



A pair of Fliegerstaffel 10's Mirage III RS jets in action for the final time at the Axalp live-firing demonstration during 2003. DR ANDREAS ZEITLER



Military aircraft procurement is now a highly controversial issue in Switzerland, but this was not always the case. It all started in 1964, when the cost of acquiring the Dassault Mirage III spiralled out of control **WORDS:** PETER GUNTI

# DELTA BLUES



**ABOVE:** The military commission of the Swiss parliament is introduced to the Mirage III in a hangar at Emmen on 21 November 1960. This was an all-male group as women were precluded from entering Swiss politics by law until 11 years later. AMF/RUAG

In 1956, Switzerland proudly claimed to have one of the world's first air forces with an all-jet combat aircraft fleet. The speedy procurement of 350 licence-built Vampires and Venoms enabled 17 fighter squadrons to convert to the de Havilland types. However, the Korean War had already proved the superiority of swept-wing fighters over straight-wing designs, and the supersonic era was now a reality. Switzerland's pipedreams of designing and producing indigenous machines such as the F+W N-20 and the FFA P-16 lingered in the minds of many. Replacing more than 300 jets with modern equipment was going to be costly.

The scandal began in 1961 when parliament was asked to approve the allocation of 827.9 million Swiss francs (CHF) for the acquisition of 100 French-designed Dassault Mirage III fighters. They were to be based on the Mirage IIIC model and be manufactured under licence in Switzerland, creating jobs and enabling technology transfer. All 100 aircraft would be

identical and capable of performing ground attack, reconnaissance — with a camera pod — and air defence missions. Selection of the avionics suite was excluded, but the politicians were assured that the price of this equipment was already accounted for, and that a definite decision would be made by 1963 at the latest. Since a number

**“ There was no clearly defined specification ”**

of possible weapon systems were under development, this delay ensured the availability of the most up-to-date technology. A second series of 100 further Mirages would be proposed at a later date, solving the Swiss Air Force's rejuvenation problem for the foreseeable future.

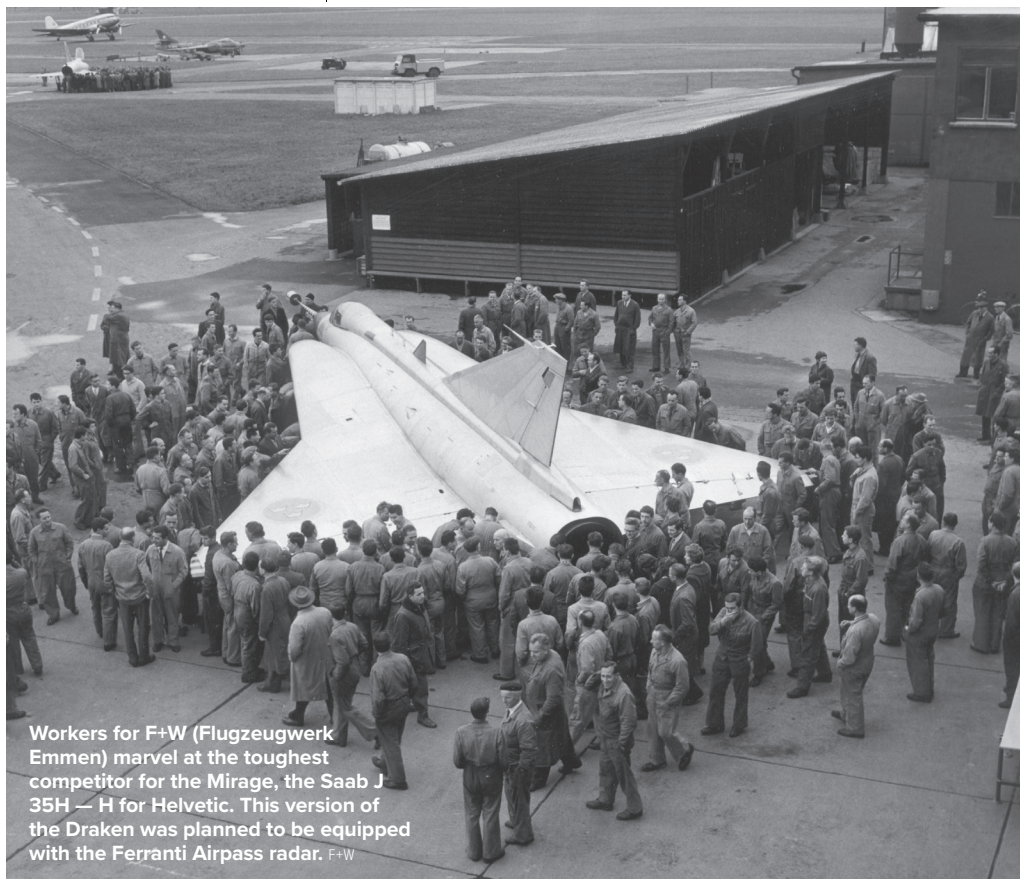
Today this sum may seem modest. Back then it was anything

but. It was, in fact, the largest fiscal item ever put forward by the government. This also meant defence spending rose to an unprecedented 43 per cent of the entire federal budget, making the military the state's highest priority. But, in the midst of the Cold War, the necessity of keeping pace with an ever-accelerating arms race seemed to override all other considerations. Members of both parliamentary chambers accepted the proposal with large majorities, the national council (Nationalrat) by 139 to nine votes, the council of cantons (Ständerat) by 38 to zero. Widespread fears of stiff left-wing opposition proved unfounded.

By this time, a complex evaluation procedure had begun. It got under way in 1957, and the following year the task of aircraft procurement was given to the army chief of staff. Gen (Oberstkorpskommandant) Jakob Annasohn formed a small committee of three men, the AGF (Arbeitsgruppe Flugzeugbeschaffung, or Aircraft Procurement Task Force). It was

led by Col Keller, reporting directly to Annasohn. Col Blözer came from the air force and engineer Richard Greinacher worked at the Department of War Technology (KTA, Kriegstechnische Abteilung). For additional know-how they were able to call on a wide range of subject matter experts.

Three pilots who had been involved in evaluating the Hawker Hunter, Col Wilhelm Frei, Maj Arthur Moll and Hans-Ulrich Weber, were able to fly almost every modern western fighter type then in series production. American test pilot Corvin 'Corky' Meyer, the project manager for the Grumman F11F-1F Super Tiger programme, wrote of the Swiss, "Their [...] team of test pilots was still the best we had seen from any Air Force that we worked with."



Workers for F+W (Flugzeugwerk Emmen) marvel at the toughest competitor for the Mirage, the Saab J 35H — H for Helvetic. This version of the Draken was planned to be equipped with the Ferranti Airpass radar. F+W

In 1959, the committee completed a secret 335-page report on the evaluation of the Saab 35 Draken, Lockheed F-104 Starfighter, Dassault Mirage IIIC, Fiat G91 and Grumman Super Tiger. It clearly recommended procurement of the Mirage to the chief of staff. On page 319, the costs of the different types were compared. The total price tag for 100 Mirage IIICs was calculated at CHF 1,030 million. From that, it can be seen that the sum put to parliament two years later had undergone some facelifting by the authorities. Several officers and politicians had voiced concerns that any proposal over the magic billion-franc limit would be destined to fail in the house. The discreet reduction from 1,030 to 828 million made an overrun inevitable. Insiders knew from that day on that more funds would be needed at a later date, which decreased cost awareness considerably.

At a time when aviation was developing with breathtaking speed, there was no clearly defined specification. The AGF was able to tailor the requirements to the options as they became available. This was to prove the biggest flaw in the committee's work. Had it frozen the specifications before the budget was fixed, it could have saved millions. Alas, it did not, and when the parliamentary votes were counted, the avionics option and many other details were still to be worked out.

Even before the contract with Avions Marcel Dassault was signed, further accounting deficiencies



had surfaced. In the early 1960s, inflation reached some 2 per cent a year, and it would soon rise to 3.5 per cent. But the entire Mirage procurement was intended to run over eight years. The first man to realise that the budget held no reserves to compensate for currency devaluation was René von Wattenwyl, the head of the KTA, whose judgement proved to be accurate. He made his own calculations and came up with a price of 1,200 million after inflation. Going through the figures, von Wattenwyl also realised that the cost of spares had been kept deliberately

low to reduce the total. This, he was sure, would be felt painfully as soon as flight operations began.

The most important contract, that with Dassault, was placed in front of defence minister Paul Chaudet in October 1961. In the presence of von Wattenwyl, who protested, he signed it despite his inner doubts. Under different circumstances, the evaluation group would have been disbanded at this point and its responsibilities transferred to the KTA, but the choice of the avionics suite and weapon system was still pending and the AGF continued to make alterations to the order

**ABOVE:** Only days before the parliamentary debate, the first Mirage IIIC with a functioning Cyrano radar landed at Emmen. In the background is defence minister Paul Chaudet, with the hat. GRD/ARMASUISSE

from a purely military point of view, with total disregard for the financial implications.

Weapon systems were offered by three companies. France's Thomson offered the Cyrano I, which became standard on the Mirage IIIC. A delegation of four Swiss experts had travelled to Brétigny near Paris back in April, and been shown a functioning model in a laboratory. Two days prior to the parliamentary vote, a Mirage IIIC arrived at Emmen with an operating Cyrano installed. The system's performance was, however, deemed inadequate by the Swiss. Some officers admitted later that there was a certain prejudice against French electronics originating from equipment bought as far back as World War Two. The refusal of Cyrano I, despite the fact that it carried the lowest financial risk, must be seen as correct in retrospect. Even before Cyrano I had come into use with the Armée de l'Air, Thomson began developing its successor, Cyrano II, later installed in the Mirage IIIE. This version was, however, not available in 1961 and could not be put forward to Switzerland.

A second proposal was made by Ferranti in the UK, namely the Airpass radar designed for the English Electric Lightning. In September 1961 a group of Swiss engineers visited the Edinburgh plant, where they were shown a model in the lab. That same month test pilot Arthur Moll was allowed to fly in a Canberra, a Dakota and a two-seat Lightning, which gave him an impression of the partially functioning system. A moving map display was still under development by the Royal Aircraft Establishment at Farnborough. There were also talks with the British Air Ministry about purchasing Red Top missiles. The biggest setback for the Airpass was the lack of an air-to-ground mode.

The third company in the race was Hughes in the United States, which had a brilliant reputation as the manufacturer of state-of-the-art electronics. It offered its newest development, TARAN (Tactical Attack Radar and Navigation). This combined the FG-10 radar from the Convair F-102 Delta Dagger with the MA-1 from the Republic F-105 Thunderchief, thus providing air-to-air and air-to-ground capabilities. Early in the evaluation, Serge Dassault, Marcel Dassault's son, was asked if it would be possible to fit TARAN to the Mirage IIIC. Several witnesses state that he said this would not be a problem. As he

costs if foreign electronics had to be integrated. People tend to believe what they want to believe. In contrast to Serge Dassault's statement, Vallières' warning was ignored as "trying to further the sale of French avionics."

Decision time came on the evening of 12 October 1961. Some 12 experts gathered in an office in Bern. The three manufacturers had been asked to keep their 'phone lines open for additional questions. The most controversial topic was the radar's range. This was not easy to compare as the companies used a variety of procedures and targets with different radar cross-sections to measure their performance. The arguments seemed convincing and a unanimous vote chose TARAN, the Hughes HM-55S Falcon and AIM-9B Sidewinder missiles as the best solution for Switzerland's new fighter. The experts had been tasked to find the best system and that is precisely what they did. Footing the bill was someone else's job entirely.

The government accepted the selection, and in December Arthur Moll and a couple of engineers from the KTA flew to Los Angeles to obtain technical details of the systems. The Swiss could now specify the components desired for the Mirage. At this stage, they were yet to learn about space, power supply and cooling requirements. It took only a few days for Dassault to confirm that the TARAN black boxes would not fit into the Mirage IIIC's avionics bay. The Swiss jets now had to be based on the IIIE, which had a longer fuselage and a larger avionics bay behind the cockpit, as well as a modified undercarriage and uprated engine. Changing the base model meant the contracts with Dassault and several other suppliers had to be reopened and renegotiated.

Besides the problem with the weapon system, the selection of

“*The Swiss Air Force's performance requirements were increasing by the month*”

was the director of flight-testing in his father's empire, nobody questioned this. In contrast to Thomson and Ferranti, Hughes could prove its performance claims with data gathered from functioning prototypes. The group of Swiss test pilots visited Hahn air base in West Germany and made several flights in two-seat TF-102s, assessing the radar on actual interceptions. These sorties were, however, of limited use as they demonstrated the performance of an already outdated weapons system.

Even before the final decision was made, another warning arrived from France. Benno Claude Vallières, director of the Dassault factory, warned of considerable additional

**BELOW:**  
The handing-over ceremony on a foggy day in March 1968 saw a line-up of 24 Mirage IIIEs. Each of these fighters had cost as much as half a squadron of Hawker Hunters.

SWISS AIR FORCE



equipment continued throughout 1962. The Nord AS-30 guided air-to ground missile was offered to Switzerland and underwent live firing trials at Cazaux. Flight tests were carried out of the SEPR (Société d'Études pour la Propulsion par Réaction) rocket motor, which allowed faster acceleration to supersonic speeds and enabled the aeroplane to reach an altitude of 22,000m (72,000ft). In turn, that necessitated trials with pressure suits. The Mirage had a considerable take-off run, so a RATO (rocket-assisted take-off) capability was considered imperative as a means of evacuating a damaged air base. The Swiss Air Force's future performance requirements were increasing by the month.



Now the contract with Dassault was open again, the test pilots reflected that landing a tail-less delta would be challenging to Hunter pilots. They thought it a good idea to order a pair of two-seaters, later dubbed the Mirage IIIBS (Biplace Suisse). Shortly thereafter, they were made aware of the tremendous capabilities of a reconnaissance variant under development with a camera nose. This would be far superior to the standard aircraft with a camera pod. So, the order was changed so 18 of the 100 jets would be delivered as Mirage IIIRS (Reconnaissance Suisse) versions. They were to be operated by Fliegerstaffel 10 and proved their worth until eventual retirement in 2004. But the type's envisioned versatility had been surrendered.

With the specification reaching its final stages, rumours started circulating in the press about cost overruns. The government was officially informed that significant additional funds would be required for the production run, but it decided not to ask for approval until the definitive sum became available. It simply wanted to avoid going to the parliamentary assemblies twice more for the same programme.

On 27 February 1962 the government informed parliament's military commission of the "unfavourable financial state" of the Mirage procurement. At this stage the additional costs could, however, only be roughly estimated. It forecast the need for another CHF 95 million, roughly 11 per cent of the original figure. This was not

considered outrageous, but later proved to be just another case of excessive optimism.

As production geared up, the pile of invoices grew higher. In 1964 it became evident that TARAN integration posed unforeseen problems. This prompted the chief of staff to form a team dedicated to finding cost savings. It concluded that there was the potential to save CHF 75 million, but at the cost of significantly limiting the aircraft's capabilities. The Mirage had been chosen because of its tremendous potential, and surrendering some of that made the whole deal questionable. The procurement went ahead unhindered.

The government called in a small panel of expert financiers to

investigate the state of affairs. Its efforts were overtaken by events. Soon after they began work, the allotted funds of CHF 827 million were used up without the integration problems being solved. Several hundred companies were in the process of producing parts, and in Emmen the final assembly line was in operation. The risk of everything coming to a standstill was all too real. Meanwhile the price tag had risen by CHF 576 million, and this was far from final. You did not need to be an expert to predict an overrun of 100 per cent or more. The budgeting of further funds became a must.

The matter went before parliament on 10 June 1964. The government was reasonably

**ABOVE:**  
The first Swiss Mirage to reach its new operator was a Dassault-built two-seater. ERNST SAXER

## DEMOCRACY, SWISS-STYLE

In this article, the term 'government' refers to a group of seven ministers called the Federal Council (Bundesrat), which is elected by parliament. These seven people govern the country. An annually changing president has no additional executive powers. Switzerland is unique that its people can have a direct influence on the work of this group. If a pressure group or political party is opposed to a government decision, it can launch a referendum. It needs to get the signatures of 55,000 voters within 100 days and the topic has to be decided by a public ballot. Last year the Bundesrat decided to plan the replacement of Switzerland's ageing F/A-18C/D Hornet fleet. A referendum forced all voters to decide. The result revealed a very small majority in favour of buying new jets.

If a movement wants to stir the Bundesrat into action on an issue the government does not want to address at all, it can try to launch an initiative. Should it gain the written approval of 100,000 voters within 18 months, the matter must be voted on by the electorate. This happened, for example, back in 1993 when a group opposed to the armed forces pushed for a law preventing the acquisition of jet fighters for the coming decade. It was rejected by 57 per cent of voters, enabling the purchase of today's Hornets.

In addition to elections, every adult citizen of Switzerland is called to the polls four times a year to vote on different issues. In the past, referendums had a hit-rate of 31 per cent, while initiatives scored public approval in only 11 per cent of all cases.



**ABOVE:** The SEPR rocket engine improved the Mirage III's supersonic acceleration and enabled zoom climbs up to 22,000m (72,000ft). It's demonstrated here by a pair of IIIS fighters. SWISS AIR FORCE

confident that, since production was under way, MPs would approve funds. It was wrong. Barely a single speaker agreed, and there was an atmosphere of outrage. Both chambers refused to vote on the matter. Instead they called for a parliamentary investigation committee (Parlamentarische Untersuchungskommission, PUK) to shed light on the mess.

Two such PUKs were formed, one by each chamber, but with a close relationship. The energetic Kurt Furgler became their spokesman, and they were unofficially dubbed the Furgler Commission. Having worked fast and efficiently, read files and interrogated all the key figures involved in the procurement process, they conveyed their findings in a 75-page report on 10 September.

The document was not short of accusations. It criticised the composition of the AGB and the unclear definition of its task. It found fault with the wording of the original procurement proposal and stated that the content had been deliberately altered to create the impression of total financial certainty, when in fact almost nothing had been confirmed at the

time. It also slammed the refusal to act on the advice of the cost-saving panel. Several high-ranking personalities were mentioned by name. The cost was analysed once more and a proposal for rescuing the Mirage deal presented. Switzerland could get no aircraft for CHF 850 million, 30 aircraft for 1,190-1,240 million, 50 aircraft for 1,300-1,400 million, 70 aircraft for 1,390-1,540 million or 100 aircraft for 1,500-1,700 million.

After some debate, a compromise was reached to buy 57 aircraft: 36 examples of the Mirage IIIS, 18 IIIRS reconnaissance machines, the pair of IIIBS two-seaters and a single IIIC to be used as a flying testbed. This saved the programme and implemented a new cost ceiling, but it had a catastrophic effect on the unit price. Many parts had already been produced for a fleet of 100. Having planned to receive a minimal quantity of spares, the air force would now get an excess of them. The royalties owed to Dassault could not be reduced as the contract was fixed. Integration problems with the American electronics would later be resolved during a flight test

campaign at Holloman Air Force Base, New Mexico.

The military command had succeeded in choosing the formidable Mirage for its future inventory. Setting out from the basic IIIC, they had developed a much more capable fighting machine. But in doing so they would nearly have bankrupted the very state they wanted to protect, had the original plan for a 200-strong fleet been realised. The colonels of 1962 had been lieutenants in 1942, when the necessity of resisting Nazi Germany had assumed frenzied proportions. All they wanted was the very best. The Swiss examples were probably the most capable of all Mirage IIIs, but their superiority over the French IIIEs, which cost a fraction of the price, was minimal.

In fairness, the quality-quantity dilemma troubled most states during this era. In the UK, a single TSR2 would have cost as much as five Buccaneers. If all possible capabilities had been pursued, the air arms of the west would have consumed a vast amount of the wealth its citizens produced and enjoyed. Switzerland learned this the hard way. The 827 million francs would not have been sufficient to buy 100 Mirage IIICs because of the demand for spares and the unwillingness to account for inflation. But the 1,500 million eventually spent could have bought some 160 standard C-models, as procured by South Africa and Israel, enabling the Swiss Air Force to equip nine or 10 squadrons and solve its obsolescence problem.

The aftermath was grim and heads rolled. The chief of the air force, Etienne Primault, was fired. The army chief of staff, Jakob Annasohn, was reassigned and soon retired. Three members of the AGB were 'promoted' to desk jobs to sit out the rest of their careers. Defence minister Paul Chaudet lost all support within his own Free Democratic Party and had to resign.

The Mirage fleet was officially handed over during a ceremony at Buochs air base on 2 March 1968. Fliegerstaffeln 16 and 17 were equipped with the S-models, whereas Fliegerstaffel 10 took on the recce jets. The air force managed the jump into the supersonic age without undue difficulty. Initially the emphasis was on ground-controlled interception, Fliegerstaffeln 16 and 17 concentrating on air defence.

Training with the AS30 missiles was almost sidelined, something frowned upon by many pilots.

The really painful effect of the small Mirage fleet was the lack of a replacement for the ageing ground attack Venoms. In 1970 the air force disbanded Fliegerstaffeln 12 and 14. The remainder of these venerable jets (see *Aeroplane* September 2016) were modified to lengthen their service lives, and would soldier on until 1983. Interdiction strike, ground attack missions deep inside an enemy's hinterland, had once been high on the priority list.

The next evaluation, this time for a ground attack aircraft, began straight away. In 1972 the air force proposed to the government the purchase of a fleet of Vought A-7D Corsair IIs for CHF 1,500 million, but the federal council refused to put this issue to parliament. At that time, sentiment towards aircraft procurement was still burdened by the recent scandal. The government was also trying to escape intense pressure from France to buy the Milan, a Mirage with retractable 'moustache' foreplanes that never attracted any orders. On top of this, the idea of attacking targets far outside Swiss territory proved politically complicated for a state which was neutral and seeking to remain so.

To meet the army's needs, the remaining 92 Hunters would have to be used for close air support. Even before the Corsair II proposal went south, Hawker Siddeley's Bill Bedford mentioned the possibility of buying a number of second-hand Hunters to the Swiss government. The low cost of such a proposal was immediately apparent, as was the prospect of contracting Swiss firms that had lost a lot of work after the cuts to the Mirage deal with the refurbishment and assembly of these old jets.

Parliament agreed during 1971 to the purchase of 30 fully overhauled Hunters for CHF 105 million. A further batch of 30 such aircraft followed for 109 million the next year. In 1980, Switzerland invested CHF 90 million in the upgrading of its Hunter fleet, purchasing cluster bombs and Hughes AGM-65 Maverick air-to-ground missiles. The Hunters now acted as specialised ground attack platforms until their retirement in 1994. From then on, the Swiss Air Force's mission has never included air-to-ground. Although the small fleet of F/A-18 Hornets offers a considerable

capability in this field, they have only been used for air defence.

The consequences of the Mirage scandal can still be felt today, 60 years later. The fact that aircraft procurement can go so fundamentally wrong is deeply embedded in the minds of the Swiss people and their representatives. A failure has the potential to destroy some political careers and enhance

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## “ The consequences of the Mirage scandal can still be felt today ”

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the position of others. Accordingly, the proponents of new aircraft procurement programmes approach the subject carefully, while the opposition barks loudly. Journalists — even some of the competent ones — have a field day.

When in 2014 the air force tried to replace part of its ageing Northrop F-5E/F Tiger II force, the favoured

option, the Saab JAS 39 Gripen, was publicly dubbed an “IKEA fighter”, too cheap to be combat-ready. During the latest evaluation, which produced a deal for 36 Lockheed Martin F-35A Lightning IIs, the Boeing F/A-18E/F Super Hornet was reported in the Swiss press as having a reduced fatigue life that would reach only one third of Boeing's guarantee. The electorate will read reports, and seek alternative information when necessary if asked to vote again.

In connection with the most recent fighter purchase, a public information event was staged in Biel during 2018. Lockheed Martin's sales representative summed it up nicely when asked about the difference between Switzerland's requirements and those of other nations. He replied, “The operators, more or less, want the same thing. In other countries we just have to convince the air force of our product. The big difference here in Switzerland is that we also have to convince the people”. If all goes well, Switzerland will take delivery of 36 Lightning IIs in 2030, and these will reintroduce a limited ground attack capability. **A**



**ABOVE:** Kurt Furgler chaired the investigation into the Mirage deal and presented its findings to parliament.

**BELOW:** Inside one of the secret aircraft caverns, a IIS with an AS30 missile and two Sidewinders is lifted over a sister aircraft. The radome had to be manually folded sideways for turn-around. RUAG

