

Swedish Air Power History: A Holistic Overview



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An early flight by Baron Carl Cederström, who became the first Swedish aviator.

Air power has a long and distinguished history in Sweden. Yet, it has rarely been documented in the English language.¹ This is what the present article seeks to do by providing a holistic overview of Swedish air power history with an emphasis on military aviation and the Swedish Air Force. It does so by a careful examination of predominantly Swedish sources and is the first study to cover the years 1909 to 2019. The research question that this article poses is as follows: How has Swedish airpower developed throughout the course of history? The investigation reveals that Swedish airpower advanced rapidly from its humble beginnings in 1909, when the first flight in the country took place to eventually becoming the fourth largest air force in the world in the 1950s. Nonetheless, the Swedish Air Force has gradually declined in relative terms ever since.

This argument is developed throughout the remainder of this article. The first section is devoted to the early history of Swedish aviation up until the outbreak of the First World War. The ensuing two sections examines Swedish airpower in World War I and World War II respectively. The fourth section takes a closer look at the Swedish Air Force at the start of the Cold War and traces its progress up until the end of the 1950s. The final section covers the remainder of the Cold War and beyond. At this point, it is however, incumbent to take a closer look at the first phase of Swedish aviation.

The Early History

On July 29, 1909, the Frenchman Georges Legagneux completed the first flight in Sweden.² The following year, Baron Carl Cederström became the first Swedish aviator when he flew around Ladugårdsgärdet in Stockholm, in front of a large enthusiastic crowd.³ The first military flight in the country would however not take place until February 3, 1912 when the pilot, Lieutenant Olle Dahlbeck, flew around the Stockholm archipelago in his Blériot XI bis.⁴

The public and the press were generally extremely favorably inclined towards aviation during these early years. The pioneering military pilot, Gösta von Porat, was for instance, constantly approached by people who desperately wanted to accompany him on a flight. Only a few of his military comrades were fortunate to be granted this privilege, but only if they did not exceed a certain weight.⁵ Von Porat himself was regarded as a hero. In one instance, the media reported that von Porat received ovations from his military comrades who carried him to the mess hall and cheered for him after a flight.⁶

In fact, the media even portrayed the flight in poetic terms. To paraphrase a journalist: a successful flight is a grandiose and impressive sight. One is left speechless in awe of this proud hymn to human ingenuity. For the layman, a flight



A Nieuport IV.G on display at the museum at Malmö.

appears as a miracle, a surreal dreamed vision as the giant bird shrinks into a swallow in the summer light sky. It is like witnessing a creature with spirit and life, a ruler of heaven.⁷

Nevertheless, not everyone was equally enthusiastic about the arrival of aircraft in Sweden. An article, which appeared in the daily Swedish newspaper, *Dagens Nyheter*, posited that particularly elderly people were upset with the advent of these giant birds, as they defied the natural laws of God. In a similar vein, another article at the time claimed that a pious teacher, in a small school, urged her little disciples to ask God to keep an eye on the 'flying machines' like he once did with the Tower of Babel. The teacher regarded airplanes as a work of evil and explained—that this is why God regularly slammed them to the ground, just as they reached their highest altitude.⁸

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Such concerns did not stop the Swedish Armed Forces from acquiring aircraft. The first Swedish military airplane was a Nyrop-Blériot nr 3, called the "Big-Bat", which director Otto Emil Neumüller donated to the navy as a gift on December 1, 1911.⁹ Another year and a half later, the navy received its next airplane, which they referred to as "flying boats" irrespective of whether they could takeoff or land on water.¹⁰ The army received its first aircraft in 1912, the Nieuport IV.G and Bréguet C.U 1.¹¹ Sweden chose to buy these French aircraft as France was generally considered a leading nation in the development of aircraft at the time.¹² In total, the army received forty-two airplanes whereas; the navy acquired 22 aircraft in the period 1911-1917.¹³

This speedy expansion largely coincided with the rapid technical advancement in aircraft production. During the period 1909-1913, aircraft went from being experimental vehicles to become reasonably reliable machines with features reminding of modern aircraft.¹⁴ Although military aircraft were still unarmed at the time, their acquisition was justified on the grounds that they are now technically capable of strategic and tactical reconnaissance.¹⁵ The reconnaissance of enemy troop movements, a task of utmost importance normally conducted by the cavalry, would now be conducted more effectively by flight thanks to their superior speed and ability to overlook a far vaster area it was reasoned.¹⁶

In practice, this plan did not always materialize. In his memoirs, von Porat, notes that during the first 'real' reconnaissance flight in Sweden in October 1921, the plane rolled over on landing and the crew was thrown to the ground without detecting any enemies. Even in a more suc-



The Nyrop-Blériot nr 3, called the “Big-Bat”, in 1912.

successful reconnaissance flight, the pilot stated that the snow made it impossible to detect anything on the ground worth reporting.¹⁷

The problems with early aviation were not limited to reconnaissance. In 1912, Axvall became Sweden’s first military airbase for Sweden’s first air force, and home to Sweden’s first war flight school. Von Porat described the airport as quite horrible with power lines everywhere and noted that this was the place where his hatred for power lines first arose. At the time, safety was not taken seriously at airports. One could find bikes laying around, liquid containers in front of the plane and children playing in the backdraft from the propeller when the engine was running. In other words, accidents were inevitable. The first fatal Swedish airplane accident occurred on July 20, 1912 when 18-year old Hilma Johansson came into contact with the propeller after a failed start-up attempt by show pilot Hugo Sundstedt, in his Blériot. Consequently, the media took it upon itself to inform people to stay out of airbases and warned that they would receive a fine of ten Swedish Crowns (equivalent to approximately US \$1.30 at the time of writing) if they failed to do so.¹⁸ It was, however, not until 1930, when the Swedish press covered five accidents over the span of three days that the concept of aviation security was born.¹⁹

The First World War and the Birth of the Swedish Air Force

In the meantime, the First World War broke out on August 1, 1914. At this point, all the major European coun-

tries possessed some type of air power. Initially, the air crewmen attacked their counterparts with regular revolvers or rifles. As the need for heavier weapons grew, the planes became equipped with machine-guns. The fighter and air war was born.²⁰ In 1916, the average life expectancy of a pilot on the Western Front was three weeks but dropped to two weeks at the start of the following year.²¹ Swedish airpower was ill prepared for such encounters. At the outbreak of World War I, Sweden had only twenty or so military pilots whom essentially, lacked tactical and technical war experience along with eight military planes in total; dispersed equally between the navy and the army. To make things worse, there was no coordination between them.²²

The problems did not stop there. Swedish knowledge of aviation at the beginning of WWI was limited to a small number of people who, essentially, made copies of foreign airplanes. Sweden was also barred from buying state-of-the-art aircraft on the international market since it was neutral, and alliance-free. In an attempt to overcome these deficiencies, the Swedish military quickly purchased civilian aircraft and contracted civilian pilots.²³ Furthermore, it sought to strengthen its domestic aviation industry with both public and private aviation companies. The crown jewel at the time was AB Thulinverken. At the start of the war, it only employed twelve to fifteen people but had grown to 900 employees by 1919.²⁴

The expansion of the Swedish Air Force in terms of personnel and aircraft continued after the end of the war.²⁵ In 1924, the importance of airpower in supporting defen-



The Saab B-17 light bomber/reconnaissance aircraft from World War II.

sive and independent offensive operations in warfare was emphasized by the Swedish Parliament in Bill No. 20. In the same year, the Defense Committee recommended a separate air force similar to England, Italy and Finland.²⁶ The army accepted this proposal but the navy was extremely reluctant, as the new military branch was to be mainly formed by the army.²⁷

The concerns of the navy were overridden as the Minister for Defense, Per Albin Hansson agreed to the proposal and the parliament approved it in full on June 2, 1925.²⁸ The political support was expected, as many of them considered an independent air force cheaper than having it spread across the army and navy.²⁹ The following year³⁰, an independent Swedish Air Force was formed and received an annual budget of approximately six million Swedish Crowns (equivalent to approximately US \$758,571 at the time of writing).³¹ Karl Amundson became the first chief of the newly formed air force³² and Malmen, located outside the city of Linköping, became its headquarters. Von Porat was far more pleased with Malmen than he had previously been with Axvall. He regarded the takeoff and landing areas of Malmen satisfactory and had personal reasons to be happy with its location. His fiancée had just moved to Linköping.³³

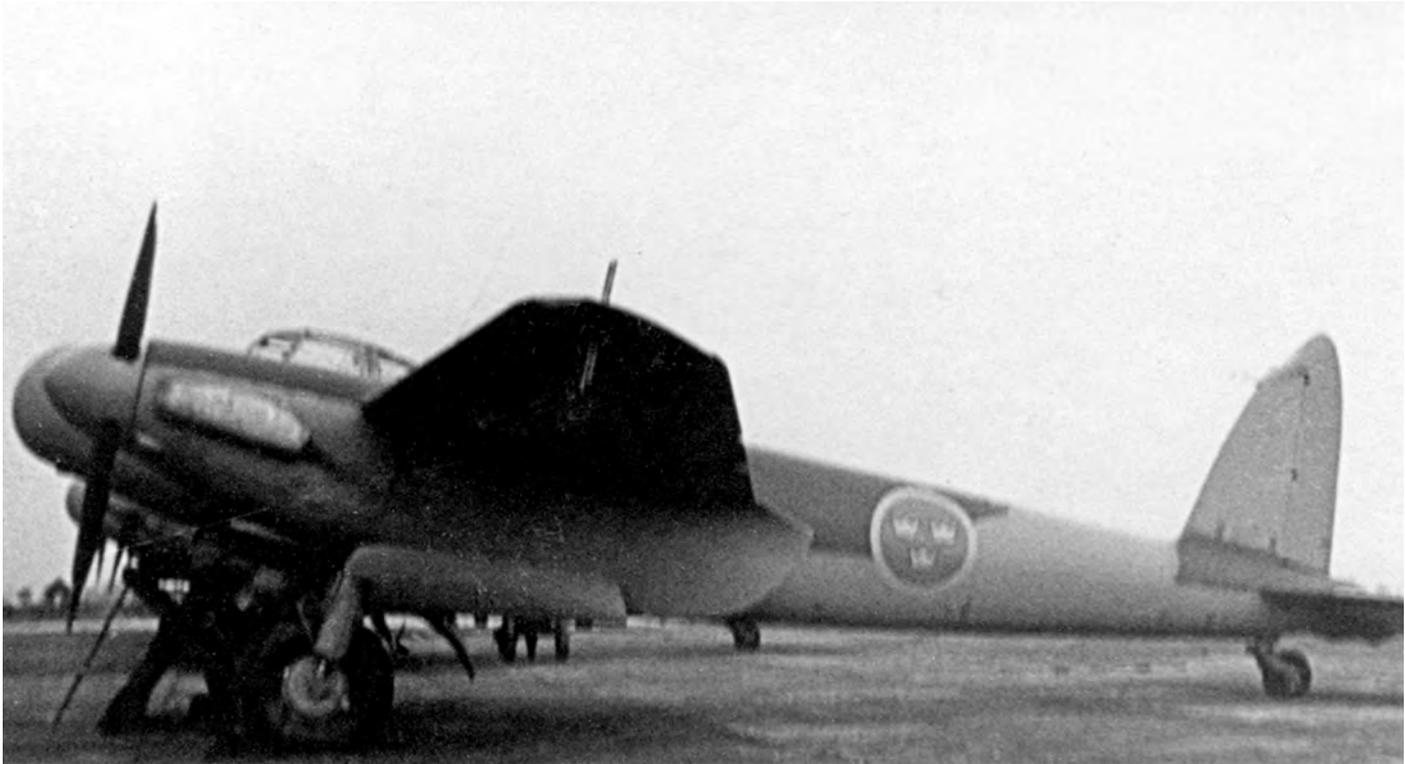
The biggest problem facing the newly formed air force was instead the obtention of equipment, especially planes as most of them already in possession were discarded and rundown. Captain Carl Florman advocated for the acquirement of bombers. In his view, these bombers should be used to attack an opponent's air bases and combat their forces. Florman's favoring of bombers was not surprising. These planes had evolved and could reach a speed of approximately 400 kph at the time, making it difficult for fighters

to keep up. Furthermore, diving enabled bombers to hit their targets with greater precision. With these points in mind, it is not surprising that the Swedish Air Force decided to purchase more bombers than fighters in 1936 at a ratio of 4:1. That same year, it was decided the Swedish Air Force must have its own reliable aviation industry. As a result, what eventually came to be the most important Swedish aerospace company, Saab, was founded in 1937.³⁴

The Second World War and the Swedish Air Force

These reforms were put in place to ensure that the Swedish Air Force would reach full strength by 1943. When the Second World War broke out on the night of September 1, 1939, the Swedish Air Force was thus, by no means fully developed and found itself in a precarious situation. There are several reasons for this: scarce funding from the government, a lack of appreciation for the need of a strong air force, limited opportunities to buy materiel abroad and the weakness of the domestic aviation industry. The air force estimated that it needed 228 million Swedish Crowns to remedy these shortcomings (equivalent to approximately US\$28.3 million at the time of writing), but only received about 30 million Swedish Crowns (equivalent to approximately US\$3.7 million at the time of writing).³⁵

As a result, the Swedish Air Force was ill equipped on the eve of World War II. When hostilities broke out, it had roughly 180 operational planes in total. Out of these 180 planes, there were approximately 40 Junkers Ju 86 bombers, 30 Hawker Harts light bombers, 50 Gloster Gladiator fighters, 25 Heinkel HE 5 reconnaissance aircraft, 25 Fokker C.V light reconnaissance aircraft and 10 Heinkel He



The DH 98 Mosquito of the post-war air force.

115 torpedo bomber seaplanes.³⁶ The quantity of planes was dangerously low and completely inadequate for a war of this magnitude. Their quality was also deficient as most of these aircraft were outdated and their performance and armament was inferior to that of potential opponents. Moreover, reserve planes and parts were in short supply. This further weakened Swedish endurance in the case of war.³⁷

In terms of personnel, approximately 6,700 people worked for the Swedish Air Force, of these about 1,000 were permanently employed, around 4,700 were conscripts and roughly 1,000 were civilians. They were generally well-educated, had high morale and could carry out their tasks in a competent manner. The limited flight material that did exist was also in good condition and well-maintained.³⁸

In an attempt to come to terms with the shortage of aircraft and engines, Sweden sought to buy them overseas from Germany, France, the Netherlands and the United States. Sweden had even paid for some of them, but did not receive them. For instance, 300 airplanes from the US were not delivered and France confiscated the Breguet 694 airplanes, which Sweden had ordered, for their own use. The Swedish Air Force not only lacked sufficient numbers of aircraft but also had the wrong type of planes for WWII. The persistent emphasis on bombers proved to be wrong-headed, as Sweden was in desperate need of strategic reconnaissance aircraft for use outside of the country's borders, but had great difficulties to attain them.³⁹

Likewise, Sweden had underestimated the need for fighters. The advent of air surveillance radar and lessons learned from Sweden's own experience during WWII, the Winter War and the Battle of Britain made the importance of fighters evident in the air force. For instance, on Septem-

ber 14, the only Swedish fleet of fighters managed to chase off curious German reconnaissance aircraft that sought to collect information regarding Swedish defense preparations. This operation proved to be successful and resulted in heightened respect for Swedish neutrality and provided a relief for Swedish merchant shipping. Subsequently, Sweden put an end to its relatively one-sided emphasis on bombers in 1941. Instead, the new doctrine stressed the importance of a balanced air force and the Swedish Air Force tripled its number of fighters.⁴⁰

The German invasion of neighboring Norway on April 9, 1940, reinforced Swedish politicians' realization for the need of a strong air force. Resources were therefore devoted to improving the organization. These developments persisted throughout WWII and by August 1943, the air force comprised of about 390 military planes. Despite these advances, their relative quantity and quality were still insufficient.⁴¹ As such, efforts to enhance the capacity of the Swedish Air Force continued and by the end of World War II, Sweden possessed over 800 aircraft. This is a far cry from the meager 180 planes at the Swedish Air Force's disposal at the beginning of the war.⁴² The Swedish aviation industry witnessed significant advances too. Indeed, Saab went from designing traditional propeller aircraft to state-of-the-art jet aircraft, which could rival those of the United States and the Soviet Union at the time.⁴³

The Cold War and the Golden Age of the Swedish Air Force

After World War II, the Cold War emerged with the Soviet Union as Sweden's main adversary. Sweden prepared



The Saab 32 Lansen, of which three variants were produced in the 1950s.

for it by building one of the most formidable air forces in the world, consisting of domestically built aircraft. These efforts affected the whole nation as wings and airspace industry, with thousands of subcontractors, spread across the country.⁴⁴ New airplane types were swiftly introduced and novel airplane systems emerged almost on a yearly basis. The turnover rate for aircraft equipment was high and within a few years, the entire air force with the exception of some reconnaissance planes, were equipped with modern jet-power. In addition, the air force decided to increase the number of fighters by 50% in 1948/1949. By the late 1950s, the bomber-centric air force of 1936 had been transformed into a pronounced fighter air force whilst retaining an admirable attack capability.⁴⁵

Air base systems were developed as well. Previously, airbases were generally large lawns with a few marked lanes. With the advent of jets, with their heavier starting weights and higher landing speeds, better airbases were required. Consequently, a hard surface became the new norm during the first half of the 1950s. At this time, the foundation of a new base philosophy that was structurally reminiscent of the German “Fliegerhorst” system was also introduced. To avoid falling victim to airbase attacks, Sweden built its airbases in conjunction with highways. Since highways already existed, building connecting airbases did not require any major investments. The planes could be scattered and potential opponents could therefore only hit relatively few planes through area bombing. This eloquent and relatively cheap solution garnered a lot of interest abroad.⁴⁶

During the 1950s, the combat control and air surveillance system, STRIL 50, was operationalized. Initially,

STRIL 50 was strictly based on manual reports and classifications but the large-scale STRIL-60 project with its fully computerized and semi-automatic systems was initiated to replace it. Moreover, Quick Reaction Alert (QRA) with continuous radar air monitoring and with fighters on alert around the clock was established. It was also during the first half of the 1950s that the Swedish produced fighter Saab 32 Lansen was developed.⁴⁷ Three principal variants of the Lansen were built: attack (A 32A), fighter (J 32B), and reconnaissance (S 32C). The main objective of these planes was to protect the 270 mile long coast of Sweden. Tactically, Lansen was primarily supposed to strike at “soft” targets such as warships with powerful anti-aircraft weaponry.⁴⁸ In combination, all of these major developments and innovations prompted the Golden Age of the Swedish Air Force in the 1950s. At the time, Sweden possessed the world’s fourth most powerful air force.⁴⁹

This is not to say that everything went according to plan for the Swedish Air Force during the 1950s. A military confrontation and Cold War era diplomatic crisis, known as the Catalina Affair, occurred in June 1952. During the incident, Soviet Air Force fighter jets shot down two Swedish aircraft over international waters in the Baltic Sea. A Swedish Air Force Douglas DC-3, carrying out intelligence-gathering was shot down by a MiG-15bis fighter. None of its eight-crew members were rescued. Subsequently, another PBY-5 Catalina flying boat involved in the search and rescue operation for the missing PBY-5 was also shot down. In this case, the crew of five were saved.⁵⁰ The Catalina Affair had a major impact on the Swedish Air Force and is the reason why the QRA mentioned above was established.⁵¹

This was not the only major headache the Swedish Air Force faced during this era. Swedish Air Force Colonel Stig Wennerström was suspected of working for the Soviet Union as a spy by the Swedish Security Service as early as 1947. These allegations could not be proven until 1963 and Wennerström was convicted of treason the following year. The investigation revealed that Wennerström probably sold over 20,000 pages of secret documents about Swedish defense to his Soviet contacts. They contained information regarding the Swedish Air Force's strategy, secret military bases, radar defense and mobilization plans and the entire Saab Draken fighter jet project. The damage that Wennerström's treason caused the Swedish Air Force was enormous. One of the implications was that the air force had to scrap some of the STRIL centers that were under development and change some of its components which added excessive additional costs since it was highly probable that Wennerström had revealed the initial plans to the Soviets.⁵²

The Cold War and Beyond

The 1960s was marked by defense budget cuts and the Swedish Air Force decreased in size. A number of politicians also began to question the viability of an expensive domestic aviation industry.⁵³ By now, the first-generation jet fighter Saab 29, colloquially called 'Flygande tunnan' (English: "The flying barrel") due to its chubby design from the 1940s, was coming of age. Indeed, unequivocal data indicated that the Saab 29 would not be able to effectively combat an aircraft with the speed, altitude, durability and defensive armament that the Soviet bomber Tu-16 Badger possessed. As such, Saab 29 was ill-equipped to deal with its main tactical objective - to neutralize opponent's aircraft in general and their bombers in particular. To overcome this weakness, the first fully supersonic aircraft deployed in Western Europe, the Saab 35 'Draken' (English: "the dragon") was operationalized in the 1960s as one of the premier fighters in the world. The Saab 35 Draken remained in operational service for almost 40 years, its longevity was due to its ability to technically adapt to new threats and demands with different engines and missiles etc. The versatility of the Saab 35 Draken was indeed impressive. Although early models of the aircraft were intended purely for air defense missions, it nevertheless, possessed a respectable quick-turn capability and proved to be a capable fighter plane of its time as well.⁵⁴

Nonetheless, the main tactical objective of the Saab 35 Draken was to confront enemy bombers from the front with the help of the recently developed air-to-air missiles.⁵⁵ Although Swedish missiles have typically passed or exceeded expectations, their development has often been halted for financial reasons.⁵⁶ Some of them did however see the light of day and among the early Swedish-produced missiles, the RB-04 (Robot 04), a long-range air-to-surface, anti-ship missile stands out. Although the RB-04 has never seen combat; it gave credence to the Swedish deterrence against a Soviet invasion in the Baltic Sea along with its

air force and submarines.⁵⁷ In fact, the last version of this missile, RB 04E was still a potent weapon against most ships by the mid-1990s.⁵⁸

The fully-computerized combat control and air surveillance system, STRIL 60, was operationalized in the 1960s as well and new types of radar stations were purchased for it. A further expansion of the base system also took place and command centers received much-needed upgrades.⁵⁹ These developments were deemed necessary to face the threat posed by the Soviet Tu-16 bombers that could reach Sweden in just over fifteen minutes from the Baltic coast.⁶⁰

In the 1970s, the societal support for the Swedish military declined and it became viewed with a degree of skepticism. As an example the extensive public spending on defense became increasingly criticized. At the same time, the political and medial focus shifted from the Soviet to the Third World and UN peace missions. As Sweden sought to position itself as an independent actor in the divide between the Eastern and Western blocs, the USSR came to be viewed in less hostile terms. During these conditions, it became increasingly difficult to justify large spending on the Swedish Air Force and aviation industry.⁶¹

Developments in this area did, nevertheless, occur. Perhaps most importantly, the Saab 37 Viggen, a single-engine, short-medium range aircraft entered service in 1971. It was produced in different versions to perform different roles. It came as a strike fighter (AJ 37), aerial reconnaissance aircraft (SF 37), maritime patrol aircraft (SH 37), a two-seater trainer (SK 37) and an all-weather fighter-interceptor aircraft (JA 37). These planes came to replace the Lanser series of the 50s. Viggen did not only take over the duties previously carried out by the Lanser, when it replaced the last Lanser aircraft by 1976, but also inherited the effective but slow-going missile system of its predecessor.⁶²

The 1980s was marked by the development of a next generation combat control and air surveillance system called STRIL 90. The platform utilized modern servers and was operated by regular PCs. STRIL 90 was developed by Saab Surveillance with the intention of working with new aircraft such as JAS 39 Gripen.⁶³ This Saab produced aircraft was designed to replace both Draken and Viggen in the Swedish Air Force but to do so, it had to fulfill several conditions. It had to be sold at a fixed price for a fifteen-year period, be cheaper than the Viggen over its lifetime, have half its weight and have equivalent or better flight performance than the Viggen. The result was a single-engine, fourth generation, multirole aircraft that could switch between fighter, attack, and reconnaissance missions in the air with a simple press of a button.⁶⁴ The JAS 39 Gripen's maiden flight occurred in 1988, entered service with the Swedish Air Force in 1997 and continues to be used today. In fact, the C/D versions of the Saab JAS 39 Gripen are still the main fighters for the Swedish Air Force. This aircraft will likely play a vital role in the future as well, since the heavily modernized E version of JAS 39 Gripen, with a new radar and enhanced fuel and weapons capacity, is planned to replace the C fleet starting in 2019.⁶⁵ ■

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5. Börje Räftegård, *Det Svenska Militärflygets Debut: Axvall Och Redberga År 1912* (Kristinehamn: Norlén & Slottner, 2012), pp. 27–28.
6. "Ett Flygbesök i Skara," *Skaraborgs Läns Tidning*, July 27, 1912.
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8. Räftegård, *Det Svenska Militärflygets Debut: Axvall Och Redberga År 1912*, p. 38.
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11. Johan Engström and Lars Ericson, *Mellan björnen och örnen: Sverige och Östersjöområdet under det första världskriget, 1914-1918* (Visby: Gotlands fornsal, 1994), pp. 113, 136, 143.
12. Räftegård, *Det Svenska Militärflygets Debut: Axvall Och Redberga År 1912*, p. 15.
13. Gösta Norrbohm and Bertil Skogsberg, *Att Flyga Är Att Leva* (Höganäs: Bokförlaget Bra Böcker, 1975), p. 23.
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15. Justin D. Murphy, *Military Aircraft, Origins to 1918: An Illustrated History of Their Impact* (Santa Barbara, California: ABC-CLIO, 2005), pp. 103–4.
16. Norman S. Leach, *Cavalry of the Air: An Illustrated Introduction to the Aircraft and Aces of the First World War* (Toronto: Dundurn, 2014), pp. 24–44.
17. Räftegård, *Det Svenska Militärflygets Debut: Axvall Och Redberga År 1912*, pp. 42–43.
18. Räftegård, pp. 10, 22–23, 36.
19. Norrbohm and Skogsberg, *Att Flyga Är Att Leva*, p. 45.
20. Robert F. Grattan, *The Origins of Air War: Development of Military Air Strategy in World War I* (London: I.B.Tauris, 2009), pp. 110–11.
21. Brian Bond, *Survivors of a Kind: Memoirs of the Western Front* (London: Continuum, 2008), 142.
22. Initially, the navy used its flying boats for general reconnaissance but eventually utilized them for more qualified tasks such as averting ships that violated Swedish waters. Annerfalk, p. 25.
23. Norrbohm and Skogsberg, *Att Flyga Är Att Leva*, p. 26.
24. Thomas Kaiserfeld, *Vetenskap och karriär: svenska fysiker som lektorer, akademiker och industriforskare under 1900-talets första hälft* (Lund: Arkiv, 1997), pp. 135–37.
25. Räftegård, *Det Svenska Militärflygets Debut: Axvall Och Redberga År 1912*, p. 45.
26. Norrbohm and Skogsberg, *Att Flyga Är Att Leva*, p. 36.
27. Annerfalk, *Flygvapnet 1926-1996: Från Dronten till Gripen*, p. 30.
28. Norrbohm and Skogsberg, *Att Flyga Är Att Leva*, p. 37.
29. Annerfalk, *Flygvapnet 1926-1996: Från Dronten till Gripen*, p. 31.
30. This is also the year the first Swedish parachute took place, on July 7 1926 to be exact (Norrbohm and Skogsberg, 1975, p. 50). Norrbohm and Skogsberg, *Att Flyga Är Att Leva*, p. 50.
31. Norrbohm and Skogsberg, p. 37.
32. Ulf Hamilton, *Teknik på bönders villkor: de tekniska och politiska aktörernas inflytande på den statsreglerade tekniska förändringen i Sverige 1806-1972* (Stockholm: Alvqvist & Wiksell, 1997), p. 135.
33. Räftegård, *Det Svenska Militärflygets Debut: Axvall Och Redberga År 1912*, p. 45.
34. Norrbohm and Skogsberg, *Att Flyga Är Att Leva*, pp. 44, 61, 80.
35. *Ibid.*, pp. 65, 100.
36. *Ibid.*, pp. 70–71.
37. Erik Norberg, *Flyg i beredskap: Det svenska flygvapnet i omvandling och uppbyggnad 1936-1942* (Stockholm: Allmänna förlaget, 1971), pp. 97–102.
38. Norrbohm and Skogsberg, *Att Flyga Är Att Leva*, pp. 70–71.
39. *Ibid.*, pp. 66, 89.
40. *Ibid.*, pp. 61, 69, 77,.
41. *Ibid.*, pp. 79, 84.
42. *Ibid.*, pp. 90–91.
43. Thomas Magnusson, ed., *Svenskt Flyg under Kalla Kriget* (Stockholm: Medströms Bokförlag, 2016), p. 9.
44. *Ibid.*, p. 7.
45. Annerfalk, *Flygvapnet 1926-1996: Från Dronten till Gripen*, p. 144.
46. *Ibid.*, p. 158.
47. *Ibid.*, p. 145, 173.
48. Magnusson, *Svenskt Flyg under Kalla Kriget*, pp. 48, 50.
49. Bertil Wennerholm, *Fjärde flygvapnet i världen?: Doktrinutveckling i det svenska flygvapnet i försvarsbesluten 1942 - 1958. Underlag, beslut och genomförande i nationellt och internationellt perspektiv* (Stockholm: Försvarshögskolan, 2006).
50. Initially, the Soviet Union denied shooting down the DC–3, but a few days later evidence that suggested otherwise was found in the form of Soviet munitions. In 1956, Nikita Khrushchev admitted that the Soviet Union had shot down the DC–3 during a meeting with the Swedish Prime Minister Tage Erlander. Likewise, Sweden maintained that the DC–3 was undertaking a navigation training flight for nearly 40 years. Only after pressure from crewmembers' families did Swedish authorities confirm that the plane was spying for NATO. The remains of the DC–3 was found in 2003 and it is currently at display at the Swedish Air Force Museum in Linköping.
51. Lennart Andersson and Leif Hellström, *Bortom horisonten: Svensk flygspaning mot Sovjetunionen 1946-1952* (Stockholm: Stenbom, 2002); Christer Magnusson, "Teknisk Utredningsrapport Över Haveri Med Tp 79 Nr 001" (Stockholm: Försvarsmakten, May 25, 2007), p. 001.
52. Anders Sundelin, *Fallet Wennerström* (Stockholm: Norstedt, 1999).
53. Annerfalk, *Flygvapnet 1926-1996: Från Dronten till Gripen*, p. 164.
54. Magnusson, *Svenskt Flyg under Kalla Kriget*, pp. 28, 32–33, 84.
55. *Ibid.*, p. 88.
56. Annerfalk, *Flygvapnet 1926-1996: Från Dronten till Gripen*, pp. 153–54.
57. Magnusson, *Svenskt Flyg under Kalla Kriget*, 43.
58. Annerfalk, *Flygvapnet 1926-1996: Från Dronten till Gripen*, p. 155.
59. Örjan Eriksson and Bengt Eklöf, "Strilsystem m/60" (Växjö: Försvarets Historiska Telesamlingar, March 21, 2016).
60. Magnusson, *Svenskt Flyg under Kalla Kriget*, p. 71.
61. *Ibid.*, p. 115.
62. Ulf Edlund and Hans Kampf, *System 37 Viggen* (Stockholm: Svensk flyghistorisk förening, 2009); Jim Winchester, *Military Aircraft of the Cold War* (San Diego, CA: Thunder Bay Press, 2012).
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