in less than six hours.

In times of crisis, the ships will spend about three-fourths of the time at sea. The time out of service is scheduled to be only 15 percent of the ships' total operating lifetime.

The KMV class is designed for to be operational for 30 years. This includes at least one capability upkeep program (CUP) during that period.

Variants/Upgrades

1989 Belgian-Dutch Feasibility Study Design. The minesweeper project originated as a bi-national program between Belgium and the Netherlands, with Norway initially a partner as well. Later, Portugal also joined the team but dropped out along with the Netherlands when their respective defense budgets were cut back. This design traced its origins to the Tripartite class mine countermeasures vessels (MCMVs).

1990 Van der Giessen-de-Noord Design. The original 1989 design concept evolved a year later to another form which was closer to today's KMV. The main difference was the lack of a mine-avoidance sonar specifically for shallow-water operation. Also, Sterne, being a more recent development as a system, was not mature enough at the time to be included on the ship as its main anti-mine suite.

Program Review

Background. Studies on a joint minesweeper project began as a multinational project in 1987. Originally the project included Belgium, the Netherlands and Norway, but after Norway selected the Oksøy class surface-effect ship (SES) for its new class of nine minehunters/ sweepers, Belgium and the Netherlands were left to continue the development work. On this basis, a Memorandum of Understanding on designing a new coastal minesweeper (Kustmijnveger, or KMV) was then signed between the Belgian and Dutch governments on April 6, 1989. This document represented the program startup.

In November 1990, a design contract was awarded to the Dutch Van der Giessen-de Noord Marinebouw team in a joint venture relationship with Oostende's Béliard Polyship BV shipyard. This led to presentation of a design proposal in August 1992. Meanwhile, Portugal had joined the project in March 1991 as an observer member of the team. At this point the assumption was that the program would comprise up to 20 ships, with the Netherlands stating a firm requirement for six (down from 10), while Belgium was still hoping to buy 10 and Portugal four ships. Neither nation, however, had at this point formally stated its requirements. It was also reported at the time that Portugal's real need would have been closer to seven.

Trials with the Sterne minesweeping system, which Thomson-Sintra intended for this class, began in October 1991. An order for the system was not placed until June 1995, though, amidst disputes concerning the hull construction contract awards.

On January 12, 1993, the Netherlands withdrew from the project, citing funding difficulties. Portugal also resigned for the same reason, leaving Belgium alone to continue with the project.

On the second week of July, the Belgian government gave its approval for the procurement of three coastal minesweepers, though the previously stated requirement was six. The smaller procurement is due to defense budget cuts, the related downsizing of the Belgian Armed Forces, and the relaxation in world tensions. However, the requirement was later raised back up to four.

A budget for four KMVs was approved by the government on February 25, 1994. The Belgian government gave its final approval for the project on December 23, 1994, followed by the approval of parliament on March 31, 1995. As a result, a construction contract valued at US$437 million was to be placed with a potential contractor. However, by that time, the financially troubled Polyship had declared bankruptcy. Its debts were stated at nearly US$100 million, reportedly due to the earlier delays with the project. SKB of Antwerp stated it would take over Polyship, which is Belgium's only facility for manufacturing fiberglass-hulled ships. In March 1996, SKB made a formal proposal to take over Polyship. However, it withdrew its US$6 million offer soon afterward because of disputes between the government and the administrators of the estate.

In 1995 the government announced that the KMV contract would go to SKB of Antwerp. A competing shipyard, VSM (Verolme) of Rupelmonde, challenged SKB's sole contractorship and took the case to the Belgian Supreme Court. The program then went into a state of indefinite suspension. On October 30, 1996, the government agreed to allow SKB to reopen contract negotiations with the Ministry of Defense. A deal was finally entered in late December 1996, awarding SKB the prime contractorship for the program. Under the deal, SKB secured itself a majority share of about US$330 million of the total program.

The 1997 signing of the contract meant that about 200 jobs were secured for the Oostende region for the time the ships were being built. The agreement also included the construction of a new hall near the existing facilities. It was noted at the time that by doing so, SKB would be able to use the existing Polyship transfer zone and shiplift in its manufacturing process. The lift and the zone are property of the Flanders regional government.

The overall program consists of three somewhat separate phases, the first being an 18-month-long engineering period, followed by the start of construction of the first-of-class, originally scheduled for May 1998. Phase 2 will roll over to Phase 3 when the construction of the remaining three units begins. These dates have slipped significantly.

The Sterne system was installed on one of the outgoing Aggressive class sweepers during 1998 as a training base in preparation for the service entry of KMVs. The evaluation of the minesweep system's efficiency, particularly its capability to detect buried mines, continued well into 1999.

The engineering phase is believed to have been completed in late 1999, but construction of the ships, originally planned to start in December 1999 or early 2000, has been delayed. Full service entry is not likely before 2004. Perhaps ominously, the January 2001

summary of future naval construction projects by the Belgian Minister of Defense, Andre Flauhaut, described plans to replace the Wielingen class frigates, build a new logistics support transport to replace the BNS *Godetia,* and upgrade the Tripartite class minehunters but pointedly did not mention the KMV class. In fact, the only mention of this project on the official Belgian Navy Web site was a single document apparently dating to around 1996.

This situation has essentially remained unchanged. There has been no indication of any significant progress in the KMV program and there is significant reason to believe that it may be suspended indefinitely. One strong pointer in this direction is the Belgian Navy contract for a substantial upgrade of its Tripartite minehunters to include a minesweeping capability. While work on the Sterne system appears to be continuing, there is no indication at this time of further work on the KMV class.

Funding

Funding for the KMV project was approved by the Belgian government in January 1994. Due to general cutbacks in the national defense budget in response to the perceived relaxation of world tensions, the number of ships was reduced from the original 10 to six, and then to three, but was eventually brought back up to four again.

This was reconfirmed in the Belgian government's 1997-99 defense plan publicized in early 1997. At the time, it was stated that four ships would be procured at a price of BEF12 billion.

Lack of funding was also cited as the reason for the resignation of both the Netherlands and Portugal from the team in the early 1990s.

Recent Contracts

Contractor	Award ($ millions)	Date/Description
Van der Giessen-de Noord Marinebouw	N/A	November 1990 – Design contract for a new class of coastal minesweepers.
Thomson-CSF Electronics; Thomson ASM	N/A	July 1995 – Development and manufacture of the Sterne influence minesweeping system.
SKB Antwerp	375	December 1996 – Engineering, construction award for four ships.
Thomson-CSF	1.9	Early 1998 – Conversion of Aggressive class BNS Truffaut to training craft for Sterne minesweeping system in preparation for new KMVs.

Timetable

Month	Year	Major Development
	1987	Initial studies for joint minesweeper program begin
Apr	1989	Dutch/Belgian MoU, feasibility study prepared
Nov	1990	Design contract awarded to bi-national joint venture
Mar	1991	Portugal joins project team as observer
Oct	1991	Trials with Sterne minesweeping system begin
Aug	1992	Design contract completed
Jan	1993	Netherlands and Portugal pull out of the program
Jul	1993	Belgian government sets its number at three (later raised back up to four)
Feb	1994	Budget approved for four ships; Beliard Polyship goes into receivership
Dec	1994	Belgian government gives final approval for the project
Feb	1995	Belgian government announces preference for SKB Antwerp on the project
Mar	1995	Parliamentary approval for the project
Jul	1995	Development of Sterne continues (order placed in June)
Aug	1995	SKB and VSM agree on joint contractorship after VSM protests SKB's role as sole winner
Mar	1996	SKB offers to take over Polyship; withdraws takeover proposal soon afterward

Month	Year	Major Development
Oct	1996	Contract negotiations reopen with SKB
Late	1996	Engineering, build contract awarded to SKB
Feb	1998	Delayed beginning of engineering contract (Phase 1)
Oct	1999	Revised completion date for engineering phase
3Q	2000	First of class schedule for laydown
	2002	Remaining three ships scheduled for laydown
	2005	All four ships scheduled for commissioning

Worldwide Distribution

Belgium. Four ships were projected for the Belgian Navy.

Forecast Rationale

The KMV class has become one of those frustrating programs where there is no news of any significant progress or developments to provide positive indications of the project becoming a reality. However, there is also no indication that the KMV program has been formally cancelled. It now seems to lie in the limbo of programs that have been approved but have yet to receive adequate funding.

It is funding that is likely to present the killing blow to this program. The KMV class is a costly representative of the general-purpose patrol craft group, being well over twice as expensive as the very similar Canadian Kingston class. As a result, it is now far from certain whether the four ships planned for the Belgian Navy will actually be built. The upgrades planned for the six Belgian Tripartite class minehunters will give those ships precisely the minesweeping capability intended for the KMVs. This would seem to deprive the KMVs of most of the rationale for their existence.

This significant upgrade of existing assets to adequately fulfill the KMV role is one factor. Another is the emergence of a multirole surface combatant to replace the old Weilingen class corvettes. This program will absorb much of the available funding for the Belgian Navy for years to come. In common with most recent warship programs, this new Belgian project envisages a frigate-sized ship of approaching 6,000 tons. At a time when the Belgian Navy faces these high-priority requirements, the high-cost, relatively low capability KMV project must look very unappealing. It now looks increasingly as if the KMV program has become a luxury the Belgian Navy cannot afford.

For these reasons we are now eliminating the KMV class from our forecasts. This report will be maintained until the status of the KMV program can be ascertained.

Ten-Year Outlook

No production of the KMV class is forecast; the forecast chart has therefore been deleted.

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