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HISTORICAL OUTLINE
ON THE QUESTION OF
SWISS NUCLEAR ARMAMENT

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(Translated by the U.S. Department of State)
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HISTORICAL OUTLINE ON THE QUESTION OF SWISS NUCLEAR ARMAMENT

This report consists of an Introduction, a Historical Survey of the years 1965 through 1988 and a Summary. While the Introduction is largely a presentation of information that is widely known, and the documentation for which is available for examination in the Federal Archives, the Historical Survey is a chronological account of activity during the period on the basis of the collection of internal files compiled by Corps Commandant Arthur Liener, Chief of the General Staff, on instructions from Kaspar Villiger, President of the Confederation.

1. Introduction

In Switzerland, the scientific community was dealing with the question of the atom bomb even before there was such a thing. During World War II, the physicist Paul Scherrer (1890-1969, Professor at the ETH Zürich beginning in 1920) even managed to invite his German scientific colleague Werner Heisenberg to present a guest lecture in Switzerland and arrange a meeting between Heisenberg and an American who was close to the Office of Strategic Services, to determine what progress the Germans had made in the development of an atom bomb. A detailed discussion of the meeting is presented by Thomas Powers in his book entitled "Heisenberg's War" (London, Jonathan Cape, 1993; EMB D 1329), which is based on US documents. The fact that Scherrer then became a key figure in further nuclear development in Switzerland, at least in the area of the civilian uses of nuclear power, is well known. The Von Villigen and Würenlingen Institutes which were merged and named after Scherrer are the memorial raised to an important scholar by a country with a strong practical disposition. It is impossible, because of a lack of documentary sources (and to some extent time to search and inspect the domestic and foreign archives, above all the US archives), to say exactly what role Scherrer played in the country's military efforts, which were well under way in 1945, to unlock atomic energy for the good of the country, i.e. to construct an atomic bomb as a deterrent. But it is certain that the Atomic Energy Study
Commission was working on basic principles as early as 1945. The Federal Council, which officially established the SKA on June 8, 1946, asked Parliament to pass a Federal Resolution for the Promotion of Research in the Field of Atomic Energy. Federal Councillor Karl Kobelt emphasized the military aspects of the question clearly enough, but he also stated that Switzerland had no plans to develop its own nuclear weapons, which practically went without saying under the conditions of 1946 and the objective resources required, but also in the rather loose wording of the classified instructions to the SKA. Had he said the opposite, he would have rendered the project impossible, because it would have triggered irresistible pressure from those responsible for foreign policy. These facts have been and will continue to be the subject of extensive historical research.

But it can be assumed that around 1955, there must have been a certain slowdown in efforts to develop a Swiss atom bomb. The Chevallier Initiative of December 2, 1954, named after its sponsor, a referendum to cut in half the budget appropriation for the military, with specified applications for the funds which thus became available, was declared invalid by Parliament. Two further initiatives along the same lines were sponsored by Samuel Chevallier on October 17, 1956. The unrealistic nature of his approach, however, was demonstrated all too clearly by the Soviet Union's bloody suppression of the Hungarian popular uprising beginning November 5, 1956. The acute phase of the Cold War began. Particularly critical episodes of the Cold War included the downing of a United States U-2 reconnaissance aircraft over the Soviet Union in 1960 and the Cuban Missile Crisis in 1962, when the world came within a hairsbreadth of a nuclear exchange. President John Fitzgerald Kennedy ordered a quarantine of Fidel Castro's island. Had he ordered a blockade, which would have involved precisely the same actions by the US Navy, it would have been an act of war, under the terms of international law.

In this anything but comforting international political climate, the government and elected officials of a small neutral state, most of whom had been marked forever by the experience of surviving Adolf Hitler's Reich, had to come up with a modern security
policy. As in other areas, the various possibilities, including the question of the possible acquisition of nuclear weapons, were not only discussed internally, but also in public. On March 29, 1957, the first meeting of the Commission to Study the Possible Development of Swiss Atomic Weapons took place. This organization was established by Louis de Montmollin, Chief of the General Staff, who declared the whole matter secret and expressly prohibited contact with any third persons not authorized by him. The goal was to present information to the Federal Council "about the possibility of acquiring nuclear weapons in Switzerland". The Commission's initial members, in March 1957, in addition to Montmollin himself, were the Deputy Chief of Staff and Division Commander Colonel Jacques Boissier, Colonel on the General Staff Peter Burckhardt, Professor D. Rudolf Bindschedler, the Chief of the Legal Service of the Swiss Political Department, the Delegate for Nuclear Affairs Doctor Otto Zipfel, his Deputy Dr. Jakob Burckhardt, the Director of Reaktor AG, Doctor Rudolf Sontheim, as well as the General Staff Colonels Henri Hess and Georg Heberlein. The Schweizerische Offiziersgesellschaft, for its part, in the same spring of 1957, had recommended nuclear weapons as an important way to strengthen the national defense, although one year later the Initiative Committee of the Swiss Movement Against Nuclear Arms began to collect signatures to add an Article 20-bis to the Swiss Federal Constitution, which would have banned the "manufacture, import, construction, storage and use of atomic weapons of all types." The first response came from the Federal Council. On July 11, 1958, the Council issued a Basic Declaration on the subject, which said: "In accordance with our centuries-old tradition of defensive capability, the Federal Council is therefore of the opinion that, to defend our independence and to protect our neutrality, the Army must be equipped with the most effective weapons. These include nuclear weapons. Consequently, the Federal Council has ordered the Federal Military Department to continue its investigation of the introduction of nuclear weapons in our army, and at the appropriate time to submit a report and motion to the houses of Parliament." The fact that this statement was criticized by the Soviet news agency TASS, among others, only had a stimulating effect, since the criticism reflected the official opinion of the most probable opponent (for more information on the overall conditions, see Dominique Metzler's thesis from the
Although the officers who participated in the negotiations of the State Defense Commission (LVK) which advised the predecessor of the EMD saw a Swiss atom bomb as more or a defensive and tactical weapon, there was also the voice of the Commander of the Airborne and Anti-Aircraft Forces Etienne Primault, who stated, according the minutes of the meeting on November 29, 1957: "If we had an aircraft like the Mirage, for example, which is capable of carrying atom bombs and flying as far as Moscow, we would imagine its use even in enemy countries". But given the state of things in 1957 and 1958, this opinion was valid only as a military/technical evaluation, because politically, the Federal Council had no intention of making Switzerland the fourth nuclear power after the USA, the USSR and Great Britain. On October 7, 1958, in a memorandum to the Swedish ambassador, Bindschedler declared: "If the Swiss army were to be equipped with nuclear weapons, it would only be because the nuclear monopoly of the three major powers can no longer be maintained. Therefore the problem arises only if this monopoly no longer exists."

But the Federal Council wanted to be ready for this eventuality, which was in fact not all that unlikely. On December 23, 1958, therefore, it ordered the EMD to study the acquisition, purchase and manufacture of nuclear weapons, and then to present a report and motion. Abroad, such statements were only to be made "in compliance with our policy of neutrality, and in close consultation with the Federal Political Department". The search for uranium deposits mentioned in the same resolution was said to be of both civilian and military importance. The EMD also required the approval of the Finance and Customs Department, to include the necessary appropriations in the budget.

The initiative prohibiting nuclear weapons was submitted on April 29, 1959. The Social Democratic Party of Switzerland, forced into action, submitted its own initiative on July 24, 1959, which called for a mandatory referendum on the "Resolution on equipping the Swiss Army with nuclear weapons of any type".
The Federal Council gave its next report on its opinion in this matter with its Message on Military Organization dated June 30, 1960: "However, the current lack of opportunity to acquire nuclear weapons abroad or to manufacture them in Switzerland does not mean that we intend a priori to do without this most effective strengthening of our national defense. Developments must be monitored carefully, so that opportunities which may arise can be taken into consideration."

That was the opinion of the Council. On March 14, 1960, Corps Commander Colonel Jakob Annasohn, Chief of the General Staff, had asked the EMD to request proposals from the USA, Great Britain and the Soviet Union for the sale of nuclear weapons to Switzerland on a commercial basis, and to offer France and Sweden, on the other hand, cooperation in the area of "tests". The Federal Council rejected such ideas out of hand. Not only did it refuse to undertake any such negotiations at the time, but it resolved that such investigations "could only be undertaken on the basis of a prior resolution of the Federal Council".

The nuclear powers (which, since February 13, 1960, also included France), however, were concerned about Switzerland's attitude, in spite of the country's official reticence. Although only its broad outlines are apparent in the files available, American unrest is apparent from 1961 on. In that same year (on April 25), the Federal Council ordered Parliament to purchase the aircraft that Etienne Primault had praised so highly in 1957. 100 Mirage III-S aircraft were to be acquired for a total of 871 million SFR.

In its report on the nuclear weapons ban initiative dated July 7, 1961, the Federal Council once again expressed its opinion on the subject of the possible acquisition of nuclear weapons: "In our report we have intentionally not discussed the acquisition of nuclear weapons, either by purchasing them from other countries, developing them ourselves or manufacturing them under license. This question will remain open until the opportunity arises, and then it will be pursued only under conditions which in no way affect either our sovereignty or our neutrality. That is currently not the case. Decisions
with regard to acquisition, which in any case would be a matter for the Federal Councils, have therefore not been made, nor will they be considered in the near future."

The electorate rejected the initiative on April 1, 1962, by a vote of 537,138 to 286,895. 18 cantons voted against it, and 4 voted for it.

In accents which were adapted to the text of the initiative, the Federal Council then said in its Supplementary Report on the Nuclear Weapons Referendum Initiative, on November 15, 1962:

"Whether our army will ever be equipped with nuclear weapons is primarily a question of military policy and military technology. Making a decision on this matter in the passionate atmosphere of a referendum is irresponsible, from the point of view of national defense, quite apart from the fact that situations are conceivable in which our army would have to be equipped with nuclear weapons in strict secrecy. If we were to maintain these secrecy requirements, there would be a risk that the people might make an erroneous decision because they were not fully aware of the situation. But if we were to disregard these requirements, then we would risk that the weapons would not be delivered to us or - in the best case - because the details of these weapons would also be known to our opponents, the effect of our weapons would be diminished. On the other hand, the objective climate of consultations in the committees of the national councils, whose experience and technical knowledge, as well as the opportunity to obtain all the necessary information, guarantee a comprehensive and expert evaluation of this fundamental decision. The conventional means of procuring weapons, as set forth in the current government procedures concerning the allocation of responsibilities, offers the best possibility for maintaining our defensive readiness without compromise."

To evaluate this language correctly, we must remember that President Kennedy lifted the quarantine on Cuba only five days later, on November 20. Most Swiss felt threatened, and in reality since 1963 the operations plan in place in the Warsaw Pact, as described by General Jan Sejna (who defected to the West in February 1968), was
to make Switzerland the target of a strategic invasion as soon as war broke out (We Will Bury You, London: Sidgwick & Jackson, 1982; EMB Ve 2024). Of course, we did not know anything about such plans in 1963, but we had our suspicions.

The planners went to work with the requisite seriousness in 1963 and 1964. The Assistant Chief of Staff of Planning, Division Commander Colonel Eugen Studer, wanted to use foreign research, but he was discouraged by Professor Bindschedler. To a letter dated July 4, 1963, Bindschedler attached the conclusions of a study of foreign policy and international law which ended, in a somewhat sibylline echo of *La Charité-sur-Loire*: "The possibilities are not encouraging; it is difficult to imagine that normal contacts by the General Staff on the subjects being studied could be kept secret." This attitude was doubtless in complete harmony with the mood of the people at the time, but on May 26, 1963, the nuclear weapons referendum initiative was rejected by a vote of 451,238 to 274,061, and by 17 1/2 cantons to 4 1/2.

The signing of the Moscow Agreement of August 5, 1983, on the Prohibition of Nuclear Weapons Tests in the Atmosphere, in Outer Space and Under Water was not in contrast with the statements with regard to the possible acquisition of nuclear weapons by the Swiss. That much was said on December 18, 1963, by the spokesman for the National Council Commission Willy Bretscher. "Even after the signing the Agreement we will be ... able to continue pursuing the matter of our own nuclear weapons, and we will make our decisions as a function of our evaluation of further developments in this area."

The "further developments" which the well-travelled Editor in Chief of the *Neue Zürcher Zeitung* and statesman had in mind included the possibility of production in Switzerland, a joint venture with a country such as Sweden, for example, or, as the Deputy Chief of Staff for Planning had expressed in a memo to the Chief of the General Staff on October 21, 1963, even "the purchase of nuclear weapons abroad on a purely commercial basis, in particular in France". On November 28, 1963, the Deputy Chief of Staff for Planning estimated the cost at 720 million SFR over 35 years, with an initial 20
million SFR for basic research. If the decision was made to use plutonium instead of highly-enriched uranium, the costs would be 2,100 million SFR over 27 years. Dr. Paul Schmid described the concrete procedure on March 21, 1964, in an eleven-page paper entitled *Proposals regarding preparations for the possible acquisition of nuclear weapons which are of primarily military importance*.

In the meantime, the Planning Subgroup had developed a proposal for the first-stage military requirements. On May 4, 1964, it called for: "Fifty 50-100 KT aerial bombs (Mirage)". On April 8, Studer himself had signed a five-page paper on the *Feasibility of Nuclear Weapons Tests in Switzerland*, in which underground explosions were considered in an area "which can be completely sealed off for a radius of 2-3 km". Studer was also demonstrably aware on October 30, 1963, of the Federal Government's uranium reserve, which was by no means a secret in spite of the "Secret" classification stamped all over the papers. On September 8, 1958, the National Councilor Alfred Schaller had quite publicly written in the *Schweizer Illustrierte Zeitung* of "10 tons of natural uranium, which had been purchased from Belgium and were refined in England" and also wrote that "tons" of this material were in the "custody" of the Wimmis Explosives Plant. Eugen Studer's studies were follow-ups to the *Possibilities of domestic nuclear weapons production*, an unsigned 50-page report which on November 15, 1963, laid the theoretical foundation for the acquisition of nuclear weapons by Switzerland and in the preparation of which the USA had obviously had a hand (to its dismay). It is possible that Switzerland might have gone even farther on the path of development marked out in 1958. But the rules of the game changed completely after the Federal Council sent its message to parliament requesting the additional appropriation for the purchase of the Mirage jets on April 24, 1964. On that day the Federal Council resolved, for the purchase of the Mirages, to request an additional appropriation of 576 million SFR, which triggered widespread concern and resulted in the first parliamentary investigation commission in the history of modern Switzerland. By coincidence, on the very same day, April 24, the Chief of the General Staff informed the Chief of the EMD, that he would like to have an appropriation of 20 million SFR from the Federal Council to search for domestic uranium deposits over
three years, to bring the centrifuge question closer to a solution and to perform research on nuclear weapons technology as well as the possibility of conducting nuclear tests.

In spite of the Mirage Affair, the specialists remained convinced that they had to continue to act in the direction indicated by the electorate. The atmosphere in 1964 also led to the optimistic appraisal by a technician that "the research on the acquisition of nuclear weapons must not be kept from the public.", an opinion which was shares in a letter dated May 14 from the Chief of the General Staff Annasohn to the Department Chairman: "Dr. Schmid has stated that it would be against his character to lie all the time, instead of coming right out and saying what was going on with the research. I think he is correctly of the opinion that conducting preliminary research is not the same thing as adopting a resolution to acquire nuclear weapons. [sic]. This resolution remains completely open."

But as under the conditions of the Mirage Affair, a parliamentary resolution which was necessary at least to approve the budget appropriation, seemed less and less likely the longer it took. On September 1, the Investigating Committee of the National Council and the upper house of Parliament published its report, in which it said: "The Parliament was in fact misled. In the interest of the state, it must be guaranteed that such a process is not repeated. The credibility of Federal Council's messages must be guaranteed by the executive branch." The number of aircraft to be purchased was reduced to 57 and motions were introduced demanding a Chief of Armaments, a Technical Committee for Armaments, a clear boundary between development and the acquisition or armaments, and the technical and commercial monitoring of government contracts.

On June 5, 1964, of course, the Federal Council did not yet know the conclusion of the work being conducted by the commissions led by Kurt Furgler and Gion Darms, but its reaction to the motions received from the EMD was skeptical. The Council probably took note of the MAP report and requested EVED and EMD to compile the necessary
information for a decision in about three years, but the EMD had to reduce its involvement to the activity of one specialist in the General Staff Department; and its foreign contacts were limited to an even greater extent: "Before taking the necessary steps, it [the EMD] must obtain approval from the Federal Council."

The Schmid and Annasohn proposals to conduct the necessary research very publicly were not adopted. On the other hand, it was impossible to maintain secrecy, as the well-informed Interpellation put forth by National Council member Helmut Hubacher showed on December 9, 1964: "Within the Federal Military Department, is there an office which deals with the question of nuclear weapons, or at least with the production of nuclear weapons or their testing in our own country? If so, who is on the staff of this body?" Etienne Primault and Jakob Annasohn had already left. How did things stand with Federal Councilor Paul Chaudet? Would he remain and one day, in the election year 1967, be the only one of his party left, or would he go, and thus leave the EMD and his party both appearing weak at the same time?

2. Historical Survey - 1965 to 1988

1965

The years 1965 and 1966 were characterized by notable tension. The political power of the EMD had been significantly weakened by the Mirage Affair, and Federal Councilor Paul Chaudet was exposed to a good many attacks. On October 3, 1965, the Social Democratic party conference demanded his resignation. A good year later, on November 26, 1966, the Assembly of Delegates of Chaudet's own Liberal Democratic Party withheld their support of his election to the position of Vice President of the Federal Council. His resignation on November 28 was therefore little more than a formality. The twilight of the Chaudet era can be described rather as an epitaph of the two years 1965 and 1966. At the same time, however, the powerful personality of the Chief of the General Staff Paul Gygli, who appeared on the scene in 1965, gave things
a new impetus on the military-scientific level, although his advent was effective politically only to a very limited extent. The resulting tension manifested itself again, and would continue to do so throughout the term of Federal Councilor Chaudet.

It was certainly a coincidence, but a remarkable one, that the first document on the question dating from the year 1965, a memorandum dated January 5, announces that Gygli will be sending a personal response to a letter from Annasohn dated December 23, 1964 (in which Annasohn declared that, according to the resolution of the Federal Council dated June 5, 1964, the research was "not feasible"). The debate was characterized by the personality of the 55-year-old native of Utzensdorf. On the other hand, the fact that nuclear weapons remained a subject of discussion even after the Mirage affair was due to various outside influences in general, and in particular to the efforts of the Schweizerische Offiziersgesellschaft. Its President Louis Allet, together with its Central Secretary, had written a letter on Christmas Eve 1964 to the newly-appointed (in January 1965) Deputy Chief of Staff for Planning Hans Wildbolz, and asked for "information on your intentions, and if possible on the status of your research". Wildbolz forwarded the letter to Gygli on January 14.

The Expanded Activity Report was presented in the Presidential Chamber of the National Council the next day, under the chairmanship of the Federal Councilor Chaudet, and in the presence of Gygli and Wildbolz, the 62-year-old Chief of Training Robert Frick, the Commissioner of the EMD for Special Studies Annasohn, the chief of the Military Technology Department Fred Kuenzy, the Director of the Federal Military Administration Arnold Kaech, and the Secretary of the National Defense Commission Enis Georg Haeberli. The minutes devote one of ten pages and one of seventeen agenda items to the subject of nuclear weapons (4). According to the document, Gygli would appreciate it if "authorization were given for contacts with Sweden". Complaints were also registered that the Federal Transportation and Energy Department had not yet "taken the initiative" in matters of uranium prospecting. The Military Technology Department wanted clarification of which of the possible solutions mentioned by Annasohn on December 23, 1964 (Study group of specially recruited specialists or
Coordinating Group with treaties concluded on a case-by-case basis) was to be preferred.

On January 18, Gygli adopted as his own Annasohn's position as stated on December 23, 1964, and on the very same day wrote to the Schweizerische Offiziersgesellschaft that the Federal Council wanted the studies relating to "problems of nuclear war" to be kept secret. A copy of the letter was sent to the Department Chairman, who was the reason for this interpretation on the part of the Council. Gygli did not at all share the offer of Louis Allet to keep the EMD's findings secret.

At approximately the same time, the preparations for a motion from the EMD to the Federal Council must have been under way. The first version bears the date February 5, and the motion must finally have been approved in June and sent to the Council. The starting point for this motion was the determination that the restriction of research on the theoretical basis of weapons problems which had been approved by the Federal Council on June 5, 1964, and assigned to a single specialist in the General Staff Department was "not feasible". Therefore consideration should be given to only a "small coordinating group under the leadership of a scientist, who can be recruited, for example, from the KTA" was considered, with simultaneous services performed under contract by specialized university professors and other scientific personnel (Solution A), or the creation of its own research institute with specialists recruited from science and industry (Solution B). In addition to these two solutions, a third solution was proposed in the drafts written by Haeberli some time before February 5 as the "formation of a coordination group, consisting of a competent Leader (e.g. the Delegate for Nuclear Energy Affairs), and appropriate specialists who are selected from the concerned departments of the Federal Government, university-level institutes and industry" (Solution C). A coordinating group of this type clearly belonged in the EVED. The Study of nuclear weapons technology as one of the basic principles for protection against nuclear attack, however, should come under the responsibility of the Military Technology Department, "which should make available the human resources required
for this purpose". Enis Georg Haebetli's draft recommended Solution C in the following words:

"An additional advantage of this type of operation would be that, in the first stage, a certain 'potential' would be created for the manufacture of nuclear weapons, without having to make a decision about their actual production.

In this first stage, the financial expenditures would be primarily in the civilian sector and simultaneously for civilian purposes. Furthermore, only a limited degree of secrecy would be necessary.

The actual production of nuclear weapons could then take place in a relatively short period of time."

If the Federal Council did not like any of the three potential solutions, "it seems logical and consistent to eliminate the weapons portion of the research right off the bat."

Of course, this consideration was objectively quite reasonable. But asking the Federal Council to accept it, which would more or less have to reverse itself, which no government official likes to do, was another matter. Not least with regard to the objections to be expected in the Council had Solution C been included, because the Delegate for Nuclear Energy Urs Hochstrasser was not a member of the EMD, but of the EVED, which in 1965 was still under the leadership of the Social Democrat Willy Spühler.

Nevertheless, in spite of such tactical and not inappropriate improvements to the draft motion, Federal Councilor Chaudet seems not to have been in any particular hurry about the whole affair. But pressure on the Department Chairman was being exerted from two different directions. On one hand, the delegate to the national Council from Basel Helmut Hubacher, in his Interpellation on December 9, 1964, had demanded information about the existence and personnel makeup of the EMD entity, if any, which
dealt with nuclear weapons. This Interpellation had been forwarded by the Federal Council to the EMD, from its DMV on December 30, 1964, to the Chief of the General Staff, and from the latter on January 7 to the Deputy Chief of Staff for Planning, and from Hans Wildbolz with the comment "Very tricky! Meeting with Prof. Hochstrasser essential" to his Research and Development Section. On March 15, an answer was received from the Chief of the General Staff with a draft reply, in which it says in particular that the preliminary discussion of the problems would take place in the General Staff Department and there was no need to provide the names of the specialists and experts involved. On the same March 15, the Chief of the General Staff for his part applied pressure. In a letter, he asked the Department Chairman "to instruct the Transportation and Energy Department and the Department of the Interior about the army's major interest in uranium prospecting." Federal Councilor Chaudet requested corresponding draft letters from the DMVB. The DMV, or Enis Georg Haeberli, who was primarily responsible for this activity, as indicated in a memorandum dated March 19, found the main problem to be it was very difficult to get the EVED and the Federal Department of the Interior under the leadership of the Social Democrat Hans Peter Tschudi "to cooperate with the EMD and provide the necessary information."

Apparently, Tschudi was not welcome in Chaudet's circle, but Spühler was. A letter was received by Spühler on March 31, in which he was asked about the status of the uranium prospecting, and was requested to issue the necessary orders.

On the basis of its experience with the Mirage purchase, Parliament, the Government and the Budget Department, as well as and the Appropriations Department were paying a good deal more attention to business. An inquiry to the Finance Committee of the Councils dated February 25 regarding the extent of the financial commitment to research on the Swiss production of nuclear weapons made its way through channels to the Deputy Chief of Staff for Planning. Hans Wildbolz consulted with Urs Hochstrasser on March 31, and then responded in a memorandum dated March 31 to the Federal Finance Department. In the report dated November 15, 1963, the costs for preliminary studies were estimated at 20 million SFR, 5 million SFR for the purchase of the
uranium, 10 million SFR for the development of centrifuges for uranium enrichment and 5 million francs for the basic weapons research.

"After the resolution by the Federal Council on June 5, 1964, in practical terms it was only possible to study the evaluation of Swiss uranium deposits and the methods for the production of fissile material could be investigated. Since these activities are of major importance for securing the supply of fuel of civil nuclear power plants, the intention is to incorporate them into the measures for the promotion of the use of nuclear energy for the generation of electricity (support of Swiss reactor development) which are being planned by the Federal Transportation and Energy Department (EVED).

Currently, the EVED is preparing a message to the Councils in which the creation of a new organization is proposed, which would be responsible for supporting uranium prospecting and exploitation, as well as the development of uranium enrichment plants. Thus, a very high degree of coordination with civilian nuclear research would be achieved. Publicly, nothing must be said about the military objectives of these efforts.

With regard to financing, it was provided that 15 million SFR would be appropriated to the budget of the Office for Nuclear Affairs (not listed in the message). With regard to the budget items inserted as a precautionary measure in the long-term EVED budget, it was assumed that on account of the overall economic situation, five (instead of three) years would be necessary for the work, and the annual expenditures would be distributed as follows (in millions of SFR):

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These were very rough estimates, which with regard to the uranium enrichment in particular will be very strongly influenced by whether suitable technical personnel can be found quickly and in sufficient numbers."

A letter dated April 1, 1965, from the physicist Walter Heilpem of the Military Technology Department enthusiastically recommends a model corresponding to Solution C. Heilpem was one of the more unconventional participants in the research. He emphasized the development of nuclear energy for peaceful purposes, for which, while altogether supporting the military applications, he hoped to mobilize greater amounts from government funds. "Industry is not in a position to finance the construction of small test reactors, which make no significant contribution to energy generation and therefore can never be amortized. The study of the technology of nuclear weapons (construction, composition of the fissile material, ignition mechanism etc.) fulfills a double purpose. ... To protect ourselves against a risk, we must have a thorough knowledge of such technology. Nuclear specialists, for example, have been doing research on the ignition process in hydrogen bombs for years. The manufacture of the fissile materials and the study of nuclear weapons technology are therefore necessary, even if we have no intention of producing nuclear weapons." "In the field of fissile material enrichment and production, the most important contributions will be made by specialists and institutes specializing in reactor construction (EIR Würenlingen, Reaktor Lucens etc., possibly Zulzer, Winterthur and other industrial companies). The study of the technology of nuclear weapons is conducted primarily in the Military Technology Department and the corresponding planned laboratories of the Sections for Munitions and for Munitions Testing, Thun, and the Wimmis Explosives Factory (for questions of actual weapons technology and electronic warfare)." Heilpem (in his paper, which as required was classified "secret") questions the necessity and even the desirability of secrecy. "The publicity will make it easier to get funding and silence the voices which claim that we are planning to produce our own nuclear weapons. All such rumors have so far found their audience, because an unjustified secrecy surrounds the whole field of nuclear defense, most of which is the result of personal motives (false arrogance and self-importance) on the part of the technicians."
Heilpern belonged to Dienstkreis II in the KTA. For its part, Dienstkreis II was part of the Technical Department under the leadership of Charles Grossenbacher, who in turn reported to Kuenzy. This hierarchical structure resulted in a certain need for coordination and correction, so that the inquiring Federal Councillor Chaudet was told on April 5 that the promised KTA report would be available "in mid-April", and on April 12 that it would be out in "late April". The official KTA position paper, which largely corresponded to Heilpern’s draft, actually was sent out on the last day of the month, over Kuenzy’s signature, to the Director of the Federal Military Administration. Further action within the DMV was once again in Haeberli’s hands.

In the meantime, the Director of the Federal Finance Office Markus Redli had given the Finance Committee of the Councils the answer to its questions about the financial effects of Swiss production of its own nuclear weapons. Redli explained the Federal Council resolution dated June 5, 1964, and wrote, "The entire matter is currently in the research phase, for which, apart from the normal administrative expenses, no special funds need to be appropriated." Any additional expenses would require budget appropriations, and would therefore have to be approved by the Councils.

Thus there were favorable conditions for the treatment of a de facto motion in the Federal Council, because of course, the understandable concerns of the Finance Committee were shared by the members of the Council. But, the actual text of the motion had to be cleared up once and for all with the Chief of the General Staff. Enis Georg Haeberli asked for a response which was sent to Paul Gygli on May 7 over the signature of Arnold Kaech. The Chief of the General Staff forwarded the documents to his Deputy Chief of Staff for Planning, who assigned only four additional employees to the project. The documents came back with only minor corrections, as was generally typical of Haeberli’s work, which always reflected careful preparation. To be prepared for what he saw as the undesirable determination of the Federal Council to respond quickly to Hubacher’s Interpellation, on May 31 the Chief of the General Staff gave the Department Chairman a draft response for his part of the document, which essentially said that responsibility for the studies had been transferred to the General Staff.
department, which had called in scientific experts. Reports and a motion would be forthcoming at the appropriate time. In this context, therefore, Federal Councilor Chaudet was prepared and the letter dated June 14 from the President of the Finance Committee of the Federal Councils, National Councilor Emil Baumgartner, gave Parliamentary approval, for the moment: "The Finance Committee ... considers the matter settled for the time being."

But the Federal Council, which in addition to the above-mentioned Federal Councilors Chaudet, Spühler and Tschudi included Friedrich Traugott Wahlen, Ludwig von Moos, Hans Schaffner and Roger Bonvin, was in no hurry to deal with the EMD motion. On August 24, the Council resolved to hold, on the afternoon of October 22 in the Von Wattenwylhaus, to hold an open discussion on the 1958 resolution concerning nuclear weapons for the Swiss Army. The reasons behind the reticent attitude displayed by the Federal Council must be seen in the progress of the international efforts to achieve a Nuclear Non-Proliferation Treaty and in the changed makeup of the Council itself. In 1965, Paul Chaudet was the only acting Federal Councilor who had been in office since 1958. But he was under great pressure, a pressure which came in particular from that faction in the Federal Council which had been out of power from 1955 to 1959 and which had marked its critical distance by means of the second nuclear weapons initiative. Of course, this initiative had been rejected clearly on May 26, 1963, by the people and the cantons, but since then the Mirage Affair had changed the political landscape, and elections were approaching in 1967. Therefore the topic was approached with a certain hesitation by the members of the Federal Council in that summer of 1965. A planned meeting of the Military Committee of the Federal Council was postponed twice (July 16 and August 24), and the rescheduled deadline of October 22 was missed, too. The meeting was rescheduled for October 26. The summary minutes of the meeting, prepared essentially by Enis Georg Haeberli for the Department Chairman, in their original version dated September 8, had not even mentioned the subject of nuclear non-proliferation, but then on the basis of an order from the Director of the Military Administration they were amended, and in the version dated September
10, in its concluding motion which is particular important for an understanding of the situation, said among other things:

"3.1 There are no new proposals to be made for the moment. But the Federal Council will have to make a decision on the proposals which have been submitted to it.

If it does not adopt one of the variants which the DMP has proposed to it, it will be necessary to review the "1958 Doctrine", which it may not be possible to uphold.

3.2 The discussions of the Federal Council must also (in connection with the questions of principle) include the situation which has been created by the various proposals concerning the "non-proliferation" of nuclear weapons, the draft agreements for which are already under discussion at the disarmament conference in Geneva.

If the position of Switzerland with regard to the "Nuclear Test Ban" is easy to define, the position in which it would be placed by an agreement among the major powers on nuclear non-proliferation would raise a serious problem, above all if we consider our 1958 Doctrine and the freedom of movement of Switzerland, a principle which the Federal Council has defended and which has been approved by very large majorities in two popular initiatives. How will Switzerland react to a (pressing!) invitation to join a nuclear non-proliferation pact?

We should not be forced to improvise on such an important theme, and in extremely short times (we should recall that we only had a few days to decide on the "Nuclear Test Ban" in the face of an impatient Swiss and worldwide public opinion).

It is absolutely necessary to be aware of all the ramifications of nuclear non-proliferation and the repercussions it would have for our national security.

In the absence of a permanent organization which handles such questions (disarmament), the creation of which must be considered, it may be necessary to create
an ad hoc "Nuclear Non-Proliferation Working Group". I assume that Prof. Bindschedler would be the man appointed to head it. The EMG and the STM would obviously also have a place in such a group.

This committee could obviously work only on the basis of a well-established statement of principle issued by the Federal Council."

On September 10, Haeberli delivered the modified draft to his boss Arnold Kaech, who forwarded it the same day to Federal Councilor Chaudet. On the 12th, the Department Chairman approved the document, and on September 16 he sent it to the members of the Federal Council as the basis for the discussions which were scheduled for October 26.

In the meantime, as usually happens, the government’s slowness in handling the matter had become the subject of criticism. The newsletter of the Schweizerische Offiziersgesellschaft, which at that time was edited by Wilhelm Mark and Herbert Wannter, the Allgemeine Schweizerische Militärzeitschrift, in its September 1965 issue (Pages 520-523) published Gustav Däniker's article entitled "Non-Proliferation - Hope or Danger?" Däniker warned against throwing away in foreign policy the "freedom of action in the nuclear field" which had been achieved "after heated internal disagreements", and demanded that Switzerland "not delay any longer the long-overdue basic research regarding its own nuclear armament", and also "to lend weight to the eventual terms under which the treaty may be signed", in other words to take political advantage of its own status as an emerging power. Däniker's ideas lent the Swiss debate (and of course the debate within the EMD) a new dimension over the next two decades, but in 1965 it was not the central object of the Federal Council's attention.

Paul Chaudet came out of the extraordinary meeting on October 26 not with broader room for maneuvering, but with sharply restricted room for maneuvering. The Federal Council had clearly abandoned the 1958 Doctrine. On November 1, 1965, Chaudet reported to his colleagues as follows:
"With regard to the question of nuclear weapons, the Federal Council has come to the following conclusion:

- the Military Committee will take up the problem and prepare a report;
- the emphasis must be placed on the civilian aspect (energy production);
- Solution C is considered by the Military Committee to be the correct basis on which to continue research;
- after a response to the Hubacher Interpellation is drafted, the Federal Council will decide when to respond to this Interpellation.

For the Military Department, it is of particular importance to determine that the resolution of the Federal Council from 1964 applied instead of the 1958 Doctrine. In the 1964 resolution, the tasks and responsibilities of the Military Department are narrowly drawn. The Department Chief will issue orders which correspond to the resolutions by the Federal Council."

On November 4, Chaudet issued the order to the Chief of the General Staff to present a proposal for the composition of the Working Group which had been approved in principle by the Federal Council, and for its responsibilities. The leadership of the Military Administration was simultaneously assigned to prepare a response to the Hubacher Interpellation. Copies of these orders, which were of course internal department instructions, were sent on the same day to the members of the Military Committee of the Federal Council. On November 8, Chaudet then told the EMD Conference, one of his management bodies, that he would give further orders only after he had discussed the procedure with the Military Committee of the Federal Council. This statement, which is clear enough in itself, led to misunderstandings when interpreted against the background of the general lack of assurance about the whole issue, so that on November 22, Chaudet once again had to confirm his orders of the 4th, which were naturally the same on the 8th.
At approximately the same time, in the context of the Association for the Promotion of Defensive Awareness and Defensive Science, Dominique Brunner, Gustav Däniker, Rudolf Farner and Andre Alys Wicki completed the second version of their Thoughts on a Swiss Nuclear Weapons Concept, and sent the paper to Director Kaech, among others. The approach was the one which Däniker had sketched in the columns of the ASMZ.

The governing bodies of the EMD also wanted intensified research. The question which had to be answered first was in what form such research projects could be approved by the Department Chairman and the Military Committee of the Federal Council. Clarifying these possibilities was the goal of the Conference on the Formation of a Working Group for Military Nuclear Affairs, which was called by the Deputy Chief of Staff for Planning, Colonel Hans Wildbolz, on December 8. The participants included the Delegate for Nuclear Energy Affairs, Professor Urs Hochstrasser, Professor Walter Winkler, both co-authors of the 1963 MAP Report, Division Commander Colonel Fred Kuenzy, Director Charles Grossenbacher and Lieutenant Colonel on the General Staff Carl Weidenmann. The work of this Conference resulted in a paper written by Urs Hochstrasser, which, with minimal, purely editorial revisions, was signed on December 13, 1965, by Federal Councilor Chaudet as a departmental report, and was sent to the Military Committee of the Federal Council on December 20. Whether Chaudet himself knew who had written the paper, however, cannot be clearly established, but it had been written on the level of the Chief of the General Staff without the signature of the Delegate. But this question is less important than the question of the content of the document. It establishes that before serious thought could be given to the establishment of a Working Group for Weapons Technology Problems in the nuclear field in the KTA, "the appropriate specialists" would have to be trained. "Such a staff can be formed as part of the investigation of the basic problems of the fast breeder reactor, ..." "Organization: establishment of a part-time Technical Committee consisting of reactor physicists from the EIR, the ETH and the universities, to select the physics problems relating to the fast breeder reactor, to set up a program for handling these problems and to supervise their implementation. The office of the Delegate, on the basis
of the recommendations of the Technical Committee, would issue research contracts to university groups and the EIR." For that purpose, there were also important and purely civilian problems, namely "the search for uranium deposits in our country and the development of enrichment processes for uranium." The coordination of all these activities would be the responsibility of the Delegate whose staff would be increased "by approximately 6 academics" and who would have to be given the necessary budget appropriations. The expenses over the next three years (i.e. 1966 to 1968), however, would remain "in any case" under 20 million SFR. "The coordination of the proposed civilian activities with the military requirements should be kept secret, and therefore should be assigned to a secret Working Committee consisting of representatives of the General Staff Department, the KTA and the Delegate for Nuclear Energy Affairs."

On December 22, there was a meeting of the Military Committee of the Federal Council, which in addition to Chaudet as the Chairman included Willy Spühler, the Chairman of the EVED, and Roger Bonvin, Chairman of the EFD. Also invited to the meeting were the Delegate for Nuclear Energy Affairs, the Chief of the General Staff, and Enis Georg Haeberli as Secretary. From his shorthand notes it can be determined that after the introduction by Chairman Spühler, the first vote was taken, which supported the proposal of the EMD, which in actuality was that of the Delegate in charge of it. It was important that "everything which is to be done must also be necessary for the use of nuclear energy for civilian purposes." Bonvin emphasized the value of the independence which would result from the exploitation of uranium deposits. He also agreed with the motion, and Hochstrasser emphasized the importance it could have "that we join the group of countries which could have nuclear weapons, at least in the near future." He had always been ashamed that the list of such countries included Sweden, India, the Netherlands and Germany, but not Switzerland. Gygli warned that the entire matter had a political and even a religious dimension, which caused Spühler to recall the foreign policy questions, in particular that of nuclear non-proliferation. Although its members held significantly different opinions, the Military Committee nevertheless achieved unanimity and asked its Chairman to prepare the report to the
Federal Council. At the Conference on December 29, Chaudet informed his closest colleagues about the result of the meeting of the Military Committee.

The year 1965 had produced in particular the decision in favor of a slow, one might almost say tentative procedure under civilian cover and the leadership of the Delegate, with simultaneous secrecy concerning the equally strong military motivation for work on the problem of the fast breeder. Domestic production of nuclear weapons receded into the background, and the drive to achieve emerging nuclear power status moved to the foreground. The great secrecy, which was observed in spite of internal and external criticism, was justified primarily by the general political mood of the era after the Mirage Affair. But it was also instituted by the Delegate; who had drafted the most important passages of the EMD motion to the Military Committee and who thereby became the single and thus essential and powerful connecting link between the civilian and military effort. The strict secrecy, the slow handling of the matter, and the fear of major expenditures overall had resulted in a reduction of the pace to a typically slow and deliberate “Swiss” speed. The future would show whether and to what extent the fears which had been expressed were justified, although the faster tempo of the international discussion of a nuclear non-proliferation treaty could make the question irrelevant for a Switzerland which was both an understanding and humanitarian member of the international community and short of raw materials.

1966

With the resignation of Friedrich Traugott Wahlen from the Federal Council, the chairmanship of the EPD (since renamed the EDA) had also been vacated, and was now occupied by Willy Spühler. The EVED was taken over by the newly-elected Federal Councillor Rudolf Gnägi, but as would become apparent, he did not initially deviate from the line followed by his predecessor.
On January 12, 1966, Chaudet perused the report on the meeting of the Military Committee, which was also presented to him on January 17, was approved by him without changes and issued. The preparation of the paper had taken longer, because Haeberli had wanted to consult with Hochstrasser and Wildbolz. The three-page report is largely a summary of the Hochstrasser text made by Federal Councilor Chaudet to the EMD document, which had been approved by the Military Committee on December 22. There are six lines about the meeting itself. The Federal Council adopted the motions of the EMD on January 28, and resolved as follows:


2. The Department of Transportation and Energy and the Military Department are requested to jointly carry out the measures and activities proposed and outlined in the reports listed in No. 1 above. The initiative shall be taken by the Transportation and Energy Department."

But the initiative was taken only slowly. On April 18, 1966, Kaech asked Gygli what had been done on the basis of the Federal Council's resolution of January 28. Gygli asked Wildbolz to look into the matter, and on April 22, Wildbolz wrote to Hochstrasser. Hochstrasser's reply, a three-page report with a cover letter, bears the date May 7, and is defensive in tone. "As you can see from this document, the activities are proceeding only slowly on account of the shortage of personnel. But I hope that the planned program can be implemented before the end of the year." He had, Hochstrasser said in his report, only 350,000 SFR in his budget for uranium prospecting, and nothing at all for the development of a centrifuge and the research into the physics of the fast breeder reactor. As soon as the scope of the planned activities was known, he would ask for additional appropriations or submit requests for funding from the budget for 1967. In the text, he explains the research on the physics of the fast breeder reactor. "The purpose of these activities is to train specialists in the field of fast neutron physics, which is
fundamental for nuclear weapons technology. Since the primary sources of such personnel are the universities and the Federal Institute for Reactor Research (EIR), I have contacted the Professors for Reactor Technology at the EPUL and ETH (Prof. Vittoz and Prof. Hälg respectively) and the Management of the EIR. They are prepared to cooperate in this task. On account of the work load of the professors during the semester, however, work in these fields can only start during summer vacation. Plans call for Prof. Hälg and one of his assistants, in the context of Refresher Military Training in the General Staff Department, to conduct a survey of the existing literature and to formulate problems which must be dealt with to reach the above-mentioned objective. This project is to be directed by a Committee consisting of experts from the EPUL, the ETH and the EEIR. "Except for the intention of having two physicists doing their refresher military training survey the literature and study problems, therefore, Swiss efforts in the field of nuclear weapons technology had gone practically nowhere by May of 1966.

Hochstrasser's papers went through channels to the Chief of the General Staff, who presented them to the Department Chairman on May 26. That day, the Federal Council bindingly and publicly marked out the framework of the research to be conducted relating to nuclear weapons. It wrote to the legislative branch, in its report on the concept of national military defense dated June 6, 1966, "These research projects must include the question of when the point would be reached at which the further proliferation of nuclear weapons may force our country to acquire them." This attitude found broad support. For example, the National Council delegate Walther Bringolf from Schaffhausen, mentioned in the debate: "As long as these weapons exist and can be used against us, we are forced to examine the advantages and disadvantages of arming ourselves with nuclear weapons with all their ramifications." In this same spirit, on September 21, 1966, National Council delegate Hubacher received a response to his Interpellation. In the same year, Gustav Däniker published his *Strategy of the Small State*. It can therefore be said that a new consensus had been established in 1966, one which had broad support from Bringolf to Däniker, and was supported and sanctioned by Parliament.
The scientists who completed their refresher military training in September 1966, however, warned against illusions in their Final Report dated September 17. "Without a well-funded group of scientists and technicians who are given the resources and authority to plan and design nuclear weapons, there is hardly any guarantee that the research projects spoken of here will actually lead to a knowledge of the corresponding technology sufficient for the production of such weapons." In other words, the specialists found the political directive to be hardly feasible. For this political directive, the General Staff Colonel Jacques Freymond, had been asked by the Chief of the Operations of the Front Subgroup, Colonel Hans Senn, to look for a new formulation. This new formulation is found in the fourth of five conclusions of the Memorandum on the Formulation of a Nuclear Policy for Switzerland, a paper which Senn distributed on September 22. "To compile the information necessary on the evolution of nuclear technology, the tactical use of nuclear weapons, and to have the information required for a new decision." The other conclusions said that a decision on the acquisition of nuclear weapons was neither necessary nor appropriate at the time, to promote a Swiss policy against the use of nuclear weapons, to provide better protection for the civilian population in the context of civil defense against the use of nuclear weapons and to establish a Swiss center for strategic studies. But since these questions must always be decided politically, from 1967 on they were not longer the responsibility of Paul Chaudet, but of his successor Nello Celio.

1967

As Däniker, Brunner, Farner and other observers inside and outside the EMD had correctly noted, the window of opportunity which was open for an independent Swiss nuclear weapons policy, began inexorably to close with the progress of efforts by the major powers toward nuclear nonproliferation. And in a much weakened, even "Swiss" form, the informed Swiss citizen in the late 1960s experienced the conflicts between foreign policy and security policy, between the creation and maintenance of order
through negotiations, trust and treaties on the one hand, and through credible
defensive readiness and the resulting deterrence of potential aggressors. Theoretically,
these are not opposites, but in practice they guarantee an eternal struggle for limited
resources, a constant stress which can be either rough or gentlemanly, depending on
the circumstances and personalities at the time.

The US draft of a nuclear non-proliferation treaty had been on the table since August
1965, and illustrated the prospects of a prohibition which was binding under
international law of the transfer of nuclear weapons to a country which did not yet have
them. That the superpowers, at the time the USA and the Soviet Union, had not
concluded a treaty sooner, was a result of the fear of the Soviets of access by the
Germans to US nuclear weapons. Not only in Moscow, but also in Washington, the tone
in the late 1960s was still set by veterans of the Second World War. Dean Rusk, the
Secretary of State, writes in his memoirs, "The prospect of a West German finger on the
nuclear trigger was a casus belli for Soviets ... we insisted that the United States would
never relinquish final decision over the firing of such weapons - we weren't going to give
that away to anybody ..." (Dean Rusk, As I Saw It, London, New York: I.B. Tauris & Co.,
1991; EMB C 1847; 285). The negotiations were difficult, because the treaty offered
hardly anything beyond declarations to the non-nuclear powers. On the other hand, it
was morally and therefore politically difficult to oppose the treaty, because even the
non-nuclear powers not only each gave their own commitment not to use nuclear
weapons, but in exchange received a certain assurance that other countries - and at
the time that still meant primarily Germany - would not use them either. The end of
Chaudet's term, like the entire Celio era at the head of the EMD and the beginning of
Gnägi's influence, was marked by the negotiations concerning the Nuclear Non-
Proliferation treaty, which was signed by Switzerland on November 27, 1969, and
ratified on March 9, 1977. And although it is clear that up until March 9, 1977, no power
in the world had a right to deny Switzerland the right to conduct activities in the field of
nuclear weapons, it also goes without saying that after November 27, 1969, the Federal
Council could no longer approve any really long-term efforts toward the goal of an
acquisition option, without being accused of double-dealing. The window actually
closed in 1969, although it took many more years for this fact to become public knowledge.

But when the newly-elected Federal Councilor Nello Celio took office at the head of the EMD, the window of opportunity was still open a very little bit. Celio himself was not yet aware of the nuclear weapons research, which had been kept secret. Celio received "for the members of the LVK" on February 13, 1967, from Gygli a paper headed Strategic Plan and entitled the Freymond Study, attributed simply to a "person outside the government". Gygli presented Celio with the following alternative: "Should the nuclear policy be pursued as a particularly important part of our overall strategy, and the currently most urgent projects in independent research, or, on the basis of the overall military situation, should an overall strategic concept be drafted first, by means of which the burning questions of our nuclear policy would be answered. In the form of an independent study, within a year principles could be established for a Swiss nuclear policy. The preparation of an overall strategic concept, on the other hand, would take two to three years." (Gygli's estimate was extremely accurate; the Study Commission for Strategic Affairs established by an order of the EMD on May 12, 1967, and chaired by Karl Schmid, was to present its Final Report on November 14, 1969; the Commission on Nuclear Armaments would also express itself completely clearly only to the extent that it did not wish nuclear weapons to come at the expense of a strong conventional national defense force. See Principles of a Strategic Concept for Switzerland, Schriften des Schweizerischen Aufklärungsdienstes 11, Zürich: SAD, 1971; EMB W 1167 DT; 108). Ten days later, Celio received a 13-page memorandum on the Historical Development of the Nuclear Weapons Question in Switzerland, signed by the EMD Press Secretary, Dr. Hans Rudolf Kurz. Kurz concluded with the words:

"In the report on the national defense concept, the Federal Council assumed that our armed forces do not have nuclear weapons and equivalent weapons. For this reason, but also for ethical and foreign policy considerations, we are extremely interested, according to the Federal Council, in all efforts to limit and prohibit the use of such weapons, and in this context to create safeguards. We are therefore following
developments in this field closely and hope that they will lead to real progress. But as long as the above-mentioned weapons are in the hands of other armies and can therefore also be used against us, we must examine the advantages and disadvantages of acquiring our own nuclear armaments. That includes not only a basic evaluation of defensive capabilities and the deterrent effect, but also the question of how far and under what conditions nuclear weapons may strengthen our military power, as well as an examination of the principles which first make it possible to make a decision on the possible equipping of our army with nuclear weapons. These investigations must include the determination of the point at which the broader proliferation of nuclear weapons might force our country to acquire them. If we do not conduct such studies, which may in no way prejudice the decision of the political authorities concerning nuclear armaments, it would be the same as refusing to make an objective evaluation of all aspects of our own manufacture of nuclear weapons. Our country would thereby be robbed of its freedom of action.

The response issued on September 21, 1966, by the Chief of the EMD to the Hubacher Interpellation was in the context of this statement. The Chief of the EMD also said that the Federal Council had ordered the EMD, together with the Delegate of the Federal Council, to follow developments in the various fields of the use of nuclear energy and to keep the Federal Council informed of the results."

Kurz passed over two issues in silence - the question of what the further proliferation of nuclear weapons would mean in concrete terms (which very probably meant the acquisition of nuclear weapons by Germany) and the motivation behind the particular haste on the part of the Chief of the General Staff (probably a concern not to be overtaken by the Nuclear Non-Proliferation Treaty). In the General Staff Department, the Deputy Chief of Staff for Planning, Hans Wildbolz, was a powerful promoter of the activity. On March 7, 1967, he invited Professors Urs Hochstrasser, Jakob Ackeret and Walter Winkler, Dr. Paul Schmid from Ciba Fribourg, Director Charles Grossenbacher of the KTA and Colonel Hans Senn from the Operations Section, to a meeting on March 31, 1967, and a Discussion of questions of the use of nuclear energy for military
purposes. Three days before this meeting, the Swiss Military Attaché in Rome, Division Commander Colonel Carlo Fontana, took the minutes of a meeting in which, in addition to information on the Spanish nuclear weapons program, we can also read the following interesting memorandum: "According to Prof. Scherrer, Switzerland currently has the capability to manufacture atom bombs independently. Everything about their construction is currently known. - To my question, how many years it would take us, Prof. Scherrer said 4 years, and he estimated the cost at 1 billion SFR." What Paul Scherrer, who frequently seemed to turn up as if by chance at he decisive moment, thought of this statement at that time remains for the time being, like many other aspects of the career of this highly-interesting figure, an open question.

But at the meeting on March 31, in addition to those originally invited, there were also Colonel Erminio Giudici as the Secretary, as well as his boss in the Section for Studies and Budgeting, Colonel on the General Staff Kurt Bolliger. Giudici's minutes tell us that the participants proceeded on the assumption of the continuing validity of the Federal Council resolutions of December 23, 1958, April 5, 1960, June 5, 1964, October 26, 1965, the Concept of June 6, 1966, and the Federal Council's response to the Hubacher "motion" (which should be Interpellation). For them it was "clear" that "the EMD had continued research into the matter in connection with the possibility of acquiring our own nuclear weapons, and "the Delegate for Nuclear Energy Affairs should continue the exploration of Swiss uranium deposits, as well as research into the enrichment process and the physics of fast reactor systems". ... The EIR must be increasingly involved by means of Dr. Zünti and the Chairman of the Industry Committee (Dr. Söntheim) by issuing concrete orders for the study of fast reactor systems... Prof. Dr. Hochstrasser, in the context of his responsibilities, will involve industry in the construction of centrifuges... A full-time working group, consisting of neutron physicists among others, must be formed, which will study the dynamics of the chain reaction, i.e. the basis for the construction of weapons. A project contracted to a university-level institute in this direction would be inappropriate." The decision on nuclear weapons for the Swiss army remained open, but would be influenced by "the response of the Federal Council to the 'International Non-Proliferation Treaty', the exact
text of which is not yet known." The definition of the country's strategic concept by the newly-established Commission for Strategic Studies and its Swiss Nuclear Policy Subcommittee, as well as the determination of "Requirements for Nuclear Weapons and their Use" by a Working Group which has yet to be formed would also have an influence. "Regardless of the political decisions and the ratification of a Nuclear Non-Proliferation treaty, it is urgently necessary that a full-time Working Group (...) undertake a scientific and technical investigation of all aspects of the manufacture of nuclear weapons and carry it through to the end... The establishment of such a Working Group requires a Resolution by the Federal Council."

On April 21, 1967, there was another meeting on the opportunities for the development of nuclear weapons. This was a small meeting, which was devoted in particular to updating the knowledge of the Delegate from the Board of Directors of AG Brown, Boveri & Cie. in Baden, Dr. Rudolf Sontheim. Sontheim was also a member of the Federal Commission for Atomic Energy and of its Committee. In addition to Sontheim, those present at the meeting were limited to Gygli, Wildbolz, Bolliger and Giudici. Wildbolz had recommended to Gygli on April 20 the discussion of the five items on the agenda: a presentation was followed by four topics related to cooperation with industry. The purpose of these items was to sound out their interest in "fast reactors" and "neutron centrifuges", to determine their technical development capabilities, to discuss the "creation of a non-profit organization of industry to study military problems in the use of nuclear energy", and to define future action. The meeting, the tone of which was set by the Deputy Chief of Staff for Planning, followed this informal agenda. Hans Wildbolz emphasized in his presentation that "Swiss nuclear armaments can only be considered in the sense of strengthening defenses" and that "a promising study of the technical problems could only be carried out by a full-time group." Rudolf Sontheim was understandably reticent: "To interest industry in research on gas centrifuges, more than just military applications must be apparent. The problem of the fast reactor systems is too expensive for industry, and is only of interest in the long term. Therefore the two Federal Institutes, EIR Würenlingen and Villigen should decide to cooperate in this field, which requires an incentive. The Battelle Institute in Geneva might have the personnel
Sontheim called a "non-profit organization" "hardly conceivable". "BBC would be interested only in a long-term arrangement, and secondarily in cooperation in the field of weapons technology development."

Sontheim's reluctance is easy to understand, on account of the costs, which he was in a better position to calculate than anyone else, and which Scherrer had just estimated at the then-enormous and even after almost thirty years still impressive sum of one billion SFR. Therefore if the preparation of an option (and it was at no time more than that) clearly ran into economic limits, the political limits were also becoming increasingly clear. Of course, Celio reacted skeptically to the motions presented by the Political Department on April 24 relating to the Nuclear Non-Proliferation Treaty, as did Gygli, Wildbolz and others familiar with the research being conducted. He welcomed the report, but did not wish to prejudice ratification, and ordered the organization of a second Working Group which included representatives of all the interested departments (EPD, EVED, EMD) and rejected the idea of forswearing nuclear weapons only on a quid pro quo basis, as can be inferred in the following paragraph from the report of the EPD:

"Under these conditions, the non-nuclear states must not make their ratification subject to prior conditions which would significantly delay the conclusion of the Nuclear Non-Proliferation Treaty". All that was true, but at the same time Nello Celio, in his own report to the Federal Council dated May 24, expressed his own deep skepticism with regard to the path being taken: "The undersigned Department Chief, however, would like to express his doubts here and now, as to whether the path recommended by the Federal Council in its resolution dated January 28, 1966 (prospecting for Swiss uranium deposits; research on enrichment processes for uranium by the development of a uranium centrifuge; research into the physics of fast reactors), is feasible."

A gulf had opened between the interpretation of the Department Chairman and the people working on the matter in the EMD. Celio attempted in a cover letter on a copy of his report addressed to the Chief of the General Staff, a paper dated May 25, 1967, to
sweeten the pill, and wrote, "As you will see, I found it necessary to base this contributing report on ideas which differ from those in your letter dated May 16, 1967, although I do not think that we have a different opinion of the fundamental problem. Paul Gygli gave the Federal Councilor's dissenting report and its cover letter wide circulation. In the meantime, the Federal Council decided to remove the EMD from participation in the research, which was assigned to the EVED. The transfer took place under the terms of the resolution dated May 26, 1967. The Federal Council took note of the non-proliferation report of the Political Department, set up an interdepartmental Non-Proliferation Treaty working Group (EPD, EVED, EMD) and adopted the following resolution: "... it assigns the Military Department to present a report on the question of the possible nuclear armament of the Swiss Army.... It finds that the Military Department should be released from the obligation to participate in the work specified by the Decree dated January 28, 1966." This and an apparently less-than-optimal internal flow of information had filled the vessel of the Deputy Chief of Staff for Planning to overflowing. On June 23, Hans Wildbolz wrote to the Chief of the General Staff: "A clear decision should finally be made about what we want. The research into the questions related to nuclear weapons has so far been characterized by buck-passing, reconsiderations, delayed responses etc. I think that this question is important enough that we should approach it head on and clearly determine what we have to do in this matter. Without a minimum of technical research projects, like those proposed by the Federal Council resolution dated January 28, 1966, further (reports) are pointless. To clarify the situation, I would like to request once again that a "hearing" be held, e.g. by the Department Chief. I think that the following should attend: Chief of the General Staff, Weapons Technology Department, Front Subgroup (Operations Section), Planning Subgroup; Prof. Dr. Winkler, Prof. Dr. Hochstrasser and if necessary Dr. Sontheim."

On August 24, in the interdepartmental Nuclear Non-Proliferation Treaty Working Group, Minister Rudolf Bindschedler asked the question, "Whether a negative decision can be made even today, that in the long term, nuclear armaments in Switzerland are to be excluded, or whether we must retain our freedom of action for the future." To that the EMD representative Colonel Hans Senn replied that "in no way can it be said that the
problem of the tactical nuclear weapons has been settled". On the contrary, for the summer and fall of 1967, there was a genuine burst of activity. There is a memorandum dated September 1, although it was not distributed and is unsigned, from the Deputy Chief of Staff of Planning. In this document, Wildbolz requests the appointment of a full-time Working Group consisting of 15 (first year) to 52 (5th year) qualified, scientifically trained people. The Leader should be appointed at the request of an expanded scientific and technical coordination commission by the Chief of the General Staff. The task of this Working Group would be "weapons development up to the testing of the first usable explosive charge (approximately 5 years)". Elsewhere, the memorandum speaks of the "design of fission weapons in the range up to 100 KT TNT." This memorandum was used, among other things, in the meeting with the EMD Chief, the subject of which was the acquisition of nuclear weapons by the Army. This meeting, the hearing requested by Wildbolz, had originally been scheduled for September 29, but it finally took place on October 5. The agenda was put together by Hans Wildbolz, and the first item was an "evaluation of the increase in the defensive strength of the Army with nuclear means", requested by the Chief of the Operations Section Hans Senn. Urs Hochstrasser was responsible for the next two items on the agenda on the "possible development of nuclear weapons in Switzerland" and the three orders from the Federal Council resolution dated January 28, 1966. Erminio Giudici was then to prepare proposals for the research projects specified by the report dated June 6, 1966, and Hans Senn was to report to Bindschedler concerning the EMD's contribution to the Nonproliferation Commission.

Probably with an intent to obtain an up-to-date technical opinion on the opportunities and limits of research projects carried out by contract or part-time employees, a two-day seminar was held on September 18 and 19 in the Hotel Bären in Ostemmundigen on the problems "which must be solved if we want to understand the processes of nuclear explosions." The summary of the discussion prepared by Urs Hochstrasser on October 4 recommends an independent institute with at least 10 employees as a minimum for the continuation of the studies. The minutes taken separately by Paul Walti, another participant in the Bären seminar, corresponds to Hochstrasser's document in full. Walti
wrote on the task of the Study Group: "The study group should concern itself exclusively with theory. The experiments which are absolutely necessary could be performed at the universities and at the EIR." Also clear with regard to the meeting on October 5, Hans Senn prepared a paper on October 4 entitled *Military Benefits Of Equipping The Army With Nuclear Weapons*. The corresponding meeting notice, apparently the basis of the discussion on the 5th, show that Senn considered what he said "a rough approximation of the problem". He allowed that nuclear weapons have a major deterrent effect, but emphasized the enormous problems inherent to a nuclear war. In terms of numbers, he was basing his arguments on the 400 nuclear warheads specified by the MAP Report. "On the assumption that the enemy will shoot at least that many nuclear weapons against us, we would quickly approach the limit of what could threaten the existence of our people. In that case we would be forced to break off the war prematurely. These considerations show that in the age of nuclear weapons, decisive importance must be given to the prevention of war."

At the meeting on October 5, which was held in the office of the Chief of the General Staff, there were a total of eleven people: Nello Celio, Paul Gygli, the Training Chief Pierre Hirsch, Urs Hochstrasser, the Deputy Director BKW Professor Stoll, the Deputy Chief of Staff Robert Stucki, the Vice Director of the KTA Eduard Specker, Hans Senn, Erminio Giudici, Enis Georg Haeberli and, as Secretary, Pierre Gsell, a Major on the General Staff. The Minutes dated October 6, however, are signed not by Gsell but by Senn. The minutes indicate that "the arming of our forces with nuclear weapons to strengthen national defense, is desirable, from a purely military point of view", but would be financially "an additional major burden." Hochstrasser referred to the progress of his work and indicated: "In approximately 2 years, a sufficient number of specialists will have been trained to be able to put together a weapons technology group. First, however, a Leader for this group must be sought. As soon as possible, the secret Working Committee for Coordination requested by the Federal Council resolution of January 28, 1966, must be formed." The formation of the Working Group requested by the Planning Subgroup led to a rather long discussion, at the end of which "general agreement was reached on the proposal to assign, as the core of such a future working
group, initially 2-3 permanent members. The questions of the hierarchical and organizational arrangements to be made for this Working Committee and the distribution of the costs, however, was not explained. "The General Staff Department must receive the approval of the Chief of EMD. For this work, effective January 1, 1968, an Office for Nuclear Affairs will be established in the Operations Section." With regard to the Nuclear Non-Proliferation Treaty, the Minutes say: "From a purely military standpoint, a non-proliferation agreement should not be ratified."

Apparently, the Federal Council Celio approved of these minutes, but pointed out, as can be read in the draft of a letter to the Chief of the General Staff, that it would be necessary to release the EMD, as expressed by the Federal Council on May 25, 1967, from the obligation to participate in the projects specified in the Federal Council resolution dated January 28, 1966, to guarantee "the sharp separation between the work being conducted with a purely civilian objective and the purely military research", a separation which Celio thought was "urgently necessary, with regard to the major political significance of the entire affair." For reasons of practicality, however, he agreed to the formation of the planned secret Working Committee. "But I must demand more than ever that this Committee and its activities remain strictly secret, and that the size of the Committee be kept as small as possible." To have a reliable basis for future activities, it was then a question of preparing a corresponding resolution of the Federal Council. It was essential "that at the same time, we close the book on everything that has gone on up to now."

There is more than a hint that, behind the dry and polite language of the documents there are two fundamentally different approaches, and that the men who held these opinions were not exactly made for each other. Arnold Fisch, a seasoned and sensible observer of the workings of the federal government, heard André Weitzel, who was at that time the head of the Women's Aid Office, explain how Federal Councillor Celio, during his term of office in the EMD, laid his head on his outstretched arms on the desk, and signed, "Oh, how miserable I am!" (Arnold Fisch, Meine Bundesräte, Stäfa: Gut, 1989, 125) Celio apparently saw no political basis for the investments of amounts in the
billions, although under no circumstances would it be possible to get nuclear weapons, and he also foresaw the domestic and foreign policy damage which could occur if the research being conducted by the EMD became known and were to be evaluated from a narrow and one-sided political point of view. But he did not understand how to convey this realization to those around him in the Department to create an atmosphere of mutual trust. On November 10, 1967, the Federal Council approved a Memorandum to the two Co-Chairmen of the 18-man committee which was meeting in Geneva, which was responsible for the formal preparation of the Nuclear Non-Proliferation Treaty. Numerous objections and a generally reserved tone altered nothing about the direction of the Memorandum, which had the following to say about Switzerland's attitude: "Therefore it very much hopes that a satisfactory Nuclear Non-Proliferation Treaty will be implemented." In his report dated November 9, Nello Celio had clearly requested, "In any case, the Army must insist on the fact that all the allowed research projects be carried out, which are necessary to be able to acquire nuclear weapons within a reasonable length of time, if the international situation so requires." On the other hand, the EPD had no objections, and Celio had set clear limits. But this did not clear the air at all. On the contrary, tensions continued to increase at the very end of 1967 and the beginning of 1968. The reason was Federal Councilor Willy Spühler's reply to the Binder Interpellation.

On March 22, National Council Juliuns Binder, together with 22 cosigners, had submitted an Interpellation in which he invited the Federal Council "to explain the political, legal, military, scientific and economic consequences of a Nuclear Non-Proliferation Treaty from our country's point of view." Initially, the Federal Council did not respond to this Interpellation, but in a Memorandum dated November 17, to the ambassadors to the United States and the Soviet Union, indicated its reaction to the draft treaty which had been presented to it on August 24. Binder briefly considered withdrawing his Interpellation, but did not. On December 18, 1967, he got the opportunity to bring it up in the National Council. In our context, the most interesting part is the following passage from Binder's speech: "Is an effective national defense possible without nuclear weapons? The answer to this question is yes. No one thinks
that our Army has to be equipped with nuclear weapons. But the situation can change; countries which currently do not have nuclear weapons could acquire them, in short, the day could come when a national defense would no longer be credible without nuclear weapons." The relevant passages of the reply from Federal Council member Spühler read:

"It would be welcome if the further proliferation of nuclear weapons could be prevented by a treaty. But because it would be altogether unrealistic to assume that the powers which currently have nuclear weapons will give them up, the treaty will be necessarily discriminatory, because it prevents the countries which do not have nuclear weapons from possessing a weapon of decisive importance which is available to the five other countries. Is non-proliferation or non-discrimination preferable?

A better way to phrase the question would be: Can the possession of nuclear weapons increase the security of a small country? I am not in a position to answer the question with any certainty, because it is a problem which includes an infinite number of variables, and one which is currently being considered by various commissions whose work is not yet finished.

... Given the current status of science and nuclear strategy, and unless new discoveries drastically change the status quo, it does not appear that Switzerland could significantly improve its national defense if it were equipped with nuclear weapons ...

Quite apart from the very steep increase in military expenditures, the manufacture of nuclear weapons would represent a major drain on its technical, industrial and scientific resources, not to mention its human and material resources. Whether a small country can support such a load without adverse effects on its economic growth seems doubtful."

1968
Spühler’s remarks inspired Gygli to write a four-page letter, classified “Personal and Confidential” to the Department Chairman. The letter bears the date January 19, 1968, and expresses the following concerns on the part of the Chief of the General Staff: “As a result of Federal Council Member Spühler’s speech, the public must assume that the security aspect has already been decided and that the studies which are being conducted represent a mere formality, the purpose of which is to provide support for the National Council’s possible withdrawal from the Treaty.” Spühler “hardly” shares the opinion of the rest of the National Council, but “has his own, highly personal opinion”. Gygli closed with the following words: “I wanted to inform you of this state of affairs, which I find disturbing, and to ask for a clarification of the situation as seen by the Federal Council.”

Such a clarification became all the more important to the Chief of the General Staff as the institutional organization of work on the question progressed. Another conference dominated by scientific specialists was held on January 24, and the next meeting was scheduled for February 21. In this phase, the driving force seems to have been the interim head of the Section for Studies and Budget Planning, Colonel Erminio Giudici. Giudici was simultaneously attempting, without success, to dissuade the Commission for Nuclear Armaments of the Schweizerische Offiziersgesellschaft from conducting its own study. Brigadier Ernst Schuler, the Chairman of the Commission, determined on February 16, 1968, in the Assembly Hall of the ETH, “that parallel studies can be very valuable, and the SOG is guaranteed to provide an independent view of things.” The second version of the Commission’s study was given to the members of the group for General Staff Services on March 20. Its principal conclusion: “If the tactical nuclear war resembling old-style wars is considered most likely, the best defense policy which would meet the requirements of our current Army is to use tactical nuclear weapons, and among these, those which would strengthen our territorial defense.”

Giudici’s warning addressed to the SOF was a consequence of his official know-how. A draft dated February 8 of a letter from the Chief of the General Staff to the Chief of the EMD is entitled The Formation Of A “Secret Working Committee (GAA)” For Nuclear
Weapons Questions Relating To The Swiss Army. On the 15th Giudici sent this draft to the Deputy Chief of Staff, Division Commander Colonel Robert Stucki, to Director Charles Grossenbacher of the Group for Arms Services, and to the Delegate Urs Hochstrasser, with a request for their comments. The objective was to place the working group to be formed under the control of the Chief of the General Staff, to make the Working Group for its part subordinate to the full-time working group, and to organize a Scientific Advisory Board. The first order of business was the determination of the leader of the full-time Working Group, who had to be "a highly-qualified scientist", but it was also the first stumbling block. For the full-time working group the paper estimated costs of 103,000 SFR in the first year, 180,000 SFR in the second and 213,000 SFR in the third year. Over the same period, the number of scientists employed by the committee was to increase from the initial three to seven. For materials, 7,000 SFR was estimated in the third year, along with 20,000 SFR for the use of outside computers. A request was made for the formation of the Working Group, the Scientific Advisory Board and for the hiring of two to three employees, who would initially report to the Scientific Advisory Board, as a first step to the formation of a full-time working group. Grossenbacher replied to this draft as follows: "I think that the entire proposal is unrealistic with regard to the expected results. In my opinion, a full-time working group should be created in the context of the EMD. Whether and to what extent this working group can then be expanded to include university institutes etc., will be its concern. If this solution is not adopted, then the whole business is likely to fall apart. For example, who will put together the detailed tasking for the Scientific Advisory Board and its full-time members?" But Grossenbacher's comments appear only handwritten on his copy of the draft. In the typed reply, the tone is milder, although the overall opinion in the matter is the same. Another important comment by the experienced project leader and future Defense Chief, on the other hand, appears in the typed version dated March 28, which has shaper edges: "We have justified doubts whether this committee can remain secret, since it will cost money to deal with these problems, for which we will have to make an accounting, which will be difficult to keep secret in the context of the federal government."
Time was also becoming an issue, and the window of opportunity for the nuclear weapons option began to close. At least Hans Senn, Chief of the Operations Section, thought it was time to start closing up shop. He therefore completed the *Evaluation of the Military Benefit of Equipping the Army with Nuclear Weapons*, which had been given up by the Study Commission for Strategic Affairs. After he had discussed his draft dated April 8 with Gustav Däniker, he gave it to the Chairman and the members of the Working Committee No. 1 of the above-mentioned Commission on April 15. The *Evaluation* spoke with no ifs, ands or buts in favor of the acquisition of nuclear weapons: "only an army equipped with nuclear and conventional weapons could convince potential aggressors that the risk of their invasion and suppression of Switzerland is greater than what they might gain, even under the best conditions."

Plans called for three stages of nuclear armaments, of approximately five years each, without any preparation time, as follows:

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<th>3rd Stage</th>
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<td>Nuclear Warheads</td>
<td>50 KT for bombs</td>
<td>20 KT for bombs</td>
<td>5 KT for guided missiles</td>
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<tr>
<td>Nuclear Warheads</td>
<td>10 KT for guided missiles</td>
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<td>1-2 KT for 155 mm artillery</td>
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<td>Nuclear Warheads</td>
<td>1-2 KT for 155 mm artillery</td>
<td>200 KT for bombs</td>
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The weapons delivery systems, in addition to "the existing fighter aircraft and the artillery", were to include a guided missile system with a range of up to 150 kilometers. "8 guided missile battalions, must be created, each with 2 units and 1 launching ramp."

The costs for a tactical nuclear potential on a uranium basis "for 15 years, only for development and procurement", were estimated by the *Evaluation* at 100 to 175 million
SFR a year, and on a plutonium basis at 185 to 380 million SFR. In the chapter entitled Next Measures, the Evaluation says that with great probability, the expected signing of the Nuclear Non-Proliferation Treaty will "prohibit Switzerland from introducing atomic weapons to the Army in the near future." However, it demands an "examination of all principles which make such a decision possible at all."

While this 39-page document, the Evaluation, was being analyzed by the Study Commission, the Deputy Chief of Staff for Planning, Hans Wildbolz, delivered the seven-page study entitled Problems of Nuclear Weaponry to the Chief of the General Staff on April 29. Chief of the General Staff Paul Gygli took Grossenbächer's criticism into account, to the extent that the GAA in Gygli's submission to Federal Councillor Nello Celio became the AAA, the Working Committee for Nuclear Affairs. But Celio, when the Problems came out, but only then, more exactly on May 16, 1968, sent an edited version of the letter to the Chief of the General Staff he had drafted in the autumn of the previous year. In his letter, Celio informed Gygli that he "could not agree to the formation of the requested secret working committee", and asked him to define "the scope of the resources required" for theoretical research, "and the manner in which they are to be spent". "We must naturally reserve the right to make our final decisions in this context." In the second part of his letter, the Department Chairman orders the Chief of the General Staff to draft a Federal Council Resolution which would bring new clarity into a confused situation. On May 20, the Leadership Staff of the Military Department held a meeting, and approved the requests of the Chief of the General Staff dated May 1, i.e. those set forth in the Problems. Therefore it is easy to understand why the Deputy Chief of Staff for Planning, to whom Gygli had given Celio's letter in a report dated the 28th, requested clarification in the face of two contradictory orders (to form the AAA and not to form the AAA). Celio gave in. On May 31, he sent a letter to the Chief of the General Staff, in which he indicated that he would abide by the Leadership Staff's resolutions of the 20th. "To that extent, the remarks in Chapter I of our letter dated May 16, 1968, should be considered null and void. We would only ask you to make certain that in the stepwise realization of the resolutions, given the delicate nature of the entire subject, the necessary confidentiality is maintained." On the other hand,
Celio demanded the draft of a Federal Council resolution as before. "We would also not like to exclude a priori the possibility that the passage of a new Federal Council resolution on the basis of the results of your report, and in the light of further considerations, may not be necessary at the moment, or may not seem advisable. The decision on whether to submit a "final" motion to the Federal Council remains expressly reserved for the Departmental level." This remarkable letter is dated May 31, 1968. On July 1 of the same year, Nello Celio took over the Finance Department, while Rudolf Gnägi, who was already familiar to some extent with nuclear affairs as the Chairman of the EVED, moved to the EMD. Roger Bonvin left the EFD for the EVED. Of course, there were many other reasons for this extraordinary game of Departmental musical chairs which have nothing to do with the topic at hand.

Thus, on July 1, 1968, the EMD entered the era of Rudolf Gnägi, a former member of the National Council's Mirage Investigating Commission and Chief of the EVED (1966-1968), whose term was to last until 1979. In addition to the eternal finance problems, there was now the Contestation to be dealt with, committees of soldiers began to form, as well as long-unheard-of phenomena such as minor mutinies in military basic training schools. The changed mood of the country was reflected in the result of the referendum of September 24, 1972, on the arms control initiative. The initiative was rejected, but only by 592,833 votes to 585,046. Those were not times which were favorable to the acquisition of nuclear weapons by Switzerland. Above all, on that very same July 1, 1968, the day on which Rudolf Gnägi took over the EMD, the Treaty on the Non-Proliferation of Nuclear Weapons was signed in London, Moscow and Washington. What that mean for Switzerland with its humanitarian tradition and its self-image, was immediately clear, at least in the sector of the population that read the newspapers. On July 12, 1968, the Financial Service of the Federal Budget Office sent back the MAP report. The possibility of the Swiss production of nuclear weapons was no longer a topic in Celio's Department in July 1968. And even if Erminio Giudici, at the head of the Section for Studies and Budget Planning, continued to work on the instructions for the AAA and for the Scientific Advisory Board, and on recruiting their members, the case files in the EMD which promised to be dry but complete for the second half of 1968
nevertheless seemed to be coming to an end, and the ruling figures gradually became aware that the window for Switzerland's nuclear armaments had closed, at least temporarily.

1969

The most important event of the year 1969 for our purposes was the signing of the Nuclear Non-Proliferation Treaty by Switzerland on November 27. After that, there was hardly any reason to expect that the National Council would throw its political weight behind measures to prepare for a possible acquisition of nuclear weapons, which would necessarily run counter to a foreign policy goal which was now clearly documented. Since, moreover, the whole business, which threatened to cause greater damage the more extensive its activities became, and was suspect to a portion of the political spectrum in any case, and could be defended by another portion of that spectrum only by making political sacrifices, there was no question of devoting a major effort to it. But there was also no question of breaking off research entirely, since many specialists considered the purpose of further research to lie in civilian applications, in maintaining the existing technical knowledge, and keeping options open for all eventualities. "All eventualities" and similar expressions were, in this context, largely euphemisms for the fear of a possible German acquisition of nuclear weapons. The youthful memories of the generation which led the country in the late 1960s went back to active service in World War II, as even a glance at the ages of the members of the National Council of 1969 shows: they were all born between 1902 (Spühler) and 1917 (Gnägi). Some of the most influential military and civilian employees of the EMD were somewhat younger (Senn 1918, Wildbolz 1919, Grossenbacher 1922), but one thing they all had in common was the lasting impression left by the most devastating was of all times. Thanks to good luck and a not-always-gloryous, but overall extremely successful interaction of a willingness to make concessions and a desire to resist, had allowed Switzerland to survive that war as a free and democratic state without having to fight. The most important potential enemy, against which the Army was prepared to fight from
1939 to 1945, had been Germany. And now, in the environment of the discussion about the Nuclear Non-Proliferation Treaty, there were significant signals from this same Germany. Marcel Hepp, for example, the Managing Editor of the Bayemkurier since 1967 and a personal confidante of Franz Josef Strauss, described this treaty as follows in his 1968 book, *The Nuclear Non-Proliferation Treaty*:

"Every sentence exudes discrimination. The text which the world powers have bestowed upon to us is a prime example of a celebration of Machiavellian power, an abbreviation of the class conditions in the world. Although the smaller industrial states in Europe and Asia have up to now been able to flatter themselves that they belonged to the Northern Hemisphere of the "haves", and at least were not counted among the developing countries, they suddenly find that they are called by the snooty American term "have-nots". The world's fortunes have been redistributed, and West Germany can say that it sat by and let it happen." (Stuttgart-Degerloch: Heinrich Seewald, 1968; EMB C 3023; 113). The question, which was frequently left unasked on account of its delicacy, was whether the inclusion of Germany in the community of nations which had become possible as a result of the treaty was or was not sufficient for the security of Switzerland. As a limiting factor, however, it should be noted that all the military planning documents, and in particular Hans Senn's draft entitled *Targets and Deployment*, which presents a geographic survey of the potential defensive and tactical use of Swiss nuclear weapons and of nuclear weapons against Switzerland, were directed clearly at the case of a Soviet invasion from the Danube, through Switzerland to the Rhone - and thus the avoidance of the use of French nuclear weapons which could with certainty be expected against the Soviet troops in Switzerland. But on the political plane, the most important thing was the key word in the policy issued on June 6, 1966: "further proliferation of nuclear weapons". That was a clear prohibition of Swiss acquisition of nuclear weapons as long as only the USA, the Soviet Union, Great Britain, France and China had such weapons, and likewise a clear reservation of our right to acquire nuclear armaments in the event - and a glance at a map leaves no doubt - of a corresponding measure being adopted in Germany. The Nuclear Non-Proliferation Treaty could solve this problem for Switzerland more ethically and
politically elegantly and significantly more economically than acquiring its own nuclear weapons. Therefore the treaty also found broad support in circles which favored a strong national defense. Nothing more than a small-scale institutionalized research could be considered at all in 1969, although it would take some time for this fact to become general knowledge.

Institutionalization required a formal organization of the tasks of the AAA and of the Scientific Advisory Council, as well as the selection of the members. Initial drafts for such an organization had been prepared as long ago as February 1969. Finally, on April 30, Federal Councilor Rudolf Gnägi, together with the EPD, EDI and EVED, signed the Departmental Order relating to the Working Committee for Nuclear Affairs with Scientific Advisory Board. The AAA, whose members were appointed by the Chairman of the EMD, was placed under the command of the Chief of the General Staff “for all matters related to the use of nuclear energy for military purposes”. The AAA, for its part, was in control of the Scientific Advisory Board. On the AAA, the Group for General Staff Services, which had the chairmanship, had three representatives. The Advisory Board had two members on the AAA, and the GRD, the Department for Science and Research and the EPD had one each. The Advisory Board consisted of eight to ten scientists from universities and from private industry, who were also appointed by the Chief of EMD.

The decisive question, the one about the full-time employees of the Advisory Board, “will be settled separately.” The first members of the AAA were appointed by Federal Councilor Gnägi on May 14. Division Commander Colonel Hans Wildbolz, the Deputy Chief of Staff of Planning, was to be the Chairman, and the other members were Minister Rudolf Bindschedler, the legal Advisor of the EPD, Colonel on the General Staff Erminio Giudici, the Chief of the Research and Budget Planning Section on the Group Staff for Weapons Services, Charles Grossenbacher, Dipl.-Ing. ETH, Dr. Jean-Michel Pictet, the Chief of the Section for Nuclear Research of the Department for Science and Research, and Colonel on the General Staff Hans Senn, the Chief of the Operations Section. The AAA thus formed met a total of 27 times during the period
between September 26, 1969, and October 25, 1988. Therefore, during its entire existence, it met less than twice a year, on average. That alone shows that during those years, Switzerland was taking an entirely different approach than that which had been taken by the USA with the Manhattan Project in the years 1942 to 1945. In that case, there were budget appropriations of billions of dollars in the 1940s, an American network of research and production facilities under rigid military control, led by physicists who feared the unrestrained tyranny of National Socialism and Fascism, and the special impetus of a German leap forward in the same field. In the Swiss case, on the other hand, there was a leisurely research project without any particular deadlines, and above all without the necessary massive political will in the background.

But in our attempt to provide an overall evaluation of the efforts of the AAA, we are getting ahead of ourselves. In 1969, even before the establishment of the AAA, the Chief of the Operations Section attempted to introduce his recently revised Evaluation Of The Military Benefits Of Equipped With Army With Nuclear Weapons, at least into the files both of the SSF and of the interdepartmental Nuclear Non-Proliferation Treaty Working Group. If we read Stucki's letter on the subject written by Senn to Gygli and dated April 25, we can sense the anxiety that a door is closing: "If the author of the report does not receive documents from us promptly, there is a risk that the military demands may be treated hastily and from a false perspective. There are two possible ways to protect our interests. Either we make available the enclosed draft to the Secretary in the form of a working document, or we demand that the study edited and approved by you be incorporated in its entirety into the report of the Interdepartmental Working Group." The head of the SSF, Professor Karl Schmid, after whom a street is now named in Zürich, was prepared to include Hans Senn's work in his own name in the files of his Commission. But on May 7, 1969, Schmid presented to the Chief of the Operations Section in a three-page letter which indicated why he rejected the idea of Swiss nuclear armaments. A first use of nuclear weapons by Switzerland would not be credible. It would probably be easiest to strengthen defense by relying on nuclear weapons from a coalition partner. For these two reasons, the maximum resources which Switzerland could apply should be devoted to improving the mobility and fire
power of the troops and to creating a protected space. The Deputy Chief of Planning did not indicate any fundamental criticism of Senn's paper. But on May 16, Wildbolz recommended toning down some of the text. In particular, he called the following sentence a too "absolute, politically dangerous text": "The army, under current conditions, even if it does receive additional nuclear weapons, is not in a position to fight a nuclear war successfully." At Wildbolz's suggestion, the sentence in the revision dated July 31 (actually, probably written on July 30 or earlier) reads: "In a nuclear war, our current army would be at a disadvantage against modern stroke forces, even if it were to be armed with nuclear weapons."

In the meantime, Federal Councilor Gnägi had appointed the Scientific Advisory Board, which had a pronounced scientific orientation. Professor Jakob Ackekret was to be Chairman. The Board's initial members also included Professors Max Berchtold, Walter Hälg, Erich Weibel and Walter Winkler, Dr. Paul Schmid-and Hans Enzmann, Dipl.-Ing. ETH, Adjunct of the Department for Science and Research.

On September 26, the members of the AAA and of the Scientific Advisory Board gathered for their joint inaugural meeting. "Prof. Dr. Ackeret pointed out that we finally have to get together to understand the atom bomb. As things stand, it is easy to overestimate and underestimate." The nuclear non-proliferation treaty must have seemed a very distant possibility to the participants. According to the minutes, Rudolf Bindschedler said, "There is no rush to sign." But according to one of them, the unregulated mining of uranium should be subjected to controls. Walter Winkler inquired about the possibility of importing foreign natural uranium, to build up reserves. The meeting also discussed the storage of the existing reserve of natural uranium. This last topic was referred to Giudici, Grossenbacher and Winkler, together with the Delegate for Economic War Preparations, for an answer.

In the meantime, a concrete example of the increased skepticism on the part of the National Council had become apparent, if not against nuclear armaments in general, then at least against the urgent need for them. The Federal Budget Office, from which
very clear signals had come since 1969, refused to allow the amount of 1,500,000 SFR for the development uranium centrifuges to remain in the preliminary Budget for the year 1970 requested by Delegate Hochstrasser. Hochstrasser asked Gygli and Gygli asked Gnägi to reinstate the amount in the budget. The Department Chairman expressed his regrets on November 3 that "unfortunately, for deadline reasons, it had proven impossible" to include the sum in the preliminary 1970 budget proposal. Nevertheless, a half million SFR were left in the budget for uranium prospecting. "Under the circumstances, there is nothing else to do but to continue the restricted context the work of Prof. Hochstrasser in the sense of the assignment he has been given, which is permitted by the above-mentioned budget appropriation in terms of scope and application." But in late November, Hochstrasser had come to the conclusion that the Federal Council was no longer standing behind the project of developing a centrifuge, which Giudici, whom he informed of his opinion, told Wildbolz, and at the same time asked Wildbolz to ask Gygli for a clarification of the situation. Gygli wrote on the next-to-last day of the year to Gnägi, asking for information. In the meantime the Federal Council had resolved on November 24 to sign the Nuclear Non-Proliferation Treaty immediately. Of course, it was expected that every country would sign, because in addition to the ratification by the USA and the Soviet Union, the treaty had also been signed by Germany and Japan - although this condition was not yet fulfilled - but on the other hand it was necessary to avoid giving the impression "of acting in the wake of West Germany". However, this passage in von Arx's draft for the motion to the Federal Council was deleted by the EPD Chairman. Spühler simply wrote of a significant clarification of the question of universality. On the basis of the report dated June 6, 1966, the Federal Council approved the central research projects for the AAA: "The studies and research projects considered by the Federal Council in its report on the concept of the national military defense on June 6, 1966 (p. 19), primarily in the field of uranium enrichment and prospecting, which are also of major importance for the economy, must be presented to the Department of Transportation and Energy and to the Department of the Interior for their comments." On the day after this resolution was adopted by the Federal Council, the National Council delegate James Schwarzenbach submitted an urgent inquiry: "On November 24, 1969, immediately before the meeting
of Parliament, the Federal Council gave authorization to the Political Department to sign the Nuclear Non-Proliferation Treaty. What pushed the Federal Council to act so hastily, without first informing Parliament, and how was it possible to set aside the results of a referendum which had secured for the Swiss people their freedom of action in the matter of nuclear armament?" The Federal Council gave its answer on December 23: It had made its decision following repeated and in-depth consideration, i.e. by no means hastily, and Switzerland was only the 92nd country to sign the Treaty.

1970

People came and went, but the problems remained. Hans Wildbolz was replaced as the Deputy Chief of Staff for Planning by Hans Senn, and Hans Senn was replaced as Chief of the Operations Section by Bernard de Chastonay. Senn was therefore appointed the President of the AAA, Chastonay a member and Wildbolz was thanked for his services and dismissed. But the new Chairman was by no means clear about exactly what the AAA was supposed to do. On February 2, he wrote to Ackeret, whom he welcomed as the permanent representative of the Scientific Advisory Board on the AAA, "that the next meeting will only be called when the Advisory Board has given clear instructions, whether the studies which have been initiated to investigate the possible acquisition of nuclear weapons are to be continued or not after the signing of the Nuclear Non-Proliferation treaty." Gnägi forwarded the document to his Council colleagues Tschudi and Bonvin on January 19 and said that the question, which had been left open in the Federal Council's decision on the ratification of the Nuclear Non-Proliferation Treaty, was "of very great significance, from a military perspective". This question, which was asked automatically after the ratification resolution of November 24, 1969, was put as follows by Hans Wildbolz on December 8: "Are the studies approved previously by the Advisory Board (uranium prospecting, uranium centrifuge etc.) to be continued unchanged or on a restricted basis?"
Plagued by fewer doubts than the AAA, the Scientific Advisory Board held meetings at the ETH in Zürich both on January 7 and February 25, 1970. In the minutes of the second meeting, there are sentences which are typical for the mood of the time that things were breaking up: "The Scientific Advisory board will be notified of any effects on our work. Until then, the work is to be continued in the planned context." The meetings produced a consensus that obviously, two and one-half positions would be necessary for employees of Professors Hälg, Ackeret, Berchtold and Weibel, that certain partial aspects of the work could be carried out in the form of Ph.D. thesis projects, and on the other hand that construction work which might be necessary for realistic tests of the ignition process and the burnup limitation would not be conducted at the ETH, "since drawings can transmit significantly more information to a much larger circle than computer programs, and therefore can easily cause difficulties with the mass media."

Hälg presented a detailed, 27-part research program which consisted of two main parts, on one hand nuclear and plasma physics, and on the other hand gas dynamics and explosive technology.

Walter Winkler had already reported at the inaugural meeting of AAA and the Scientific Advisory Board on the accumulation of plutonium and uranium reserves. On November 14, 1969, Walter Hälg informed Erminio Giudici of the 1,955.83 g of plutonium which belonged to Norway, which was being stored in Mol at the Eurochemic company, and was available for purchase by a politically unobjectionable buyer such as Switzerland. The plutonium, however, was subject to inspections by the IAEA in Vienna. For this reason, too, Senn expressed his thanks but rejected the offer on March 2 in a letter to Hälg. But Hälg was as little dismayed by this as by the dragging pace of the political clarification of the situation. On April 22, 1970, he requested the full-time hiring of a graduate physicist and Ph.D. candidate, although on May 15 the candidate decided to accept another position.

Professor Hälg had also objected to one of the two substantial items on the agenda of the AAA meeting on September 16, 1970, namely the item concerning the Status of the theoretical studies of the physical processes during nuclear explosions. Ambassador
Bindschedler, for his part, reported on the *Attitude of the Federal Government to the continuation of the civilian and military studies on the uses of nuclear energy*. The military studies were supposed to be EMD's affair and would therefore no longer be mentioned in the most recent Federal Council resolution, the one dated July 7, 1970. On the other hand, the Council had approved the continuation of the uranium prospecting, but for 1971 had appropriated an amount of only 200,000 SFR. There was a great deal of disagreement amount the uranium enrichment. The Department for Science and Research was to be limited to preliminary studies, so that without the participation of industry or the electricity companies, there was a risk of missing the boat internationally.

The discussions in the bosom of the AAA revealed the desire to be included in the discussions about the ratification of the NPT. The final sentence of the minutes of the meeting, which was released only on March 5, 1971, which was also a clear reflection of bureaucracy in action, read: "The meeting of the AAA will be convened when the report on the uranium centrifuge is available, but not before the autumn of 1971."

1971

On March 5, 1971, the same day he signed the AAA minutes, the Deputy Chief of Staff for Planning sent the Chief of the General Staff a Situation Report. The report reveals a certain disappointment about the limited allocation of federal funds and the absence of interest on the part of industry, which together meant that the research projects approved in 1966 in the fields of uranium prospecting, uranium enrichment and fast reactor physics had not produced any particularly advanced results. On the other hand, Senn was visibly impressed by the results achieved by the research projects led by Walter Hälg, and by the potential of Bemer's laser research, which was still in the basic research phase, however. "On the part of EMD, the scientific studies should be continued both in the field of uranium and plutonium nuclear fission by supercritical masses, and also in the area of fusion by lasers." But Senn noted in conclusion:
"Experiments which go beyond mere laboratory tests would no longer be reconcilable with the Nuclear Non-Proliferation Treaty." Senn's report dated March 5 was forwarded by Gygli practically unchanged on April 21 to President Gnägi.

Hans Senn did not call any meetings of the AAA in 1971. On January 1, 1972, he was appointed Commander of the Field Army Corps 4; the new Deputy Chief of Staff of Planning and Chairman of the AAA was Hans Rapold, who was simultaneously promoted to the rank of Colonel and Division Commander, so that the AAA had its third Chairman by the time it held its third meeting. Bernand de Chastonay simultaneously took command of the Mountain Division 10. The new Chief of the Operations Section and thus a new member of the AAA was Josef Feldmann.

1972

Jakob Ackeret, born in 1989, was the senior member of the Scientific Advisory Board. He submitted his resignation on February 10, 1972, and on June 30 he was replaced by Federal Councilor Gnägi, with thanks for his services, by Walter Hälg as Chairman, and as a member by another ETH Professor, Hans Heinrich Thomann. At the third meeting of the AAA on April 27, 1972, Ackeret no longer attended. Feldmann was away on military duties, and both Bindschedler and Grossenbacher sent their deputies. It is certainly a coincidence, but a remarkable one, that the acting third President of the AAA was the first who was not subsequently promoted to Corps Commander.

The meeting had nine items on the agenda, two of which were purely formalities. The substantial items ranged from the consequences of the Nuclear Non-Proliferation Treaty, through the status of the research projects in the field of the high power laser (which naturally had only a tangential relationship to the question of nuclear armaments) and the work of the Scientific Advisory Board, the uranium centrifuge question and uranium prospecting, as well as the possibilities of storing reserves of natural uranium, to personnel questions of the Scientific Advisory Board in connection with Ackeret's
resignation. The minutes, which were released about three months later (on July 20), leave the impression of a board which is dealing with concerns without any special haste and in a stately, institutionalized form, making certain that all the participants were kept up to date with the latest findings, and that the country as a whole was provided with knowledge that might someday turn out to be useful. Therefore, under Professor Hälg's leadership, various explosive configurations were calculated, and in what was probably the AAA's most important decision in 1972, the green light was given for the practical testing of the conventional parts of a nuclear warhead. The tone was relaxed. One participant said that the Vatican had ratified the Non-Proliferation Treaty, "which means we don't have to worry about a 'holy atom bomb'!". The Working Group's main attention had clearly shifted to the attempt to precisely understand the function of nuclear weapons, to better protect against them. According to Walter Hälg: "The transition from the original components of the nuclear weapon into a plasma from which thermal radiation, X-ray radiation and also particles such as neutrons escape, is currently being investigated in great detail. This phase subsequently initializes the fireball and thus the pressure wave, and a knowledge of this phase is essential to define rules for the behavior of troops and the civilian population with regard to photon and neutron emissions."

On November 30, 1972, Hans Enzmann presented a report entitled Results And Status Of Research Projects Relating To Ultracentrifuges. The status of the research was not particularly advanced, and the explanation given was as follows: "If tests ... are performed at minimum expense, during which the work is sustained more by personal [sic] interest than by the funds provided, you can't insist on deadlines." Another problem was said to be "the reluctance of the EIR to participate actively". But Enzmann was thanked for his services and dismissed from the Scientific Advisory Board on December 31, 1972, and was replaced by Felix Gillieron as the representative of the Department for Science and Research. In addition to Gillieron, Federal Councilor Gnägi appointed Walter Hälg, Max Berchtold, Paul Schmid, Hans Heinrich Thomann, Erich Weibel and Walter Winkler as members for the 1973/1976 term. For the same term, the appointment document dated December 5, 1972, named Hans Rapold, Rudolf
Bindschedler, Erminio Giudici, Charles Grossenbacher, Jean-Michel Pictet and Josef Feldmann as members of the AAA. Of course, one copy of the appointment document went to the Federal Personnel Office and to the Federal Budget Office. Nevertheless, the AAA Chairman Hans Rapold had to submit an additional list of all the expenditures of the AAA and the Scientific Advisory Board, plus the supporting legal documents, for the years 1970 to 1972 at the end of 1972. From these documents, we find that for meeting attendance fees a total of 1,085 SFR had been paid, and 194.60 for travel costs. The scientific research sponsored had cost 12,196.15 SFR in 1970, 25,861.60 SFR in 1971 and 28,611.95 SFR in 1972. That gives an overall total of 67,949.30 SFR for the period 1970 to 1972.

1973

Exactly one year after the third meeting, the fourth meeting of the AAA was held in Bern, this time in the Parliament Building, on April 27, 1973. Gillieron had completed an extensive report on March 14, 1973, under the title *Investigation Of The Possibilities Of Storing Reserves Of Natural Uranium*, and had it sent to the members of the AAA with the invitation to the meeting. But since hardly any deposits worth exploiting had been discovered in Switzerland, and prospects of obtaining natural uranium from abroad which was not subject to the control system seemed dim, the AAA dispensed "for the time being" with "investigations of the financial effects". Hälg reported that the following tests had been completed:

- Estimation of the critical mass
- Dynamics of fission systems according to the spherical and compression-spherical model - interruption of the chain reaction as a result of burnup.

On the other hand, the research in the following areas seems to have made little progress, or was still in its initial stages:
- Nuclear ignition, together with statistical questions.
- Dynamics of fission systems according to the cylindrical model - behavior of sintered fuel.
- Caliber of a combined fusion-fission system and the possibility of laser ignition.
- Miscellaneous questions on the equations of state for explosive devices.

Walter Hälg was responsible for what progress was made in research in the field of nuclear weapons. After a first full-time employee, he proposed in the summer of 1974 to hire a second. On December 17, he addressed a meeting at the ETH which, as clearly indicated in the minutes, lasted a maximum of three-and-one-half hours, and the meeting of the Scientific Advisory Board somewhat longer. In what had become a well-worn routine, the Advisory Board discussed the program for the year 1974, which was once again assigned to nuclear weapons research on the basis of activity in the context of military refresher training.

1974

After a few years of quiet, small-scale research activity - probably involving more than one department and staying within specifications, but under the veil of secrecy and keeping the public largely in the dark - the question of nuclear weapons for Switzerland once again became a topic in 1974, because on October 30, the Federal Council resolved to ask Parliament to ratify the nuclear non-proliferation treaty, but in its message emphasized that research in the area of nuclear weapons would continue, "so that in the event of an unfavorable change in the international situation, all the basic elements will be in place to allow us to decide on the potential acquisition of nuclear weapons, although that would require withdrawing from the Treaty." In other words, we had come to the first scene of the last act. At the same time, however, there were new problems involved with discontinuing the research."
At that time, there was an alarming upsurge in worldwide terrorism. So-called "conventional" terrorism represented an acute problem during the term of Federal Councilor Gnägi, one which the country was forced to deal with intensively. Highly visible terrorist crimes such as the hijacking of a Swissair flight to Zerka in Jordan in September 1970 resulted in anti-terrorism activities which were speeded up by the police or by circumstances. For example, it was not unlikely that Sabri al Banna, alias Abu Nidal, had at least one terrorist cell in Geneva, ready to attack the Völkersbundpalast, to disrupt the Middle East Conference which opened there on December 21, but was postponed again on the 22nd (Patrick Seale, Abu Nidal, New York: Random House, 1992; EMB G 1542; 106). Was it possible that terrorists, whose importance in terms of security policy was debated, for example, by Gustav Däniker in his Antiterror Strategy of 1978, could get hold of a nuclear weapon? Professor Dr. Franz Aebi, Vice Director of the Technical Department of the GRD, mentioned the "possibility of terror with nuclear weapons" in a letter to Division Commander Colonel Hans Rapold dated April 29, 1974. An American idea predicted that "plutonium somehow diverted from a civilian reactor" could be used to make a "functional nuclear weapon".

The reason for the letter may have been the encounter between Rapold and Aebi on April 26 at the fifth meeting of the AAA. Dr. Arthur Liener, Chief of the Planning Methods Section, attended the AAA meetings in place of Erminio Giudici, who had recently been promoted to the rank of Brigadier and had resigned his office at the head of the Overall Military Planning Department. Professor Rudolf Bindschedler announced: "The Chief of the Political Department has decided in favor of the ratification of the Nuclear Non-Proliferation Treaty. The very existence of the AAA and the Scientific Advisory Board was thereby called into question. Rapold drafted an interim report to the Chief of the General Staff. In the "Conclusion", the Chief of the General Staff is asked "whether it is appropriate to continue the work of the AAA, or whether the time has come to put an end to the AAA and its Scientific Advisory Board." Ultimately, that was a question which could only be answered at the level of the Department Chairman. Rapold sent a brief memo to Gnägi on June 15, 1974, in which he referred to the
Federal Council's resolution dated July 11, 1958, and to the report dated June 6, 1966. At the end of his memo, he wrote: “To retain our freedom of action, so that we can respond to future developments and threats with the appropriate means ... We are working in this direction, although it must be said that our army is currently not equipped with nuclear weapons in the operational/tactical sector, and particularly not in the strategic sector.” Walter Hälg’s Report on the Investigations Of The Scientific Advisory Board On The Function Of Nuclear Weapons During The Period 1969 To 1974, dated July 5, took another approach altogether. The Chairman of the Scientific Advisory Board, together with two other members, had reviewed the problems on June 11 with the Chairman of the AAA, with special emphasis on the continuation of the operation of the DIORIT heavy water reactor in Würenlingen. In summary, Hälg wrote that in 5.3 man-years, one-third of the projects described in the 1968 plan, estimated at a total of 36 man-years, had been accomplished.

“We are currently in a position to make reliable predictions about the behavior of uranium fission weapons with a spherically symmetrical construction. Such systems are compressed with a conventional explosive. By selecting the degree of compression, the caliber can be varied within considerable limits, i.e. from 1 Kt to 200 Kt. In such a case, the beginning of the nuclear chain reaction must be delayed until the conventional explosive wave has compressed the bomb material to the maximum.

It has also been shown that the energy generation is only insignificantly limited by the consumption of the fissile material, but is terminated by the expansion of the hot explosive body.

Calculations have shown that temperatures are reached in the center of the system at which fusion reactions become possible, as a result of which combination weapons with preferred doses of radiation or specific pressure wave action can be realized.

The research into radiation transport has progressed to the point that we should shortly be in a position to indicate the spectral distribution and the sequence of photon
emission as a function of the caliber. That will make possible a verification or revision of the current guidelines for responses by the military and civilian population to nuclear attacks.

Our results from model tests in a spherical geometry can be recalculated for a cylindrical geometry under certain restrictions which are not very restrictive for initial estimates. We are therefore in the position to supply initial design data for the production of a weapon."

"The construction of the weapon, or even the experimental verification of certain constants used in the calculations, however, requires the existence of the corresponding nuclear material. Apart from the separation of uranium isotopes, this material can be obtained by breeding plutonium in nuclear reactors. For this capability, only reactors moderated with graphite and heavy water can be considered."

"It will probably be impossible, however, to provide a definitive answer to the question of our production capabilities for uranium, for civilian or military uses, in the context of the current research projects.

To answer this question, we would need more extensive research which would take a good many years. With the current ad hoc organization and the current financing process, which does not provide any appropriations for longer than one year, it is impossible to conduct this research in an efficient manner."

Anyone who is closely involved with this subject, and especially in Switzerland, will sooner or later become interested in its political dimension and will make his voice heard on the subject. Therefore it is not surprising to find the contentious but always loyal opposition opposed to the ratification of the Nuclear Non-Proliferation Treaty in the Military Department. For example, the Director of the Technical Department of the GRD Urs Lanz communicated the following request to his Armaments Chief Charles...
Grossenbacher on October 14, 1974, via the Leadership Staff, in a passage expressly marked as “personal opinion" in a letter:

"The EMD should oppose the ratification of nuclear non-proliferation zones [sic]. Reason: As long as our Parliament has not ratified the Treaty, we still have a certain freedom of action. I do not think that ratification has any advantages for our country. On the other hand, there may be disadvantages from the public discussion which would precede a ratification (such as statements by those in favor of nuclear weapons, arguments by opponents of military readiness in general etc.). Let sleeping dogs lie!

... If the nuclear non-proliferation treaty is ratified, the existence of the AAA must be re-examined, and if it continues in existence, a new government directive must be issued."

1975

But the slow pace was already taken for granted to the point that Ernst Wyler, who had recently been promoted to Division Commander, could invite the members on March 27, 1975, “to this year’s meeting of the AAA”. Of the five items on the agenda, four were orientations, and one was a discussion of the adaptation of the government directive outlining the activities of the Scientific Advisory Board.

In the AAA's opinion, the most pressing issue was obviously the future of the Diorit heavy water reactor. In any case, it appears at the very top of Walter Hâlg's three-page activity report for the year 1974. Felix Gillieron, of the Office for Science and Research, noted in his Memorandum to the AAA (dated April 24, 1975), that the Swiss Schools Inspector had decided on November 8, 1974, to discontinue operation of the reactor when the current fuel charge had been exhausted. The reaction of the AAA, which met on April 25, as indicated in the minutes of the meeting, was as follows: "Means and methods must be found to finance the further operation of Diorit." Professor Bindschedler reported on the ratification process for the nuclear non-proliferation treaty
which had become stalled in the Cantons Commission, and the resulting assignment to collect comments from the electric companies, to evaluate the degree of universality of the treaty, and to include the results in the review conference which was to be held in May and which was to include a Swiss Delegation. For the further activity of the Scientific Advisory Board, a subcommittee under the leadership of Dr. Arthur Liener, the Deputy Director of the Planning Subgroup, was to establish a program. In addition to Liener, the Subcommittee consisted of Hälg, Imobersteg and Aebi. The subcommittee met on July 2, 1975, and confirmed the existing *Program 68* "in its basic outlines". It was to be prepared by the end of 1975 by the "Hälg Working Group of the Scientific Advisory Board", i.e. by the Professor and his two assistants who were on the payroll of the AAA, and by several government employees during their military refresher training. The meeting of the subcommittee clarified what the Scientific Advisory Board expected from a "do-it-yourself bomb": "The question must be stated as follows: 'What can I do with nuclear fuel in what length of time and at what cost?' The expected results will be used as the basis for decisions for crisis management, and for possible use as an 'emergency solution' for the leadership of the armed forces."

As long ago as 1972, Johann Jakob Vischer had dismissed Paul Gygli as the Chief of the General Staff. In the summer of 1975, he then appointed the Basel Corps Commander personally to clear up the relationship between the desired status of an emerging nuclear power, the contextual conditions for weapons production (technology, fuel acquisition, time factors) and the planned shutdown of the DIORIT reactor. The personal involvement of the Chief of the General Staff was a necessity on account of the opposing opinions of his advisors and other involved parties. For example the Director of the Federal Institute for Reactor Research, Professor Heinji Gränicher, wanted to confer with Vischer in private, excluding the other participants at the meeting. He was given a personal interview on July 31, 1975, from 2:20 to 3:00 PM. Only then did the other participants at the meeting, Professor Walter Winkler, Division Commander Roger Mallibard, the Deputy Chief of Staff, Division Commander Ernst Wyler, the Deputy Chief of Staff for Planning, Professor Franz Aebi, Colonel Ulrich Imobersteg and Dr. Arthur Liener enter the offices of the Chief of the General Staff.
The Minutes signed by the Chief of the General Staff are dated August 18. "From a military point of view, there are no pressing reasons" opposing a shutdown of the DIORIT reactor. Switzerland might be called a "potential emerging nuclear power”. “A strategic deterrent effect can be derived from this evaluation.” “The emphasis of any Swiss efforts must be placed in the field of enrichment technology. First, recommendations must be prepared, on which basis (uranium or plutonium) the future work is to be continued. It must also be determined what type of raw materials can be acquired, and how.

These activities, however, assume that the country has a desire to become an emerging nuclear power, which is not clearly evident, at least on the government level.”

“According to a number of publications, the deterrent effect of a do-it-yourself bomb is considered weak.

Requirements for a do-it-yourself bomb include:
- sufficient fissile material,
- a great deal of detailed know-how,
- at least five specialists, and
- a great deal of time.
- On a plutonium basis such a bomb is very difficult; it would be somewhat simpler on a uranium basis. In all cases, the chances of failure are very high.”

The slowdown of the ratification process on a political level therefore had, if we consider the year 1975 as a whole, a stimulating effect on the participants in terms of the creation of basic principles for the potential acquisition of nuclear weapons, but not much more than that. The entire project would have required resources on a scale which were at no time available.
The domestic political situation in 1976 was favorable to a ratification of the Nuclear Non-Proliferation Treaty. The Federal Council presented the Supplemental Report on the Nuclear Non-Proliferation Treaty requested by the Cantonal Council's Commission for Foreign Affairs, and thus pushed it through. In February or early March, the EDI sent back its secret files, apparently only the ones considered non-essential, and the Report on the Possibilities of Swiss Nuclear Weapons Production (MAP Report) from the year 1963.

The 7th meeting of the AAA took place on June 23, without Chairman Wyler, who sent his regrets along with Ambassador Bindschedler and Colonels Imobersteg and Feldmann. The meeting was chaired by Arthur Liener. On the same day, the Cantonal council approved the Nuclear Non-Proliferation Treaty by a vote of 23 to 8, as announced at the AAA meeting. The background for the meeting, and for the entire opinion of the affair in Switzerland, was, as described by Ambassador Herbert von Arx of the EPD, a "clear tendency by the non-proliferation treaty states to deal harshly with states which have not ratified the treaty." This state of affairs led to only one conclusion, which the minutes dated June 28, 1976, indicated: "It would be appropriate to no longer confirm the Scientific Advisory Board in the current form after the new elections."

Accordingly, a new government directive on the AAA was issued. It bears the date October 19, 1976, and entered into force on January 1, 1977. The members of the Scientific Advisory Board dismissed the Deputy Chief of Staff of Planning on December 23 with "thanks for his valuable service". As indicated by the acknowledgment signed by Federal Councilor Gnägi on November 24, the AAA still had eight members, namely Division Commander Ernst Wyler as Chairman, Professors Rudolf Bindschedler, Walter Hälg and Hans Heinrich Thomann, Doctors Ulrich Imobersteg, Arthur Liener and Jean-Michel Pictet and the Director of the Technical Department of the GRD Ulrich Lanz. The departing members were dismissed with the usual expressions of gratitude.
The Treaty on the Non-Proliferation of Nuclear Weapons entered into force for Switzerland on March 9, 1977. Therefore, because the possibility of cancellation was and remained altogether theoretical, and the question of Swiss nuclear armaments was no longer the subject of necessary or useful research and scenarios, it represented one less political problem. The work of the AAA thereafter extended to its dissolution by Federal Councillor Arnold Köller on November 1, 1988 (effective December 31), and no further than the maintenance of the scientific knowledge it had collected and the discussion of subjects such as the do-it-yourself bomb or the effects of nuclear weapons. A draft on the subject *Swiss Policy in the Question of Nuclear Weapons* dated May 1977 (completed some time before May 25) by Division Commander Josef Feldmann, the new Deputy Chief of Staff, can be interpreted in this light. It was intended as a document to be released over the signature of Hans Senn, who had returned to the office of Chief of the General Staff in 1977. The draft comes to the following principal conclusion: "The evaluation of the security policy position and its possible developments leads to the conclusion that Switzerland has an interest in taking all measures in the context of the NPT which are appropriate to ensuring it the status of an emerging nuclear power, and providing it with long-term protection." In the same, 21-page draft, strict secrecy is demanded. "The circle of 'people in the know' must ... be as small as possible." Was this a conspiracy of soldiers who were unable to accept valid, binding political decisions? Certainly not! Not only did the author of the draft want to do scrupulously only what was allowed by the Treaty, but in the "Conclusions" he also wrote that it is "important in this regard, for the Federal Council to make the necessary decisions and issue the corresponding orders."

In the meantime, the research proceeded, but in a very much broader sense, and in no way focused on the functioning of nuclear weapons in the narrow sense and on design problems. The EMD Research Committee chaired by Franz Aebi, the successor to the Scientific Advisory Board, on June 20, 1977, requested that more attention be paid to questions such as the nuclear electromagnetic pulse radiation (NEMP), the remote and
delayed effects of the use of nuclear weapons, the do-it-yourself bomb, the risks posed by nuclear power plants and others. It was apparently also a question of legitimizing the AAA by means of research projects in altogether different fields. On this subject, Walter Hälg remarked that weapons knowledge would be necessary precisely to discuss the subject of the do-it-yourself bomb.

The 8th meeting of the AAA was held on July 14, 1977, again under the chairmanship of Division Commander Wyler. Those in attendance included no fewer than four future Corps Commanders, two of whom would become Chief of the General Staff, plus Wyler, Feldmann, Liener and the Colonel on the General Staff Eugen Lüthy, in his capacity as Chief of the Basic Planning Section. The discussion once again revolved around the DIORIT Reactor. Walter Hälg asked whether it was still be to be shut down for political reasons, which Rudolf Bindschedler denied, and added: “The EPD is of the opinion that the heavy water from the DIORIT Reactor should not be sold.” The AAA unanimously supported continuation of uranium prospecting. With regard to the organization of the research, however, no agreement could be reached. Therefore it was decided to ask for written commentaries, which Franz Aebi would incorporate into a draft to be submitted for further discussion. The same procedure was used in the matter of Swiss Policy. To actually be able to do this, the AAA resolved to hold a special meeting on November 2, 1977.

With Wyler’s election as the Chief of Management and involvement in the KFLF, Federal Councilor Gnägi had to find someone new to serve as Chairman of the AAA. This he did on September 6, 1977, by appointing Division Commander Josef Feldmann, effective January 1, 1978. The contributions to Swiss Policy were already to be sent to Feldmann. The most important contributions came from the pen of Walter Hälg, who wrote on September 26:

“That means that we need not worry about working in each case on detailed problems of a ... weapon. In this case, the time which is given to us for this work is of major importance. If we do not acquire the knowledge appropriate to an emerging nuclear
power, that would mean that we had decided to schedule an infinite length of time for these experiments. If we want to be taken seriously as an emerging nuclear power, the time must be realistically short. A delta-T of five years might possibly be acceptable, but not 8 to 10 years. It must thereby be taken into consideration that the manufacture of the weapons themselves would also take a significant amount of time, and that we cannot wait until there is a threat (...) to begin preparations."

The research priorities approved by the AAA on November 2, however, assigned only medium priority to special developments and ignition mechanisms in the field of thermonuclear weapons, along with the protection of troops and the civilian population. According to the motion, neutron weapons and NEMP were assigned high priority. In terms of research policy, this is clear evidence that the Hälg era had given way to the Aebi era.

According to the minutes dated November, 29, the participants in the meeting expressed themselves on the subject of Swiss Policy in favor of emerging power status. "The goal remains: Switzerland must ensure its status as an emerging power. If this is not possible, the objection to the Non-Proliferation Treaty are much more difficult (Prof. Bindschedler)." However, the members of the AAA did not think for a minute about their high-handed procedure; their intention was to have the Front Subgroup revise the report in the light of the discussion and have it sent to the Federal Council via the Leadership Staff and the EMD.

1978

In early 1978, Corps Commander Senn first began streamlining Swiss Policy. To streamline this basic paper, he invited the Armaments Chief and the Deputy Chiefs of Staff for Front and Planning to attend a meeting on January 20, the preparation for which triggered all sorts of activities. Senn himself welcomed five participants to the meeting, in addition to Eugen Lüthy, who had been promoted to Division Commander
and Deputy Chief of Staff for Planning, and his opposite number Josef Feldmann, the old hands Grossenbacher, Imobersteg and Aebi. Grossenbacher and Aebi were categorical in their rejection of the draft.

"The deterrent effect of the study is called into question, and it is determined that we do not want any 'Los Alamos' (Armaments Chief)."

Deficiencies in the study were indicated .. the lack of a definition of the term 'emerging nuclear power'; the mixing of recent and older documents as the basis; the insufficient and disorganized technical situation (Prof. Dr. Aebi). In any case, that is what Imobersteg put in the minutes. For future action, the preparation of a new study by the Front Subgroup was agreed. "For the technical realization of any research projects which are ordered, the GRD will act as the leader."

In the meantime, Professor Aebi organized, largely inside the GRD, a new edition of the depleted Scientific Advisory Board, the BOA (Beratungsorgan für A-Fragen des FE-EMD - Consulting Organization for Nuclear Affairs of the FE-EMD), which held its first meeting in Thun on June 22, 1978. The rudimentary minutes give the impression that a new team is starting over from Square One. However, this new team performed a remarkable service for its coach Aebi. On August 4, a 50-page list of problems was on the table, and in connection with the question of emerging power status, it is of particular interest to note the enthusiasm with which the discussion was steered away from the ignition mechanisms which had been of such interest to the old Scientific Advisory Board. "The practical importance for the evaluation of the threat posed by tactical nuclear weapons and the protective measures to be taken in response is slight. (On the other hand, they would be very important for a country which wanted to develop or use tactical nuclear weapons itself!)

At the 10th meeting of the AAA on August 18, 1978, chaired by Josef Feldmann, the members were asked to indicate their evaluation of the priorities for research activity. The following criteria were cited:
"1. General assurance of survival; protective aspects.
2. Preservation of offensive power; not to protect just life, but also infrastructure, weapons and structures.
3. Retention of emerging nuclear power status."

In the discussion of Swiss Policy, the representatives of the EPD, Rudolf Bindschedler and his Scientific counterpart Herbert von Arx asked that research on the use of plutonium be included in the study, and that the question of the purchase of uranium on the open market be examined, "because when a conflict breaks out, the Non-Proliferation Treaty automatically expires".

1979

Several times at the meetings of the AAA, the idea came up of buying natural uranium to build up a strategic reserve. It had been largely forgotten that from 1957 and 1958, a total of 3234 kg of uranium and 2283 kg of uranium oxide UO3 had been in storage on the site of the Wimmis Explosives Plant, but had not been used by anyone since 1964. Dr. Peter Grossenbacher, the Director of the Explosives Plant, demanded in a letter dated June 20, 1978, that responsibility be assigned to some governmental entity, which was finally found in EVED, and specifically in the Federal Office for Energy. Its Director, Dr. Eduard Kiener, was quite prepared "to keep the material on our books", but he wanted to leave it untouched, if possible: "We cannot ... rule out the possibility that the current condition of the material is [less than] optimal," he wrote to the GRD on September 21, 1978. Peter Grossenbacher, however, wanted the material off the site of his factory, for which purpose he took the initiative. On the occasion of a meeting in Wimmis on November 23, 1978, in the presence of representatives of the GRD, the Explosives Plant, the Office for Energy, the Department for the Safety of Nuclear Installations and the EIR, it was determined that the uranium in question had been purchased by the Swiss Atomic Energy Research Commission (SKA) from Belgium and
Great Britain in the 1950s. Of course, the SKA had been disbanded at the end of 1958, but its successors were various entities, which ultimately found their successor in the Office for Science and Research of the EDI. But no one gave any further thought to the uranium in Wimmis. Robert Knörr, who was present throughout the events of the summer of 1978, wrote in a memorandum dated July 26: "My impression that the control over the material and its existence by the frequently-replaced commissions and responsible government departments and office-holders had been forgotten, and was simply passed from hand to hand. It could not be determined who was currently responsible."

Therefore the draft of a Federal Council Resolution dated February 6, 1979, sought to have the rights to the uranium reserve assigned to the EVED, the material placed under international control in the context of the Nuclear Non-Proliferation Treaty, and have it moved to the EIR. The draft also put an end to the "secrecy which has been maintained since the time the material was purchased (1955)", because the existence of the reserve had been described in the Schweizer Illustrierte Zeitung in 1958, although it had apparently been forgotten since then. The draft memorandum of the Federal Council Resolution then set the usual gears moving both inside and outside the Military Department. Finally on June 28, 1979, Hans-Ulrich Ernst, the acting Director of the Federal Military Administration since the beginning of the year, gave permission in the name of the EMD to the Federal Office for Energy to release the draft, subject to consultation with the AAA of the EMD in matters of the suitable use of the material. That was OK with the Federal Office for Energy, which for its part was in no hurry for this project, but not with the Explosives Plant. After long delays, the Federal Council finally adopted the following resolution on August 12, 1981:

"1. The secrecy which has been maintained by the Federal Government since the acquisition of the uranium reserve is hereby ended; all of the uranium shall be subjected to inspections by the international material control system under the terms of the Nuclear Non-Proliferation Treaty."
2. The control of the uranium is transferred to the Federal office for Energy; the Working Committee for Nuclear Affairs of the Military Department must be consulted before any further use of the uranium.

3. Until the uranium is reused, the uranium shall remain stored in the current locations (EIR and the Wimmis Explosives Plant).

Finally, in December 1986, the uranium was actually moved from Wimmis to Würenlingen.

The entire project described here was the first which was supervised by AAA Chairman Feldmann in 1979. In March, he scheduled the next AAA meeting for July 11. Three substantial items made it onto the agenda: the status of priorities in research matters, a presentation on the status of the study of emerging nuclear power status conducted by the Deputy Chief of Staff himself, and the Conference on the Revision of the Non-Proliferation Treaty.

The GRD Study entitled Technical Aspects of the Status of Switzerland as Emerging Nuclear Power, released in September 1797, was presented by Josef Feldmann to Hans Senn on September 17. Feldmann did not request any Federal Council Resolution; he only requested that the study be used "as an internal working paper", and that the AAA be made responsible for its periodic updating and, if necessary, for submitting motions at the proper time. The Chief of the General Staff followed the proposals of his Deputy Chief of Staff and issued the following instructions on September 28, 1979:

"a) The GRD study shall be used as an internal working paper and classified SECRET.

b) The AAA is requested to update the study periodically.
c) If the political or technical developments should lead to a fundamental re-evaluation of the situation, the AAA shall promptly present a motion concerning the measures to be taken.

The AAA had thus become nothing more than a think tank.

That corresponded to the priorities set by Professor Aebi's EMD Research Committee. In an extraordinary meeting with the Deputy Chief of Staff for Front on November 28, 1979, the committee clearly resolved to place the emphasis on the protective aspect: "The emerging nuclear power status is a separate objective, and should be treated as a second priority."

1980

The 12th meeting of the AAA on January 11 was once again primarily to keep its members informed, this time in particular about the proliferation of nuclear weapons in the Third World, about the decisions of the Chief of the General Staff of the previous September, and the continuation of uranium prospecting by the Federal Office for Energy. On August 6, Division Commander Josef Feldmann named his successor as of January 1, 1981, Division Commander Gerard de Loes. On September 3, 1980, the Federal Councilor Georges-Andre Chevallaz ordered the inclusion of a representative of the Federal Office for Energy on the AAA. Chevallaz had taken over as Nello Celio's successor, and since January 1, 1980, was no longer the head of the Financial Department but of the Military Department. On September 9, 1980, Chevallaz also appointed the members of the AAA for the term 1981 to 1984. In addition to the Chairman de Loes, the members included Professors Walter Hälg and Hans Heinrich Thomann, Doctors Herbert von Arx from the EDA, Christian Favre from the Federal Office for Energy, Arthur Liener, the Deputy Director of the Planning Subgroup, and Jean-Michel Pictet from the Federal Office for Education and Science, as well as Colonel Ulrich Imobersteg, Chief of the ACSD Department, and Ulrich Lanz, the
Director of the Federal Office of Weapons Technology. Josef Feldmann and Rudolf Bindschedler were dismissed with thanks for their services. But before all that, Feldmann was still able to chair the 13th meeting of the AAA, this time in the EMD Administration Building on Papiermühlestrasse 20. That was on October 29, 1980. The minutes of the meeting, dated November 19, 1980, refer to the upcoming Interim Report of the EMD Research Committee as follows: "We have not yet had time to do anything except to collect several reports which may tell us who can be assigned to which field."

1981

The 14th meeting of the AAA was held on October 23, 1981. Chairman de Loes defined the objectives of the research activity as follows:

"- Information processing (keeping up to date scientifically) - verification and expansion of our own defense capabilities;
- Maintenance of Switzerland's status as an emerging nuclear power. Under the title "AAA Activities 1982", the minutes dated November 5, 1981, begin with the following text: "The AAA requests the EMD Research Committee to carry out the following tasks:
- Prepare an inventory of the current state of knowledge (studies, reports etc.)
- Prepare a directory of specialists;
- Formulate the statement of task; what does AAA expect from the specialists and of the federal departments and offices represented on the AAA?"

1982

To remedy the documentary deficiencies he found, de Loes set about convincing the AC Laboratory in Spiez as well as the responsible government entities to provide part-time technical secretarial and filing services for the AAA. He also established an internal
newsletter. The question of the justification of the very existence of the AAA, however, which appeared almost doubtful in the request to the Research Committee of the EMD, however, would simply not go away. It also dominated the 15th meeting on September 24, 1982. The AAA came to the conclusion that it would revise and expand the draft Swiss Policy from 1977 within six months. Corps Commander Jörg Zumstein, who had been Chief of the General Staff since 1981, learned of this in the AAA's annual activity report dated December 22, 1982. Zumstein annotated this passage in his copy with questions in the margin; his final comment is, "Is that what they think?"

1983

The Tasks and Responsibilities of the Technical Secretariat of the AAA signed by Chairman Gerard de Loes on January 10, 1983, is interesting primarily on account of the insight it provides into his interpretation of the purpose of the AAA, as its Chief saw it in this late phase of the Cold War. In this document, the tasks of the AAA are formulated at the beginning, although with the more formal qualification "among others":

"- evaluation of the effectiveness of measures to protect against the effect of nuclear weapons - 'nuclear events' (sabotage, blackmail, accidents etc.);
- nuclear policy (Non-Proliferation Treaty etc.);
- maintenance of the level of technical know-how in the fabrication of nuclear weapons, in the event that Switzerland enters the ranks of the nuclear powers."

The five substantial items on the agenda of the AAA meeting on March 25, 1983, were the above-mentioned set of Tasks and Responsibilities, coordination with the EMD Research Committee, a presentation about NEMP activities, the effects of nuclear technology in indirect warfare, and the remote and delayed effects of the use of nuclear weapons. The next meeting of the AAA, the 17th, was scheduled for September 23, 1983, and heard presentations on the ZGV's Information Project and the intermediate storage of low-level waste from the Federal Office of Health. In the meantime, as a
result of changes in personnel, all the members received, along with the minutes of the meeting, copies of the government Decree dated October 19, 1976, and the Amendment dated September 3, 1980.

In his report to the Chief of the General Staff dated December 9, 1983, the Deputy Chief of Staff for Front described the matter of the uranium reserve (discussed in more detail above) and the do-it-yourself bomb. Two studies had been prepared on the latter subject; the former was "not to be touched". Dr. Michel Dufour, the Scientific Adjunct from Special Projects and Research of the GRD, came to the following conclusion in a paper completed six days later and devoted to a re-evaluation of the 1977 Swiss Policy draft: "During the six years which have passed ... our overall know-how in the field of the technology of nuclear engines has advanced only slowly."

1984

On March 21, 1984, the 18th meeting of the AAA took place in the AC Laboratory in Spiez. In addition to the Chairman himself, the list of those present includes Minister Herbert von Arx (on matters of nuclear non-proliferation) and the GRD engineers Bernard Anet and Bruno Heiz, the latter on a study entitled Survival, a study entitled Nuclear Weapons Arsenal intended for general release, and a scientific evaluation of The Day After, a popular movie of the time.

According to the minutes, the central question, "Do we want to achieve or maintain emerging nuclear nation status?" was discussed, although no decision was reached. It was decided, however, that Swiss Policy, plus Dufour's comments on it, would be given to all the members for their review by late August 1984.

On June 19, 1984, Federal Councilor Jean-Pascal Delamuraz, who had taken over the EMD from his predecessor Chevallaz at the first of the year, signed an amendment to the government order relating to the AAA. According to this new order, effective as of
January 1, 1985, the Central Office for Defense would be represented, but at its express wish the Federal Office for Education and Science would no longer be represented on the AAA.

The mood of the summer of 1984 is probably reflected in the files first in an unsigned commentary dated August 10: "The technical studies can be continued in their current scope. But the time for more advanced steps has passed. Their potential costs are greater (and by a great deal) than the possible military benefits."

At the 20th meeting of the AAA on September 21, 1984, responsibility for the Swiss Policy was shifted once again. This time it was assigned to Dr. Josef Schärli of the Front Subgroup, and designated one of four priority topics for the year 1985. The other three were the study of the Survival Working Group, the study of the do-it-yourself bomb and the NPT Review Conference "under the leadership of EDA". On the basis of handwritten memoranda dated October 10, 1984, it can be concluded that Herbert von Arx was by no means certain that the Nuclear Non-proliferation Treaty would stand. In a rare public evaluation, he wrote of both the circumstances surrounding its origin and the most important Swiss motivation for joining the countries which had signed the Treaty: "As long as the Nuclear Non-Proliferation Treaty has a certain 'minimum universality' (in particular no new nuclear powers in our neighborhood), we ourselves can give up our nuclear weapons option. But that can be done only on condition that we are capable of getting this option back again immediately, if the above mentioned situation changes."

"The treaty, which was originally designed for European conditions (West German), could collapse as a result of a change in this region. Imagine, for example, a withdrawal by the USA, in which case, for example, West Germany and Italy were given access to the use of nuclear weapons."

The draft of a letter from Chairman de Loes to Chief of the General Staff Zumstein dated October 18 echoes these sentiments, and recommends the "maintenance of material and human resources" to "ensure the emerging nuclear power option", and promises a significant "gain in deterrent capability, if it is known that Switzerland is
(once again) prepared to take the necessary precautions for the resumption and permanent guarantee of emerging power status." "The realization of these decisions requires preparatory measures. Without these measures, they would waste away to 'projected decisions' and our emerging nuclear power status would be an illusion."

1985

On January 8, 1985, Jörg Zumstein received a letter from his AAA Chairman oriented to the December draft. The Chief of the General Staff added a few question marks, including one at the enigmatic phrase "Theoretical considerations of a European nuclear war (with West Germany and Italy having access to nuclear weapons)", a passage in which the diplomat von Arx had changed the clear and straightforward military expressions, probably on account of various diplomatic objections. But Zumstein was in no hurry to get on with the project. He discussed the paper with the Deputy Chief of Staff for Front only on October 3, asking him for a submission from the AAA to the Federal Council, presenting several options.

On January 10, 1985, the Military Attaché of West Germany, Lieutenant Colonel on the General Staff Count von Pfeil visited Colonel Erich Kipfer, the Chief of Military Protocol, with an astonishing knowledge of the details of Switzerland's research activities and an approach which at least did nothing to weaken Herbert von Arx's comments. The Count, on behalf of the West German Defense Minister, requested five documents, with precise indications of the authors and titles, and in two cases with the military rank and position of the authors. The documents were entitled:

- "Some considerations of stochastic phenomena in the ignition of nuclear weapons"
- "Time-dependency of Rossi-Alpha for colliding uranium cylinders"
- "Stochastic phenomena on the three-dimensionally extended and reflected multiplying system"
"On the pre-ignition of nuclear weapons using plutonium from power reactors"
"Thermonuclear Fusion Part I: Physical Principles"

On February 5, the Technical Secretary of the AAA, Bernard Anet, asked Chairman de Loes "to respond to the German request for the first 2 reports, and to 'negotiate' for the other three, so that we receive something in exchange (a West German delegation is expected to visit our laboratory in late March)." De Loes forwarded the letter with the annotation "settled between Anet and Kipfer" to the secretary of the AAA, which means that it was very probably forwarded and that some sort of deal like the one described was probably arranged.

The 20th meeting of the AAA on March 27, 1985, was addressed by the Chairman Herbert von Arx, Bernard Anet and Dr. Andreas Pritzker. Anet discussed, among other things, the fifth of the studies requested by Pfeil, but nothing about what else Pfeil had asked for. The subject was also not discussed at the 21st meeting (October 7, speakers as above, minus Pritzker, plus Schärl and Heinz Staub, Secretary of the AAA). The Swiss Policy was still being revised. The principal conclusion of the 21st meeting read as follows:

"By agreement with the Chief of he General staff, a 'Letter from the Chairman of the AAA is to be sent to the Chief of the EMD'. The purpose of this letter is to request the Chief of the EMD to ask the Federal Council to indicate to the AAA its opinion/policy on the question of nuclear armaments. The following points should be presented in particular:

- A statement of the problem (June 6, 6966, report and NPT Treaty);
- Presentation of the possible solutions with regard to further research, including effects on the financial, human resources and structural aspects;
- Reference to the problem of secrecy (regarding budget appropriations);
- Motion."
On November 1, 1985, Federal Councilor Delamuraz appointed the following members to the AAA: Effective January 1, 1986, the Vice Director of the Federal Office for Energy, Professor Alec Jean Baer, and Colonel Heinz Lott, the new Chief of the Department for ACSD as the successors to departing members Christian Favre and Ulrich Imobersteg. On the last day of the year, Chairman de Loes sent his letter on *Swiss Policy* to the Department Chairman, to whom the paper was forwarded the same day by the Chief of the General Staff. The most important request was for a resolution by the Federal Council, the purpose of which was to confirm "that the status of an emerging nuclear power continues to be one of Switzerland’s security policy objectives". There was a resulting request for an additional Federal Council Resolution, that within 6 months, the AAA should "prepare an approximate calculation of the financial, institutional and human resources required".

1986

At the 22nd meeting of the AAA on March 4, 1986, only de Loes, von Arx and Anet had items on the agenda. Of central importance was the reaction of the Department Chairman to the letter from the Chairman of the AAA. The minutes say only: "For the meantime, however, the C EMD is not prepared to present the problem to the whole Federal Council for its comments (politically explosive)." "If the C EMD or Federal Council is not prepared to respond, serious thought must be given to dissolving the AAA, since in such a case there would be no mandate for the future activities of the AAA." The time until a final position is received from the Department Chairman should be bridged by the preparation of a feasibility study to be introduced by the AAA’s Technical Secretariat, i.e. by Bernard Anet. Anet and von Arx should receive copies of the letter dated December 31.

When Anet had received the letter, he composed a letter to de Loes on April 9, in which is expressed his "astonishment". "In conclusion - and I am aware that this represents the point of view of my colleagues from the GDA - I must insist that the Federal Council
not be once again confronted with this question of nuclear weapons until the study discussed in the AAA meeting in March of 1986 is available." With regard to this study, Anet began, on June 19, 1986, in Spiez, a "brainstorming" discussion of the scientific and technical aspects of the possible Swiss acquisition of nuclear weapons. The conclusions of this discussion included the determination that Switzerland, always assuming the prior cancellation of the Nuclear Non-Proliferation Treaty, did not have sufficient "detonation know-how (implosion method)" for the construction of a plutonium weapon, and would be unable to acquire sufficient fissile material for the manufacture of a uranium-235 weapon because it lacked the enrichment facilities. Therefore Switzerland was currently not an emerging nuclear power, although it could become one within two years "assuming the requisite national effort".

On October 2, Federal Councilor Delamuraz dismissed de Loes as the Chairman of the AAA effective as of the end of the year, thanked him for his services and appointed his successor in the person of the Deputy Chief of Staff, Division Commander Rolf Sigerist, to the position of Chairman of the AAA effective January 1. His was a difficult legacy, because the old controversies about leadership and programming and the availability of resources for and among research projects resurfaced in connection with the feasibility study approved by the AAA in October 1986, albeit in somewhat altered form, whereby the protagonists (like Hälg and Aebi in the past) were what could be called the ETH circle on one hand, and the GRD, most of whom were skeptical, on the other hand. The situation is difficult to reconstruct with any certainty on account of the lack of documentation in the archives, but the two main positions are apparent. Dufour from the Special Projects and Research Department of the GRD recommended in an internal memorandum dated October 8, that, if there was a demonstrated military need for nuclear weapons, serious consideration be given to "a 'turnkey' variant", i.e. buying the weapons, because that would save a great deal of time and money both on development work and the acquisition of the fissile material, as well as technical weapons research, in particular on the detonation and field tests. But if a feasibility study were to be conducted nevertheless, then it must "above all be an internal GDA project" which must be carried out without involving additional people in the consensus
process, and consulting the Armaments Chief in the event of differences of opinion. On November 19, the Director of the Armaments Office No. 3, Ulrich Lanz, formally notified Chairman de Loes that the Armaments Chief (Charles Grossenbacher) had assigned the feasibility study to Vice Director Bruno Heiz, the Chief of Special Projects and Research. The opposing point of view was presented by Andres Pritzker, the ETH’s Scientific Advisor for Auxiliary Institutes, in a letter dated October 27 to the Chairman of the AAA. Two passages will serve to illustrate both the heavy weather ahead and the general approach:

“When I recently got back in touch with Mr. Anet ... I learned that, after discussions within the GRD, the affair had been assigned to the FSFO Division. I think this action is in contradiction to the order issued by the AAA, because it assigns the study to precisely the office which, during the discussions, came out in opposition to it ... 

... It is the government’s job to provide an objective basis for a decision, and to implement the policy defined by the superior authorities. It should not be the task of individual government officials to define their own policies, e.g. by suppressing the determination of the objective basis for a decision, or blocking it with some sort of alibi.”

Then, at the 23rd meeting of the AAA on November 20, the only speakers were de Loes, Anet, Lanz and Dr. Herbert Braun from the Central Office for Defense. Walter Hålg accepted the resignation of the outgoing chairman and welcomed the new chairman.

1987

At the 24th meeting of the AAA, the first under the chairmanship of Sigerist, on April 3, 1987, one of the members present referred to safety precautions in the vicinity of KKW. Heiz then referred to the current project which was entitled Feasibility Study (Emerging
Nuclear Power Status). The project had been assigned to him by the Armaments Chief.
The minutes continue:

"The group of people currently involved in this project should not be expanded. It is also unnecessary to prepare a detailed study at this point; it should be sufficient to describe the problem. Nor should the nuclear industry be included in the study. Conclusion: The study must be limited to our internal know-how and the various meetings and discussions.

The procedure regarding the preparation of the study was discussed last January between Dr. Fritzker [sic], Dr. Dufour and Mr. Heiz. The study is to be presented on the occasion of the next meeting of the AAA on November 13, 1987."

The meeting also discussed related topics such as the lessons of Chernobyl. With what entirely different, practical problems on an altogether different level the members of the AAA were faced in 1987 can be illustrated by the example of the advanced military training period put in by Peter Vontobel. Vontobel performed his service instead of the regular course with his unit from January 12 to 24 under the supervision of Pritzker and Hälg, during which time he rewrote the computer programs of earlier projects from the old EMOS operating system of the ETH Computer center to the new NOS Operating System, and for FORTRAN Version 77. Hälg and probably also Pritzker wanted Vontobel to work on another project, which would have been most efficient if it could also be done in 1987, while he still remembered things. And that was possible, according to the statements in the report from the AAA Secretary, only in the form of voluntary service, and was not credited to the soldier's military obligation, and required a special agreement with his employer ...

The Chairman of the AAA, Division Commander Sigerist, submitted his resignation on September 29, 1987, effective January 1, 1988, and nominated Division Commander Carlo Vincenz, Deputy Chief of Staff, as his successor. It was thereby guaranteed that the Feasibility Study, which had first been discussed on March 4, 1986, to bridge the
period until a political decision was made by the Federal Council, would only be handled by a successor, or by a successor-of-a-successor of the then-Chairman de Loes, and was finally assigned to the successor of the former Department Chairman Delamuraz, Koller, via the successor (Lüthy) of the Chief of the General Staff, Zumstein, who had forwarded the letter from Delamuraz to AAA Chairman de Loes on December 31, 1985, the next-to-last day of his term. That was merely another example of the circumstances which facilitated the GRD's tendency to interrupt projects correctly identified by Pritzker. Heiz sent the long-promised report to Sigerist on November 10, 1987. The twenty-page paper bore the title *Technical Considerations Relative to the Emergence of Switzerland as a Nuclear Power*, and the author was identified as "Specialized Technical and Research Group of the Armed Services". Heiz's cover letter contains the word unnecessary twice, with regard to other studies, one of which is the very last word of the letter. The study, which does not deal with anything which will be new to the reader of this Outline, closes with the determination that the development by Switzerland of its own nuclear weapons may encounter not only technical problems but also political problems. With regard to the technical aspects, the report states: "Our know-how is currently insufficient to allow us to determine with the necessary precision the costs and manpower which would be required." Before undertaking further studies, the report says, the necessity for such activities must be carefully considered, considering the "explosive nature of the question."

In its 25th meeting on November 13, 1987, the AAA resolved "after extensive discussion" to "take approving note" of the study, "not to investigate the question of 'emerging nuclear power status' any further", and to request the Chief of the General Staff to retract the order dated September 28, 1979 (periodic updating and, in the event of a fundamental change in the political or technical situation to promptly propose the measures to be taken). Once again, therefore, the need for the very existence of the AAA had to be faced. The minutes state clearly: "The AAA in its current form must be dissolved, unless it is given a new objective." Eugen Lüthy indicated in a meeting with Rolf Sigerist, the departing AAA Chairman, on December 21, 1987, that he approved of the motion, i.e. the retraction of the mandate and the dissolution of the AAA. At that
time, since December 2, 1987, Carlo Vincenz had been appointed as Chairman
councilor Arnold Koller effective January 1, 1988, and Rolf Sigerist was dismissed with
the usual thanks for his services. But less than one week after this appointment, the
National Councilor Paul Rechsteiner raised the first of two questions which he
submitted one week apart.

On December 7, 1987, Rechsteiner wanted to know how the Federal Council was
reacting to the results of Peter Hug's research, according to which the 1946 Parliament
of Federal President Karl Kobelt, which had issued the order establishing the Atomic
Energy Study Commission, to attempt to manufacture nuclear weapons, but had
disputed it in the legislature. He also asked: "Is the Federal Council prepared with
regard commitments which go beyond the Nuclear Non-Proliferation Treaty (and which
do not relate to research and development), to guarantee that in the future, all research
and development for the military use of nuclear energy will be prohibited?" The Federal
Council replied to Rechsteiner that "it cannot be the task of the Federal Council to
express an opinion on the results of historical research." Elsewhere, the response
states: "Our country signed the Nuclear Non-Proliferation Treaty in 1969 and ratified it
in 1977. This Treaty prohibits the development and manufacture of our own nuclear
weapons. Switzerland is complying strictly with the terms of the Treaty, and the arming
of our forces with nuclear weapons has been out of the question since the conclusion of
the Nuclear Non-Proliferation Treaty, so that no further prohibitions are necessary." One
week later, on December 14, National Councilor Rechsteiner responded. He asked
about the uranium reserve purchased in the 1950s from Great Britain and Belgium, and
also wanted to know: "Does the internal government group for nuclear affairs led by the
EMD still exist? If so, why?" The Federal Council responded: "The interdepartmental
Working Committee for Nuclear Affairs established in 1976 by the EDA, the EDI and the
EVED still exists. It has not been decided whether it will be continued beyond the
expiration of the terms which end at the end of 1988."
1988

The AAA could either attempt to redefine itself, or it could request its own dissolution. At the 26th meeting on June 3, 1988, it resolved unanimously, with one abstention, to request dissolution. The Chairman Vincenz made the corresponding request to the Chief of the General Staff on September 1, 1988. Corps Commander Lüthy submitted a corresponding motion to the Department Chairman on September 8. “In particular, in light of the current changed circumstances (Non-Proliferation Treaty, disarmament negotiations etc.) the question of the acquisition of nuclear weapons by Switzerland is no longer relevant ... In contrast to the period 1969-1976, the EMD now has its own nuclear weapons experts (GRD). It therefore no longer needs the civilian representatives of the AAA (representatives of nuclear scientists).”

Lüthy’s words reflect the mood as the Cold War was drawing to a close. From November 19 to 21, US President Ronald Reagan and the Soviet party Chief Mikhail Gorbachev had met in a summit conference in Geneva, which gave even skeptics in the second half of the 1980s the idea that the situation really was changing. The Soviet empire, the greatest threat to world peace after 1945, and one which could not be trivialized, even in retrospect, had turned out to be economically and ideologically bankrupt. Afghanistan, a case closely watched in Switzerland, also made it clear how prophetically Homer Lea had seen far into the future in 1912: “We have heretofore shown that there exist in the world certain places that have for mankind a strange and fatal significance, in that they give direction to his conquests. In these places victories are decisive, and defeats mark the consummation of national ruin. These places are the doorways through which nations come and go; sometimes arches of triumph, sometimes those narrow exits through which nations, like men, pass to return no more. Herat is one of these places, Kabul another.” (Strategischer Überfall, das Beispiel Afghanistan, II. Teilband, Liestal: Bibliotheca Afghanica, 1993, Frontispiece).

In 1988, the Soviet Union was obviously on its way into the history books, and along with it the Cold War, and with the Cold War the risk of a collapse of the Nuclear Non-
Proliferation Treaty. And as much as the Treaty had withstood the enormous stresses of the years 1968 to 1988, its survival in a post-Soviet world was guaranteed, precisely by the fact that a weakened Russia will maintain its share in the oligopoly of military nuclear power as a guarantee against sinking to the status of a second-rate country. But if the Nuclear Non-Proliferation Treaty was no longer threatened with collapse, there was also no reason to continue the work of the AAA, which since 1969, and finally then since 1977, had been kept in existence only as a precautionary measure against the dissolution of the Treaty. Therefore on November 1, 1988, by signing the Dissolution order, Federal Councilor Arnold Koller was able to close the book on the AAA. In the minutes of the 27th and final meeting of the AAA on October 25, 1988, there is a sentence, expressly identified as "the opinion of the AAA": "Undoubtedly, there has been a change in the foreign policy of the USSR." The Cold War and thus the topic of nuclear weapons for Switzerland had thus become history.

3. Summary

In 1945, hardly any small country was better prepared scientifically for the Nuclear Age than Switzerland. The links which Paul Scherrer had forged during the war with the Americans, who were the leaders in the field, took care of that. A corresponding sense of self-importance may have been another factor which contributed to the fact that in 1945, the Federal Council took this decision in secrecy, and then in 1958 quite publicly announced its decision to equip the Army with the most effective weapons, i.e. with nuclear weapons. The country's recent experience of successful self-assertion through a combined willingness to compromise and a clearly demonstrated defensive capability played a role, as did the fear aroused by the Soviet invasion of Hungary in 1956, and the all-too-clearly indicated claims of hegemony by the Communist superpower.

But the pace of development remained slow, for several reasons: uncertainty whether the feared prospect of German nuclear weapons would become a reality, a long tradition of democratic legitimization of political decisions and a permanent struggle over limited resources. But on April 1, 1962, the people and the Swiss nation rejected
an initiative concerning a ban on nuclear weapons, and gave a stimulating signal. A phase of intensive activity commenced, the most important result of which was the 1963 report on Switzerland's capability of producing its own nuclear weapons. This project, which could not be kept completely secret on account of its large scale, probably provided an impetus to American efforts to achieve a Nuclear Non-Proliferation Treaty, efforts which naturally related less to Switzerland than to the hypothetical model it might represent. The deciding push for Swiss nuclear activity, however, came from the Mirage Affair. On April 24, 1964, the Federal Council asked Parliament for an additional appropriation of 576 million SFR to purchase Mirage III-S fighter aircraft. This request led to a parliamentary investigation, a reduction in the number of aircraft to be purchased, the departure of the Chief of the General Staff and the Commander of the Airborne Forces and the Anti-Aircraft Defense Forces, and shook the confidence of Parliament in the Federal Council and the Federal Councillor responsible for the Military Department. All things considered, it was not a good time to get the 20 million SFR over three years that Paul Chaudet requested from the Federal Council, especially when the estimated total costs down the road came to 720 million SFR, and spending such amounts for military projects had led to unpleasant experiences, which were not over yet. On June 5, 1964, therefore, the Federal Council approved only the hiring of a single person in the General Staff Department.

Thus there was a clear contradiction between the objective stated by the Federal Council in 1958 which was never repealed, i.e. to equip the Army with nuclear weapons, and what was still feasible even in the light of tight restrictions. But the Federal Council was in no hurry to resolve the situation, even when requested to do so by Chaudet in 1965. In a statement dated October 26, 1965, the Council finally agreed to give clear priority to the civilian aspects of the nuclear question. On January 28, 1966, the Federal Council formally approved the measures and projects requested by the Military Department and the Military Representative on the Federal Council (but formulated by the Representative for Nuclear Affairs), but assigned the initiative to the EVED. The National Military Defense Plan issued on June 6, 1966, specified that the Swiss would only reconsider the question of acquiring nuclear weapons in the event of
a further proliferation of nuclear weapons, and that the current research was oriented toward such a situation.

Nello Celio, who took over the Military Department in 1967, was skeptical about the acquisition of nuclear weapons. He opposed the plans put forth by the Planning Subgroup of the Group for General Staff Services to assemble a group of between 15 and 52 full-time employees within five years. But because Celio was simultaneously of the opinion that it would be a mistake to sign the proposed Nuclear Non-Proliferation Treaty without receiving some quid pro quo, he did not, in a meeting on October 5, 1967, stand in the way of the formation of a secret Coordinating Committee based on a Federal Council resolution dated January 28, 1966. However, the subject was to be handled by only two or three full-time employees. The purpose of the Committee was to protect the country's freedom of action, not to build a bomb.

Planning activities continued in the Group for General Staff Services. In 1968, the Operations Section calculated annual requirements of 100 to 175 million SFR for the development and acquisition of weapons based on the cheaper uranium, 200 nuclear warheads for the existing fighter aircraft, artillery and for a guided missile system to be created, but over fifteen years. The money, along with the length of time involved and other things, were enough to guarantee that Celio would reject the formation of the secret Coordinating Committee in May 1968. The Chief of the General Staff, however, brought the issue up again and gave the green light; Celio, on the other hand, moved to the Finance Department on July 1, 1968, the very day the Nuclear Non-Proliferation Treaty was signed in London, Moscow and Washington.

From the Finance Department, there were clear signals of opposition to any Swiss acquisition of nuclear weapons. In 1969, for example, the Federal Budget Office declined to include 1,500,000 SFR in the 1970 budget for the development of uranium centrifuges. On a political level, on November 27, 1969, the Federal Council closed the window which had been left only slightly ajar after the Mirage Affair, by its resolution to sign the Nuclear Non-Proliferation Treaty. Although under international law, the Swiss
adherence to the treaty entered into force only with its ratification on March 9, 1977, it was at least conceivable that from 1969 on, Switzerland could acquire the necessary know-how to qualify as an emerging nuclear power, which simultaneously meant that it was free to take precautionary measures against the eventuality of a collapse of the Treaty. Ensuring this on the practical level was the task of the Working Committee for Nuclear Affairs and the Scientific Advisory Board established on April 30, 1969, by the EMD in cooperation with the EPD, EDI and EVED. The AAA met a total of 27 times during its existence (April 30, 1969, to December 31, 1988), i.e. an average of less than twice a year, which by itself shows that it could not have taken more than preliminary measures to keep this option available, i.e. so that the Federal Council could resolve to acquire nuclear weapons should the international situation change, e.g. if Germany should acquire nuclear weapons and the Non-Proliferation Treaty should collapse.

The amounts of money appropriated were in line with to the level of activity. For the period from 1970 to 1972, the grand total, including the wages of two physicists hired for a time by the Scientific Advisory Board, came to SFR 67,949.30. And although that took some of the wind out of the original plan - the training of specialists who would be particularly adaptable for weapons technology as a result of work on the heavy water reactor - the Chief of the General Staff Johann Jakob Vischer declared in 1975 that the shutdown of the DIORIT Reactor in Würenlingen was militarily acceptable. In the rest of the work, Vischer, supported by the judgment of his military specialists, wanted to place the emphasis on enrichment technology. But he did not find the will to become an emerging nuclear power “clearly discernible, at least on the government level”.

The year 1976 dawned with the ratification decision by the upper chamber of Parliament, which was the first chamber to deal with the matter, and had originally rejected it, issuing the order for a supplemental report, which resulted in some disillusionment among the members of the AAA and the Scientific Advisory Board. It was decided that the Scientific Advisory Board was no longer necessary, but that the AAA could continue to operate in 1977, on the basis of an Executive Order which was passed easily.
The theoretical basis for the work of the AAA in the period from 1977 to 1988 lay in the document prepared by Josef Feldmann, Deputy Chief of Staff, entitled *Swiss Policy in the Question of Nuclear Armament*. The *Swiss Policy* came to the conclusion that "it is in the interest of Switzerland to take all measures allowed in the context of the NPT which are appropriate to protecting and guaranteeing its status as an emerging nuclear power over the long term." However, the necessary studies received very little funding in the fierce competition for scarce resources from projects which, following the dissolution of the Scientific Advisory Board, could be more easily paid for from AAA funds, although they had nothing to do with the original objective, although they could legitimize the AAA's existence, such as the measures for protection against Nuclear Electromagnetic Pulse Radiation (NEMP). The Armaments Chief and his Group for Armaments Services, which owed its existence in this form and the positions of its officers to the Mirage Affair, and in fact offered the best capabilities for evaluating the problems of the potential acquisition of nuclear weapons, from this point on steered the discussions of the AAA eagerly and finally successfully away from questions of the ignition mechanism and similar concrete weapons problems in other directions. That of course in no way prevented the AAA from completing its own projects, such as the compilation of a technical study on the ascent of Switzerland to the status of an emerging nuclear power, which on September 28, 1979, the AAA was assigned to update periodically by the Chief of the General Staff, at that time Hans Senn. Senn's instructions also say: "If political or technical developments should require a fundamental re-evaluation of the situation, AAA shall propose the measures to be taken."

But on August 12, 1981, political developments seemed to allow the Federal Council to dispel the secrecy surrounding the Swiss reserve of uranium, to place it under international control in the context of the Nuclear Non-Proliferation Treaty, and to assign responsibility for it to the EVED, which was required to consult the AAA, but nothing more. At least that is what the Council thought it was doing; in reality, the *Schweizer Illustrierte Zeitung* had publicized the existence and location of the reserve
as long ago as 1958, although in the meantime it had apparently been forgotten by practically everyone. A great deal of the AAA's attention was devoted to the possibility of purchasing natural uranium and keeping it for any eventuality, but no one seems to have been aware that five-and-a-half tons of the stuff were already in storage in Wimmis.

The resolution by the Federal Council in 1981 shows clearly, however, that on its level, there was hardly any doubt - in spite of the remaining uncertainty expressed by the AAA - that the Nuclear Non-Proliferation Treaty would last, and that the question of the acquisition of nuclear weapons by Switzerland was a topic for the history books.

In fact, during the first half of the 1980s, the question of the AAA's existence became increasingly relevant. It could not hide the fact that it was continuing its training activities and other studies, and that it was working on new projects such as research on the possibilities of fabricating a "do-it-yourself" bomb, i.e. a nuclear weapon to be used in case of emergencies. But the fact that even mere studies could be explosive subjects is evidenced by the request for information submitted in 1985 by the German Military Attaché. He seemed to know everything about the work that had been done; he had titles and the names of the authors, and he asked to see only a selected few of the studies that had been done. The files do not indicate with any certainty whether he actually got them, but not only was the Technical Secretary of the AAA not surprised by the request, but was to some extent prepared to accept it, or at least to make a deal for something of equivalent value in exchange. Just like in the spy stories in all ages and places, there seems to be a sort of bazaar in the field of classified science; at least that is what one is forced to conclude. Two other ideas also emerge: Other countries were also concerned about the possible collapse of the Nuclear Non-Proliferation Treaty, and must have made at least theoretical preparations. From that we can conclude that as a result of the long duration of the work and the many and non-always-unavoidable changes in personnel and institutions, even more about the Swiss nuclear weapons program has been forgotten than the existence of the uranium reserve as published in the Schweizer Illustrierte, in this case the clear prohibition by the Federal Council of
foreign contacts in the field without express prior permission from the Council. Finally, one is impressed by the demonstrated level of discipline which was maintained, because it does not take much imagination to picture the public relations and political consequences if the situation had become known at the time, although the exchange of studies certainly did not represent a violation of the Nuclear Non-Proliferation Treaty.

The “Spirit of Geneva” established in 1985 by Ronald Reagan and Mikhail Gorbachev gave further reason to question the very existence of the AAA. On the final day of that momentous year, the Chairman of the AAA, Division Commander Gerard de Loes, sent a letter via the Chief of the General Staff to Federal Councilor Jean-Pascal Delamuraz, which requested the Federal Council to officially establish that Switzerland still wished to be considered an emerging nuclear power. De Loes, visibly disappointed by the lack of enthusiasm displayed by the Department Chairman in this matter, announced that consideration was being given to the dissolution of the AAA in 1986, since he did not have the authority to dissolve it himself. In reality, perhaps what was missing was the confidence and the belief that the AAA still had any raison d'ètre, which led to the desire for support from the Federal Council. In a GRD study which was still being written, the “explosive nature of the question” was emphasized, and the necessity of further studies was questioned.

In these questions, the members of the AAA were not alone. In two interrogatories submitted a week apart in December 1987, National Councilor Paul Rechsteiner, among others, wanted to know whether the government’s Group for Nuclear Affairs was still in existence, and if so, why. The Federal Council replied that the AAA was still in existence, although it had not determined whether its mandate would be renewed for another term after 1988. At this point the Chief of the General Staff, Corps Commander Eugen Lüthy, had already indicated that he would approve its release from the only project still being funded, i.e. the study of Switzerland’s status as an emerging nuclear power.
All that remained was for the AAA, unanimously with one abstention, to request its own dissolution. Accordingly, on November 1, 1988, Federal Councilor Arnold Koller closed the book on the subject of Swiss nuclear armament.
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<td>A</td>
<td>Atom</td>
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<td></td>
<td>Atomic/Nuclear</td>
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<td>AAA</td>
<td>Arbeitsausschuss für Atomfragen</td>
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<td></td>
<td>Working Committee for Nuclear Affairs</td>
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<td>BKW</td>
<td>Bernische Kraftwerke</td>
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<td></td>
<td>Bern Electric Company</td>
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<td>BOA</td>
<td>Beratungsorgan für Atomfragen</td>
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<td>Nuclear Affairs Advisory Council</td>
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<td>BR</td>
<td>Bundesrat</td>
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<td></td>
<td>Federal Council</td>
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<td>BRB</td>
<td>Bundesratsbeschluss</td>
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<td>Federal Council Resolution</td>
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<td>C EMD</td>
<td>Chef des Eidgenössischen Militärdepartements</td>
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<td></td>
<td>Chief of the Federal Military Department</td>
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<td>DMV</td>
<td>Direktion der Militärverwaltung</td>
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<td>Military Administration management</td>
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<td>EDA</td>
<td>Eidgenössisches Department für auswärtige Angelegenheiten</td>
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<td></td>
<td>Federal Department for Foreign Affairs</td>
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<td>EDI</td>
<td>Eidgenössisches Department des Innern</td>
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<td>Federal Department of the Interior</td>
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<td>EIR</td>
<td>Eidgenössisches Institut für Reaktorforschung</td>
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<td>Federal Institute for Reactor Research</td>
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<td>EK</td>
<td>Ergänzungskurs</td>
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<td>Advanced Course</td>
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<td>EMB</td>
<td>Eidgenössische Militärbibliothek</td>
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<td>Federal Military Library</td>
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<td>EMD</td>
<td>Eidgenössisches Militärdepartement</td>
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<td>Federal Military department</td>
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<tr>
<td>EMG</td>
<td>Etat-major général General Staff</td>
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<td>EPD</td>
<td>Eidgenössisches Politisches Department Federal Political Department</td>
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<tr>
<td>ETH</td>
<td>Eidgenössische Technische Hochschule Federal Technical University</td>
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<tr>
<td>EVED</td>
<td>Eidgenössisches Verkehrs- und Energiewirtschaftsdepartement Federal Department of Transportation and Energy</td>
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<tr>
<td>FA</td>
<td>Forschungsausschuss Research Committee</td>
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<td>FSFO</td>
<td>Fachstellen und Forschung Special Projects and Research</td>
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<td>GAA</td>
<td>Geheimer Arbeitsausschuss für Fragen der Atombewaffnung Secret Working Committee for Nuclear Armaments Affairs</td>
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<td>GDA</td>
<td>Groupement de l'armement Armaments Group</td>
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<td>GRD</td>
<td>Gruppe für Rüstungsdienste Armaments Services Group</td>
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<tr>
<td>KFLF</td>
<td>Kommando der Flieger- und Fliegerabwehrtruppen Airborne and Anti-Aircraft Command</td>
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<td>KTA</td>
<td>Kriegstechnische Abteilung Military Technology Department</td>
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<td>MAP</td>
<td>Möglichkeiten einer eigenen Atomwaffenproduktion Swiss Nuclear Weapons Production Capabilities</td>
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<tr>
<td>NPT</td>
<td>Non Proliferation Treaty</td>
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<tr>
<td>RFA</td>
<td>République fédérale d'Allemagne West Germany</td>
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<tr>
<td>SKA</td>
<td>Schweizerische Studienkommission für Atomenergie Swiss Study Commission for Nuclear Energy</td>
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<tr>
<td>SOG</td>
<td>Schweizerische Offiziersgesellschaft Swiss Officer Corps</td>
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<td>Code</td>
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| SSF  | Studienkommission für strategische Fragen  
Study Commission for Strategic Affairs |
| STM  | Service technique militaire  
Military Technology Department |
| TNW  | Thermonukleare Waffen  
Thermonuclear weapons |
| VED  | Verkehrs- und Energiewirtschaftsdepartement  
Department of Transportation and Energy |
| WBe  | Wissenschaftlicher Beirat  
Scientific Advisory Board |
| WK   | Wiederholungskurs  
Refresher course |
| ZGV  | Zentralstelle für Gesamtverteidigung  
Central Office for Defense |