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FRANCO-AMERICAN RELATIONS AND THE EMERGENCE
OF FRENCH NUCLEAR ARMAMENT, 1939-1962

by

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Approved by:

Patrick Rollins (Director)

ABSTRACT

FRANCO-AMERICAN RELATIONS AND THE EMERGENCE OF FRENCH NUCLEAR ARMAMENT, 1939-1962

Régis Hugues Philippon
Old Dominion University, 1990
Director: Dr. Patrick Rollins

France and the United States stand out as two major pioneer countries in the development of nuclear science. It was logical for France to join the nuclear club. But due to the extended responsibilities such an option implies, a lengthy difference of opinion developed between France and the United States. The former asserted its rights and its worldwide influence heedless of the decolonization process. The latter, heavily committed to the Western defense and its global interests, opposed the development of a strike force that it could not control. This disagreement led France to make specific reservations toward decision-making of the Atlantic Alliance's military body. This study, based on memoirs and published documents, reviews the military aspects of the nuclear relationship between both nations from the late 1930s to 1962. It concludes that the French military nuclear program revealed the two nations' differing perception of their sovereignty and international role. France gained through this program a technological edge which clearly ensues from de Gaulle's steadfast policy.

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INTRODUCTION

Since the Treaty of Versailles, signed in 1783 by France and the United States, cooperation as well as disagreement have marked the Franco-American relationship. The nuclear issue is no exception: the development of nuclear science has been a high-stake issue for both nations due to the national priorities and international conditions prevailing at the time. In spite of the difficult circumstances caused by World War II, the colonial wars, and the constitutional weaknesses of the Fourth Republic, France steadfastly maintained advanced scientific research in nuclear matters. That persistence allowed her to produce nuclear programs, both civilian and military, whenever required for national purposes.

In the late fifties the emergence of a French nuclear military program encompassing nuclear weapons and nuclear-propelled submarines could have been a matter of real interest for the Atlantic Alliance as a means to bolster the global defense posture of the Allies, coping at that time with the turmoils of the Cold War. Such was not the case. Instead, French defense policy was progressively viewed by Washington as a course of action not oriented in the best interest of the West. As a consequence, the United States

was led to mistrust the French nuclear option and sever most of the nuclear cooperation which its first and oldest ally could have expected. Thus the nuclear question appeared at the center of a Franco-American difference of opinion.

The aim of this study is to review the various facets of the US reaction to the development of the French program. How did the US administration address the French military nuclear effort? What was the extent of the cooperation envisaged by the Eisenhower-Kennedy Administrations and limited by Congress to the agreements of 1959 and 1961? What are the reasons for the French determination to build a costly nuclear deterrent force, while the United States provided sturdy nuclear protection to Europe? What shaped the US attitude towards the quest of the French government to share the decision-making process on nuclear issues in NATO?

France was well advanced in nuclear science before World War II and, during the war, provided the Allies with a team of atomic researchers. The study starts at that time in order to underline the deep roots of the French atomic program. It ends in 1962 when the government had decided and financed the main steps toward the creation of the nuclear deterrent force, and when the Nassau Agreement confirmed the special Anglo-American nuclear relationship. References to French and European civilian programs appear only when they affected nuclear military developments.

CHAPTER ONE

TOWARD ATOMIC MASTERY

The Origins. Atomic research in France took shape at the turn of the twentieth century with the discovery of radium by Marie Curie. In 1934 her daughter and son-in-law Irène and Frédéric Joliot-Curie discovered artificial radioactivity, for which they were awarded a Nobel Prize of chemistry the following year. In March 1939, Frédéric Joliot-Curie, Hans Halban, and Lew Kowarski proved in the Laboratory of the Collège de France the existence of secondary neutrons generated by one nucleus of uranium when struck by one neutron. This fundamental step demonstrated that propagation of nuclear fission, or a chain reaction, was possible inside a highly concentrated mass of uranium. Shortly thereafter, in May, physicist Francis Perrin introduced the notion of critical mass, i.e. the minimum quantity of nuclear material necessary to keep a chain reaction going.

There is no doubt that the theoretical ability of specific materials to release great amounts of energy was clearly understood by French scientists as having potential application in the development of explosive charges. Thus in

his Nobel address in 1935, Joliot-Curie declared:

If we look at past scientific progress, pursued with ever increasing speed, we may reasonably expect future research workers, breaking down or building up atoms at will, to be able to achieve explosive nuclear chain reactions. If such transmutation can be propagated in matter, we can envisage the liberation of enormous quantities of usable energy.¹

Such a possibility was clearly stated by a patent, registered in Paris by the Caisse Nationale de la Recherche Scientifique on 4 May 1939, which described the combination of necessary characteristics to produce an explosive device. This patent--the third French patent in atomic research--went as far as to envision an external source of neutrons as the means to energize the reaction and to define the shape of the explosive material (uranium, thorium, or other). The way to prevent a premature explosion as well as the conditions to create the most effective critical mass were also addressed.²

At the same time similar studies were pursued in Britain and in Germany. The growing concern that "extremely powerful bombs" might be made by Nazi Germany with the uranium-ore extracted from the mines of the recently annexed Czechoslovakia prompted Albert Einstein to inform the president of the United States of the ultimate expectations of atomic research. In his famous letter to Franklin Roosevelt dated 2 August 1939, Einstein mentioned France and America as the two countries where research was the most advanced:

In the course of the last four months it has been made probable--through the work of Joliot in France as well as Fermi and Szilard in America--that it may become possible

to set up a nuclear chain reaction in a large mass of uranium by which vast amounts of power . . . would be generated. Now it appears almost certain that this could be achieved in the immediate future.³ (See Appendix A.)

The War. Despite the conditions in which France had to survive the war, French scientists continued to make progress in their research. One of the last decisions taken by the French government in atomic research before the country was invaded was the purchase from Norway of what actually was the worldwide stock (185 kilograms) of heavy water. During the Phony War (the period between the fall of Poland in September 1939 and the attack on the Low Countries and France in May 1940), the precious stock was moved to France in order that experiments with this substance used as a moderator of the chain reaction could be pursued. When the German advance began to threaten Paris in May 1940, the Laboratory of the Collège de France was evacuated to Clermont-Ferrand. At the same time, Halban and Kowarski were ordered by Raoul Dautry, the Minister of Armament, to go to Bordeaux and sail to Britain with their families and the stock of heavy water. They were to report in London to the French mission⁴ to continue the research begun at the Collège de France. Joliot-Curie decided to stay in France for personal reasons--his wife was seriously ill--and because of his poor aptitude with the English language which he considered might be a serious impediment to the continued advancement of his research.⁵ Soon after their arrival, Halban and Kowarski were invited to work for the "MAUD Committee," a code-name for the British team set up in April

1940, to take charge of atomic developments. Both scientists were integrated into the Cavendish Laboratory run by John Cockroft.

The first contact between American and British nuclear researchers took place in the fall of 1940. The scientists determined that the line of inquiry that Fermi's group was pursuing was similar to the work of Halban and Kowarski at the Cavendish Laboratory at Cambridge.⁶ The Frenchmen, however, were working on the slow chain reaction, a process regarded as unpromising for military applications. They had studied various moderating substances, and their experiments had led them to imagine a "boiler" with cooling and control systems that would release its energy in a continuous manner.

By June 1941 the MAUD Committee had drafted two major reports, one on the "Use of Uranium for a Bomb" and the other on the "Use of Uranium as a Source of Power." The latter recognized the breakthrough:

The problem is to find an arrangement which will give a release of atomic energy with ordinary uranium, either as a metal or preferably in a compound, since the extraction of the metal is still not an easy operation. Experiments to determine whether such an arrangement is possible have been carried out by various workers in this and other countries, and most recently by Dr. Halban and Dr. Kowarski, who have proved that it can be done by mixing uranium oxide in suitable proportions with a substance known as heavy water.⁷

The MAUD Committee recommended that, since the United States was planning to produce heavy water on a large scale and since the Frenchmen had done all they could with the supplies they had brought to Britain, Halban and Kowarski

should be allowed to continue their work in the United States. It also urged that arrangements be made to keep the British informed of their results.⁸

Moving to North America. With the US entry into the war, Anglo-American collaboration became closer, and, as a consequence, French scientists continued their war effort, but amidst larger organizations. Their autonomy, already precarious, faded away. But the advancement of certain researches made it desirable, from the Allied standpoint, to transfer the French team to North America in 1942.

Negotiations for the transfer of Halban's team to Chicago, where major nuclear installations were set up by 1942, raised problems, since the Americans would certainly not give him access to confidential information. Halban, on his part, was impatient to move to Canada rather than stay in Britain; he explained that

if the British were to build their own boiler, they would have to rely on American manufacturers, and close proximity between scientists, engineers and manufacturers would be essential.⁹

In October, as a result of the integration of American and British programs, Halban and his team settled in Montreal; Halban became the director of this new enterprise of one hundred persons, among them French scientists Lew Kowarski, Pierre Auger, Jules Guéron, and Bertrand Goldschmidt.¹⁰ The latter, who had been Marie Curie's personal assistant at the Radium Institute in Paris, had been dismissed from his job at the Faculty of Sciences under the anti-semitic laws then introduced by the Vichy regime; he had

escaped to the United States in 1941. When he arrived in New York, Fermi and Szilard strove to include him in their team at Columbia University. That proved impossible because the US government did not recognize the Free French Forces¹¹ of which Goldschmidt was a member and no longer allowed foreigners to be recruited. But the British embassy obtained permission, on behalf of British scientific research, for him to be sent to the University of Chicago to study the chemistry of the newly discovered element, plutonium. There, as a member of Glenn Seaborg's team, he spent four months with a hundred or so of the most respected scientists. He was informed of and visited Fermi's atomic pile being constructed under the highest secrecy.

In Montreal, French scientists pursued their work fully integrated with the British and paid by them until the end of the war. According to Margaret Gowing, historian of the United Kingdom Atomic Energy Authority, the scientific contribution of the French members of the Montreal laboratory in the fields of atomic piles, nuclear chemistry, and separation of plutonium was great and out of proportion to their tiny number.¹² She also suggests that if Halban and Kowarski had not been leaders in the slow neutron reaction, it is unlikely that Britain and Canada would have acquired information on the subject from the United States.

Gen. Charles de Gaulle was never informed by the Allies of their atomic progress. Taking advantage of a short visit de Gaulle made to Ottawa on 11 July 1944, the French

scientists who "knew the formidable importance of the weapon that was being developed,"¹³ informed him, without British and Canadian knowledge. This is related in his war memoirs, in a paragraph describing Canada's outstanding effort for the war and the Allied cause:

Even her laboratories and mills were participating in the country's research and operations, which were soon to produce the first atom bombs. I was secretly informed of the imminent results by Pierre Auger, Jules Guéron and Bertrand Goldschmidt, French scientists who with my authorization had joined the Allied teams consecrated to this apocalyptic work.¹⁴

The Patents Problem. With the end of the war and the beginning of normalization of relations with the newly installed French government, the question of patent rights became a real concern. At the Cambridge laboratory, Halban had registered several advanced patents related to his research on the slow chain reaction. The British government had become increasingly interested in these patents for commercial purposes. Complex negotiations with Halban--who was verbally tasked by Joliot-Curie to look after the interests of France--led in 1942 to an arrangement

giving the British all rights in the French patents throughout the British Empire and the rest of the non-French world, and giving the first French government after the liberation similar rights to exploit, in France and the French Union, all the subsequent new patents taken out in Britain.¹⁵

But the Anglo-French wartime patents agreement was ignored by the US authorities who either saw in it some unnecessary entanglement or wanted to show once more their distrust of the Free French. Nonetheless, the British and US governments, in association with the government of Canada,

signed in August 1943, in Quebec, an agreement on the exchange of atomic information able to serve the war effort. This first international atomic treaty established a Combined Policy Committee to deal with the transfer of knowledge. It also stipulated that any broader cooperation with a third nation would be subject to constraints: "We will not either of us communicate any information about Tube Alloys [atomic research and development] to third parties except by mutual consent."¹⁶ That clause ignored the fact that the French team at Cambridge was clearly dependent upon the Free French government. Therefore, whether the result of forgetfulness, or perfidy as asserted after the war by Gen. Leslie Groves,¹⁷ the Quebec agreement did not mention the patents agreement between the British government and the inventors responsible in this matter for the rights of the French government.¹⁸ Thus the situation could only deteriorate.

In November 1944 Halban requested permission to go to London and then to partially liberated France to discuss with Joliot-Curie the patents agreement. Since Joliot-Curie had recently become a member of the Communist Party, the consequences of his possible knowledge of secret information could be very critical, according to the Allies, in regard to possible leakage to the Soviet Union. Although Halban's visit to France was officially forbidden by General Groves, it took place with the approval of Sir John Anderson, Chancellor of the Exchequer and member of the Combined Policy

Committee. But Joliot-Curie refused to discuss the giving up of any rights without a wider collaboration agreement.

The legacy of the patents remained and gave rise to a new concern that the frustration of the French might trigger a Franco-Soviet atomic agreement. Henry Stimson, US Secretary of War, expressed that concern on 22 January 1945, during a meeting of the Combined Policy Committee:

Sir John Anderson has informed us that there is great danger that the French, through Mr. Joliot, or possibly through de Gaulle instigated by Joliot, may press for immediate participation in the Tube Alloy project. . . . Sir John Anderson thinks some assurance to Joliot will have to be given in order to . . . protect against political explosion by the French with or without collaboration with the Russians, with possible danger to security.¹⁹

The Committee agreed unanimously that "any more extensive discussions of negotiations with the French as to their interest in the project would be undesirable from a security standpoint." Clearly the time had not come for cooperation with France in the atomic field. The recognition of the patent rights was simply dismissed much to the embarrassment of British scientists.

The Eviction from Canada. The Commissariat à l'Energie Atomique (CEA) came into being by an ordinance adopted on 18 October 1945 by the Provisional Government led by de Gaulle. The CEA immediately gathered all French atomic scientists in Paris. Joliot-Curie was appointed High Commissioner, and with his agreement, at Cockcroft and the Canadians' request, Goldschmidt remained with the Canadian team as an expert on the plutonium extraction process.²⁰ But

General Groves insisted that Goldschmidt should go. The US domination in the atomic field had become such that Goldschmidt had to leave by the end of January 1946, just after having signed a one-year contract with the British. Goldschmidt relates that at his own request he was received in Washington by Groves who explained that "because the United States no longer had atomic relations with France, the employment of a French specialist detached by his government could no longer be justified."²¹ They resolved between them the secrecy problem to allow the CEA to benefit from the knowledge and experience of its former Canadian team.

So ended French participation in the Allied atomic enterprise.

US Atomic Isolationism. In July 1946 the US Congress adopted the Atomic Energy Act (the so-called McMahon Act) which, as a matter of international relations, increased US atomic isolationism and established Washington's control over the dissemination of classified information. The new law stated that

until Congress declares by joint resolution that effective and enforceable international safeguards against the use of atomic energy for destructive purposes have been established, there shall be no exchange of information with other nations with respect to the use of atomic energy for industrial purposes.²²

When the Congress took that position, the United States possessed a monopoly on nuclear weapons production, a monopoly that lasted until the Soviet Union exploded its first nuclear device in September 1949. During this privileged era, the United States, thinking that it could

reestablish a world free from atomic weapons, adopted a policy of secrecy highly favored by the military establishment. Simultaneously, the Truman Administration adopted, vis-à-vis the United Nations Atomic Energy Commission, a policy of nonproliferation and proposed, in the Acheson-Lillienthal Report, to subject all atomic affairs to the control of an international authority. The United States established strict export regulations involving a wide array of materials ranging from cyclotrons to medical and X-rays equipments.²³

Confronted by US and UN controls, deprived of access to sources of uranium, and hampered by a lack of trained manpower, the CEA managed nevertheless to build its first experimental pile, called ZOE (Zero power, Oxide fuel moderated by Eau lourde [heavy water]). ZOE went into operation in December 1948 in an old fortress near Paris. The French atomic program originally focused on scientific and technical research and their applications to science, industry, and national defense; it left open, however, the option for a military program, which in fact was not taken up for several years.

French Atomic Development. In 1950 Prime Minister Georges Bidault dismissed Joliot-Curie from his post as High Commissioner. His cumbersome political involvement--he was pressed by the Communist party to publicly endorse resolutions opposing the Atlantic Alliance--was deemed incompatible with the policies of a government grappling with

the turmoil of the Cold War. Joliot-Curie, a prestigious figure who faithfully carried out his responsibilities, had rebuilt the national nuclear research program, and his dismissal created deep concern within the CEA and among government officials and politicians.

By that time a number of successful CEA experiments were pointing toward promising industrial applications and the emergence of a French nuclear industry. This evolution was accurately analyzed by Robert P. Terrill, Deputy Counselor of the US Embassy in France, who, in a despatch of 28 March 1951,²⁴ informed the Department of State of all the disadvantages that could stem from the probable expansion of the French program: (1) France had a large appetite for atomic energy materials, and the French had made successful deals with Portugal and India. This was disadvantageous to the United States which was denied access to the potential resources of the French Union. At the same time the United States was paying for the atomic weapons supremacy that protected Europe and, therefore, France.²⁵ (2) Breakthroughs in the design of high-power piles and progress in isotope separation would certainly be available to the Soviets since the CEA included many Communists and Communist sympathizers.²⁶ (3) French diplomacy might become less supportive of the United States, and a growing atomic industry establishment might lead to independent policies in other fields. Furthermore, the Germans might become more assertive in their demands for "equality."

The counselor then proposed the following alternatives: (1) maintenance of the status quo, while exercising a "vigilant neutrality" toward the French; (2) a military alliance, bringing France into closer military relations with the United States through a mutual defense program and persuading France to reduce her atomic energy program; (3) a limited cooperation in the fields of research and trade of atomic energy materials; or (4) unspecified negative operations to prevent or delay specific projects or relationships.

It is now evident that the first approach--maintenance of the status quo--was followed by the United States and that the French leaned more and more toward European cooperation. But there was one exception: the need for uranium supplies to meet its huge defense requirements pushed the US to make a secret deal with France in 1952 for a joint exploration and development program in French Morocco.²⁷ According to Goldschmidt the prospects appeared very poor compared to the considerable wealth of uranium discoveries in Canada and the United States.²⁸

International Initiatives. The attempt to establish international control over atomic energy was presented by President Eisenhower to the General Assembly of the United Nations (UN) on 8 December 1953. This fundamental address entitled "Atomic Power for Peace" was the basis for the creation of the International Atomic Energy Agency (IAEA), located in Vienna. It was preceded by the Bermuda talks

among Eisenhower, Churchill, and French Prime Minister Joseph Laniel. Therefore the French were entitled to understand that a confidential relationship was established on this matter. But later, when it came to define the procedure for approaching the UN and designate the working group committed to setting up the IAEA, France was excluded by the United States, Great Britain, and Canada who found it "advantageous to confine initial discussions of the Agency and its problems to this small group."²⁹ This was clearly a seizure of the Agency by Anglo-Saxon powers and could only generate French suspicion.

More rewarding for the French was the negotiation, from 1955 onward, of the Treaties of Rome and the buildup of the European Atomic Energy Community (EURATOM). Jean Monnet who was a strong advocate of the European integration, convinced the US ambassador to France that it was

of great importance that US accept principle that control by EURATOM organization will be adequate for US purposes thus avoiding necessity for US inspectors in Europe. . . . [Monnet] emphasized importance of this aspect of matter both as means of gaining good will for US and as important element in promoting rapid ratification of treaty.³⁰

French scientists regarded the EURATOM regulations as imposing "nuclear abstinence" on France; de Gaulle equated them to surrender:

Our partners, who bitterly regretted our having changed Republics, had been counting on us once again to sacrifice our own cause to "European integration", as had happened . . . with EURATOM, for which our country put up practically the entire stake without a quid pro quo, and, moreover submitted her atomic assets to foreign supervision.³¹

The agency had an active role in providing European nations with common safety standards, shared research facilities, and fissionable material controls for civilian programs.

EURATOM, as a supranational authority, interfered heavily with national programs but was finally endorsed by France in 1957 after Prime Minister Guy Mollet reaffirmed the country's freedom in the military field.

The United States unequivocally supported EURATOM, mainly as an instrument of nonproliferation. In a memorandum dated 9 January 1956 to the president, John F. Dulles, Secretary of State, recommended that the United States encourage European development on the grounds that (1) EURATOM would set up an effective control and authority in the field of peaceful use of atomic energy, (2) control over military use of atomic energy by the six signatory countries would be simplified and would set a precedent for other regional arrangements elsewhere, (3) the treaty would tie Germany more firmly to the Western European Community, and (4) the Community's efforts in this field might fail without concrete US support.³² Indicative of its support, the United States entered into an agreement with this European entity in 1958, the year after the treaty was ratified.

The First Five Year Plan: 1952-1957. In July 1952, the first true public debate over the CEA's program took place in the French parliament as the first Five Year Plan was discussed. The plan was engineered by Pierre Guillaumat,

Administrator-General of the CEA, and by a young secretary of state, Félix Gaillard, who exercised responsibility for atomic affairs from 1951 to 1953 under four different governments. Basically it provided for the production of plutonium with the construction of two reactors and an extraction plant in Marcoule. Officially, plutonium was to be used in electricity generation plants; no military application was mentioned, although the disposal of concentrated fissionable materials was obviously a major step in that direction. A Communist amendment that plutonium would not be used for making bombs was rejected. The plan, the implementation of which was supported by a significant budgetary effort, also emphasized industrial developments in the production of energy.

Examination of possible nuclear weapon development arose in 1954 when the question of the European Defense Community (EDC) was submitted to the parliament. The EDC proposal, with the rearmament of Germany as the centerpiece, contained certain restrictive conditions that required the unanimous agreement of members should one of them (Germany excepted) decide to launch its own military nuclear program. That proved to be too harsh a condition for France which did not ratify the treaty and which, one month later, allowed Germany to rearm with conventional forces within the framework of NATO.

On 26 December 1954, after a dramatic interministerial meeting, Prime Minister Pierre Mendès-France made the

decision to start secret research programs for both a nuclear bomb and an atomic submarine. That decision was a way of taking advantage of France's position over Germany, which had renounced the production of nuclear weapons; it might also have been a way of improving France's stature after the terrible military setback in Indochina. From December 1954 to April 1958, when the anticipated date of the first bomb test was revealed, the military atomic program was surrounded by high secrecy and functioned without parliamentary control. This situation, unprecedented in a democracy in peacetime, was basically the reflection both of intrinsic weaknesses of the government and the strong opposition, given the circumstances, to any program of this kind among influential people.

Any major governmental decision in the mid-fifties that had to be approved by the parliament ran the risk that the parliamentary coalition would split and bring about the fall of the government. Such constitutional fragility pushed cautiousness to an extreme. When Edgar Faure became prime minister in February 1955, he made contradictory statements about the military atomic program to the press³³ and suggested that, on the whole, a waiting position was preferable. No written instruction was made by the government, but Faure gave his ministers some freedom to act at their own level, provided that no leak would occur. Among his cabinet members, the Defense Minister, Pierre Koenig, and the Minister for Scientific Research, Gaston Palewski, were both

convinced of the necessity of nuclear armament. The Bureau d'Etudes Générales (BEG) was created as the military arm of the CEA. It later became the Direction des Techniques Nouvelles (DTN) and, in 1958, the Direction des Applications Militaires (DAM), its current designation.

In March 1955 Koenig and Palewski signed a protocol between their respective ministries which entrusted the BEG with the task to "study and develop a bomb program."³⁴ Funding was obtained by shifting large amounts of money from the armed forces budget to the CEA budget. This new line of credit was called "section commune" without specifying its use and therefore keeping secret its real purpose. For example, a third reactor built in Marcoule was financed through this channel. The protocol was renewed in 1956 and was implemented by every government until the termination of the Fourth Republic in late 1958.³⁵ Such is the strength of the French administration, acting as a balance to unstable governments.

Another project came into being as a result of a Navy-CEA agreement. In July 1955, the Navy ordered the construction of a submarine powered by a natural uranium reactor. Such a propulsion system proved technically infeasible, and the project was abandoned in 1958.³⁶

Opposition to the military program--or what was known of it--came first from the CEA itself where a pacifist influence had survived the eviction of Joliot-Curie. As early as the summer of 1954 a petition signed by 665 members

of CEA opposed the manufacture of atomic weapons and rejected the arguments offered in support of such a program, i.e., prestige, national independence, and military effectiveness.³⁷ Francis Perrin himself, as High Commissioner, feared that the production of plutonium as scheduled by the Five Year Plan would exert military pressure on the CEA. The military establishment, involved in guerilla warfare in Indochina and after 1956 in Algeria, did not have much interest in the program which it deemed too costly and irrelevant to its daily concerns. Only a small team of officers--among them Brigadier General Albert Buchalet, head of the BEG--was convinced of the necessity of atomic weapons and lobbied in favor of their manufacture. Within the government, foreign policy considerations motivated opponents of the program because France was seeking the support, or at least the neutrality, of the United States in her colonial conflicts: Faure, as a Finance Minister, had managed to get the United States to share part of the costly burden of the Indochina conflict; then as Prime Minister he did not want to give the United States an opportunity to criticize the huge expense of the French nuclear armament program.

But the US State Department was well aware that, should the US administration interfere in this sensitive matter, certain failure would be the result. Thus the US ambassador to France cabled in February 1956 that

it would be most serious if French should come to believe that US favored their renouncing right to manufacture atomic weapons. Such a feeling would arouse storm of anti-American protest and would ensure the defeat of any

such project. If there is any chance of France permanently renouncing right to make nuclear weapons, which I believe is only extremely slight, it would certainly be ruined if it could be labelled as an American project to deprive France of military power that could otherwise be hers.³⁸

The feeling that the decision-making should in no way be influenced by a foreign power was well rooted in France before the return of de Gaulle, although he was the one who loudly asserted the French desire for an unimpaired national independence.

The Suez Crisis. Guy Mollet replaced Faure as Prime Minister in February 1956. As a socialist and a strong supporter of the Treaties of Rome (among them EURATOM) then under negotiation, Mollet envisaged the renunciation of military atomic research but ultimately allowed it to go ahead within the CEA and the National Defense laboratories. In June 1956, during a general parliamentary debate about EURATOM, the prime minister for the first time acknowledged the existence of this type of research.³⁹ The Suez crisis which erupted one month later gave him an unexpected opportunity to justify the program.

Nationalization of the Suez canal was declared in July by Col. Gamal Nasser, head of the Egyptian state and leader of the Pan-Arabian movement. After an international conference failed to settle the dispute, military retaliation was prepared under tight secrecy among British, French, and Israeli governments. Israeli troops began to occupy the Sinai on 30 October; Franco-British troops jumped into Port Said on 5 November. On 7 November the United States and the

Soviet Union demanded a cease-fire after exercising harsh and humiliating diplomatic pressures. The retreat from Port Said was a terrible blow to the Mollet government which lost face before the Arab nations just when it was fighting the Algerian uprising, which was actively supported by Egypt. France found herself alone in her aspirations, isolated from her closest Allies, and powerless in the international arena.

Under those conditions the Mollet government shifted abruptly toward a "determined and positive interest in national nuclear armament."⁴⁰ A secret decree was taken on 5 December creating the Comité des Applications Militaires de l'Energie Atomique (CAMEA), which was charged with establishing the objectives of the military program as well as its schedule and its budget forecasts. This top-level committee included the Administrator-General and the High Commissioner of the CEA, the Chiefs of Staff of the National Defense and of the three services and high-ranking officials of the CEA and the Defense Ministry, such as Professor Yves Rocard and Brigadier General Charles Ailleret.

This structure had sufficient authority to impose its views on the government, to help the DTN to recruit highly qualified engineers, and to keep the military atomic program in civilian hands, thus avoiding the disadvantages of creating a "military CEA," an idea that the Administrator-General, Guillaumat, vigorously opposed. The creation of the CAMEA was the last preparatory step toward what was called

"l'atome militaire" and cleared the way for the commencement of nuclear weapons testing.

Chapter One Notes

1. Bertrand Goldschmidt, The Atomic Complex, trans. Bruce M. Adkins (La Grange Park: American Nuclear Society, 1980), 7.
2. See the summary of this patent in Margaret Gowing, Dossier secret des relations atomiques entre alliés, 1939-1945 (Paris: Librairie Plon, 1965), 227-29.
3. Faculty members of the Massachusetts Institute of Technology, The Nuclear Almanach: Confronting the Atom in War and Peace (Reading: Addison-Wesley Publishing Company, 1984), 22-23.
4. See their orders reproduced in Gowing, Dossier secret.
5. Goldschmidt, Atomic Complex, 32.
6. Margaret Gowing, Britain and Atomic Energy, 1939-1945 (Glasgow: The University Press, 1964), 65.
7. Ibid., 427.
8. Ibid., 79.
9. Ibid., 135.
10. Goldschmidt, Atomic Complex, 60.
11. Free French Forces belonged to the Free French government led by General de Gaulle in exile in London. This government was not recognized by the United States which kept diplomatic relations with the Vichy regime led by Marshal Pétain until 1944.
12. Gowing, Britain, 289.
13. Goldschmidt, Atomic Complex, 60.
14. Charles de Gaulle, War Memoirs. Unity, 1942-1944, trans. Richard Howard (New York: Simon and Schuster, 1960), 273-74.

15. Goldschmidt, Atomic Complex, 62. The French Union included all of French overseas territories and colonies.

16. "Articles of Agreement Governing Collaboration Between the Authorities of the U.S.A. and the U.K. in the Matter of Tube Alloys, 19 August 1943," in U.S., Department of State, United States Treaties and Other International Agreements 1954 (Washington: Government Printing Office, 1955), 5: 1115.

17. General Groves was Director of the Manhattan Project (i.e. the US atomic program) during World War II.

18. Gowing, Britain, 291.

19. "Minutes of a Meeting of the Combined Policy Committee, 22 January 1945," in U.S., Department of State, Foreign Relations of the United States 1945 (Washington: Government Printing Office, 1967), 2: 2-3; hereafter cited as FRUS followed by the appropriate year.

20. Gowing, Britain, 296.

21. Goldschmidt, Atomic Complex, 64.

22. Atomic Energy Act, Statutes at Large, 60, 766 (1946).

23. "Circular Airgram from George Marshall, Secretary of State, to Certain Diplomatic Missions, 16 August 1948," FRUS 1948, 1: 739-44.

24. "Despatch from Robert P. Terrill, Deputy Counselor of the Embassy in France to the Department of State, 28 March 1951," FRUS 1951, 1: 704-9.

25. This proves that current discussions on the "burden sharing" among NATO nations are nearly as old as NATO.

26. A letter from Robert Terrill, Deputy Counselor of the US Embassy in France, to Gordon Arneson, Special Assistant to the Secretary of State, dated 28 December 1951, gives details about the new CEA statutes and mentions an internal plan to eliminate Communist employees from the CEA. See FRUS 1951, 1: 799-801.

27. "Letter from Gordon Dean, Chairman of the USAEC to John F. Dulles, Secretary of State, 16 February 1953," FRUS 1952-1954, 2: 1098-1101.

28. Goldschmidt, Atomic Complex, 108-9.

29. "Memorandum of Conversation, by Phillip J. Farley of the Office of the Consultant to the Secretary of State for Atomic Energy Affairs, 7 September 1954," FRUS 1952-1954, 2: 1512-13.

30. "Telegram from Douglas Dillon, Ambassador to France, to the Department of State, 9 November 1956," FRUS 1955-1957, 4: 488-89.

31. Charles de Gaulle, Memoirs of Hope: Renewal and Endeavor, trans. Terence Kilmartin (New York: Simon and Schuster, 1971), 186.

32. John F. Dulles, Secretary of State, to the President, Memorandum on European Integration of Atomic Energy, 9 January 1956, United States Department of Energy, Archives, AEC 751/43.

33. Université de Franche-Comté et Institut Charles-de-Gaulle, L'aventure de la bombe (Paris: Librairie Plon, 1985), 44.

34. *Ibid.*, 46.

35. Wolf Mendle, Deterrence and Persuasion (New York: Praeger Publishers, 1970), 140-41.

36. Lawrence Sheinman, Atomic Energy Policy in France under the Fourth Republic (Princeton: Princeton University Press, 1965), 122-23.

37. Bertrand Goldschmidt, Les rivalités atomiques 1939-1966 (Paris: Fayard, 1967), 206.

38. "Telegram from Douglas Dillon, Ambassador to France, to the Department of State, 3 February 1956," FRUS 1955-1957, 4: 402.

39. Goldschmidt, Atomic Complex, 135.

40. *Ibid.*, 137.

CHAPTER TWO

FIRST ACHIEVEMENTS, 1957-1960

The Second Five Year Plan. When the second Five Year Plan (1957-1962) was approved by the parliament in July 1957, it became clear that France intended to establish technical parity with other countries in the atomic business. The Plan was backed up by an annual budget roughly twice that of 1956 and 1957 and included the continuation of current military programs, the completion of two atomic power stations at Marcoule, the development of uranium extraction and refinery plants as well as the construction of a uranium enrichment plant.

As the requirement for uranium metal was increasing, recent discoveries of uranium ore in Vendée, Limousin, and Burgundy brought the hope that uranium would be available in relatively large quantities and at a competitive price. The necessary investment in capital was provided by the Plan after an attempt to purchase uranium from Canada failed in March 1957. Canadian uranium was currently sold to the United States at a price around eleven dollars per kilogram free of utilization control; the French negotiator proposed either the same conditions--which the Americans, although not

directly concerned, did not allow--or a 25 percent discount with acceptance of Canadian control--which was dismissed for economic reasons.¹

To experiment in new technologies, French atomists needed enriched fuels for research on advanced types of reactors. Such a requirement was mainly fulfilled by the United States through an agreement signed at Washington on 19 June 1956 and modified in 1957, 1959 and 1960. In its principle it was similar to the agreements the United States made with various countries in the aftermath of the atoms-for-peace program of President Eisenhower. It stated that the AEC was authorized to sell specific amounts of uranium enriched up to certain percentages for civil uses in research facilities.² Uranium was provided under stringently specified conditions and for certain types of work. For the French, the application of the agreement, in force over a ten year period, went as far as providing for the purchase of 300 kilograms of uranium-235 enriched to 60 percent for use in a successful prototype of fast-breeder reactor called Rapsodie.

But the requirement to secure sources of enriched uranium which were not under US control pushed decisively in favor of building an enrichment plant based on the gaseous diffusion process. A first attempt to share such a huge investment with Euratom members plus Switzerland, Sweden, and Denmark failed mainly for political reasons.³ Therefore the government included in the Five Year Plan a provision to build the plant, which clearly meant that France intended to

achieve true independence throughout the nuclear cycle. The plant, located in Pierrelatte in the Rhône valley, would be able in its first layout to produce fissionable material for power reactors and civilian use only. Since this kind of fuel was available at a cheaper price from the United States, there is no doubt that a future extension of the plant to produce a "military quality" fuel was already envisaged and accepted by the representatives who approved the Plan.⁴ In a meeting held in Paris in December 1957, Admiral Lewis Strauss, chairman of the AEC, and John Hall, AEC Director of International Affairs, tried to convince Pierre Guillaumat not to launch the French enrichment program. Their démarche only reinforced his determination.⁵ Admiral Lewis Strauss was indeed well aware of the political struggle on nuclear armaments within the French government. A report dated 17 December 1956 from Gerard Smith, Special Assistant to the Secretary of State, informed him that

there is a mounting concern as to the intentions of the French military to push for an independent nuclear capability. Opposing elements in the French government, and also her European partners, see EURATOM as being a means of limiting and controlling an independent French effort in this field.⁶

The Nuclear Testing Decision. Apart from the adoption and the funding of the Five Year Plan, 1957 was a critical year for nuclear testing. In March, General Ailleret was appointed by the government as supervisor of the nuclear tests. Responsible to two ministerial departments--National Defense and CEA--Ailleret had to propose a schedule for the experiments and any decision the

government should make concurring with their achievement. In May, the Sahara test range was selected in the most arid part of French Algeria, in an area of over 100,000 square kilometers. Here, a large joint military base headed by an Air Force colonel was activated; construction work started in October. In the meantime, to expand its development facilities, the CEA purchased several sites within reach of Paris, among them the land known as the "Valduc Abbey" near Dijon. In October the Test Directorate was organized within the BEG and entrusted to a naval officer.

When Gaillard became Prime Minister in November, he personally assumed the trusteeship of the CEA. Under his government, the choice for a scientific IBM computer which the CEA urgently needed was decided in lieu of a French Bull computer not yet available. Gaillard also had to make a firm governmental decision as to the first series of tests; in April 1958 he signed the decision which stated that tests would start during the first quarter of 1960.⁷

A political crisis arose soon thereafter, followed by upheavals in Algeria. Gaillard was thrown out of office. After a short interim government headed by Pierre Pflimlin, Charles de Gaulle was recalled from retirement and sworn in as prime minister on 1 June 1958. As such he confirmed the decision of his predecessor concerning the nuclear testing and gave it a national priority. Later, under his impulse, the constitution of the Fifth Republic was passed

overwhelmingly. Charles de Gaulle was elected president in December 1958.

NATO's Nuclear Policy. In the first years of the Atlantic Alliance, created by the Treaty of Washington in 1949, the United States was extremely reluctant to share with allied nations any nuclear knowledge. Even collaboration between the United States and Britain on this matter had not survived long after the war and was at a standstill in the mid-fifties.

When the Soviets exploded their first thermonuclear device in 1953, their advance in weapon technology came as a surprise to the world. According to Goldschmidt they had relied on a technical principle envisaged but not used by the Americans, which ruled out any progress through espionage.⁸ Since it was clear that the monopoly situation enjoyed by the United States had vanished and that no arms control pact would occur soon with the Soviets, the McMahon Act was then revised to allow for the exchange of nuclear information among NATO Allies

In 1955 an Agreement for Cooperation with NATO was set up for the transfer to NATO commanders and member-states of information deemed necessary to (1) the development of defense plans, (2) the training of personnel in the employment of and defense against atomic weapons, and (3) the evaluation of capabilities of potential enemies in the employment of atomic weapons.⁹ This agreement of a modest scope did not

include data related to the structure and manufacture of bombs.

The United States' attitude changed significantly in 1957 as a result of two events: on 15 May Britain had achieved in isolation her first thermonuclear explosion; and on 4 October the Soviet sputnik was put into orbit, creating a psychological shock in the United States. Confronted with a potential adversary who had achieved substantial nuclear stockpiles and decisive progress in the means of delivery, the United States was forced to make a reappraisal of its deterrent posture.

Besides the strategy of massive retaliation, a strategy was developed to deal with limited war and with the possibility that limited war might progress to "graduated" use of tactical nuclear weapons as counter force capability. As a consequence, the Americans would have to pressure their Allies on at least two critical points: (1) since the counter-force strategy required a large number of nuclear vectors (to destroy one enemy nuclear rocket, one has to launch several of them) which must be geographically dispersed, the settlement of tactical nuclear weapons in Allied nations had become a necessity; (2) to prevent the escalatory effect of the use of a nuclear weapon by a third nation, the building of deterrent forces by the Allies would be opposed and the British force already in existence would have to be integrated into the US system. Furthermore the president of the United States alone would retain the power

to decide whether to employ nuclear weapons. Those deployed on Allied soil would therefore be subordinated, through a double-key arrangement, to American control.

This new policy was emphatically voiced by the Eisenhower Administration and specifically by the Secretary of State. In July 1957 Dulles disclosed that the United States was studying a plan for transferring nuclear stockpiles to NATO's Supreme Commander in Europe in his capacity as Commander of US forces in Europe.¹⁰ At the yearly meeting of the North Atlantic Council, which convened in Paris on 19 December 1957, Dulles informed the heads of government that nuclear stockpiles would be made available to NATO, although the United States would keep custody of the warheads; he revealed the plan to disperse IRBMs in Europe and gave assurances that their employment would be subject to bilateral agreements. In addition, without ambiguity and as an incentive, he stated that cooperation with industrial nations of NATO in the development of a nuclear submarine was being considered. But the IRBM deal was the sticky point of the meeting: France, Greece, Belgium, Italy, and the Netherlands refused to commit themselves to it, and later all but Italy refused to deploy those missiles on their soil.¹¹

Once more, nuclear cooperation with NATO Allies became dependent on a revision of the McMahon Act. In his recommendations to Congress to do so, Deputy Under Secretary of State Robert Murphy insisted on the strengthening that NATO military forces would gain from the revised Act and on

the avoidance of duplication of effort which the Alliance would enjoy. He openly indicated that the submarine deal was at stake:

I refer to the atomic submarine, which has proven its tremendous capabilities over thousands of miles of operation by the Nautilus and Seawolf. If the necessary legislation is obtained, we will be able to cooperate with interested members of NATO in the development, production and fueling of nuclear propulsion and power plants for submarines and other military purposes.¹²

And he added that

in those cases where it is in our mutual interest to do so, it would be possible for us . . . to make available weapons design information and materials necessary to improve the weapons design and production capabilities of Allies who had made substantial progress in the nuclear weapons field.¹³

In congressional language "Allies" meant any "nation [having] its own testing site, [having] carried out an important number of tests and [having] the capability of manufacturing various types of weapons."¹⁴ At this stage only Britain fulfilled the conditions, and she was indeed the intended target of the revised McMahon Act of 1958. This came as a reward for having steadfastly maintained her atomic program up to thermonuclear mastery during the break off of American aid. Thus Britain renewed her privileged relationship with the United States on nuclear matters after an interruption of twelve years. For her part, France had to support all of the research and development of her atomic military program on her own.

The Submarine Program. In early 1955 sea trials of the first US nuclear submarine, USS Nautilus, were successfully conducted as a result of the perseverance of

Captain (later Admiral) Hyman G. Rickover. The revolution brought by nuclear propulsion and its outstanding consequences on defense programs were clearly understood by the French Naval Staff. Indeed, the Navy had a 5,000-ton nuclear-propelled attack submarine under construction and was planning to build a second one, but it desperately lacked enriched uranium to fuel their reactors. Admiral Strauss and the AEC had indicated to the CEA that a naval propulsion reactor could not work with natural uranium and heavy water, and this information led Alain Poher, the French Secretary of the Navy, to cancel the program.¹⁵ The reflex for the French was then to enter into a cooperation program with the United States and Britain, as advocated by Admiral Henri Nomy, Chief of the Naval Staff. In November 1957, at the launching ceremony of the conventional submarine Aréthuse, Nomy stressed "the necessity of coordinating scientific efforts" and chided the United States and Britain for their secrecy on atomic matters.¹⁶

This is why the unequivocal American offer made at the NATO summit of 1957 to supply nuclear submarine technology to Allied nations was taken very seriously in Paris. The Netherlands and Italy also expressed interest in the deal. The offer was studied by the French Naval Staff as early as January 1958 and was soon followed by negotiations between the French and United States governments.¹⁷ Although President Eisenhower stood personally in favor of giving France atomic submarine technology, Congress and its powerful

Joint Committee on Atomic Energy (JCAE) opposed the deal as long as they could (over one and a half years) and, in the end, caused its demise.

The basic reason for Congress's attitude was that nothing should be done that could encourage the entry of a fourth nuclear power into the club. And indeed, the McMahon Act was being revised to incorporate this rule, since Britain --already a nuclear power--had been granted access to nuclear information. NATO had been given weapons but without full rights of property and could not therefore be considered a fourth nuclear power. The battle between Congress and the administration went on, with the Congress adamantly opposing any transfer of technology to France and the administration standing firmly by its position. Thus C. Burke Elbrick, Assistant Secretary of State for European affairs, revealed on 28 March under testimony that the administration plan could encourage the entry of a fourth nuclear power.¹⁸ Secretary Dulles in a news conference on 1 April declared that

the idea that we can stop that expansion by trying to keep our information secret is illusory. . . . And of course not sharing our knowledge with some countries --like the United Kingdom, which has already got a program of this sort--strikes me as a complete folly.¹⁹

And Secretary Dulles disclosed after a meeting with President Eisenhower that the United States was preparing to sell an atomic submarine engine to France.²⁰

After various procrastinations, a French mission headed by Admiral Robert Barthélémy was sent to Washington in

February 1959 with the hope of negotiating the purchase of a nuclear submarine. The JCAE and influential Admiral Rickover were invariably hostile to such a deal on the grounds that the Soviets were far behind in this field and that any transfer to France would result in the leakage of information and technology to the East. Furthermore they expressed doubts on the ability of French engineers to master nuclear propulsion.²¹ The Barthélemy mission failed in its endeavor.

The Franco-American difference of opinion was aggravated in the view of French politicians by the fact that Britain, among others, was being offered the reactor for a first nuclear submarine. With de Gaulle back in power, the "Anglo-Saxon coalition" was undoubtedly going to become one of the targets of the French government policy.

The Land-Based Prototype Submarine Nuclear Propulsion Plant. One exception occurred, however, in the Congress's attitude toward France, and that substantially quickened the design of her naval propulsion reactor. Since the US submarine technology was not available, it was urgent for France to have a small quantity of highly enriched uranium to start research on a land-based prototype of a submarine propulsion plant. Indeed the mastery of nuclear naval propulsion required lengthy experiments over an extended period of time, and the government could not afford to wait for the completion of the enrichment plant at Pierrelatte to obtain a fuel of national origin. Had it done

so, the whole program of nuclear submarine would have suffered a delay of several years.

An agreement between France and the United States was signed at Washington on 7 May 1959.²² It provided for the purchase of a modest quantity of enriched uranium but did not include any exchange of secret information, for example, the design of nuclear reactors. Furthermore a control on the use of the uranium was enforced by US authorities. As one American journalist observed, the delivery of uranium was a poor substitute for the complete reactor offered by President Eisenhower during his visit to France in December 1957.²³ Even though the deal was limited in its scope, it provoked an unfavorable concurrent resolution from the Senate and the House of Representatives,²⁴ but Congress finally endorsed arrangement on the recommendation of the JCAE.²⁵ Admiral Rickover did not oppose it, but he did cause a paragraph on the exchange of unclassified information to be deleted from the final draft.²⁶

The deal on enriched uranium having been settled, applied research started in the CEA's research facility of Cadarache in Provence where French scientists had to discover on their own all of the technology of pressurized water reactors (PWRs). An experimental pile, Azur, was the place chosen to study the design of a nuclear core. In 1960 the trial was successful enough to allow the scientists to build, inside a mockup submarine compartment, a prototype of a naval PWR called prototype à terre (PAT). Under the direction of

Jacques Chevallier, the first French PWR fueled by US enriched uranium became operational in August 1964. That engine, the result of a tremendous scientific effort, ultimately made possible the build up of the French naval deterrent force in the late sixties.²⁷

The Difficult Relationship Between France and NATO. In 1958, however, things did not go smoothly between France and her major Allies. One of the first actions of de Gaulle was to revamp France's international role, weakened as it was by years of political instability and colonial ordeals.

This role, as I conceived it, precluded the Atlantic docility which yesterday's Republic had practised in my absence. In my view, our country was in a position to act on its own in Europe and the world, and must so act because, morally speaking, this was an essential motive force for its endeavors. Naturally this independence presupposed the possession of modern means of deterrence to ensure France's security.²⁸

Of course this armament was not yet ready. The possibility that it could be obtained from the United States was mentioned and then avoided in conversations that Secretary Dulles and de Gaulle held in Paris on 4 and 5 July 1958, as related by the latter in his memoirs:

"If you agree to sell us bombs, we shall be happy to buy them, provided that they belong to us entirely and unreservedly." Foster Dulles said no more.²⁹

Nuclear armament bears in itself the specific limitation that it cannot be truly and thoroughly shared among allies, and therefore Dulles' attitude came as no surprise. The same limitation applies as well to the decision of its employment which, in NATO, belongs ultimately

to the president of the United States. Furthermore, since both superpowers have enough means to wipe out each other with a direct strike on the other's territory, bringing about their mutual destruction, Europe would become instead their preferred nuclear battlefield. Therefore France could be involved in a war that she would not want or would not decide. The author of Memoirs of Hope bluntly concludes that "for the Western Europeans, NATO had thus ceased to guarantee their survival."³⁰

Consequently the revision of the North Atlantic Treaty was an immediate priority of the French government. In a memorandum dated 17 September 1958 (Appendix B), de Gaulle sent Eisenhower and British Premier Harold Macmillan his observations and proposals for refurbishing the treaty. The memorandum contains some of the most characteristic features of the Gaullist thought on the Alliance:³¹ (1) basically, "the sharing of the risks incurred is not matched by indispensable cooperation on decisions taken"; (2) NATO's area of interest, limited to the North Atlantic, does not extend to Africa, the Indian Ocean and the Pacific where France has her own responsibilities as well as Britain and the United States; (3) these three nations should set up a tripartite directorate whereby decisions could be jointly made on world policy and strategy, "notably with regard to the employment of nuclear weapons"; (4) such a security organization is paramount for the French government which "subordinates to it as of now all development of its present

participation to NATO." Thus after only four months in office, de Gaulle had secretly informed France's major Allies of his views on NATO; these were to endure far beyond his tenure. De Gaulle sought nothing less than to give France the full status of nuclear power with a trilateral equality in worldwide decision-making. His demand came with some kind of ultimatum regarding French participation in NATO hanging in the balance.

As could have been foreseen, the memorandum received mixed comments from Eisenhower and Macmillan. Nevertheless, trilateral conversations on the issue began and went on during the Eisenhower and Kennedy Administrations. But when it appeared that those discussions would produce no tangible results, the French government decided a partial disengagement from the Alliance and withdrew its Mediterranean naval forces from the NATO command to which they had been designated. That gave de Gaulle the opportunity to write another personal letter (dated 25 May 1959) to Eisenhower in which the French president claimed, as previously, the right to share in strategic decisions and the employment of nuclear armament.³²

In June 1959 the French government notified the Atlantic Alliance that the stockpiling of nuclear bombs in France was no longer allowed, unless she was given a voice in deciding their use. As a result of this determination, all French-based US fighter-bombers having nuclear delivery capability were moved to Germany and elsewhere in Europe.³³

These were the first steps in the disengagement of France from the NATO military structure, a process that was to climax formally in 1966.

The Emergence of a Deterrent Force. On 13 February 1960 the first French A-bomb exploded in the Reggane test center. This plutonium bomb, located in a tower, developed a power of between sixty and seventy kilotons, i.e. four times the power of the Hiroshima bomb. According to Chevallier, Americans from Wheelus Air Force Base (Libya), who took samples of the atmospheric cloud, were surprised by the efficiency of the device.³⁴

The State Department issued a terse and noncommittal statement of one single sentence which noted that "the atomic detonation was not unexpected."³⁵ In fact, the resounding entry of France into the nuclear club did not come at the right time from an international standpoint. As the result of a "gentlemen's agreement" between the United States and the Soviet Union, no atomic test had taken place since November 1958, as both superpowers and Britain were tentatively negotiating in Geneva a treaty to end the testing of nuclear weapons. It was awkward to have France break the moratorium. But delays that she had experienced in her atomic program compelled her to go ahead with the tests as long as she had not achieved a technical parity with the other three. De Gaulle had publicly stated in a press conference of 10 November 1959 that

if the Anglo-Saxons and the Soviets agree among themselves to halt their tests, France can only approve. But

if anybody wished to ask France to renounce atomic weapons for herself, while others are in possession of them and are developing them in tremendous quantities, there is not the slightest chance that she would accede to such a request.³⁶

This clearly indicated that France, at this stage, would not join the Geneva talks, although she was entitled to do so. On the other hand the United States was not eager to invite to those talks a fourth power, whose presence would not facilitate the negotiating process. Asked about such an invitation, Secretary of State Christian Herter declared to the National Press Club on 18 February 1960:

There have been no discussions with France whatsoever about entering into the Geneva talks, nor have I heard any question discussed as to what might be anticipated in that direction. . . . I personally do not know whether the tests that the French are conducting will be continued or not.³⁷

The second French atomic test occurred in April. It was a smaller device--an indication that an effort of miniaturization was being made with the intention of achieving an airborne bomb. Another test took place a few months later.

At that point the French government formalized the national commitment to build nuclear weapons. It was deemed necessary from a political standpoint to compel the parliament to support the program, and from a military standpoint to impose on the armed forces--in the midst of the Algerian turmoil--the priorities and reorganizations which would ensue. Therefore the loi de programme or act providing a framework for military expenditures over the period 1960-64 was passed on 8 December 1960 after a tough parliamentary

debate. It resulted principally in the appropriation of (1) a stock of forty A-bombs of medium power, (2) specific studies aimed at carrying out thermonuclear mastery, (3) fifty (and later sixty-two) strategic Mirage IV supersonic bombers already under development since 1957 and built by the Marcel Dassault Company, and (4) the first SSBN, construction of which actually began in 1964.³⁸ It was according to these terms that the force de frappe or strike force was defined, planned on the long term, and funded--although its cost was then largely underestimated. The deterrent force, cornerstone of the Gaullist defense and foreign policies, was the source of deep pride--and also sharp criticism--among French elites.

Chapter Two Notes

1. Université de Franche-Comté et Institut Charles-de-Gaulle, L'aventure de la bombe (Paris: Librairie Plon, 1985), 64.
2. "Agreement for Cooperation Between the Government of the United States of America and the Government of the Republic of France Concerning Civil Uses of Atomic Energy, 19 June 1956," in U.S., Department of State, United States Treaties and Other International Agreements 1956 (Washington: Government Printing Office, 1957), 7: 3097-3116.
3. Bertrand Goldschmidt, Les rivalités atomiques 1936-1966 (Paris: Fayard, 1967), 232.
4. Wolf Mendle, Deterrence and Persuasion (New York: Praeger Publishers, 1970), 148-49.
5. Université de Franche-Comté, 64.
6. Gerard C. Smith, Special Assistant to the Secretary of State, to Admiral Lewis L. Strauss, Chairman, Atomic Energy Commission, Status Report on Euratom, 17 December 1956, United States Department of Energy, Archives, AEC 751/102.
7. Université de Franche-Comté, 50-52.
8. Ibid., 65.
9. "Agreement Between the Parties to the North Atlantic Treaty for Cooperation Regarding Atomic Information, 22 June 1955," in U.S., Department of State, United States Treaties and Other International Agreements 1956 (Washington: Government Printing Office, 1956), 7: 397-415.
10. Robert E. Osgood, NATO The Entangling Alliance (Chicago: the University of Chicago Press, 1962), 220.
11. Ibid., 221.
12. "Recommendations for Revising Atomic Energy Act of 1954, Statement by Deputy Under Secretary Murphy," Department of State Bulletin, 24 February 1958, 313.

13. Ibid., 314.
14. Bertrand Goldschmidt, The Atomic Complex, trans. Bruce M. Adkins (La Grange Park: American Nuclear Society, 1980), 142.
15. Université de Franche-Comté, 64.
16. "France's Allies Chided," New York Times, 10 November 1957, 9.
17. "French Study Offer On Atom Submarine," New York Times, 3 January 1958, 6.
18. "Congress Delays On Atom Sharing," New York Times, 29 March 1958, 7.
19. "Secretary Dulles' News Conference," Department of State Bulletin, 21 April 1958, 643.
20. Jack Raymond, "Atom Submarine Engines Offered London and Paris," New York Times, 4 July 1958, 1.
21. Goldschmidt, The Atomic Complex, 143.
22. "Agreement Between the Government of the United States of America and the Government of the Republic of France for Cooperation on the Uses of Atomic Energy for Mutual Defense Purposes, 7 May 1959," in U.S., Department of State, United States Treaties and Other International Agreements 1959 (Washington: Government Printing Office, 1960), 10: 1279-87.
23. Robert C. Doty, "U.S. Will Aid Paris on Atom Project," New York Times, 16 April 1959, 1.
24. Congress, House, Concurrent Resolution 249, 86th Cong., 1st sess. Congressional Record 1959. Vol. 105, pt. 16: 1313.
25. Congress, House, Adverse report to accompany H. Cong. Res. 249, 86th Cong., 1st sess. Congressional Record 1959. Vol. 105, pt. 16: 1313.
26. Université de Franche-Comté, 65.
27. The successful outcome of the PAT, and the thorough knowledge and confidence acquired in this class of reactor have had another beneficial consequence: when it came to select one type of technology to provide France with nuclear generated electricity, the PWR technology emerged as a must. It is now the source of 75 percent of nationally produced electricity.

28. Charles de Gaulle, Memoirs of Hope: Renewal and Endeavor, trans. Terence Kilmartin (New York: Simon and Schuster, 1971), 201-2.

29. Ibid., 209.

30. Ibid., 201.

31. The following quotations are extracts from the official translation of de Gaulle's memorandum dated 17 September 1958 and provided to the author by the Eisenhower Library.

32. Charles de Gaulle, Lettres, notes et carnets, Juin 1958-Décembre 1960 (Paris: Librairie Plon, 1985), 225-28.

33. Robert C. Doty, "U.S. NATO Planes May Guilt France," New York Times, 9 June 1959, 1.

34. Université de Franche-Comté, 129.

35. E. W. Kenworthy, "U.S. and Soviet Regret French Atomic Explosion," New York Times, 14 February 1960, 2.

36. Ambassade de France, Major Addresses, Statements and Press Conferences of General de Gaulle, 19 May 1958-31 January 1964 (New York: Service de presse et d'information, 1964), 61.

37. "Address by Secretary Herter made before the National Press Club," Department of State Bulletin, 7 March 1960, 361.

38. Université de Franche-Comté, 93-95.

CHAPTER THREE

PRELUDE TO THE NUCLEAR DETERRENT, 1961-1962

Overview of Outstanding Facts. In the early sixties the will of France to achieve a nuclear deterrent force remained unabated. Technical capabilities to build up the first generation of armament--the Mirage IV supersonic bomber armed with a plutonium A-bomb--were already secured. Those for the second and third generations--land and sea-based IRBMs--were developed progressively. The Administration of President John F. Kennedy remained reluctant to recognize this fait accompli and tentatively proposed the creation of a NATO strike force, which Paris regarded as a way to keep an American upper hand on any nuclear development, specifically in France and Germany. This impression was confirmed by the Nassau Agreement of 1962. Britain renounced building her own ballistic missiles in favor of buying US Polaris missiles, and thus became linked closer than ever to the United States. The last French hope of creating an independent European nuclear deterrent within the Alliance was thereby dashed. As a result, French policy on arms control and disarmament opposed any demonstration of monopoly by the superpowers. But when the most serious crises of the Cold War--Berlin and

the Cuban missile--erupted, the French government stood firmly and openly by its Allies.

The Wherewithals of the French Nuclear Armament.

Taking into account the protestations of some African countries against atmospheric tests--Ghana, the most bitterly demonstrating country, had gone as far as to freeze all French assets it owned--France decided to embark upon underground explosions. For this purpose the In Ecker test range located in the Sahara's Hoggar Massif was fitted out, and the first underground test occurred in November 1961. It happened to come after the USSR and the United States had broken their truce in this matter and resumed nuclear testing. The official statement of the Soviet Union on resumption of nuclear testing mistakenly accused France as exploding nuclear devices with the encouragement of the governments of the United States and Britain. The Soviets also blamed the French for "sweeping away from the table of negotiations the proposals aimed at putting an end to nuclear weapon tests once and for all."¹ Thus the French nuclear tests acquired an international opprobrium that was by no means deserved: France claimed four tests at that time whereas the US, USSR and Britain altogether had by then conducted about two hundred tests.

Algeria was formally granted independence in July 1962. In the Agreements of Evian leading to this process, the French government had reserved the right to use over an extended period of time several military facilities including

the nuclear test range. But the foreseeable resumption of atmospheric and high-power tests required for thermonuclear mastery compelled the government to decide in June 1962 to establish a new test range in French Polynesia, located 18,000 kilometers from the homeland.²

The same year, as a supplement to the loi de programme, twelve American-made KC 135 tanker planes were ordered with delivery in 1964. Those planes were intended, but not exclusively, to increase the range of the Mirage IV bombers. Their purchase encountered no opposition from the US administration, although it clearly improved the deterrent value of the French strike force. This American assistance to the French nuclear deterrent, possibly pushed by commercial considerations,³ was not fully consistent with the usual line of conduct of the Kennedy Administration which steadfastly opposed the principle and the validity of the French nuclear weapon program.

In 1959 the government entrusted the coordination of the missile business to the Société pour l'Etude et la Réalisation d'Engins Balistiques (SEREB).⁴ That corporation was mainly tasked to acquire the technical and industrial know-how essential to future military rocket programs. Therefore, as part of basic studies, SEREB developed several rockets and small-size launchers which blasted off from the facility at Hammaguir, Algeria. When the ballistic missile program became official in May 1963, it underwent a

relatively smooth execution thanks to this accumulation of abilities and knowledge.

A similar strategy was applied in the Navy to formulate the action program for the development of the SSBN force and all its constituents. Established in June 1962, the Groupe Coelacanth, headed by an admiral, worked out a true charter for the SSBN force and coordinated the effort of small teams of researchers, engineers, and officers who had been working on the project.⁵ This structure was critical to the shaping and beginning of the nuclear submarine program when it was implemented in 1963.

The Atomic Cooperation Agreement of 1961. As the French government was more and more committed to having a national nuclear deterrent force, the requests for sharing nuclear strategic decisions with Washington and London grew more assertive. Such was not, of course, the policy of NATO, whose Supreme Allied Commander Europe (SACEUR), US Air Force Gen. Lauris Norstad, proposed in 1959 to transfer the control of nuclear weapons to NATO itself; NATO, as the "fourth nuclear power" holding the control of its own weapons, would limit any desire among European nations to engage in military nuclear programs.⁶ But instead the United States, commencing in 1959, entered into a series of advanced agreements with NATO European nations, whereby the United States kept the custody of warheads under the "two-key system" and trained Allied armies in the use of the weapons and their means of delivery. In 1959 France had refused to allow NATO to

stockpile nuclear warheads on her soil. Subsequently she had given several indications of her opposition to the principle of "integration" of her forces under existing arrangements. She was at that time lagging behind other NATO Allies in nuclear cooperation with the United States. President Kennedy decided to make up the gap. During his visit to France in June 1961, he reached an agreement in principle with de Gaulle for "improving the training and operational readiness of the armed forces of France."⁷ The agreement, signed at Paris on 27 July 1961, did not include any transfer that "would contribute significantly to the recipient nation's atomic weapon design, development or fabrication capability."⁸ But it made possible training in the employment of nuclear weapons with launchers manned by the French forces stationed in Germany, i.e. those of the NATO Central European Command.⁹ Therefore the United States extended as much as it could cooperation to improve the Alliance's deterrent posture; outside this context the United States adamantly opposed any form of nuclear cooperation with France.¹⁰

The Multilateral Force. Armed with tough atomic energy legislation--the McMahon Act--and the belief that no new nuclear power should emerge, the Kennedy Administration remained determined in its policy of nonproliferation. The ultimate goal was to enter into an arms-control agreement with the Soviets. Consequently the United States sought to set no precedent to the Soviets to transfer nuclear knowledge

to China--which they did anyway--and strived to prevent the spread of small national nuclear forces among the Allies. But as more US warheads were deployed in Europe, a larger European operational and political commitment to the strategy they implied was required. Thus at a NATO ministerial meeting held in December 1960 Secretary of State Christian Herter raised the possibility of a sea-based, mixed-manned NATO nuclear force.¹¹ In May 1961 in an address at Ottawa, President Kennedy proposed to commit five Polaris submarines to a NATO nuclear force which would be jointly manned and financed. Later a US mission conducted among NATO European members an exploratory investigation on their appreciation of a multilateral force (MLF) of twenty-five surface ships each carrying eight Polaris missiles.¹² But the insistence of Secretary of Defense Robert S. McNamara that the United States should retain the control of all nuclear weapons in NATO could not lead to the true Atlantic partnership for which France was striving. In a press conference on 14 January 1963 de Gaulle indicated bluntly that the formal logic of her defense policy dictated that France would not join the MLF:

To turn over our weapons to a multilateral force, under a foreign command, would be to act contrary to that principle of our defense and our policy. It is true that we too can theoretically retain the ability to take back in our hands, in the supreme hypothesis, our atomic weapons incorporated in the multilateral force. But how could we do it in practice during the unheard-of moments of the atomic apocalypse?¹³

The MLF proposal did not live long. Without French participation and with only modest British interest--the

British having been engaged in the far more attractive Nassau Agreement--the MLF, already cumbersome from a military standpoint, would have become principally a United States-German connection which neither of those two nations actually required.¹⁴

The Nassau Agreement. In the late fifties, as part of its national deterrent, the British government was developing a liquid-fuel missile, the Blue Streak. Cancellation of that program in 1960 led the government to join the American air-ground Skybolt missile program under development for the US Air Force. The Skybolt program was cancelled in turn in 1962 because new long-range strategic missiles had made it obsolete. Britain suddenly found herself with warheads but without the means of delivering them. Thus in December 1962, during the Anglo-American summit at Nassau, Kennedy proposed to Premier Harold Macmillan to supply Britain with sea-based Polaris missiles which would be placed under NATO control except if "supreme national interests" were at stake.¹⁵ Military considerations pushed in favor of the agreement, but the political and industrial implications were tremendous because Britain renounced an autonomous deterrent and linked part of her defense industry to the American one.¹⁶

The same offer, on similar terms, was then made to France. At his press conference of 14 January 1963, de Gaulle rebuffed it together with the MLF offer, on the grounds that French technology was not ready to provide

either the warheads to equip the Polaris missiles (although the American offer to the French included British aid in the design of the warheads) or the submarine to launch them. More important, the offer put an obvious limit on national sovereignty since "It does not meet with the principle . . . of disposing in our own right of our deterrent force."¹⁷

Thus the Nassau conference, to which France was not invited, greatly affected the French role in NATO and led to a major reorganization of the Western deterrent. London obviously preferred the Polaris pact with Washington to the development of its own deterrent which ultimately would have allowed a European defense nucleus. Nassau probably confirmed suspicions in de Gaulle's mind about Britain's unreliable European engagement: he vetoed the entry of Britain in the Common Market soon after the Nassau conference. Moreover the new nuclear posture of NATO was defined and agreed upon between the Anglo-Saxon powers without consulting France, the other European nuclear power. Therefore the role of France within NATO and the various planning committees was called into question, and the relationship between France and NATO could only deteriorate further.

Divergent American Views. In France the deterrent force was the subject of hot debates. This was especially true in 1960 in the parliamentary debate of the loi de programme and in July 1962 in the consideration of extra funding for the Pierrelatte enrichment plant. Totally apart

from the Communists and the left-wing who were hostile to large military expenditures, two main trends basically opposed each other in French public opinion. The orthodox "Europeans" believed that an independent nuclear deterrent was a technical utopia and an expression of resistance to European integration and of distrust toward NATO; genuine Gaullists believed that besides a military advantage, an independent nuclear deterrent would give France the prestige and influence that her worldwide interests demanded.

Similar opinions on French nuclear armament, supported by different arguments, were found in the US administration and in the American press. The leader of the cons was undoubtedly the Secretary of Defense for whom nonproliferation exceeded all other considerations and for whom Europe's political requirements in the nuclear area were to be met by the build-up of the MLF. Thus on 16 June 1962 in his famous address at the University of Michigan commencement exercises, McNamara delivered a harsh indictment against small national deterrents, obviously with France in mind:

Relatively weak national nuclear forces with enemy cities as their targets are not likely to be sufficient to perform even the function of deterrence. . . . Indeed, if a major antagonist came to believe there was a substantial likelihood of its being used independently, this force would be inviting a preemptive first strike against it. . . . In short, then, limited nuclear capabilities, operating independently, are dangerous, expensive, prone to obsolescence, and lacking in credibility as a deterrent.¹⁸

President Kennedy himself took every opportunity to strengthen his nonproliferation stance. On 18 April 1962, asked at a press conference whether the United States should

assist France in developing and procuring atomic weapons, he did not definitely reject the idea but he said that the US policy "continues to be that of being reluctant to see the proliferation of nuclear weapons."¹⁹ On 27 June 1962, answering a question about France's determination to go ahead with her nuclear program, he replied in abrupt diplomatic language: "We believe that is inimical to the community interest of the Atlantic Alliance, that it encourages other countries to do the same."²⁰ The same month Secretary of State Dean Rusk drew similar conclusions on the Voice of America: "We feel that the multiplication of governments who have such weapons is not something to which we ought to make a direct contribution."²¹

More direct language was used on another occasion. According to the New York Times, the offer to sell a Nautilus-type nuclear submarine to France was revived in October 1962 in the hope of modifying the strained relations between both countries without directly assisting the French nuclear weapons program. Chet Hollifield, chairman of the JCAE, assailed the administration's plan and declared that he opposed the transfer of secrets "to nations whose political structure is unstable and whose security capability is questionable."²² Other arguments were summed up in a June 1962 issue of the Wall Street Journal: since de Gaulle is assumed to be nearing the end of his political career, and since there is a clear opposition to his atomic ambitions in the French parliament, a policy of wait and see is

preferable; the expenditure for a deterrent force is so high and its deployment so complex that the United States is the logical custodian of the Western nuclear fire; and the French deterrent which relies on manned bombers due to be operational in 1964, will be outdated at that time by the missile technology.²³

On the opposite side, the pros had a notable spokesman in Henry Kissinger, director of the Harvard Center of International Affairs, who wrote in 1963:

It is hard to conceive a stable Europe that does not include France as well as Britain. Any genuine nuclear policy must grow out of existing programs that will continue whatever the fate of the multilateral force. . . . Thus instead of being hostile to the French nuclear program and, at best, indifferent to the British effort, we should use our influence to place them in the service of a European conception.²⁴

C. L. Sulzberger, editorial writer of the New York Times, warned that the United States had invented several myths in its difficult relationship with France. They included the arguments that the United States does not share nuclear information with France because it does not want to spread the knowledge to the Germans, although Chancellor Konrad Adenauer proclaims that he does not want it; that France's current nuclear policy is de Gaulle's invention and will fade away with de Gaulle; and that Washington, so rigid in its crusade against atomic proliferation, does not yet admit that France is a member of the atomic "club."²⁵

Among US officials, Ambassador James M. Gavin, US ambassador in Paris, Gen. Maxwell D. Taylor, military adviser to President Kennedy, and several Pentagon officials leaned

toward some form of atomic sharing with France. They argued that French atomic progress was inescapable and therefore should be helped in order to improve Western military readiness and to obtain trade concessions in return. The trade issue was deemed critical at the time of the emergence of the Common Market because increasing exchanges between France and Germany could harm US exports and have a negative impact on the US balance of trade.²⁶

Working out the French Deterrent Doctrine. The debate over the justification and doctrine of the French deterrent raised other points of friction with the United States. Basically, there were two assumptions at the root of the deterrent question: (1) the French deterrent force was as much political as military, and (2) its military value did not compare to the potential adversary but was sufficient, by the damage it could cause, to deter the adversary from any aggressive action. Political motives for the French deterrence have never been openly stated. Beyond the arguments of grandeur and prestige often attributed to de Gaulle's ideals and found in Anglo-Saxon literature, it was actually the existence of France as a sovereign nation which was reaffirmed through the nuclear armament program. This is particularly true when one remembers that the intrinsic political weakness of the Fourth Republic, exacerbated by the painful process of dismembering her colonial empire, led France on the road to decline. There is no doubt that the military nuclear program was intended to strengthen her

position internationally and in the UN Security Council, giving her some kind of assurance that her global role would not be disputed. Furthermore the regained respectability was to enhance France's quest for leadership in Europe. This centuries-old goal of French policy found in the deterrent force the opportunity of creating a European security system aimed at keeping the upper hand over the common destiny of Western Europe. But linking both British and French nuclear deterrents--the latter only in its planning stage--in a European force would have been a necessary step which was never envisaged at that time, although the option remained open. As a result of the vacuum left in Europe by the new defense commitment of Britain, particularly after the Nassau agreement, French diplomacy focused instead on strengthening relations with Bonn. Overall, the Gaullist design was to reinstate France as a major power on the basis of the nuclear deterrent force, and, rejecting its current bipolar orientation, to propose a new world equilibrium. That new equilibrium would include a European entity dominated by the French-German entente which would be able to deal as equals with both superpowers, rather than being subject to their bargainings, rivalries, and possible war as in the present status quo.

French concerns about the political role of the deterrent remained quite remote from the Allied concerns which focused on its military value. Basically, since the French nuclear force would never possess the same deterrent

value as the American one, some European Allies considered it useless and unjustified. But French strategists, well aware of America's qualitative and quantitative superiority in deterrence, introduced a strategy differing at least on two points from the American one: (1) French deterrent posture relied on the strategy du faible au fort (from the weak to the strong). Unlike the United States, France could not afford the multiplication of weapons to destroy the enemy's missiles and therefore could not build a counterforce deterrent matched with a controlled, or flexible, response. On the contrary, the French targets would be population centers, and the nuclear strike would occur as an ultimate retaliatory action. (2) The dissuasion proportionnée (proportional deterrence), the theoretical basis for this strategy, explained how it made sense from a military standpoint to build a small but sufficient amount of weapons. Defined by Air Force Brigadier General Pierre Gallois, proportional deterrence assumes that military parity with the aggressor is not necessary to overcome him as long as the deterrent ensures that the potential damages inflicted on the aggressor will be greater than the benefits he would gain from his attack.²⁷

Obviously French and American strategies were in conflict: the American counterforce doctrine made disarming and selective strikes possible, while the French counter-city doctrine relied on an all-out strike capable of eliminating several of the adversary's cities. In his University of

Michigan speech McNamara declared that "there must not be competing and conflicting strategies to meet the contingency of nuclear war,"²⁸ but it was doubtful that the French government would change anything of its laborious strategic build-up: it could not afford it. To do so would be tantamount to renouncing its entire policy in this area.

Arms Control and Disarmament Policy. Nuclear arms control and disarmament appeared as French concerns long before France made known her intention to develop an atomic bomb. For several years successive governments had been supportive of the UN proposals in this field sponsored by the United States. In 1957, the government, by then socialist, indicated that, unless a disarmament agreement was reached, it would push ahead the military atomic program. Jules Moch, French government representative to the UN, explained that if other powers stockpiled weapons, France would do likewise.²⁹ The atomic powers envisaged an agreement to ban atomic tests as the first step toward nuclear disarmament, and they agreed unilaterally to suspend nuclear testing during the negotiations. In October 1958, de Gaulle remarked publicly that this represented a shift in the Allies' position and that France was sticking to the goal, agreed in common, of limitation and control of all armaments. Therefore the suspension of tests could be interpreted as a "fallacious sidetrack," and France would not accept "a position of chronic and overwhelming inferiority."³⁰

The government maintained this attitude throughout the negotiation of the Test-Ban Treaty (later called the Moscow Treaty), although strong opposition in the UN, especially from African and Asian nations, brewed against the tests scheduled in the Sahara. In his press conference of 10 November 1959, de Gaulle hinted that he regarded the suspension of tests as a demonstration of the superpowers' hegemony because their technological edge made suspension possible without damage for them:

I must note that this suspension of tests is taking place at a time when the two rivals are in possession of all that must be had or known in order to be able to wipe out life. . . . Moreover this suspension of tests comes at a time when each of the two sides has accumulated, through tests, a fund of knowledge which enables them, without having to proceed to new explosions, to perfect almost ad infinitum their nuclear weapons.³¹

The refusal to join the negotiation of the Test-Ban Treaty was clearly an expression of the political reality that France needed a unilateral nuclear deterrent in order to secure her independence over the long term. In her apparently negative and actually isolated stand, France found in China an ally who had the same reasons to fear an "atomic Yalta" and to oppose a "US-Soviet military condominium."

The French conception of disarmament stemmed from three basic assumptions derived from de Gaulle's press conferences of October 1958 and November 1959: (1) disarmament was not a matter for superpowers only; (2) the security of France came first; therefore disarmament should not be construed as a goal in itself but as a corollary of security, and (3) nuclear disarmament was acceptable under

the condition that it was not discriminating.³² On 25 April 1960, during a visit to the United States, de Gaulle addressed a joint session of Congress and expressed his view that disarmament should begin with a ban on the construction of launching ramps and delivery vehicles:

One can indeed apply contractual measures first to the vehicles of death, missiles, planes, ships, which, even today, it is possible to prevent from carrying bombs and to supervise in common. . . . Failing the renunciation of atomic armaments by those states who are provided with them, the French Republic obviously will be obliged to equip itself with such armaments.³³

De Gaulle's position stood in contrast to US policy which supported the control and prevention of the use of the nuclear warheads themselves.

Atlantic Solidarity. In the early sixties two major crises with the Soviets created opportunities to test the Atlantic solidarity and the reliability of the engagement of France with her Allies.

Since World War II the Soviets regularly brandished a military threat against Berlin or threatened to conclude a separate peace treaty with East Germany, a step which could in turn trigger a conflict over the Allied role in Berlin. To defend the city and accept the conflict or to abandon it and undergo a disastrous humiliation was the basic dilemma confronting the United States, Britain, and France who occupied the western sectors of the city. East-West tension grew steadily after 1958 and climaxed in the erection of the wall around West Berlin in June 1961. Throughout the crisis French diplomacy showed an uncompromising attitude to support

the status quo, lest concessions to the Soviets would bring more demands.³⁴ And to make very clear that France would stand by her Allies and would not compromise, whatever the risk of a major conflict, de Gaulle made his famous remark to Sergei Vinogradov, Soviet Ambassador to France: "Well, Mr. Ambassador, so we shall die. But so will you!"³⁵ President Kennedy praised that attitude, and in his letter to Congress dated 7 September 1961 urging approval of the Atomic Cooperation Agreement of 1961, wrote:

The Government of France, in this crisis, has behaved with great firmness, and the staunch and determined position of President de Gaulle, in particular, has reinforced the West.³⁶

Again, in October 1962, the Cuban missile crisis led both superpowers to the verge of a direct confrontation. Among the diplomatic assurances Kennedy sought at that time, those of the NATO Allies were critical to demonstrate a united front in firm opposition to Nikita S. Khrushchev's maneuvering. Therefore former Secretary of State Dean Acheson hastily toured several European capitals. In Paris he met de Gaulle who did not hedge in making France's position known: de Gaulle said only three words: "France will fight,"³⁷ and put French forces under alert.

Such was typical of the resolute and inflexible response given by de Gaulle when matters such as national will and principle were at stake. Western and European security were linked. Therefore despite the efforts to build an immune sanctuary on the French homeland, the government knew that the destiny of France was inextricably linked to

that of the Allies and that it was imperative for France to commit herself militarily to the common defense.

Chapter Three Notes

1. "Excerpts From the Soviet Union's Statement on Resumption of Nuclear Testing," New York Times, 31 August 1961, 4.
2. Université de Franche-Comté et Institut Charles-de-Gaulle, L'aventure de la bombe (Paris: Librairie Plon, 1985), 226.
3. Wilfrid L. Kohl, French Nuclear Diplomacy (Princeton: Princeton University Press, 1971), 223.
4. Wolf Mendle, Deterrence and Persuasion (New York: Praeger Publishers, 1970), 151.
5. Hilarion, Vice-amiral Philippon, La royale et le roi (Paris: Editions France-Empire, 1982), 355-56.
6. Robert E. Osgood, NATO The Entangling Alliance (Chicago: the University of Chicago Press, 1962), 229.
7. "Agreement Between the Government of the United States of America and the Government of the French Republic for Cooperation in the Operation of Atomic Weapons Systems for Mutual Defense Purposes, 27 July 1961," in U.S., Department of State, United States Treaties and Other International Agreements 1961 (Washington: Government Printing Office, 1962), 12: 1423-33.
8. "Letter to President from Glenn T. Seaborg, Chairman of Atomic Energy Commission, and Roswell L. Gilpatric, Deputy Secretary of Defense, 20 July 1961," Department of State Bulletin, 2 October 1961, 557.
9. Ibid., 558.

10. In a recent article, Professor Richard H. Ullman indicates that one objective the Kennedy Administration sought when it concluded the 1961 agreement "was to discourage the French from going ahead with their own nuclear force." Most probably if any discouragement was to come, it could not hurt either the government which was striving to have nuclear weapons under its own control or the military leaders who at that time were assured of the feasibility of the French nuclear force. Therefore the agreement, which could in no way offer some substitute for a national force, could not create much trouble. See Richard H. Ullman, "The Covert French Connection," Foreign Policy 75 (Summer 1989): 31.

11. Congress, Senate, Problems and Trends in Atlantic Partnership, Staff Study prepared for the use of the Committee on Foreign Relations, 88th Cong., 1st sess., (Washington: Government Printing Office, 1963), 14-15.

12. Ibid., 5.

13. Ambassade de France, Major Addresses, Statements and Press Conferences of General de Gaulle, 19 May 1958-31 January 1964 (New York: Service de presse et d'information, 1964), 219.

14. Kohl, 284.

15. "President Kennedy Holds Talks at Nassau With Prime Minister Macmillan: Joint Communiqué," Department of State Bulletin, 14 January 1963, 44.

16. Bertrand Goldschmidt, The Atomic Complex, trans. Bruce M. Adkins (La Grange Park: American Nuclear Society, 1980), 148-49.

17. Ambassade de France, 219.

18. "Defense Arrangements of the North Atlantic Community, Address by Robert S. McNamara," Department of State Bulletin, 9 July 1962, 67-68.

19. "U.S. Wary on Arms Plea," New York Times, 19 April 1962, 19.

20. "United States Unwillingness To Participate In The Development of French National Nuclear Deterrent", U.S., Department of State, American Foreign Policy 1962 (Washington: Government Printing Office, 1966), 1318.

21. "Voice Of America's Press Conference U.S.A., 12 June 1962," Department of State Bulletin, 9 July 1962, 54.

22. Jack Raymond, "Hollifield Hits Plan To Sell Submarine," New York Times, 18 October 1962, 1.
23. Philip Geyelin, "Kennedy Considers New Atom Force In Europe To Undercut de Gaulle," Wall Street Journal, 21 June 1962, 1.
24. Henry Kissinger, "NATO's Nuclear Dilemma," Reporter (27 March 1963): 36, quoted in U.S., Senate, Problems and Trends in Atlantic Partnership, 23.
25. C. L. Sulzberger, "Pandora's Box, Ourselves and France," New York Times, 18 April 1962, 38; "The Ghosts of Suez and a Myth," New York Times, 29 June 1962, 26.
26. Jack Raymond, "Atom Aid To Paris Pressed By Gavin," New York Times, 6 June 1962, 1.
27. Université de Franche-Comté, 165-73.
28. "Defense Arrangements of the North Atlantic Community, Address by Robert S. McNamara," Department of State Bulletin, 9 July 1962, 68.
29. Kathleen Telsh, "France to Develop Her Own Atom Bomb In Absence of Arms Pact, U.N. Is Told," New York Times, 23 October 1957, 14.
30. Ambassade de France, 27-28.
31. Ibid., 61.
32. Université de Franche-Comté, 288-90.
33. "Address by President de Gaulle Before a Joint Session of the Two Houses of Congress," New York Times, 26 April 1960, 18.
34. Charles de Gaulle, Memoirs of Hope: Renewal and Endeavor, trans. by Terence Kilmartin (New York: Simon and Schuster, 1971), 222-23.
35. François de Rose, European Security and France, trans. Richard Nice (Urbana and Chicago: University of Illinois Press, 1984), 93.
36. "President Urges Approval of Atomic Cooperation Agreement with France," Department of State Bulletin, 2 October 1961, 556-57.
37. Congressman William G. Whitehurst, interview by author, Norfolk, Virginia, 12 September 1989.

CHAPTER FOUR

CONCLUSIONS

The Original Path of France Toward Nuclear Armament.

There is no doubt that the history of nuclear science is also part of the history of France. This point has to be remembered when examining the various difficulties that arose between France and the United States on nuclear issues. In the French perspective every step in the development of the national atomic capability stemmed logically and naturally from the research and know-how acquired by French scientists. They were involved in the major events that marked atomic expansion, from the discovery of radium in 1898 by Pierre and Marie Curie to the invention of the critical mass of uranium in 1939 by Francis Perrin; those scientists and researchers pushed nuclear physics to its most advanced stage, as described by Einstein and demonstrated by the patents registered before World War II. The ordeal of World War II--France was occupied for four and a half years--put a temporary end to atomic research in France. But following an order issued by de Gaulle from London, a group of scientists continued their work for the Allied cause in British and North American laboratories. Later, when it came time to clarify the issue of the French secret patents, that French

contribution was not recognized by the US administration. It appeared rather that the US monopoly would not tolerate any kind of true cooperation on atomic matters. The French government had no choice other than to gather nuclear scientists, restart fundamental research, and take other necessary steps to improve its overall nuclear capability. In that respect, it is remarkable to note that the first impulse for this reorganization was given as early as in October 1945, before France was completely liberated, with the creation of the CEA.

The potential benefits of atomic science fascinated generations of influential engineers--especially among the grands corps de l'état--and received careful attention from the body politic, socialist and conservative alike. Therefore, nuclear programs which emerged in France in the forties and the fifties must not be considered as costly whims or eccentric achievements put forward in order to compete in the international arena. Rather they were designed as national goals, planned by the government, written down in its policy, and supported by the strong French state-system which on several occasions was able to unite governmental structures and private industries in the same objectives.

Nuclear programs, both civilian and military, developed from a national capacity supported by the achievements of national research and industry. As a consequence, when dealing with the United States and NATO on

nuclear matters, it is no surprise that the French government was prone to take an uncompromising stance. The proposals for equality with the United States and Britain on strategic issues as well as the right to deploy a military atomic force not controlled by the Americans derived logically from this attitude and this capability. Although President Eisenhower and some high-ranking American statesmen certainly understood French eagerness, Congress and the JCAE remained steadfastly insensitive to these considerations.

The decision for a French nuclear armament program was not made immediately after World War II but in the 1950s, following the initial developments in civilian atomic energy. Indeed, after World War II, there was no requirement for a nuclear armament capability. To pursue such a goal at that time would have been politically unreasonable since the country was emerging from its ruins and was struggling with the reconstruction policy. Therefore, until 1955 when plutonium began to be produced as a by-product in the Marcoule plant, the CEA exclusively worked on peaceful applications of atomic energy such as basic studies, prospecting for uranium, manufacturing fuel, and evaluating piles and power-generating reactors. It must be spelled out that during the first ten years of its existence, the CEA, established as a civil authority, had no military program, although this option remained viable since it was allowed by its statutes. It was not before the mid-fifties that governmental decisions were made, in the framework of the

First Five Year Plan, to start a military program including nuclear explosive devices and nuclear-propelled submarines. Contrary to what happened in the other nuclear powers of the time (United States, USSR, Britain and China), France began her atomic program as a civilian program without specific military research and development. This original approach, explained by historical and circumstantial reasons, at least gave French politicians and officials the opportunity to conduct a long and thorough assessment before deciding in 1956 to join the "club."

When the rift in military nuclear relations deepened between France and the United States, a political argument erupted in the United States according to which the French nuclear armament was a Gaullist invention which would not survive the General's retirement. That contention is clearly refuted by the fact that a Socialist prime minister, Mollet, endorsed the military program, after two years of hemming and hawing, in the aftermath of the shock created by the abortive Suez expedition. Later, the government led by Gaillard, a Radical, took the necessary steps to pursue the program. When de Gaulle returned to power, his line of action on nuclear matters followed the one already designed by his predecessors. De Gaulle inherited and extended but did not invent French nuclear policy. This remarkable continuity underlines the wide political consensus which somehow or other supported the emergence of the French military atomic program. Therefore Washington's way of attributing this

policy to de Gaulle alone, with all the political fragility that implied, did not take into account the full meaning and the genuine foundation of the program in French politics.

Controversial Political Assumptions Concerning French Nuclear Deterrence. The buildup of a French nuclear deterrent force independently from the Anglo-Saxon powers, which resulted in a lengthy misunderstanding between France and her Allies, was based on political assumptions rooted in French history. French unwillingness to rely wholly on any other power for nuclear support was inspired by the events of the preceding hundred years when France was invaded three times. One cannot forget that the Third Republic, born in the aftermath of the Franco-Prussian War, later had to face two World Wars fought on French soil from which the nation emerged deeply disabled and ruined. Among French politicians of the fifties, many of whom were World War I veterans, the spectre of the battle of Verdun, into which the nation poured its extreme resources during a ten-month struggle for its very survival, exerted a major, if not always recognized, influence. Similarly, the critical role of an Alliance could not be forgotten since France was saved twice from annihilation by her Allies. Therefore, after World War II the line of conduct adopted by successive governments maintained the faithfulness to the principle of the Atlantic Alliance and envisaged the buildup of a nuclear military force which would guarantee that no more Verduns would ever

occur in France. Such a guarantee implied that the government would have full control over its own armament.

The memorandum of 1958 from de Gaulle to Eisenhower and Macmillan demanding a reorganization of the decision-making process within NATO, specifically on the employment of nuclear weapons, derived from this assumption. Similarly, the refusal to join the MLF, and, years later, the decision to leave NATO's military structure, were the abrupt political translation of the fact that France did not intend to be left atomically naked or in a less developed state.

Furthermore French political circles which, with the exception of the Communists, favored the Atlantic Alliance as a protector-shield of Western values, could question through historic examples the timeliness of an American intervention in Europe, should a conventional conflict erupt. In 1917 the United States entered World War I after France had been fighting for nearly three years and was on the verge of a total collapse; in 1940 Franklin Roosevelt, struggling against an isolationist Congress, could not do much to forestall the fall of France and the desperate situation of Britain which remained alone against Nazi Germany.

Such troublesome memories were reinforced after World War II with the emergence of the American nuclear strategy of massive retaliation. The nuclear umbrella which the United States deployed over its European Allies induced an underlying debate as to whether the Americans would be willing to put Chicago, for example, at risk if Frankfurt or

Marseille were the target of a Soviet nuclear attack. Later, starting in 1962, the progressive introduction of the flexible response doctrine was viewed by some as a means of accepting nuclear conflict and limiting it to tactical nuclear weapons, thereby confining most of the battlefield to continental Europe.

These doubts basically reflect the reality that the guarantee given by the nuclear armament of one nation to other nations introduces immeasurable risks for the guarantor; therefore, the extension of a true nuclear guarantee to Allies is acceptable only if the Allies, part of the same bloc, renounce their fundamental rights as nations able to make autonomous decisions on matters of defense. In the late fifties France was not ready to make such concessions. In 1956, her humiliating withdrawal along with Britain from Suez in the face of US pressure and oblique Soviet threats strengthened the case of the French government for building an independent strategic nuclear force.

Given these differences in perspective, it did not matter that the scale of US nuclear armament was assessed on both sides of the Atlantic as sufficient to protect Europe against a Soviet attack. Thus, Washington sometimes regarded the French deterrent, which did not add to the global strategic balance, as an unnecessary tool. On the other hand, Paris asked a different set of question: on what basis could a sovereign nation be reproached for safeguarding its own territory, for protecting its vital interests, and for

providing itself with a freedom of action in world politics? Why should a nation such as France depend under all circumstances on the United States for protection?

US Uncompromising Attitude Versus French Determination. There was some righteousness in the Congress' intentions not to do anything that would help the emergence of the fourth nuclear power. The crusade against nuclear proliferation was good from a moral standpoint and was, after all, intended to facilitate a peace settlement with the Soviet Union, to the benefit of all nations. But the fallacy of this reasoning came from the idea that the United States would be able to stop that proliferation by keeping its nuclear information secret. In the late fifties the United States could have reasoned that a nation having some atomic knowledge, reasonably educated scientists, a good industrial base, and enough money, would be able to join the atomic club. Furthermore the sharing of US atomic secrets, with discrimination, would have been more apt to keep the development of nuclear weapons under US control.

The avoidance of duplication of effort, so often advocated in Allied cooperation in order to save money and resources, was never applied to the French case. In the nuclear armament field, France had to discover all the prerequisite technologies and every step of the program, often relying with only some indication from the Allies' experience that such a system or such a process was feasible. One might as well say that French researchers had to

rediscover America. This imposed quite a financial burden on the state budget. After 1961, however, that burden was partially offset by the repatriation and demobilization of the Army from Algeria and also by years of unprecedented economic growth.

In 1957, lacking American assistance, the French government pushed decisively to set up the European atomic energy consortium, EURATOM, with West Germany, Italy, and the Benelux countries. Among them France was the most advanced in nuclear science. Although EURATOM was devoted to civilian programs and although civilian and military programs to a certain extent go hand in hand, the implementation of EURATOM, beneficial to European integration, was only a stopgap measure which could not come up to French military expectations. The US attitude favoring EURATOM had no implication for the French military program in its actual state of development.

The agreement of 1959 allowing the French government to buy from the United States a modest quantity of military-grade uranium appears as an exception in a rather intransigent US attitude. Despite the commitment of the US administration, it was clear that Congress would oppose the transfer of atomic submarine technology to any nation but Britain. In no way could the uranium deal be compared to a transfer of technology, but its implementation revealed implicitly that, in the American view, the French reactor program would continue even without that specific aid. To

refuse the deal, however, would have been an effective, if unrefined, means for the United States to delay the building of French nuclear submarines. It may be also that in the mind of lawmakers, the mastery of pressurized water reactors was out of the reach of French scientists, and therefore the deal bore in itself no critical consequence. But it actually speeded up the reactor program and reduced its development by several years.

Different in its purpose was the agreement of 1961 on the training of French forces in the employment of US nuclear weapons. Training consistent with what other NATO nations had access to served as a conspicuous sign of the French commitment to Western common defense. But it did not interfere with national armament programs.

Remote Consequences of a Missed Cooperation. During the period studied, it was always and only with great reluctance that the United States recognized French achievements in the nuclear field. During the war de Gaulle had ordered several nuclear researchers to Britain and North America, but he was never informed by the Allies of the results of studies and tests. After the war, rights over the wartime patents developed by the Frenchmen were simply dismissed by the US administration. This gave rise to lengthy international lawsuits which concluded in 1969. During the late fifties and early sixties, every step of the French military program encountered US resistance or passivity and on one occasion was qualified as "inimical" by

President Kennedy. France was not regarded at that time as a genuine nuclear partner. Therefore she developed her own program without US technology. Consequently the United States lost the possibility of influencing or checking French nuclear research and development.

Pressed by its global defense commitments and eager not to encourage German military nuclear aspirations, US diplomacy opposed as futile the effort represented by a small but credible independent deterrent force which in its view had no role to play in the Allied defense posture. The Nassau agreement, which linked the British deterrent force to the US, reinforced the American diplomatic stance in the NATO arena and emphasized the singularity of the French position. As a consequence, the rendezvous of French and British forces to achieve through mutual cooperation and coordination some kind of truly European deterrent system was postponed indefinitely. In the current political turmoil affecting Central and Eastern Europe, such a European deterrent system, if it existed, would be most helpful in giving Western Europe a voice in the debate over European balance of power. Put another way, Europe could rely on its deterrent as a token of its political will.

In retrospect, if France had benefited from American aid in building a nuclear submarine as envisaged in 1958 and again in 1962, it is probable that the whole French nuclear program, both civilian and military, would not have reached its current level. If the government had relied on a

Nassau-type agreement to obtain strategic missiles, it is probable that the French space industry would have remained tiny and would not have led the European space program. These benefits to science and technology belong to the Gaullist legacy.

BIBLIOGRAPHY

Primary Sources.

Ambassade de France. Major Addresses, Statements and Press Conferences of General Charles de Gaulle, 19 May 1958-31 January 1964. New York: Service de presse et d'information, 1964.

Atomic Energy Act. Statutes at Large. Vol 60. (1946).

de Gaulle, Charles. War Memoirs. Unity, 1942-1944.
Translated by Richard Howard. New York: Simon and Schuster, 1960.

_____. War Memoirs. Salvation, 1944-1946. Translated
by Richard Howard. New York: Simon and Schuster, 1960.

_____. Memoirs of Hope: Renewal and Endeavor.
Translated by Terence Kilmartin. New York: Simon and Schuster, 1971.

_____. Lettres, notes et carnets. Juin 1958-
Décembre 1960. Paris: Librairie Plon, 1985.

Goldschmidt, Bertrand. Les rivalités atomiques 1939-1966.
Paris: Fayard, 1967.

_____. The Atomic Complex. Translated by Bruce M.
Adkins. La Grange Park: American Nuclear Society, 1980.

_____. Pionniers de l'atome. Paris: Editions Stock,
1987.

U.S. Congress. House. Concurrent Resolution 249. 86th
Cong., 1st sess. Congressional Record 1959.
Vol. 105, pt. 16.

- _____. House. Adverse report to accompany H. Cong. Res. 242. 86th Cong., 1st sess. Congressional Record 1959. Vol.105, pt. 16.
- _____. Senate. Committee on Foreign Relations. Problems and Trends in Atlantic Partnership. Staff Study. 88th Cong., 1st sess. Washington: Government Printing Office, 1963.
- U.S. Department of Energy. Memorandum on European Integration of Atomic Energy, 9 January 1956. Archives, AEC 751/43.
- _____. Status Report on Euratom, 17 December 1956. Archives, AEC 751/102.
- U.S. Department of State. American Foreign Policy, 1961. Washington: Government Printing Office, 1965.
- _____. American Foreign Policy, 1962. Washington: Government Printing Office, 1966.
- _____. Department of State Bulletin, 1957-62.
- _____. Foreign Relations of the United States, 1945. Vol. 2: General Political and Economic Matters. Washington: Government Printing Office, 1967.
- _____. Foreign Relations of the United States, 1948. Vol. 1: General: The United Nations. Washington: Government Printing Office, 1979.
- _____. Foreign Relations of the United States, 1951. Vol. 1: National Security Affairs; Foreign Economic Policy. Washington: Government Printing Office, 1979.
- _____. Foreign Relations of the United States, 1952-1954. Vol. 2: National Security Affairs. Washington: Government Printing Office, 1984.
- _____. Foreign Relations of the United States, 1955-1957. Vol. 4: Western European Security and Integration. Washington: Government Printing Office, 1986.
- _____. United States Treaties and Other International Agreements. Vol. 5. Washington: Government Printing Office, 1955.

_____. United States Treaties and Other International Agreements. Vol. 7. Washington: Government Printing Office, 1956.

_____. United States Treaties and Other International Agreements. Vol. 8. Washington: Government Printing Office, 1957.

_____. United States Treaties and Other International Agreements. Vol. 9. Washington: Government Printing Office, 1959.

_____. United States Treaties and Other International Agreements. Vol. 10. Washington: Government Printing Office, 1960.

_____. United States Treaties and Other International Agreements. Vol. 11. Washington: Government Printing Office, 1961.

_____. United States Treaties and Other International Agreements. Vol. 12. Washington: Government Printing Office, 1962.

Université de Franche-Comté et Institut Charles-de-Gaulle.
L'aventure de la bombe. Paris: Librairie Plon, 1985.

Secondary Sources.

- Barjot, Vice-amiral. Vers la Marine de l'age atomique. Paris: Amlot Dumont, 1955.
- Capitanchik, David. The Eisenhower Presidency and American Foreign Policy. New York: Humanities Press, 1969.
- Cerny, Philip G. The Politics of Grandeur. Cambridge: Cambridge University Press, 1980.
- Delmas, Claude. Histoire politique de la bombe atomique. Paris: Editions Albin Michel, 1967.
- de Rose, François. European Security and France. Translated by Richard Nice. Urbana and Chicago: University of Illinois Press, 1984.
- Faculty Members of the Massachusetts Institute of Technology. The Nuclear Almanach: Confronting the Atom in War and Peace. Reading, Mass.: Addison-Wesley Publishing Company, 1984.
- Frémy, Dominique et Michelle Frémy. Quid 1987. Paris: Robert Laffont, 1986.
- Gowing, Margaret. Britain and Atomic Energy 1939-1945. Glasgow: The University Press, 1964. Published in French under the title: Dossier secret des relations atomiques entre alliés 1939-1945. Paris: Librairie Plon, 1965.
- Hewlett, Richard and Oscar Henderson. A History of the U.S. Atomic Energy Commission. Vol. 1. State College: Pennsylvania State University Press, 1962.
- Hilarion, Vice-amiral Philippon. La royale et le roi. Paris: Editions France-Empire, 1982.
- Kennedy, Paul. The Rise and Fall of the Great Powers. New York: Random House, 1987.
- Kohl, Wilfrid L. French Nuclear Diplomacy. Princeton: Princeton University Press, 1971.

- Laird, Robbin F. France, the Soviet Union and the Nuclear Weapons Issue. Boulder: Westview Press, 1985.
- _____, ed. French Security Policy. Boulder: Westview Press, 1986.
- Leclercq, Jacques. The Nuclear Age. Paris: Librairie Hachette, 1986.
- Le Prestre, Philippe G., ed. French Security Policy in a Disarming World. Boulder: Lynne Rienner Publishers, 1989.
- Mendl, Wolf. Deterrence and Persuasion. New York: Praeger Publishers, 1970.
- Néel, Louis, and others, eds. Vivre avec le nucléaire. Paris: Librairie Hachette, 1982.
- New York Times, 1957-1962.
- Osgood, Robert. NATO, the Entangling Alliance. Chicago: University of Chicago Press, 1962.
- Pogon, Edmond. De Gaulle et l'armée. Paris: Librairie Plon, 1976.
- Polmar, Norman and Thomas B. Allen. Rickover. New York: Simon and Schuster, 1982.
- Pringle, Peter and James Spigelman. The Nuclear Barons. New York: Holt, Rinehart and Winston, 1981.
- Rhodes, Richard. The Making of the Atomic Bomb. New York: Simon and Schuster, 1986.
- Rosecrance, Richard, ed. The Dispersion of Nuclear Weapons Strategy and Politics. New York: Columbia University Press, 1964.
- Scheinman, Lawrence. Atomic Energy Policy in France Under the Fourth Republic. Princeton: Princeton University Press, 1965.
- _____. The International Atomic Energy and World Nuclear Order. Washington: Resources for the Future, 1987.
- Serfaty, Simon. France, de Gaulle and Europe. Baltimore: The Johns Hopkins Press, 1968.

Ullman, Richard H. "The Covert French Connection." Foreign Policy 75 (Summer 1989), 3.

Weart, Spencer R. Scientists in Power. Harvard: Harvard University Press, 1979.

_____, and Gertrud W. Szilard, eds. Leo Szilard: His Version of the Facts. Vol. 2. Cambridge: The MIT Press, 1978.

Williams, Robert, and Philip Cantelon, eds. The American Atom. Philadelphia: University of Pennsylvania Press, 1984.

APPENDIX A

THE EINSTEIN LETTER

Albert Einstein
Old Grove Rd.
Nassau Point
Peconic, Long Island
August 2nd, 1939

F. D. Roosevelt
President of the United States
White House
Washington, D.C.

Sir:

Some recent work by E. Fermi and L. Szilard, which has been communicated to me in manuscript, leads me to expect that the element uranium may be turned into a new and important source of energy in the immediate future. Certain aspects of the situation which has arisen seem to call for watchfulness and, if necessary, quick action on the part of the Administration. I believe therefore that it is my duty to bring to your attention the following facts and recommendations:

In the course of the last four months it has been made probable--through the work of Joliot in France as well as Fermi and Szilard in America--that it may become possible to set up a nuclear chain reaction in a large mass of uranium by which vast amounts of power and large quantities of new radium-like elements would be generated. Now it appears almost certain that this could be achieved in the immediate future.

This new phenomenon would also lead to the construction of bombs, and it is conceivable--though much less certain--that extremely powerful bombs of a new type may thus be constructed. A single bomb of this type, carried by boat and exploded in a port, might very well destroy the whole port together with some of the surrounding territory. However, such bombs might very well prove to be too heavy for transportation by air.

The United States has only very poor ores of uranium in moderate quantities. There is some good ore in Canada and the former Czechoslovakia, while the most important source of uranium is the Belgian Congo.

In view of this situation you may think it desirable to

have some permanent contact maintained between the Administration and the group of physicists working on chain reactions in America. One possible way of achieving this might be for you to entrust with this task a person who has your confidence and who could perhaps serve in an unofficial capacity. His task might comprise the following:

a) to approach Government Departments, keep them informed of the further development, and put forward recommendations for Government action, giving particular attention to the problem of securing a supply of uranium ore for the United States,

b) to speed up the experimental work, which is at present being carried on within the limits of the budgets of University laboratories, by providing funds, if such funds be required, through his contacts with private persons who are willing to make contributions for this cause, and perhaps also by obtaining the co-operation of industrial laboratories which have the necessary equipment.

I understand that Germany has actually stopped the sale of uranium from the Czechoslovakian mines which she has taken over. That she should have taken such early action might perhaps be understood on the ground that the son of the German Under-Secretary of State, von Weizsacker, is attached to the Kaiser-Wilhelm-Institut in Berlin where some of the American work on uranium is now being repeated.

Yours very truly,

A. Einstein*

*Faculty Members of the Massachusetts Institute of Technology, The Nuclear Almanach: Confronting the Atom in War and Peace (Reading, Mass.: Addison-Wesley Publishing Company, 1984), 22-23.

APPENDIX B

**COPY OF THE TRANSLATIONS OF PRESIDENT DE GAULLE'S LETTER AND
MEMORANDUM OF 17 SEPTEMBER 1958**

(Obtained from The Dwight D. Eisenhower Library, Abilene,
Kansas)

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SECRET

Translation

Paris, September 17, 1958

GENERAL DE GAULLE

Dear Mr. President:

When I had the pleasure of meeting with Mr. Foster Dulles last July, I informed him of my views regarding the organization of the defense of the free world. The events which have since occurred have reinforced the French Government's conviction in this regard. This has determined the French Government to make certain propositions to the American and British Governments.

Because of the importance of the problem, I have instructed Mr. Alphand to raise this matter personally with you in my behalf. I hope that the enclosed memorandum, which I am also having sent to Mr. Macmillan, may be the object without delay of a full discussion among the three Governments.

I appreciate how much the Far Eastern situation may be causing you preoccupations and I wish to assure you on this occasion of my sincere and trusting friendship. I hope all the more that we may be able to work together under better conditions in order that our alliance may become more coherent and more effective. It is in this spirit that I inform you of the conclusions to which I myself have come and concerning which I would be very happy to know your personal views.

Please believe, dear Mr. President, in my loyal sentiments and in the assurances of my very high consideration.

(Signed)
C. de Gaulle



His Excellency
Dwight D. Eisenhower,
President of the United States of America.

SECRET

DECLASSIFIED
E.O. 11652, Sec. 11

NATIONAL ARCHIVES RELEASE
By T. E. P. H. M. Date 10/2/75

~~SECRET~~

Translation

MEMORANDUM

Recent events in the Middle East and in the straits of Formosa have contributed to show that the present organization of the Western Alliance no longer corresponds to the necessary conditions of security as far as the whole of the free world is concerned. The sharing of the risks incurred is not matched by indispensable co-operation on decisions taken and on responsibilities. From this the French Government is led to draw conclusions and to make several propositions.



1. The Atlantic Alliance was conceived and its functioning is prepared with a view to an eventual zone of action which no longer corresponds to political and strategic realities. The world being as it is, one cannot consider as adapted to its purpose an organization such as NATO, which is limited to the security of the North Atlantic, as if what is happening, for example, in the Middle East or in Africa, did not immediately and directly concern Europe, and as if the indivisible responsibilities of France did not extend to Africa, to the Indian Ocean and to the Pacific, in the same way as those of Great Britain and the United States. Moreover the radius of action of ships and planes and the range of missiles render militarily outdated such a narrow system. It is true that at first it was admitted that atomic armament, evidently of capital importance, would remain for a long time the monopoly of the United States, a fact which might have appeared to justify that decisions on the world level concerning defense would be practically delegated to the Washington Government. But on this point, also, it must be recognized that such a fact admitted originally no longer is justified by reality.

2. France could, therefore, no longer consider that NATO in its present form meets the conditions of security of the free world and notably its own. It appears necessary to it that on the level of world policy and strategy there be set up an organization composed of: the United States, Great Britain and France. It would be up to this organization, on the one hand, to take

joint

~~SECRET~~

DECLASSIFIED

E.O. 11652, Sec. 11

NATIONAL ARCHIVES REVIEW 1/2/01

By J. C. [Signature] Date 4/4/75
1/7/74

SECRET

-2-

joint decisions on political questions affecting world security and on the other, to establish and if necessary, to put into effect strategic plans of action, notably with regard to the employment of nuclear weapons. It would then be possible to foresee and organize eventual theaters of operations subordinated to the general organization (such as the Arctic, the Atlantic, the Pacific, the Indian Ocean), which could if necessary be subdivided into subordinate theaters.

3. The French Government considers such a security organization indispensable. It (the French Government) subordinates to it as of now all development of its present participation in NATO and proposes, should such appear necessary for reaching agreement, to invoke the provision for revising the North Atlantic Treaty in accordance with Article 12.

4. The French Government suggests that the questions raised in this note be the object as soon as possible of consultations among the United States, Great Britain and France. It proposes that these consultations take place in Washington and at the outset through the Embassies and the Permanent Group.



SECRET