



**GRIPEN**  
SAAB • BRITISH AEROSPACE

# GRIPEN NEWS

1999 • 2

## NEW DESIGN DEALS ON THE TABLE

While high-level final negotiations are being wrapped up with South Africa's government for its purchase of 28 Gripens, contracts have already been awarded to leading South African suppliers and sub-contractors for further work on Gripen for international markets of the fourth-generation multi-role fighter. Awarding this new business to South African firms is not only a firm vote of confidence in their abilities, but also an essential element in Saab and British Aerospace's industrial co-operation package for South Africa. The latest contracts to be signed involve Denel in the design and manufacture of new weapons pylons, and Avitronics, which will develop an advanced Communications Control Display Unit for the aircraft. These new structures and systems will be applied to Gripens worldwide and will further enhance South Africa's reputation in the international aerospace field.

Cont. on page 6

Robert Gardner



Katsuhiko Tokunaga

## 21st Century display pilot

**Captain Martin Birckfeldt occupies a unique position in the Swedish Air Force. He is the 1999 Gripen display pilot – taking over this high-profile position from Major Ken Lindberg – and thus becomes only the second official Flygvapnet display pilot for the Gripen.**

Martin (35) was born in Skövde and today lives in Lidköping. He started his Air Force career in 1985 and flew as a front-line Viggen pilot at F16 (Uppsala) and F15 (Söderhamn) before moving to F7 Wing, at Sätenäs, in 1987. During that time he has logged over 1,500 flying hours, including a three-year spell

as the AJS 37 Viggen solo display pilot at F7. In April 1998 he transitioned to the Gripen and flew his first display in November.

Martin's Viggen display experience, which in fact stretches back to 1990, was essential when it came to formulating his new show on the Gripen. Taking some manoeuvres he knew to be crowd-pleasers from previous years, he reworked the routine to play to the strengths of the Gripen. The display is a short, sharp five-minute routine where the aim is to never do the same thing twice.

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On the face of it, the appointment of Dave Hewitson to the four-man Executive Committee of Saab AB may not seem all that unusual. As a 25-year veteran of the aerospace industry he has amassed considerable programme management expertise in the civil and military fields, he has an in-depth IT background and has worked extensively on export and international co-operative projects. As such, he clearly has much to contribute at a senior level in any major company. What makes him unusual is that the company he now works for is Saab AB. Though his roots are firmly with British Aerospace, in April 1999 Dave stepped into one of the top jobs at Saab and became the first non-Swede ever to hold such a senior position. His move to Sweden highlights the ever-increasing links between Saab and British Aerospace and underlines the way the firms are moving forward and doing business together.

Dave began his aerospace career in the Military Aircraft Division of British Aerospace, as part of the IT/IS team. He moved into the product support field and was involved in the rationalisation and reorganisation that swept through British Aerospace in the 1980s. His management experience saw him selected as Project Director for the UK-Saudi Al Yamamah deal, a major project with which he worked for four years. Also in the international field, he worked with the Jaguar (SEPECAT), Tornado (Panavia) and Eurofighter teams, giving him great insight into the European industrial co-operation scene. This, and his wide-ranging business experience, saw him recruited into British Aerospace Dynamics in 1995. He dealt with the MATRA/BAe Dynamics joint venture, which later became a fully-fledged single commercial entity. In the light of British Aerospace growing relationship with Saab he was a clear choice as the person who could help deepen, broaden and optimise the relationship between the two companies. The new appointment was approved just after Christmas 1998 and, once he had set his seal on his ongoing projects in the UK, he was ready to make the move.

David is quick to point out that he is not a British Aerospace representative



Terbjörn Caspersson

## Dave Hewitson Group Senior Vice-President Saab AB

in Sweden. His new position means that he "has joined the Saab team as a Saab person, is employed by Saab and will look after Saab's interests." His mission is to understand and help Saab, facilitating the relationship with British Aerospace while all the time working within Saab to increase its shareholder value. He has one line of reporting and that is to Bengt Halse. What he brings with him is an understanding of how British Aerospace functions and insight into doing business on the international market. "Saab has immense potential for getting bigger and better. They are a very professional organisation with a reputation for innovation in all fields. What we need to do now is expand the business focus outside Sweden and see the export market grow."

Though it is not a specific responsibility of his, David says the Gripen export drive is "at the forefront of my mind. The future is pinned on exporting Gripen." The Saab/British Aerospace export joint venture was an important step forward in this aim, but the 35 per cent stake acquired by British Aerospace in Saab AB subsequently raised co-operation to a whole new level.

Gripen export plans are moving ahead. The South African deal is an essential one and David is confident it will proceed smoothly to completion. After that there are several important market areas where Saab and British

Aerospace are already working hard. These include Latin America, most notably Brazil, plus the involved and challenging requirements of the Central European states. David remarks "this is a promising market for us. We have a product that lends itself to the needs of these nations and there are good prospects for Gripen."

British Aerospace has a substantial 'footprint' in the international market and understands the industrial and political realities of getting things done. Saab equally has its own expertise and the great strength of 100 per cent government and national defence force backing for its products. With Gripen David points to how "the two military aircraft companies spotted a gap in the market and filled it." The next step will be to share their areas of knowledge to ensure that all elements of the business are free to do what they do best.

The Gripen is certainly not the only element at Saab set for expansion. Dave has special responsibility for Collaborative Programmes and Training Systems, both with great potential. Training Systems is already arguably the world leader in IR-based training systems and can leverage this position further. Space division can continue to be a successful and expanding niche provider to the buoyant global space industry. After a just a month in his new job he has been impressed by the level of co-operation on the Gripen project. "Saab has such a positive approach when it comes to getting things done. What's more, the British and the Swedish culture and outlook are very similar so, when you have two proud aerospace companies full of such good people, they have immense potential."

"My position at Saab AB is a unique privilege. The appointment is for a minimum of three years with an option to extend that as required. I want to ensure that the 'Swedishness' of Saab is preserved, both in its own right and in the perception (of the company) worldwide. I'd like to think that in three years time I'll have achieved enough to be able to stay here. I've been given a great reception and I'm looking forward immensely to life in Sweden." ■

# GRIPEN PHOTO EXHIBITION



Katsuhiko Tokunaga

Anders Nylen

The Flygvapen museum, already one of the most acclaimed aviation museums in the world, gained a new attraction in May with the opening of an exhibition by celebrated aviation photographer Katsuhiko Tokunaga. 'Katsu' has been working closely with Saab in recent months photographing the Gripen in service with F7 Wing. He has flown with Gripens in a wide range of operational configurations, and mixed formations, using a Lansen or an Sk 60 as a camera ship. His distinctive and dynamic views of the aircraft have now appeared in publications around the world.

Choosing material for the Museum exhibition, which opened on 21 May and runs until 31 August, was no easy task. The organisers settled on a range of photographs which not only show the

Gripen in action, but also illustrate Tokunaga's unique ability to capture the spirit of his subject in subtleties of light and shade, and from unconventional angles. The fascinating Flygvapen

museum is located at Malmen, just outside Saab's home at Linköping, and is well worth a visit – now more than ever. ■

## Latin American Defence Exhibition

**The Latin American Defence Exhibition (LAD) keeps on getting bigger and bigger. This year, 170 exhibitors from 24 countries were present when the show opened, for a week, in April. Two important guests on the opening day were Brazil's Vice President Marco Marcie and the newly-appointed Defence Minister Elcio Alvares. Their speeches attracted much media attention and the two time touring the exhibition.**

There were a total of 18 official delegations from foreign countries visiting LAD. Among them four defence ministers.



Lars Jansson

Both the UK and Sweden were represented by several companies at the show. Saab-British Aerospace

Gripen came to Brazil with the fully-functional Gripen cockpit systems mock-up. It also hosted two headline briefings for a large audience of press and VIP guests, which discussed Gripen's superior air supremacy capability through the application of information superiority.

Flanking the Gripen stand was the Ericsson display, featuring a model of the Brazilian-built EMBRAER EMB-145SA surveillance aircraft which carries Ericsson's Erieye advanced airborne radar system. Brazil has ordered five of these aircraft, and Greece another four. The first example was rolled out on 28 May. ■

# SIMPLY THE TEST

**Fault Finding has never been easier. Under normal operating conditions, when an aircraft returns from a sortie, the pilot reports any snags to his engineers, who then spend hours tracking the problems down. Gripen technicians are spared that arduous task thanks to a revolutionary system in use with F7 at S aten as where the fourth generation multi-role fighter is in operational use.**

Prior to any sortie, a Safety Check is run automatically at start-up of the Auxiliary Power Unit (APU), which along with the engine is verified by the pilot to ensure the aircraft is free of snags. The Safety Check report appears on the cockpit's Multi Function Display (MFD). First it will display the 25 main sub systems in which any fault could be lurking, ranging from the Electronic Flight Control System, to the brakes. An indicator assigned to each sub system will notify the pilot if it is faulty or not R (- correct) or F (- faulty) – see diagram.

Montage: Johnny Lindahl/Ni.s-Goran Widh



If a fault appears on screen, he will move the cursor down to the problem system and hit the FL (Fault Localisation) button. Displayed along the bottom of the screen will be two suggestions from the system regarding what may be wrong – and a suggested course of action. By following this route the pilot (or technicians) can identify the offending Line Replaceable Units (LRUs) and remove them. On the diagram seen here, the code 'IDG 10PB' indicates that it is the Integated Drive Generator at fault, while '10P' shows

its exact position in the electrical schematics. If that doesn't work the second suggestion is to replace the GCU, the generator control unit.

"We see very good accuracy in fault localisation," says first lieutenant Bengt Saleryd,

technical officer at the F7 Air Force Wing, "The first fault suggestion proposed by the system is correct 85 to 90 per cent of the time. It is also important to bear in mind that it is impossible to reach 100 per cent fault detection – the system will never detect a worn tire, for example! Therefore we are very close to our goal of 90 to 95 per cent fault detection and identification."

During the sortie, the pilot is only advised of any serious problems that

Anders Nyl en



arise, as he has enough to concentrate on, without being distracted by a minor complaint. Should there be a serious fault, the pilot receives, via his MFD, any relevant information on which systems are affected. He would immediately request a Flight Instruction (a computerised check list), that advises him what actions to take, such as "fly smoothly, leave the aircraft at flight idle, avoid icy conditions". Once safely on the ground, even if no problems arose during the sortie, the Gripen pilot enters instructions for the Quick Report on his MFD. This will indicate what, if any, faults the aircraft has encountered. If necessary, a technician will then climb into the cockpit and call up the Failure Report on the MFD which gives detailed information relating to each malfunction identified in flight. By activating Fault Localisation, the problem LRU is located, based on the information registered in the system at the very moment there was a system failure. It is a similar test to the Fault Localisation on the Safety Check, however, the latter detects a malfunction by putting the systems through specific tests with preset requirements, while the Failure Report is based on genuine registered information from the Function Monitoring System that is active during the sortie. If values somehow deviate from the expected, a Failure Report is created containing all the relevant information from that split second. The Failure Report is then downloaded and made available at engine shut-down.

When the Gripen returns from a sortie, regardless of its status, it is hooked up

Torbj rn Caspersson



to the External Memory Unit (EMU) and data from the aircraft system is downloaded. The EMU is then taken into the hangar and downloaded onto the Maintenance Data Recording System (MDRS), which each Swedish Air Force Wing uses for its maintenance records.

Interestingly, the MDRS parameters can be viewed graphically, and key information is downloaded onto an Operational Data Base called DIDAS (Drift DATA System). The MDRS records every LRU on the aircraft of the Wing. Information gathered after each sortie, helps to keep track of LRUs, so technicians can see on the Operational Data Base at a glance how many flight hours the LRU has been subjected to. This provides information as to when it should be serviced, its modifications status or why it has not performed as well as other components. The life of a Gripen engine is recorded meticulously. By consulting the MDRS, the technician can check how many times the engine has reached one of its life-stunting manoeuvres – maximum acceleration or afterburner. Such information could ensure that an engine does not undergo unwarranted attention or maintenance. Hence, man-hours are kept to a minimum and the operating costs significantly reduced.

*By Air Forces Monthly's Alan Warnes. In the July issue of Air Forces Monthly there is a nine-page article on the Gripen. The author would like to thank Bengt Saleryd of F7 for his assistance in writing this piece.*



**Cont. from page 1**

In May the first Gripen team personnel were transferred to South Africa where they will assist the local defence and aerospace corporation, Denel, in setting up a new computer-based design office. This design facility will play a pivotal role in all future industrial activity on the SA Air Force's Gripens. It is fully equipped with the latest CATIA computer-aided design hardware and software – the same technology used in the design of Gripen, Eurofighter and the latest Airbus airliners. One of this office's first tasks will be to design NATO-standard weapons and stores pylons for the Gripen.

This pylon design and development contract is one of the biggest deals ever won by Denel from a foreign partner. The initial value is worth approximately R42 million (US\$7 million), but the potential total value of the subsequent production and supply contract could be worth at least R240 million (US\$60 million) based on the anticipated manufacture of pylons for 200 export aircraft and possible additional Swedish Air Force Gripens.

These general purpose pylons will be designed with a mechanical interface to a MIL-A-8591H standard. Gripen's design incorporates four underwing, a centreline and a shoulder pylon.

In the same month, Pretoria-based Avionics, part of the Grintek group, was awarded a contract to design, develop and manufacture a Communications Control Display Unit (CCDU) for the export Gripen. This CCDU is intended to replace the existing radio panel on Gripen. It is also envisaged that the new CCDU will be incorporated into future Swedish Air Force Gripens. The contract is expected to yield significant returns for Grintek with follow-

up orders to equip future Swedish Air Force and export market Gripen fighters with the CCDU.

The Gripen takes advantage of advanced microprocessor and electronic technology to simplify the cockpit layout and reduce pilot workload. Pilots would use the CCDU to operate the aircraft's communications system. The CCDU has a 5-inch active LCD matrix colour display. Initially it will be used as a communications system control unit, but further development will see it serving as a general purpose Multi Function Display for the Gripen avionics system. To accomplish this, the CCDU must be flexible enough to take on new functions. It must also be upgradeable to remain compatible with updated/new systems that may be incorporated into the fighter in future. On the Gripen, the CCDU will be connected, through the five MIL-STD-1553B databuses, with the Mission Computer and to more than 40 other onboard systems computers.

This CCDU development deal follows two other contracts awarded to Grintek for work on Gripen. Last November the company was selected to provide audio-management suites for the programme, while in March, Ericsson-Saab Avionics contracted Grintek to develop and supply power units for the Gripen cockpit displays. Grintek develops and produces a substantial range of military communication equipment and systems. The company has a history of innovation stretching over 35 years and, for example, pioneered the development of frequency-hopping HF radios.

"We are delighted to have such a high calibre partner as Grintek on the

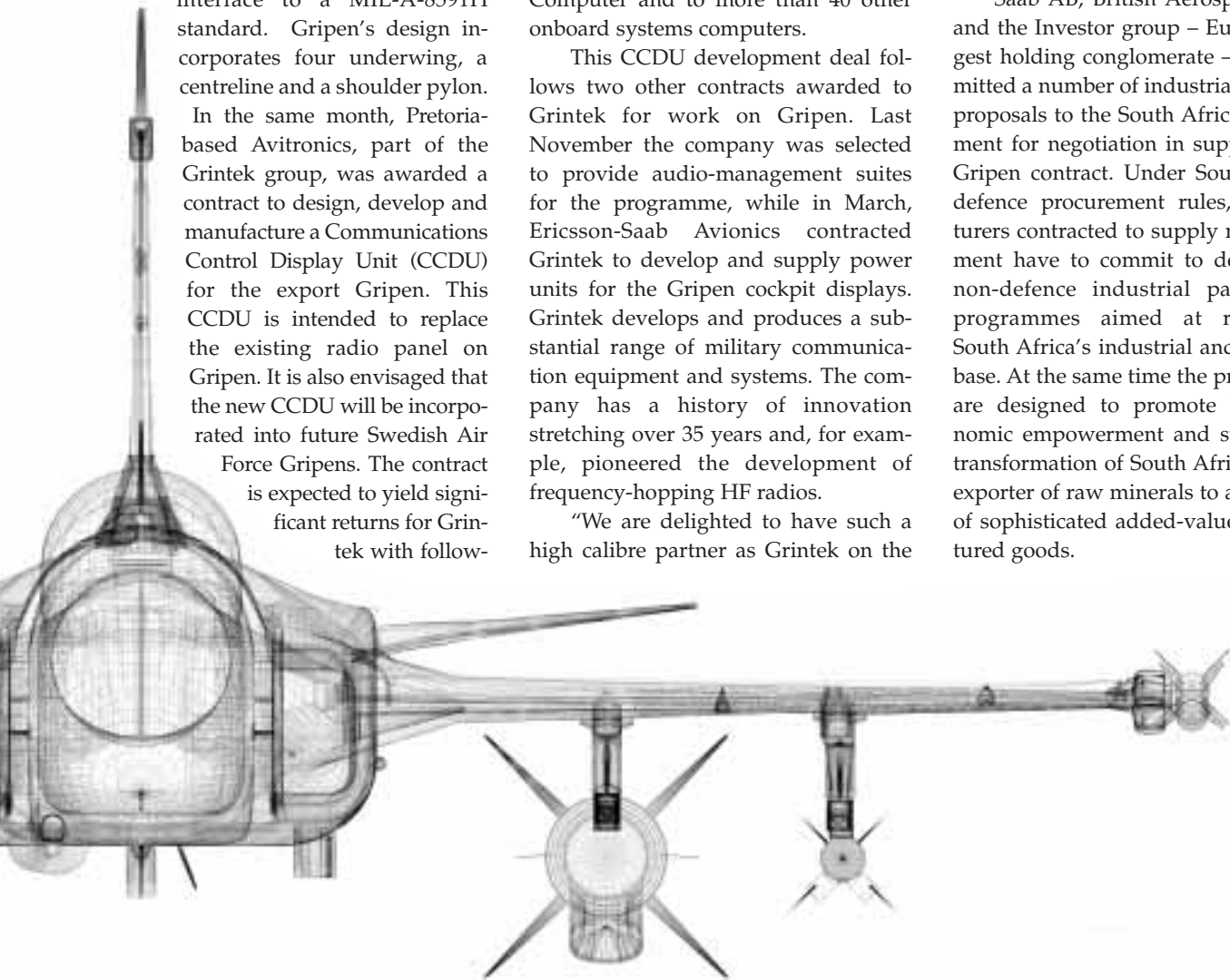


**The contract team in action. From left, Cyril Moss, Denel, Steve Sheard, Gripen, Chris Coetzee, Denel and Ian Clare, Gripen.**

Gripen programme. We are confident that Grintek, with its pedigree in innovative electronics and communications systems design, is best suited to designing, developing and manufacturing sophisticated communications components for the Gripen," remarked Hans Krüger, Saab AB Senior Vice President and General Manager.

It is anticipated that contracts for additional work on the export-standard Gripen will be announced over the next few months. Major contracts for non-defence trade and industrial participation are likely to be announced over a similar time-frame.

Saab AB, British Aerospace, Volvo and the Investor group – Europe's biggest holding conglomerate – have submitted a number of industrial and trade proposals to the South African government for negotiation in support of the Gripen contract. Under South Africa's defence procurement rules, manufacturers contracted to supply new equipment have to commit to defence and non-defence industrial participation programmes aimed at revitalising South Africa's industrial and economic base. At the same time the programmes are designed to promote black economic empowerment and support the transformation of South Africa from an exporter of raw minerals to an exporter of sophisticated added-value manufactured goods. ■



## M I S C E L L A N Y

**New light-weight mock-up**

At the beginning of April a new stripped-down version of Gripen was unveiled. It is a one-tonne full-scale model, built chiefly from carbon fibre composites, and is to be used at exhibitions where there is not a runway in sight. The key speakers at the roll-out were Investor Chairman Percy Barnevik, Birgitta Böhlin, the General Director of the Swedish Defence Material Administration and 'godmother' to the mock-up, and Brigadier General Owe Wagermark, Deputy Inspector General for the Swedish Air Force – who 'co-owns' the mock-up together with Saab. Another special guest was Ulf Ekberg from the well-known Swedish pop group Ace of Base. Ulf is one of the biggest Gripen fans in Sweden and the aircraft recently appeared in a video made by the group.



■ Ulf Ekberg dreaming of being a pilot.

Marie Akto

**Upgrade for Gripen website**

The Gripen website, [www.saab.gripen.se](http://www.saab.gripen.se), has been updated for the Paris Air Show, in June. There will be new material, both words and images, and also four added Quick Time VR movies where viewers can take a virtual walk around a Gripen aircraft, meet a Gripen pilot and even a Swedish Air Force Ranger.



Torbjörn Caspersson  
■ Saab test pilot Magnus Ljungberg demonstrating the Gripen cockpit.

**The right stuff**

The French astronaut Jean-Loup Chretien flew the Gripen dome simulator during a visit to Saab-Ericsson Space in Linköping, Sweden. Mr Chretien, a former fighter pilot and test pilot, is now working at the Johnson Space Center in Houston, Texas. He has been in space several times, both on the Russian Mir space station and aboard the US Space Shuttle.



Torbjörn Caspersson  
■ JA37 Viggen cockpit

**New colour displays already airborne**

The advanced colour multi-function displays now under development for the Gripen will be retrofitted to upgraded Swedish Air Force Saab JA37 Viggen fighters. The Ericsson-Saab Avionics LCD colour displays destined for the Gripen, are already flying in a Viggen testbed and 34 units are now on order for refit to the Viggen force. However, the improved Viggens will only be fitted with a single display, while the Gripen cockpit will have three.

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The routine starts with a distinctively short take off run and lift off, into a 70° turn and steep climb. A John Derry turn gets the aircraft back onto the display line, followed by a roll into a loop. While in the vertical, Martin rolls through 90 deg to point the nose back at the display line then he continues the turn to half-roll in for an inverted fly-past. A 360-deg turn at minimum speed follows to demonstrate the tight turning circle of the aircraft, then a top roll brings the aircraft back to the crowd for two snap rolls at maximum g. To finish the display Martin slides smoothly into another top roll, with the gear extended, to curve in for a short-stop landing underlining the Gripen's short-field capability. The aircraft is flown the whole time within a tight airspace 'box', never extending too far from the view of the crowd as is so often the case with other fast jet displays.

Martin admits that the small size of the Gripen can almost work against it as a display aircraft. The Gripen's compactness makes it a difficult target to acquire in air combat but it lacks the bulk and presence of the Viggen. At the same time, the Gripen's agile fighter credentials give it a far greater thrust-to-weight ratio than the Viggen, and a much tighter turning circle – to name but two essential display qualities. Martin is hoping that Flygvapnet will acquire 'smokewinders' for the Gripen in the near future. These wingtip smoke generators have already been flown on the aircraft by Saab and bring a whole new dimension to any display routine.

The Gripen routine is a polished and precise one which owes a lot to the aircraft's fly-by-wire flight control system. Martin remarks that it doesn't matter what you do with the stick, the aircraft firmly knows its own limits and there are no ragged edges of the envelope to exploit. For a display pilot this might seem frustrating but Martin likens the Gripen display to music – if some air show displays are Stockhausen, then the Gripen is Mozart.

Right now displays are flown within closely-defined parameters. The speed range is 230 km/h to 1000 km/h, g limits are +9g/-3g and the maximum altitude is 1000m. A strict minimum



Katsuhiko Tokunaga

height of 100 m is imposed by the air force. In the future, Martin sees some changes coming – particularly in the low-speed arena. He hopes to see the minimum speed for displays cleared down to 180 km/h and to introduce more negative-g manoeuvres.

Martin's 'day job' is as a pilot with 2 Squadron 'Gustav Blå', the first of F7's two operational Gripen squadrons. Already he has about 150 hours on type, and enthuses about the ease with which he made the transition to confident display flying on the new aircraft. During 1999 Flygvapnet had hoped to take the Gripen display to the Mildenhall Air Fete, in the UK, and the Bodø air show in Norway. The situation in Kosovo forced the cancellation of both these events but, in June, Martin will travel with his squadron to Poland for a series of road-base exercises and there he plans to fly several displays during that friendly exchange. He will also be flying the Gripen at various events around Sweden. With a three-year 'tour' ahead of him as the air force display pilot, Martin will take the Gripen into the new millennium and he will be one of the most visible elements of the programme, on the public stage, worldwide. ■

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