Swedish Tactical Aerial Reconnaissance and NATO

Past, Present and Future

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Introduction

Swedish Tactical Aerial Reconnaissance (TAR) has, like other parts of Swedish Armed Forces’ (SwAF) capability, followed shifts of emphasis in doctrine and practice. In particular, at the end of the Cold War, it moved from a posture focusing on fending off a Warsaw Pact invasion towards greater emphasis on deployed interventions abroad. More recently, contemporary events have also impacted on Swedish thinking, resulting in a renewed focus on homeland defence whilst also recognising the need to act in concert with others. Consequently, interoperability issues will increasingly play a prominent role in Sweden’s wider international approach. Indeed, interoperability is high on the current agenda due to both the recently ratified Host Nation Agreement between Sweden and NATO and Sweden’s on-going commitment to the NATO Response Force (NRF). Against this shifting backdrop, this article provides a broad outline of both past and present TAR capabilities before considering likely future development, with particular emphasis on interoperability.

History of Swedish TAR

From the ‘60s through to the ‘80s, SwAF intelligence requirements placed a strong emphasis on countering an invasion threat. Accordingly, the need to follow regional developments, for example in and around the Baltic seaports, largely governed SwAF TAR capability development. Sweden’s main international effort during this period was in the Belgian Congo, where an air presence was deployed, using the reconnaissance version of the iconic SAAB 29 (The Flying Barrel).

Although the invasion threat remained the defining consideration, by the ‘90s there was also an increasing focus on international operations, mainly driven by events and subsequent SwAF deployments in the Balkans. Whilst no SwAF TAR units were deployed in this theatre, UK Remotely Piloted Aircraft (RPA) assets were used by Swedish troops, generating valuable tasking and user experience. At that time, SwAF RPA capabilities were still under development, mainly within K3, an army regiment in southern Sweden.

In response to this growing emphasis on deployed operations, the Swedish Air Force Rapid Reaction Unit (SWAFRAP) formed in 2000. At first, SWAFRAP’s tasks – mainly reconnaissance – were designated to the reconnaissance version of the SAAB AJSF 37 Viggen. The SWAFRAP was, however, never deployed.

Over the next decade, SWAFRAP was re-equipped and replaced by a series of similar, small and agile units equipped for fighter and attack roles as well as for reconnaissance. This included assignments of the unit within the EU Nordic Battle Group Expeditionary Air Wing (NBG EAW).
did not, however, take place until 2011. Similarly to its assignment to the NBG EAW, since 2014, Sweden has also offered Gripen TAR assets to support the NRF.

In 2011, there were also advances in RPA when Swedish elements deployed to Afghanistan were equipped with the Shadow 200. During this deployment, it became increasingly apparent that organic tactical reconnaissance support was a modern day battlespace necessity. Somewhat later, smaller tactical RPA were also again tested and acquired.

The early part of this century offered few real-world opportunities to test the emerging aircraft TAR capability, but that changed in April 2011, when Sweden deployed a Gripen unit (equipped with eight aircraft) to participate in the NATO-led Operation Unified Protector (OUP) over Libya. Notwithstanding the organisational preparation that had taken place over the years, this was the first Swedish expeditionary experience with combat aircraft since the Congo deployment half a century earlier.

Since Libya, the Gripen contingency commitment to the EU NBG EAW has been sustained, although the unit has not deployed. Sweden, however, is currently contributing some 250 troops to the ISR Task Force (equipped with Shadow 200 and smaller tactical RPA) as well as to the Multinational All Sources Information Fusion Unit, in Mali.

Organisationally, SwAF TAR has continued to revolve around three formations; F17, F21 (both Air Force wings) and K3 (Army regiment). F17 and F21 each comprise two squadrons, all of which undertook TAR. However, in early 2016 the fixed wing TAR role was allocated solely to F17. At K3, TAR is organized within the regiment’s Intelligence Battalion, which among other capabilities comprises two Shadow 200-equipped companies. Furthermore, each of the eight Swedish ground forces battalions is equipped with organic RPA assets.

**SwAF TAR in OUP**

The Swedish Libyan mission was divided into two rotations. First, from April to June 2011, the unit was tasked
the Swedish contingent consistently proved their worth. A RUSI report on the international intervention in Libya concluded:

‘The Gripen aircraft and the Swedish pilots and support staff proved outstanding in [the reconnaissance] role and outstripped other combat assets with the quality of its tactical ISR (intelligence, surveillance and reconnaissance).’

Whilst the Swedish contribution to OUP was in many ways a success, the operation also revealed a number of important challenges, which would need to be addressed to improve operational effectiveness in future coalitions. Upon deployment, it became clear that the Swedish communication systems, despite years of working on interoperability, could not be fully integrated
the collection process and ensuring subsequent products are stored and shared in a timely and efficient manner with minimal obstacles between the command chain and contributing/user forces. In many ways, it is dependent on building a network of Coalition Shared Data (CSD) servers which allow unhindered and timely transfer of products generated by those on the network, as well as the potential to transparently tap into the collection management process. As this initiative gains traction (the underpinning doctrine, AJP 2.7 JISR, was published on 11 July 2016), nations will need to decide the measures necessary to ensure adequate interoperability both in terms of process and CSD capability. Given that this process will most likely form the basis of any coalition activities, potential partners, like Sweden, will also need to make suitable contingency arrangements to avoid interoperability speed bumps on contributing elements.

The Swedish government has explicitly directed its military to maintain interoperability with NATO and actively transform towards NATO compliance. Although Sweden has no formal STANAG ratification into the NATO C2 systems. First, and most importantly, as a partnership country, Sweden had no access to the NATO Secret network from the outset, and obtaining a license initially proved difficult. Second, despite having made the Gripen’s Link 16 compatible shortly before deploying, a crypto key had to be obtained, which also was a difficult and lengthy process. Not providing early access to a substantial troop contributor was an unnecessary weakness, and the Alliance has been critical of its handling of this issue. In short, these matters highlighted the importance of interoperability – both politically and technically, particularly when they impact on speed of information transfer and analysis – the key in TAR to operational effectiveness.

Interoperability with NATO

Joint ISR today

The primary NATO initiative driving Sweden’s focus on TAR has been Joint Intelligence Surveillance and Reconnaissance (JISR). Essentially, this initiative shifts the focus from collecting intelligence to streamlining the collection process and ensuring subsequent products are stored and shared in a timely and efficient manner with minimal obstacles between the command chain and contributing/user forces. In many ways, it is dependent on building a network of Coalition Shared Data (CSD) servers which allow unhindered and timely transfer of products generated by those on the network, as well as the potential to transparently tap into the collection management process. As this initiative gains traction (the underpinning doctrine, AJP 2.7 JISR, was published on 11 July 2016), nations will need to decide the measures necessary to ensure adequate interoperability both in terms of process and CSD capability. Given that this process will most likely form the basis of any coalition activities, potential partners, like Sweden, will also need to make suitable contingency arrangements to avoid interoperability speed bumps on contributing elements.

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In recent years, there have only been minor changes to equipment. Consequently, Gripen’s reconnaissance pod lacks a downlink capability, meaning data is only available to interpreters for exploitation post-landing. However, a software solution is in place allowing the image interpreter to almost immediately start producing the RECCEXREP, while the entire mission data set is still being downloaded. Nevertheless, a CSD solution for sharing raw or exploited data is currently neither available aboard Swedish reconnaissance aircraft nor at the respective ground stations.

So, if the SwAF were to embrace NATO JISR, particularly CSD, how could that be done? As a start, it is possible to rapidly create a solution for archiving, cataloguing, and retrieval with CSD interoperability simply by deploying a CSD server alongside a Gripen unit. The Gripen unit could then publish data to the CSD server via an air gap. From this ‘outside’ CSD server, data can be published to a Mission Network via Swedish BICES. With some advice from the NATO Communication and Information Agency (NCIA), both short-term plans to integrate Gripen with CSD, and longer-term solutions, are currently under discussion within the SwAF.

In the same manner, demands for video archiving, cataloguing, and retrieval with CSD interoperability are beginning to be felt within the SwAF Tactical RPA community. The latest development of NATO JISR doctrine and procedures clearly point to the need for common methods and messages in regards to JISR operations; moreover, the requirement to make RPA video available to partners is a distinct challenge. However, there are at present no plans to CSD-ify SwAF Tactical RPA.
Conclusion

Operationally, interoperability issues could be quite significant going forward. Could SwAF TAR today offer the same utility as it did in OUP? The current inability to provide a CSD-driven approach would most certainly impact on its utility in time-sensitive terms. In today’s more sensor-rich environment, the chief effect of this would be that Swedish intelligence products, not being available via CSD, would take longer to access than products available from CSD-capable nations. Because of this, it is assessed that, should something akin to OUP happen today, Swedish assets would be used less, and would be given lower priority tasks with less important time constraints. Notably, the lack of CSD architecture also means that SwAF units cannot access the vast archives of imagery that would most likely be generated, or receive time-sensitive data from other coalition assets, to the detriment of their own effectiveness.

TAR will inevitably play a prominent part in Swedish defence planning, which perhaps is natural for a small, non-aligned nation with limited resources and a strong focus on homeland defence. This TAR emphasis has been strengthened by the recent good use made of such capabilities in international missions such as Libya and Mali. It would therefore be surprising if SwAF TAR resources were to be further diminished, despite current economic strains. That said, just like the rapid rise of RPA at the turn of the century became a necessity, interoperability and sharing will likely make similar demands on any nation, in or out of NATO, wishing to contribute to collective missions downstream. So, given that the NATO JISR initiative, particularly its sharing philosophy based on exploiting CSD, could well become the operational norm, the timely codifying of what an alliance/coalition contributor needs to achieve in terms of interoperability would be a significant step forward, if not an essential precursor, to successful operations.

2. For the purpose of this article, unless otherwise stated, tactical RPA are included in the concept of Tactical Aerial Reconnaissance
4. Personal experience as Head Intel Section (S2) at the Swedish Second Kosovo Battalion (KS02) in 2000
6. The NRF comprises four elements: Command & Control element based on a deployable Joint Task Force HQ; Very High Readiness Joint Task Force (VJTF); Initial Follow On Forces Group (IFG) and, a Responsive Forces Pool (RFP). The Swedish contribution would be to the latter category.
9. These are AeroVironment Puma and AeroVironment Warp III, in Sweden together referred to as UAV 05.
13. NATO JISR background can be found in ‘How NATO makes the Unknown Known’ by Robert Murray, Hq of CS, NATO HQ in JAPCC Journal Ed 22.
14. Reconnaissance and Intelligence Report Form / Air Reconnaissance Requesting and Targeting Reporting Guide
15. MAJIC was a NATO-led, 9-nation programme to provide procedures, a service-oriented architecture and the understanding to allow compliant systems to interoperate thereby allowing collaboration on a broader and timely scale. It also supported the development of Coalition Shared Data (CSD) platforms.
16. Battlefield Information Collection and Exploitation systems. Joint US/NATO project to integrate current and future intelligence networks. BICES is intended to coordinate and exploit battlefield intelligence gathering among all NATO commands and participating nations.
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Air Commodore (ret.) Garfield Porter (RAF)
has flown as a navigator, crew captain, flight commander and squadron commander on the Nimrod MPA. He also commanded RAF Kinloss in 2002 and, in 2006, completed an operational tour as the UK Air Component Commander Middle East. He was then Director Air & Space at the UK’s Doctrine, Concepts and Development Centre, before serving as Assistant Director Transformation at the JAPCC until he retired from the RAF in 2010. Since then, he has continued to work on Air & Space/ C4ISR matters, sat on the UK Lib Dem Defence Policy Working Group, and consults on defence matters with a number of UK and international companies.

Dag Åsvärn
is a biologist and remote sensing specialist working as Operations Manager at Spacemetric, the Swedish company providing image handling capacity to both Gripen and the Swedish tactical RPA currently deployed in Mali. For many years, he served as a Swedish Commando Reserve officer, primarily in intelligence-related positions, and still belongs to the Reserve. After several appointments to various HQs in Sweden and service in both Kosovo and Afghanistan, he rose to the rank of Lieutenant Colonel. Prior to joining Spacemetric, he worked as a consultant for the Swedish Armed Forces, with – amongst others subjects – specific focus on intelligence method development.