

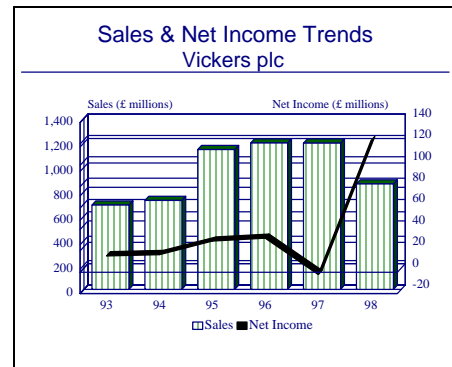
# ARCHIVED REPORT

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## Vickers plc - Archived 12/2001

### Outlook

- Rolls-Royce acquired Vickers in a merger valued at £576 million
- Combined, Rolls-Royce and Vickers Ulstein Marine have become one of the top marine systems producers in the world
- Vickers Defence Systems is performing well and may not be sold off as quickly as was originally anticipated



### Headquarters

Vickers House  
Millbank Tower  
Millbank, London SW1P 4RA  
United Kingdom  
Telephone: (44 0171) 828-7777  
Web site: <http://www.vickers.plc.uk>

The Vickers name first appeared in the Sheffield firm of Naylor, Hutchinson, Vickers and Company, founded in 1829. From this firm, Vickers Sons & Company was formed in 1867. Its increasing involvement in shipbuilding and armaments led, in 1897, to the acquisition of the Barrow shipyard and Maxim Nordenfellt, manufacturer of the first practical machine gun. During both World Wars, Vickers produced most of Britain's field artillery and machine guns, and

pioneered development of the battle tank. No longer a gun and artillery manufacturer, Vickers is still a major defense supplier. In addition, Vickers was a pioneer in the British aircraft industry with such models as the Vimy, Wellington, Spitfire, Viscount and VC10.

Vickers' steel-making interests were nationalized in 1967, followed in 1977 by shipbuilding and aircraft construction.

In November 1999, Rolls-Royce completed the purchase of Vickers plc, further enhancing its global position in marine power systems.

Vickers employed approximately 7,130 prior to the merger.

### Structure and Personnel

Rolls-Royce Board of Directors  
Sir Ralph Robins  
Chairman  
John E.V. Rose  
Chief Executive  
Lord Moore of Lower Marsh  
Non-executive Director, Deputy Chairman  
Peter J. Byron  
Non-executive Director  
Colin H. Green

Director, Operations  
James M. Guyette  
President and CEO, Rolls-Royce North America Inc  
Carl Symon  
Non-executive Director  
Paul Heiden  
Finance Director,  
Sir Robin Nicholson  
Non-executive Director  
Philip C. Ruffles

Director, Engineering and Technology  
 Richard T. Turner  
 Group Marketing Director  
 Sir John Weston  
 Non-executive Director  
 Charles E. Blundell  
 Corporate Secretary

The non-executive board members serve as representatives of the company shareholders.

## Product Area

Prior to the merger, Vicker's product lines included defense and aerospace, marine propulsion, and turbine components. At that time Vickers conducted its businesses in the following manner.

### Vickers

1. Defence Systems
  - 1.1 Vickers Defence Systems
  - 1.2 Vickers Bridging
  - 1.3 Vickers Specialist Engines
2. Marine Propulsion
  - 2.1 Vickers Ulstein Marine Systems
    - 2.1.1 Kamewa Group
    - 2.1.2 Ulstein Holding ASA
  - 2.2 Michell Bearings
  - 2.3 Brown Brothers & Co Ltd
3. Turbine Components
  - 3.1 Certified Alloy Products
  - 3.2 Ross & Catherall Ltd
  - 3.3 Ross & Catherall Ceramics
  - 3.4 Trucast
  - 3.5 Vickers Aerospace Components
  - 3.6 Vickers Airmotive
  - 3.7 Vickers Pressings
  - 3.8 Vickers Precision Machining

**Defense Division.** Vickers Defence Systems specializes in the design, development and manufacture of tracked and wheeled armored fighting vehicles. This capability is comprehensive and covers the whole life of a vehicle, from the initial concept to post-design services, including retrofit and modernization. Tracked vehicles include the Vickers Mark 7 and Mark 3 main battle tanks, and their recovery, bridging, howitzer and anti-aircraft variants. Wheeled vehicles include the Valkyr range of 4x4 Armored Personnel Carrier and Fire Support Vehicles. Vickers also produces the Challenger Armored Repair and Recovery Vehicle (CARRV), several of which saw service in the Persian Gulf War. Vickers also produces the turret for the British Army's MCV-80 vehicle, as a subcontractor to GKN.

Projects under way include the Challenger 2 main battle tank, which won the Chieftain Replacement Program contract in June 1991. Collaborative agreements now

form a significant part of Defence Systems' activities. The division has been engaged in new vehicle projects with companies in Brazil, China and the United States. Customers are provided with a comprehensive range of product support services, including training, spares, in-country support, and equipment management advice. The division provides a research and development service to industry, and maintains a 950-acre proving ground with extensive test facilities. The commercial engineering resources of the division include medium and heavy engineering, fabrication, machining and assembly of capital plant and special-purpose machinery. Facilities are also available for precision work, and a comprehensive range of NC and CNC machines allows for batch production. Vickers Defence Systems is the sole licensee in the UK and Europe for Logemann Scrap Processing machines, Waste Paper Bailing Presses and Refuse Bailing equipment, including transfer stations.

In 1995, Vickers Defence Systems expanded its operations with the acquisition of Thompson Defence Projects. Renamed Vickers Bridging, this unit's major product is an advanced system known as Bridging for the Nineties (BR90), which will supply the British Army with new tactical bridging equipment.

**Marine Propulsion.** The Marine unit is composed of the following key operations:

Vickers Ulstein Marine Systems is the result of a unique international partnership – the combination of the Marine Division of Vickers plc which includes the Kamewa Group and the marine engineering resources of Ulstein Holding ASA. The new organization has the ability to design, build, deliver and support fully integrated ship systems, tailored to meet specific customer requirements.

Mitchell Bearings designs and manufactures complete whitmetal bearings for a wide range of marine and industrial applications. Marine products include thrust blocks, propeller shaft bearings, stern tube bushes, and bulkhead glands. Industrial applications include bearings for fans, pumps, electric motors, electric generators, gearboxes, turbines, and compressors.

Brown Brothers manufactures motion-control equipment for ships and other floating structures. Stabilizer and steering gear systems are produced for the commercial marine and naval defense sectors and multi-path swivel stacks for the offshore oil and gas industry.

**Turbine Components.** The subsidiaries of this unit supply metallurgical products and are supplied to the following

industries: aerospace, automotive, power generation, and medical. In the aerospace and automotive markets, this division designs and manufactures superalloys, ceramic cores, specialized components, gas turbine engines, and precision castings.

## Facilities

Listed below are the principal divisions, subsidiary companies and associated undertakings of Vickers.

### Vickers Defense Systems

Web site: <http://www.vickersdefence.co.uk>

Vickers Defence Systems, Armstrong Works, Scotswood Road, Newcastle-upon-Tyne, NE99 1BX, UK. Telephone: (44 191) 273-8888.

Vickers Defence Systems, Barnbow Works, Manston Lane, Crossgates, Leeds LS 15 8ST, UK. Telephone: (44 113) 264-8123.

Vickers Bridging, PO Box 37, Spring Road, Ettingshall, Wolverhampton WV4 6YN, UK.

### Marine Propulsion

Web site: <http://www.vickersmarine.com>

Kamewa AB, Box 1010, S-681 29 Kristinehamn, Sweden. Web site: <http://www.kamewagroup.com>

Michell Bearings, Scotswood Road, Newcastle upon Tyne, NE15 6LL, UK.

Brown Brothers & Company Ltd, Rosebank Works, Broughton Road, Edinburgh EH7 4LF, Scotland, UK.

### Turbine Components

Web site: <http://www.vickers-turbine-comps.com>

Ross & Catherall Limited, Forge Lane, Killamarsh, Sheffield S21 1BW, UK.

Ross Catherall Ceramics Limited, Denby, Derby DE5 8NX, UK.

Trucast Limited, Marlborough Road, Ryde, Isle of Wight, PO33 1AD, UK.

Vickers Airmotive, Whitchurch Road, Shrewsbury, Shropshire SY1 4DP.

Certified Alloy Products Inc, PO Box 90, Long Beach, California 90801, USA.

Vickers Pressings, Scotswood Road, Newcastle upon Tyne, NE15 6BZ, UK.

Vickers Precision Machining, Pymms Lane, Crewe, Cheshire CW1 3P, UK.

Vickers Aerospace Components, Whitchurch Road, Shrewsbury, Shropshire SY1 4DP, UK.

## Corporate Overview

The pre Rolls-Royce Vickers segmented its businesses into three major sectors: marine, defense, and turbine. Within these categories for 1998, marine accounted for 29 percent of the company's sales and 48 percent of its income. The defense business generated 21 percent of the company's revenues and a loss for the year. The turbine businesses contributed 21 percent of the company's revenues and 50 percent of its income. Other activities composed the remaining 1 percent of sales and 2 percent of income for the year.

### New Products and Services

**Future Engineer Tank.** In August 2000, Vickers Defence Systems was selected as the preferred bidder for new engineer tanks for the British Army. Under a smart procurement initiative with the Ministry of Defence's

Defence Procurement Agency (DPA), Vickers is aiming to supply 66 Challenger-based vehicles in a program worth approximately £250 million. The vehicles would all be manufactured at the company's Newcastle facility and will enter service in 2005.

Engineer Tank Systems, previously known as FET (Future Engineer Tanks), are to replace Chieftain-based Armoured Bridgelayers and Royal Engineers Vehicles currently in service. There are two variants, both based on the same chassis as the Challenger main battle tank: TITAN, a bridge laying vehicle, and TROJAN, a flexible obstacle/mine clearance vehicle.

**Tactical Reconnaissance Armored Combat Equipment Requirement.** The Tactical Reconnaissance Armored Combat Equipment Requirement program is to initially develop two vehicles based on a common chassis. One

is to be a light reconnaissance vehicle designed to replace the FV101 Scorpion. The other is to be an armored utility or logistics vehicle.

As a result of the unification of the United Kingdom's Tactical Reconnaissance Armored Combat Equipment Requirement program and the United States Army's Future Scout and Cavalry System requirement for a new scout vehicle of this type, two teams emerged:

- SIKA International, a consortium consisting of GEC-Marconi (now BAE Systems) with GKN Defence (now Alvis), Raytheon Systems and United Defense.
- Lancer, a consortium consisting of BAE Systems along with Royal Ordnance, General Dynamics, Lockheed Martin and Vickers Defence Systems.

In October 1998, both Lancer and SIKA International officially submitted their proposals for a new scout/reconnaissance vehicle to meet the joint requirement. However, in late 1999, the joint requirement was clouded by the establishment of the US Army's new medium brigades. By March 2000, the British were concerned over the perceived lack of commitment by the United States.

### **Plant Expansion/Organization Update**

Tank Production Consolidated at Newcastle. In September 1998, Vickers Defence Systems (VDS) announced that it was taking action to strengthen its future as a major European tank manufacturer. VDS currently manufactures tanks in Leeds and Newcastle. Under a new plan, all VDS tank manufacturing will, in 2000, be consolidated on one site, at Newcastle.

Manufacturing and related support activities at Leeds were shut down progressively as the UK Challenger 2 order was completed, and the Leeds factory closed at the end of 1999. The company did retain some of the site and workforce at Leeds to create a new specialist "service center," dedicated to vehicle upgrade, maintenance and test.

Marine Propulsion Expansion. In July 1998, Vickers announced plans to carry out a major expansion of its marine propulsion operations as it had completed the sale of its Rolls-Royce Motors subsidiary to Volkswagen of Germany. According to chief executive, Paul Buysse, the expansion would likely take the form of both acquisitions and joint ventures. Among the changes at the division will be a move into complete propulsion packages, right down to engineering software on a ship's bridge. There could also be some acquisitions and joint ventures at the group's tanks operations. Vickers is said to be looking to hold talks with Giat of France on possible

cooperation in the area of research and development, with similar talks also possible at a later date with Germany's Rheinmetall.

### **Mergers/Acquisitions/Divestitures**

Rolls-Royce Acquires Vickers. In November 1999, Rolls-Royce completed its £576 million cash acquisition of Vickers. The purchase has transformed Rolls-Royce into a global leader in marine power systems. The deal was originally announced in September 1999.

Commenting on the deal, Sir Ralph Robins, Chairman of Rolls-Royce, said: "Rolls-Royce has more than 40 years experience in marine markets and the enlarged business has exciting prospects. The acquisition has powerful industrial and financial logic. The combination of the two marine businesses will provide a wide range of competitive products, services and brands, creating growth and enhancing shareholder value."

Rolls-Royce is well positioned to add value to Vickers' Turbine Components division. The major part of the division's turnover is in the aero-engine sector, where Rolls-Royce is one of the three leading companies in the world. Prior to the acquisition, Rolls-Royce was a major customer of this division.

Vickers Defence Systems will be a small part of the combined group, representing approximately 5 percent of overall sales. With the acquisition completed, Rolls-Royce is expected to sell Vickers Defence Systems once it fully assimilates Vickers operations into the fold. Since Rolls-Royce has no experience or apparently desire to be in the land-based defense business, the divestiture of the unit is a possibility.

Reumech Acquired. In September 1999, Vickers Defense Systems purchased South Africa's Reumech OMC for £11 million. The acquisition was made in order to position Vickers as an international supplier of all types of tracked and wheeled vehicles. Reumech OMC is the only manufacturer of armored fighting vehicles in South Africa.

Ulstein Acquired. In November 1998, Vickers purchased Norwegian marine engineering group Ulstein Holding ASA for £304 million. Ulstein is well established in marine activities complementary to propulsion, and has been a pioneer in developing integrated marine systems. The purchase excludes Ulstein's shipbuilding operation which is being sold off separately. Vickers undertook the acquisition to further bolster its marine propulsion unit – the new Vickers marine unit will have annual sales in the £500 million range.

Cosworth Sold to Audi. In July 1998, Vickers plc reached full agreement with Audi, part of the Volkswagen Group, on the sale of Cosworth to Audi for £117 million, based on net assets as of May 2, 1998, of £59 million, and subject to final adjustment on completion. The consideration will consist of £107 million in cash and the payment of £10 million in respect of assets previously leased to Cosworth. This follows the announcement on June 4, 1998, that Vickers had reached agreement in principle to sell Cosworth to Audi. Taxes and other expenses for this transaction are expected to be approximately £30 million. Cosworth produces advanced automotive engines and power train systems, and its activities range across racing, engineering, castings and manufacturing. The sale is scheduled for completion following regulatory approval by the European Commission.

Rolls-Royce Sold to Volkswagen. In July 1998, Vickers completed the sale of Rolls-Royce Motor Cars to Volkswagen AG. The completion payment of £479 million consists of the agreed purchase price of £430 million (which was based on net operating assets of £149 million as of the end of 1997), increased by £38 million to reflect an increase in net operating assets between January and July 1998 and by a further £11 million as a refund of the net cash balance as of completion.

Vickers/Giat Alliance Scuttled. In January 1999, Vickers Defence Systems and France's Giat Industries announced the signing of a Memorandum of Intent to form a joint venture company comprising the two tank manufacturers. The alliance was to initially cover sales and marketing, program design and development, and contract management and procurement. However, by September 1999 the discussions between the two companies had ended inconclusively.

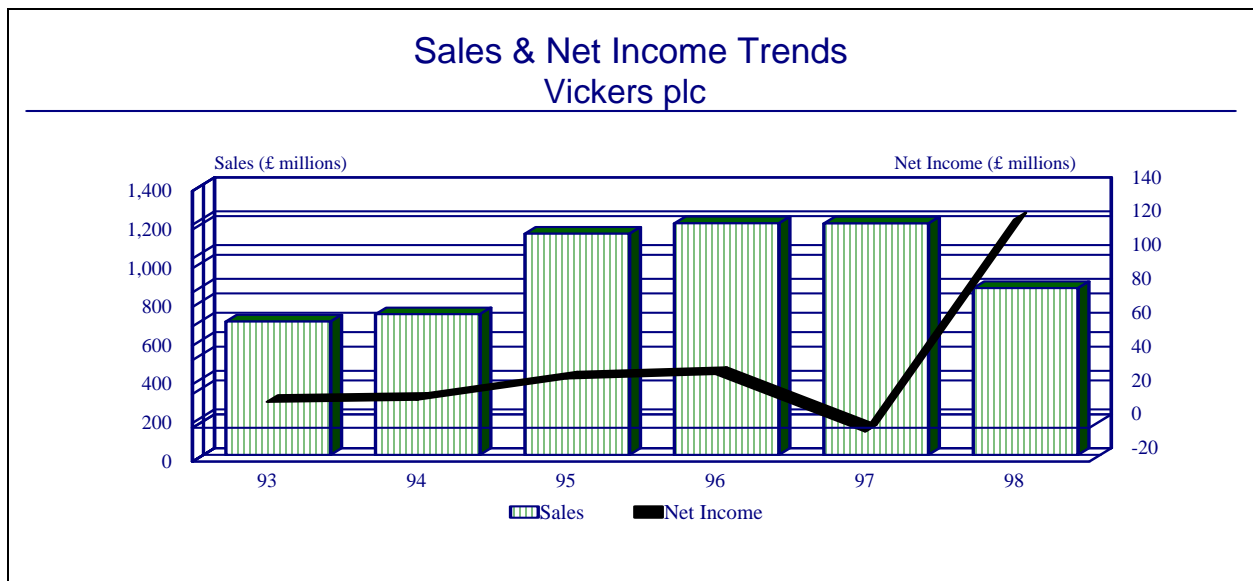
**General Dynamics.** In May 1999, Vickers Defence Systems and General Dynamics formed a joint venture company, Vehicle Armour and Armament (VAA), as part of the SIKA consortium bidding to develop the US Army's Future Scout and Cavalry System (FSCS) as well as the British Army's Tactical Reconnaissance Armored Combat Equipment Requirement (TRACER). GD and Vickers are currently part of SIKA which is led by British Aerospace and Lockheed Martin against the rival Lancer consortium, which is composed of GEC-Marconi, United Defense LP, and Raytheon. The new VAA joint venture will be responsible for the chassis, weapons and overall integration of SIKA's demonstrator vehicles. The competing consortia were each awarded a \$140 million contract in January 1999 to develop FSCS/TRACER demonstrator vehicles. The development phase of the program is set to end in 2002, with the first vehicles entering service in 2008.

**Teaming/Competition/Joint Ventures**

**Financial Results/Corporate Statistics**

Vickers' 1998 sales dropped to £892.5 million, reflecting the impact of units divested over the previous year. The company posted a gain of £123.1 million compared with a loss of £2.2 million for 1997. The loss for 1997 was due to charges totaling £57.1 million to cover the disposal of certain businesses. Latest year statistics are provided below. US dollar figure translated as a 1998 average at the rate of US\$1.6564 = £1. Results for 1999 were not published due to the company's acquisition by Rolls-Royce.

Y/E December 31	1994	1995	1996	1997	1998	1998
(£ millions)						US\$
Net Sales	727.2	1143.8	1197.6	1196.9	892.5	1478.3
Net Income	16.5	29.1	31.8	-2.2	123.1	204.0

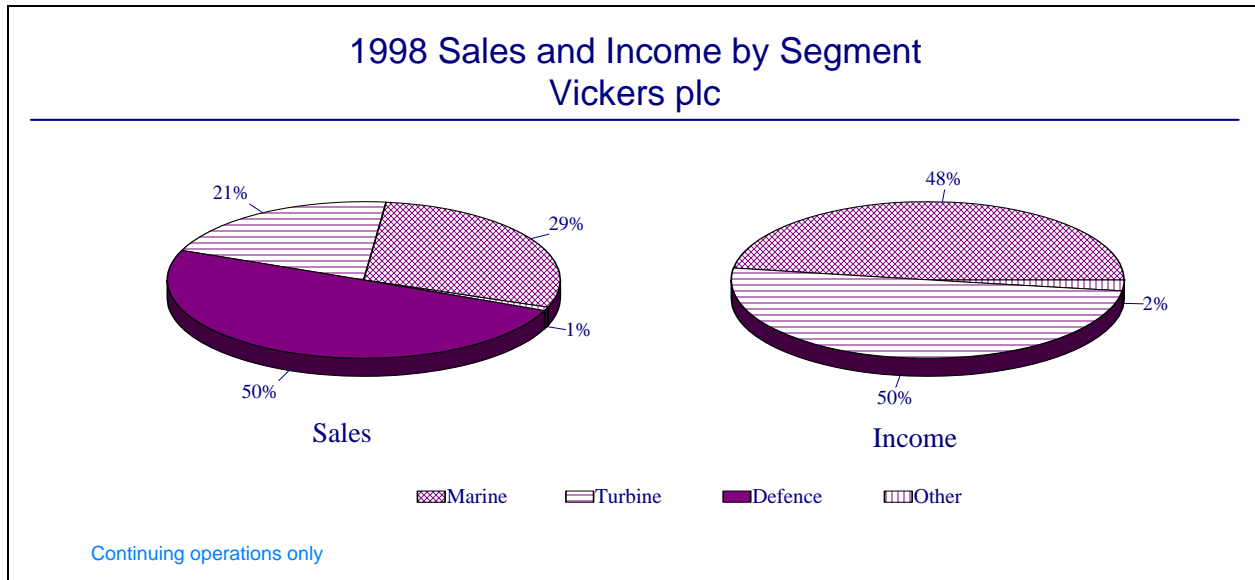


### Industry Segments

A breakdown of Vickers' sales and operating income by major market segment for the past two years follows. Figures have been restated to conform to the company's current presentation. In 1998, discontinued operations comprised the businesses of Rolls-Royce Motor Cars, Cosworth and Cantieri Riva. In 1997, they also included the businesses of the Medical Division and Jered Brown Brothers.

<b>SALES</b>	<b>1997</b>	<b>1998</b>
(£ millions)		
Marine	171.7	199.5
Turbine Components	136.5	143.2
Defense Systems	351.3	344.5
Discontinued	522.8	200.5
Other	15.1	5.2
Intersegment	-0.5	-0.4
<b>TOTAL</b>	<b>1196.9</b>	<b>892.5</b>

<b>OPERATING INCOME</b>	<b>1997</b>	<b>1998</b>
(£ millions)		
Marine	14.3	11.1
Turbine Components	12.3	11.7
Defense Systems	23.5	-29.3
Discontinued	-31.0	156.5
Other	2.0	0.5
<b>TOTAL</b>	<b>21.1</b>	<b>150.5</b>



### Strategic Outlook

In a move designed to enhance Rolls-Royce's position in the marine power systems market, Rolls-Royce has acquired Vickers in a merger valued at £576 million. What made the deal especially attractive to Rolls-Royce was Vickers' earlier acquisition of Ulstein and the subsequent formation of Vickers Ulstein Marine, which offers ship propulsion systems, engines and deck machinery, along with marine engineering services, including ship design.

Combined, Rolls-Royce and Vickers Ulstein Marine have become one of the top marine systems producers in the world. This complements Rolls-Royce's leadership position in aerospace propulsion which has been flagging as of late.

For Vickers the deal is welcome. Vickers has spent the past several years struggling to reinvent itself. During this period, the company has sold off its medical division, Cosworth cars, and Rolls-Royce Motors. The deal with Rolls-Royce secures a strong future for a majority of the company.

Originally, Rolls-Royce strongly implied it would sell Vickers Defence Systems, as it did not fit with the

company's core business operations. According to reports, the unit could fetch around £60 million for Vickers Defence. However, strong performance at the operation has prompted Rolls-Royce to reexamine the issue. Vickers Defence was recently selected as preferred bidder for a £250 million (\$352.5 million) order for bridge-laying and mine-clearing tanks for the British Army. In addition, Vickers is also in the middle of attempts to beat German armored vehicle makers to orders worth potentially billions from NATO allies.

Vickers Defense Systems' main British rival, Alvis, has expressed serious interest in the operation if it does eventually end up on the block. Other possible bidders for the operation include Krauss-Maffei, Rheinmetall, and possibly even the Carlyle Group. However, despite the interest abroad, any potential suitor for Britain's major tank manufacturer will have to have British blood in its veins.

For the time being, though, Vickers is expected to remain a part of the Rolls-Royce family.

*With the acquisition by Rolls-Royce now complete, this report will no longer be individually updated.*

### Prime Award Summary

Unavailable

## Program Activity

Some important aerospace and government programs currently under way at Vickers are listed below. The briefs are intended to provide a listing of programs that are of major importance to the company. For detailed information or analysis of specific aerospace and defense programs or equipment, please refer to the appropriate *Forecast International* binder (for example, AIRCRAFT, MILITARY VEHICLES, WARSHIPS, MISSILES, ELECTRONICS SYSTEMS, and GAS TURBINES). The following are the company's business interests:

- Military Vehicles
- Ordnance Systems

### Military Vehicle Programs

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#### Centurion

Production of the Centurion main battle tank ended in 1962, and the tank is in service with a number of nations in the world. A number of modernization and retrofit programs are in various stages of development or integration. Vickers (one of the original producers of the Centurion) and Marconi Radar Systems have worked together to develop a number of modernization packages for the Centurion. A new electrical system and fire suppression apparatus are offered. Increased fuel capacity can also be integrated into the modified vehicle. In addition, a new commander's cupola can be fitted.

#### Challenger Armored Repair and Recovery Vehicle (CARRV)

In 1984, the Ministry of Defence requested bids for the development and production of an Armored Repair and Recovery Vehicle variant of Challenger. Previously, Royal Ordnance and Vickers Defence Systems bid on the contract which was awarded to Vickers Defence Systems in June 1985. The value of the contract was £60 million and covered the development and production of the first 30 vehicles; a subsequent order was placed in late 1989 for the last 47 vehicles. Each vehicle is fitted with towing gear including a winch, an Atlas hydraulic crane, shears, a dozer blade and four additional seats. A complete set of tools can be carried along with the three-man crew. Total inventory requirement is placed at 80 vehicles. The first of six preproduction vehicles was delivered in August 1987 and the remaining five were completed in 1990. Two of the vehicles are being used by the British Army for trials. The total value of the 80-vehicle production contract is about £150 million.

#### Chieftain 900

A Vickers modification, the Chieftain 900 was originally intended for new production only. However, the changes incorporated in Chieftain 900 could be delivered as a kit, or as desired. While no customers were forthcoming for this program and it is no longer marketed, the various components are still available on demand. Also, a snorkel has been developed for the Chieftain by Vickers. While not accepted for service by the British Army, this low-cost kit remains available.

#### FV721 Fox

The Fox armored car is the follow-on to the Ferret scout cars, which were developed from the 1940s vintage Daimler scout car. The Daimler vehicles were extensively used in a variety of roles (internal security, reconnaissance, patrol) and proved to have unmatched reliability in "brush fire" conflicts and wars of national liberation. Production of the Fox has terminated; the vehicle remains in service in the United Kingdom and several other nations. The British Army FV721 Fox vehicles are being retired, but some of their turrets are being integrated with the FV101 inventory.

#### FV4034 Challenger

In July 1980, Britain's Secretary of State for Defence, Francis Pym, officially announced that a new tank, to be known as Challenger, was to be ordered for the British Army. The Challenger would meet the short-term needs of British forces within NATO. Subsequently, the Ministry of Defence approved an initial order for 240 Challengers to equip one armored division of the British Army of the Rhine by 1985. While the MBT 80 project had been abandoned some years previous to the announcement, the Challenger incorporated several of the technical features that were planned for that vehicle. These advances have been incorporated in the second and third production options. The production of the FV4034 Challenger has been completed, with a total of 427 tanks produced.

#### FV4034 Challenger Training Tank

In February 1988, the Ministry of Defence placed an order with Vickers for 17 Challenger training tanks. This variant replaces the standard Challenger turret with a non-rotating turret-like structure that accommodates an instructor and up to four students. Dual instrumentation and roll-over protection is provided. The other hull components remain the same; the Challenger training tank is essentially the same weight as the FV4034 Challenger, so the automotive characteristics are essentially the same. The first Challenger training tank was delivered in November



1989 and production of the remaining 16 vehicles was completed in 1990.

### Challenger 2

Due to the rather poor showing of the Challenger in the 1987 Canadian Cup competition and the need to replace the 900-odd Chieftain tanks in Europe, in 1986 the British Army began exploring an "interim tank." This tank would fill the need until the advent of the next generation of main battle tanks. Nine prototype tanks were fabricated for the initial demonstration phase, which ran through September 1990. Following the evaluations, the Ministry of Defence awarded Vickers Defence Systems a \$158 million contract in January 1989 covering 21 months for the demonstration phase of development of the Challenger 2. The first contract award for the Challenger 2 (127 tanks) was truncated compared to the original requirement, which was put at 600 tanks. However, on December 1, 1993, it was announced that an additional 259 Challenger 2 tanks would be ordered. This was in preference to the earlier plan to upgrade a portion of the inventory of the original version of the Challenger. A contract with Vickers Defence Systems was signed in July 1994.

Earlier, in June 1993, Oman became the first export customer for the Challenger when it ordered 18 Challenger 2 tanks with an option for 20 more (which it has since ordered). The Challenger 2 program is on sure footing, having been bolstered by the follow-on order from Oman. The tank is also reported as having performed well in Saudi tests. The marketing of the tank continues, especially in Greece, Qatar, Saudi Arabia, and Turkey.

The serial production of the Challenger 2 tank is ongoing for the domestic requirement as well as export. As of January 1, 2000, a total of 427 Challenger 1 tanks, nine Challenger 2 prototype and developmental tanks, and 304 production Challenger 2 tanks had been manufactured.

### FV4201 Chieftain

Production of the Chieftain main battle tank has been completed, and it is in service in the United Kingdom and a number of other nations. A variety of modernization and retrofit programs are in various stages of development and integration. Several types of new armor have been developed that greatly enhance the already heavy armor suite of this tank. Enhanced Chobham type – probably the best of its type available today – has been fitted to most of these tanks. It was also offered on the Chieftain 900 retrofit package. Aboard the Chieftain, the appliqué armor provides

protection for the tank's turret front and hull top to the rear of the driver's position. Stillbrew, the secret driver, was developed and is being produced by Vickers Defence Systems Leeds (formerly Royal Ordnance Leeds). All Chieftains in the British Army are expected to receive the Stillbrew armor retrofit.

### Gepanzertes Transport Kraftfahrzeug Véhicule Blindé de Combat de l'Infanterie Multi-Role Armored Vehicle

In April 1998, the delayed and intensely contested competition to provide a common armored vehicle for France, Germany and the United Kingdom was won by Eurokonsortium. The Eurokonsortium, consisting of ARGE GTK of Germany (led by Krauss-Maffei along with Rheinmetall/MaK System Gesellschaft and Wegmann), Giat Industries of France, and GKN Defence of the United Kingdom beat out the TEAM International consortium consisting of Kuka Wehrtechnik and Henschel of Germany, Alvis of the United Kingdom, and Panhard of France. Vickers Defence Systems was partnered with Alvis on this program.

### Timoney

The Timoney is a wheeled, amphibious armored vehicle. Following the fabrication of three prototype/developmental vehicles, the initial Irish order for 10 vehicles was completed some years ago.

### BDX

Production of the BDX is finished, with two prototype and 128 vehicles serially produced. The BDX is similar to the Timoney Mk 5, differing only in design features and the engine.

### Valkyr

This is a dual project of Beherman Demoen of Belgium (initial design) and Vickers Defence Systems (R&D, fabrication and marketing). In September 1981, Vickers announced that a 10-year agreement had been reached with Beherman Demoen under which Vickers would develop, market and produce the BDX vehicle under the name of Valkyr. In order to enhance the marketability of the Valkyr, Vickers has developed a family of armored personnel carrier and fire support vehicles. The armored personnel carrier is slightly higher (19.3 centimeters - 7.59 inches) than the fire support vehicle, which is offered with numerous armament options. For more details on this and any other military vehicles described herein, please refer to *Forecast International's MILITARY VEHICLES Forecast* binder.

**Vickers Armored Bridgelayer**

The VAB, or Vickers Armored Bridgelayer, is an armored-vehicle-launched bridge based on the Vickers Mk 3 chassis, which can span gaps up to 12 meters at load class 60. The bridge is in service only with the Nigerian Army. Six bridges were ordered in 1981 and a further six in 1985. Under contract to Hyundai Precision and Machine, Vickers Defence Systems has developed an armored-vehicle-launched bridge for the Type 88 tank. In August 1993, Hyundai awarded Vickers Defence Systems a contract worth US\$34.47 million for the manufacture of eight bridges and 41 bridge-launching mechanisms. These were integrated with the Type 88 chassis in the Republic of Korea by Hyundai. The rest of the 56-unit requirement was manufactured in the Republic of Korea, also by Hyundai.

**Vickers Main Battle Tanks**

Realizing that the high weight and high cost of the Chieftain would place it out of the reach of many potential customers, Vickers began the development of a smaller, cheaper tank in the late 1950s. This work was accelerated by the acceptance of the Vickers design for production in India in August 1961. The original design, the Mark 1, went into production in India as the Vijayanta at the Avadi facility near Madras in January 1965. One of the two original prototypes was kept in the United Kingdom for further development. Avadi produced a total of 1,527 Vijayanta (Mark 1) tanks. In addition, Kuwait purchased 70 Mark 1 tanks from Vickers which were delivered between 1970 and 1977. There are currently more than seven models of the Vickers Main Battle Tank in service around the world.

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