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Correspondence School: New Dimensions in Extension

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NEW DIMENSIONS IN EXTENSION

DID YOU KNOW THAT . . . a lieutenant in the Coast Guard, upon enrollment in the Correspondence Course of Military Planning, stated that one of the reasons was:

> To demonstrate my ability along these lines, so that I might be selected to attend the Naval War College.

DID YOU KNOW THAT . . . a recent graduate of the Correspondence Course in International Law commented on the course as follows:

> With the last assignment completed, I can state without reservation that the course is as difficult—and as productive—as postgraduate study. After studying at some depth the many types of problems in the field of International Law, as this course demands, a Naval Officer has added a real dimension to his background that will serve him well in a variety of situations.

DID YOU KNOW THAT . . . a commander in the Naval Reserve had this to say while enrolled in the Correspondence Course in International Relations:

> This is the most valuable course [I have] ever taken. Texts are well chosen and provide interesting as well as instructive reading. I have devoted much time to reading and rereading the material assigned and feel, always, that the time is well spent.

DID YOU KNOW THAT . . . upon completing the Correspondence Course in National and International Security Organization a Naval Officer commented that:

> This has been an excellent course for me. When I started this course I was attached to the CNO Staff. When I completed it, I was attached to the CINCSTRIKE Staff. This course was ideal for both duties. It has done me more direct good in doing my job better than any technical course I have taken. I highly recommend this course to all officers going to or attached to a U.S. or Major Command Staff.

DID YOU KNOW THAT . . . the following officers have recently completed the Correspondence Course of Naval Command and Staff and have been awarded a diploma for this achievement? Especially noteworthy is the fact that Colonel Wunderlich is the first Army officer to complete this program. This package plan consists of the following four courses (or their equivalent): National and International Security Organization, Military Planning, Naval Operations, and Command Logistics. Completion of these four courses closely parallels a command and staff level of education.

CAPT James D. Oliver, Jr., USN
COL Frederick W. Wunderlich, USAR
CDR Isham W. Linder, USN
CDR LeRoy R. Brown, USN

NUCLEAR PROLIFERATION: THE FRENCH CASE

A Research Paper written by
Commander Donald C. Sattler, U.S. Navy
School of Naval Command and Staff, 1966

INTRODUCTION

The problem of nuclear weapons proliferation has confronted the world since the first atomic explosion in 1945. Since then, continuous disarmament and arms control negotiations have failed to produce a solution. Concurrently, the number of nations possessing a nuclear weapons capability has increased to five with the accession of France in 1960, and Communist China in 1964. These two additions brought a note of urgency to the negotiation table; however, the solution to the nuclear proliferation problem remains illusive.

This paper represents a case study of the French effort in achieving a nuclear weapon capability as it pertains to the basic problem of nuclear proliferation. The French case exemplifies the basic problem in that it embodies the establishment of a motive, the acquisition of the requisite wherewithal, and the follow-through to successful achievement of an atomic detonation with the subsequent status of a nuclear power. As such, France is representative of other nations which may aspire to become members of the "nuclear club." The purpose of this study is to delineate the motivational and contributory factors attendant in the French case of nuclear weapons proliferation.

The presentation of material in the paper resembles the accepted form of a case study with the inclusion of a problem statement, relevant factors, course of events, analysis, and conclusions.

Chapter I constitutes the statement of the nuclear proliferation problem. The development of the problem is traced from its beginning in 1945 through the complexity of the present.

The French rationale for acquiring a nuclear weapon capability in the face of internal and external opposition is analyzed in Chapter II.

In Chapter III, the extent of the French nuclear effort is addressed in terms of origins, present capability and future programs. Cost considerations and overall limitations are also examined.

Additional analysis and the conclusions are presented in Chapter IV.

CHAPTER I

THE NUCLEAR PROLIFERATION PROBLEM

Since the beginning of the Atomic Age in 1945, the United States has pursued a policy designed to prevent the acquisition of nuclear weapon technology by other nations. This policy of secrecy and exclusion was predicated on the premise that nuclear proliferation would constitute a danger to the continued existence of mankind. As the Nagasaki damage reports were still coming off the wire, President Truman informed the American people that:

> The atomic bomb is too dangerous to be loose in a lawless world. That is why Great Britain and the United States, who have the secret of its production, do not intend to reveal the secret until means have been found to control the bomb so as to protect ourselves and the rest of the world from the danger of total destruction. . . .[1]

Thus, the initial nuclear policy conrse was set–a course through uncharted waters. No precedent existed for the situation created by the advent of the atomic bomb.

Truman Policy. Policy makers of the Truman administration immediately set to work to establish national agencies to administer and control the expanding nuclear stockpile. Legislation was introduced and adopted in 1946 which created the United States Atomic Energy Commission (AEC), composed exclusively of civilians, and the Joint Committee on Atomic Energy within the Congress.[2] These two bodies became the dominant powers in the formulation and administration of the national atomic energy policies.

In October 1945, President Truman brought the issue of international controls before the United Nations. He declared that "the highest hope of the American people is that world cooperation for peace will soon reach such a state of perfection that atomic methods of destruction can be definitely and effectively outlawed forever."[3]

Three months later, the United States, Great Britain, and Canada signed a joint declaration recommending that the United Nations set up a special commission for the international control of atomic energy. The declaration urged the elimination of atomic

weapons adaptable to mass destruction; but it stressed that inspection and other safeguards shonld be undertaken by the United Nations "to protect complying states against the hazards of violations and evasions."[4] The U.N. Atomic Energy Commission was formed as a result of the tripartite declaration. Bernard Baruch was appointed the United States representative to the U.N. Atomic Energy Commission.

In June 1946, Mr. Baruch presented the American plan for the international control of atomic energy to the U.N. Commission. The plan proposed the creation of an International Atomic Development Authority, to which wonld be entrusted all phases of the development and nse of atomic energy including the power to control, inspect, and license all atomic activities. After an adequate system of control was in operation, the plan provided for the cessation of atomic bomb manufacture and the disposal of all existing bombs. The United States also insisted on abolishing the veto of the Security Council in all cases involving a violation of atomic agreements. "We are here to make a choice between the quick and the dead," Mr. Baruch solemnly told the members of the Commission. "That is onr business."[5]

The Soviet delegate to the United Nations, Andrei Gromyko, rejected the American proposals which wonld have infringed on the Soviet principles of industrial secrecy and absolute sovereignty. The United States subsequently disagreed with the Soviet counterproposal which provided for an international convention that wonld outlaw the use and prohibit the production of atomic weapons before a control system was established. The major area of disagreement concerned the timing and type of safeguards for the control and inspection machinery.

This impasse between the Soviet Union and the United States in these negotiations proved to be of major significance in the years that followed. It was one more area of a discord that marked the beginning of the cold war between the East and the West. The nnwillingness of the Rnssian delegates to cooperate and accept the will of the majority cast the first foreboding shadow on the ability of the United Nations to achieve international cooperation. Additionally, the issue of safeguards continued to be the primary area of disagreement between the Soviet Union and the United States in succeeding disarmament and arms control negotiations—a disagreement stemming primarily from a feeling of mutual distrust.

After 1946, the United States sought to maintain its nuclear power supremacy by preserving its monopoly over the atomic bomb as long as possible, by enforcing a policy of secrecy with respect to atomic infomation, and by striving to retain its position of scientific and technological superiority.

With the detonation of an atomic device in September 1949 by the Soviet Union, the arms race was accelerated towards the achievement of bigger and more destructive bombs. A hydrogen bomb was tested by the United States in November 1952. The Soviet Union exploded a similar device less than a year later in August 1953.[6] This event shocked the policy makers of the United States. It demonstrated the exceptional progress of the Russian weapons program; and, even more significant, it presaged the approaching technological parity between the East and West. In retrospect, it seems apparent that the Soviets employed delaying tactics in the disarmament talks until such time as they could bargain from a position of comparable strength.

Eisenhower Policy. With the loss of the atomic technology monopoly and the failure to obtain an East-West agreement in the area of military nuclear application, the United States turned to the peaceful uses of nuclear power as a possible means of finding common ground. This new policy was aimed at the limited goals of redirecting atomic materials from military to civilian uses, with safeguards merely against rediversion to military purposes. At the same time, it was hoped that the development of cooperation in the peaceful atomic field might aid the cause of international control agreements for military uses of atomic energy. Eisenhower disclosed in his book, *Mandate for Change*, another reason for the program. He considered the proposal an opportunity to tell "America and the world about the size and strength of our atomic capabilities and yet to do it in such a way as to make the presentation an argument for peaceful negotiation. . . ."[7]

On December 8, 1953, President Eisenhower proposed his "atoms-for-peace" plan to the United Nations General Assembly. The plan called for "the Governments principally involved . . . to begin now and continue to make joint contributions from their stockpiles of normal uranium and fissionable materials to an International Atomic Energy Agency." It would be the responsibility of this Atomic Energy Agency to allocate the fissionable material "to serve the peaceful pursuits of mankind." The President expressly pointed out that "of those 'principally involved,' the Soviet Union must, of course, be one."[8] The Soviet Union

chose not to be one of those "principally involved." Consequently, the United States launched a unilateral atoms-for-peace program after receiving Congressional sanction in the Atomic Energy Act of 1954. A delay in establishing the International Atomic Energy Agency in the United Nations prompted a modification of the program to the extent that the United States offered cooperation with friendly countries through bilateral agreements.[9] These agreements provided for the release of technical information, fissionable materials for research reactors, and other United States assistance. A grant-aid program was initiated for those nations requiring financial support in the construction of reactors. As of June 1, 1960, agreements had been entered into with 42 countries. Several more agreements have since been negotiated.

The initial successes of the United States atoms-for-peace program stimulated the interest of the United Nations; and, in July 1957, the International Atomic Energy Agency, which had been recommended by President Eisenhower in 1953, finally came into being.[10] However, it did not assume the dominant role in peaceful atomic activities as originally foreseen because the United States bilateral assistance program was too well entrenched. In addition, the Soviet Union began to negotiate bilateral agreements after noting the apparent expansion of Western influence. The Soviets set to work spreading peaceful atomic technology among Communist-dominated countries in a program similar to that of the United States.

Another way in which the United States helped to spread peaceful atomic technology was by its pledges of material support to several regional atomic organizations. These included the European Organization for Nuclear Research (CERN), the Asian Regional Nuclear Center, the Inter-American Nuclear Energy Commission, the European Nuclear Energy Agency (ENEA), and the European Atomic Energy Community (EURATOM).[11]

However, by 1960, the worldwide enthusiasm for the peaceful applications of atomic energy had subsided—especially among the technologically "backward" nations. The financial outlay in acquiring the requisite technological base to develop and sustain nuclear power reactors, in addition to construction costs, proved too burdensome for many countries. Also, progress in providing a greater abundance and the cheapness of conventional fuels, particularly oil, reduced the competition of atomic power. Radioactive waste from reactors was another factor which proved to be more of a problem than had been anticipated.

Aside from the doubtful gains made towards raising the world's standard of living, the atoms-for-peace programs have contributed adversely to the basic problem of nuclear weapon proliferation. During the heat of the East-West competition to spread peaceful atom technology, a battle to surpass each other in the declassification of technological information developed. As a result, a minimum of twenty countries are currently considered to possess sufficient technology to achieve a nuclear weapon capability.[12] Approximately ten of these countries also have the economic base to develop weapons—all that is required is the inclination. A consensus of analysts includes Belgium, Canada, Czechoslovakia, West Gennany, East Germany, India, Italy, Japan, Sweden, and Switzerland in this list of potential nuclear powers.[13]

Meanwhile, Great Britain joined the "nuclear club" in 1952 through independent action. Although the policy of nuclear exclusion adopted by the United States in 1945 was directed primarily at the Soviet Union, it also denied access to nuclear technology to Great Britain and Canada, the two countries that had assisted the United States in developing the first bomb. This situation was remedied in 1958 when Great Britain regained full atomic cooperation with the United States. Secretary of State Dulles spoke in favor of proposed amendments to the Atomic Energy Act of 1954 to meet the "increasing need for a broader sharing of nuclear knowledge with our allied." He further stipulated that this need applied particularly to Great Britain, where such an exchange would be mutually beneficial.[14] Congress passed the legislation that provided for sharing of nuclear weapon designs and materials (but not completed weapons) with nations that had made "substantial progress" in nuclear weapon technology. An agreement to share atomic weapon information with Great Britain was signed on July 3, 1958—the day following enactment of the legislation into law.[15]

Two days later in Paris, Premier de Gaulle confronted Mr. Dulles with the French aspirations for a nuclear force. Mr. Dulles replied that despite the recent modification to the Atomic Energy Act, the United States could not aid France directly in its objective but would assist them in the construction of a French nuclear-powered submarine. However, the offer was subsequently withdrawn because of the Joint Congressional Atomic Energy Committee's opposition to the move.[16]

A repeat of this farcical performance was played in 1962 when the Kennedy administration proposed to sell France a

nuclear submarine. Once again the administration was forced to withdraw the offer in deference to the Joint Committee's opposition. After publicly announcing that the proposal had not been cleared by his Committee, Chairman Holifield stated that he opposed the transfer of nuclear weapons and secrets to "nations whose political structure is unstable and whose security capability is questionable." [17] The reference to security was undoubtedly prompted by the influential position that the Communist Party has maintained in French politics since World War II. In the 1945-1946 national elections in France, the Communists polled approximately 30 percent of the popular vote and won almost a third of the National Assembly deputy seats. [18] They have continued to attract a solid 20 percent of the vote through the presidential election of December 1965. [19] In addition, the inveterate distrust displayed by the United States of French security capabilities was further justified in that the French Minister of Defense in 1947 [20] and the High Commissioner of the French Atomic Energy Commission during the period 1945-1950 were both Communists. [21]

Despire the free flow of peaceful atomic technology during the Eisenhower administration, military atomic information remained a matter of secrecy. Disarmament proposals and counterproposals between East-West negotiators continued with no measurable progress. However, after the death of Stalin in March 1953, Soviet negotiators appeared to be more conciliatory.

In 1955, the negotiations began to lean more towards arms control than total disarmament. One reason for this change appears to be the concessiou by both East and West that stockpiles had reached such great proportions that an infallible system of inspection for complete nuclear prohibition was no longer feasible. Auother factor that influenced the uew approach to negotiations was the problem of radioactive fallout that had come sharply to the attention of the world following extensive high-yield nuclear tests in the mid-fifties.

In 1958, the Soviet Uniou, Great Britain, and the United States agreed to a voluntary suspension of further nuclear testing, pending the completion of a nuclear test ban treaty. Efforts to conclude this treaty, however, met with the same frustrations that had plagued earlier attempts at agreement. The Soviet aplomb gained from the success of Sputnik I in October 1957, was reflected at the conference table. Primary areas of disagreement were the technical issues involved in

detecting underground tests and the political issues involved in inspection and control. The voluntary moratorium remained effective until September 1961, when the Soviet Union resumed testing followed by the United States and Great Britain.

Finally, after eliminating the areas of disagreement from consideration, the negotiators produced the limited Nuclear Test Ban Treaty of October 10, 1963. The Governments of the United States, the United Kingdom, and the Soviet Union agreed to refrain from testing nuclear weapons in the atmosphere, in outer space, and under water. They proclaimed as their principal aim the "speediest possible achievement of an agreement on general and complete disarmament under strict international control in accordance with the objectives of the United Nations. . . ." It would also "put an end to the armaments race and eliminate the incentive to the production and testing of all kinds of weapons, including nuclear weapons." One hundred and three other nations voluntarily subscribed to the treaty.[22] Advocates of the treaty consider it to be the first step toward the aims stated above, and assent that it inhibits proliferation, slows the arms race, and thereby reduces world tensions. It also stopped the high rate of radioactive contamination of the atmosphere. On the other hand, critics of the treaty claim that it limits scientific advances; it does not reduce stockpiles, halt production, or restrict use of nuclear weapons—while tending to lull the world into a state of euphoria. The absence of France and Communist China from the list of signatories is also considered to reduce the overall worth of the document.

Current Considerations. With the initiation of France and Communist China into the "nuclear club" in 1960 and 1964 respectively, increased emphasis and concern have been placed on the problem of nuclear proliferation. Arthur J. Goldberg, the United States Ambassador to the United Nations, told the U.N. General Assembly that "the first priority, and I repeat, the first priority . . . must be given to halting the spread of nuclear weapons."[23] Representatives of the Soviet Union and Great Britain have expressed similar views on the urgent need for a nonproliferation agreement. However, attempts to consummate such an accord have failed. The Soviets will not agree to a treaty until West Germany is barred from any direct or indirect access to nuclear weapons. France is of the opinion that the problem is one of disarmament instead of proliferation; consequently, it has refused to participate in negotiations until such time as disarmament becomes the main agenda item. The fifth

nuclear power, Communist China, will not discuss anns control unless its conditions are met for admission to the United Nations –conditions that are unacceptable to the United States. All of this tends to cast doubt on any hope for an early solution to the problem of nuclear proliferation.

Add to this situation the growing number of countries possessing the wherewithal to produce nuclear weapous, and the problem becomes more complex.

The lack of success lends credence to the premise that the United States nuclear secrecy policy has reached a crossroad or, in the minds of some observers, gone by the turning point. Any reappraisal of the policy brings forth many, as yet, unanswered questions. Can intense feelings of nationalism be made compatible with military integration and supranational authority? Can our nonnuclear allies be convinced that they will always be protected by the American nuclear umbrella? Can technological progress be arrested in a world where technology is synonymous with power and prestige? Can the spread of nuclear weapons, in fact, be controlled?

Perhaps some insight can be gained toward the answers to these questions through an examination of the nuclear proliferation problem as exemplified by the French case.

CHAPTER II

THE FRENCH RATIONALE

The statecraft of Charles de Gaulle has been the subject of widespread criticism since his return to power in 1958. This critical assault reached a crescendo with the detonation of the first French atomic device in the Sahara Desert–a crescendo that still reverberates in the council chambers of the world. The French achievement was reviled as an affront to world opinion at a time when the other three members of the "nuclear club" were voluntarily refraining from testing, and when agreement appeared imminent for a comprehensive test ban treaty. Despite this opposition, France continued nuclear testing and enacted into law a long-term program for the development of a strategic nuclear force, the controversial *force de frappe.* [1]

The French rationale for the *force de frappe* ranges from idealistic nationalism to the more realistic reason of security. Other factors that warrant examination for an understanding of the French view include the individualism of Charles de Gaulle, technological considerations, and the influence of disarmament negotiations.

French Nationalism. Concomitant with increased political and economic stability in recent years, France has experienced a resurgence of nationalism which is unmistakably reflected in French foreign policy. The stated aim of this policy is to produce a strong and independent France which, according to De Gaulle, "means that our country, which does not seek to dominate anyone, intends to be its own master." [2] One of the several manifestations of this asserted independence has been the pursuance of a national nuclear force. De Gaulle expressed this sentiment following the abortive Summit Conference in 1960 when he said:

> Yet until we achieve an organized peace, if that is at all possible, France intends, as far as she is concerned, to be ready to defend herself. This means, first of all, that she shall remain an integral part of the Atlantic Alliance. Moreover, the recent trial has shown the deep-seated solidarity which exists among the Western powers. . . . Our alliance appeared a living reality. In order for it to become even more so, France must have her own role in it, and her own personality. This implies that she too

> must acquire a nuclear armament, since others have one; that she must be sole mistress of her resources and her territory; in short, that her destiny, although associated with that of her allies, must remain in her own hands. It goes without saying that such autonomy must be coupled with even closer coordination among the Western world powers in their policy and their strategy.[3]

France has an answer for the apparent incongruity of remaining "an integral part of the Atlantic Alliance" while, at the same time, asserting a necessity for an independent "nuclear armament." The French Government contends that the NATO Pact is outdated and should be changed to better meet current world conditions. They offer three recommendations for improvement of the Pact.[4]

The first recommendation advocates an extension of the NATO geographical area of responsibility to ensure the solidarity of allies in all parts of the world. In other words, the organization should have the capability to coordinate political and strategic conduct of the NATO members involved in crises which occur outside of Europe. In making this recommendation during a press conference in 1960, De Gaulle referred specifically to the Middle East and Africa.[5] It was obviously aimed at avoiding future embarrassments such as France suffered in the Suez Crisis when the United States refused to support the Anglo-French action. And conversely, it would apply to occasions when the United States has seen fit to act unilaterally such as during the Cuban Affair and in Vietnam.

Elimination of "excessive inequalities" of the partners is the basis for the second recommendation. While alluding to the privileged position of the United States, France believes that the other partners of the Alliance should have a greater share in the policy planning and decision making. This recommendation points up the cupidity with which France views the "favored" position of Great Britain within the Alliance and in her relations with the United States, especially in the area of nuclear cooperation. To France, this was one more justification for the *force de frappe*—enhanced prestige in the Alliance and equality with Great Britain in relations with the United States. Using as an example the apparent political gains to Great Britain that were derived from its nuclear force, Premier Michel Debré told the French National Assembly during the debate on the bill authorizing a nuclear striking force: "We do not see why, what

is true for one country should not be true for another."[6] This rationalization, however, proved to be illusory.

The third French recommendation for NATO improvement addresses the controversial subject of integration. De Gaulle feels strongly that "the defense of a country, while being of course combined with that of other countries, must have a national character."[7] He questions the practicability of a people giving money and services in peacetime, and making sacrifices in wartime for a system which is not responsible for their own defense. De Gaulle's continued opposition to the proposed multilateral nuclear force for NATO is based on his steadfast desire to maintain French forces under the control of France. He has stated that "to turn over our [French] weapons to a multilateral force, under a foreign command, would be to act contrary to that principle of our defense and our policy. . . . As for the bulk of American nuclear weapons," De Gaulle further points out, "it remains outside the multilateral force and under the direct orders of the President of the United States."[8]

He has accentuated his variance with the integration concept by a series of positive acts designed to provide French forces with a "national character." The first such act was to withdraw from NATO in 1959 the French Mediterranean Fleet which constituted a major part of the joint allied forces in that area. The French disengagement from NATO continued with the withdrawal of the Atlantic Fleet in June 1963. France has also failed to honor her commitments to the NATO ground forces. At the Lisbon Conference in 1952, France promised to provide NATO with fourteen modern divisions. This pledge was not fulfilled because of the Algerian War. However, since the end of the conflict in 1962, France has furnished NATO with only two divisions. The bulk of the returning forces from Algeria were retained in France to form the nucleus of the modernized national military structure.[9]

As an additional assertion of French nationalistic renewal, De Gaulle declared: "France feels that if [NATO] atomic weapons are to be stockpiled on her territory, these weapons should be in her own hands. Given the nature of these weapons and the possible consequences of their use, France obviously cannot leave her own destiny and even her own life to the discretion of others."[10]

De Gaulle and the Fifth Republic. Contemporary usage links De Gaulle and France in synonymity. The actions of De Gaulle are, indeed, the actions of France since the adoption of a new

constitution and the beginning of the Fifth Republic in 1959. The revised constitution reduced the strength of the legislative branch and bestowed increased powers on the President of the Republic.[11] The De Gaulle interpretation of these presidential powers has led critics to refer to the French President as a dictator. Nevertheless, De Gaulle has succeeded in providing France with a stable government and an economy that has resulted in an increase of the real national product by 35 percent and an increase of the average income by 25 percent since 1958.[12] These notable gains attest to the responsiveness of Frenchmen to the "dictatorial" leadership of Charles de Gaulle.

There is no doubt that General de Gaulle was the author of France's "return to greatness" theme; however, it was instituted in 1944 after the liberation and not in 1958 as often assumed. As the head of the Provisional Government, De Gaulle "reinstilled among his countrymen the concept of *grandeur,* of a great French global role."[13]

The United States policy toward France after World War II took this psychological factor into account. It was considered in the interest of the United States "to treat France in all respects on the basis of her potential power and influence rather than on the basis of her present strength."[14] Consequently, the twenty-six governments that rose and fell in the interim between De Gaulle's departure in 1946 and his return in 1958, had a tendency to operate under the guise of great power status—a sham that possibly contributed to their short tenures in office. They evidently, as one student of France commented, subscribed to the "pursuit of large scale ideas with small scale resources."[15]

De Gaulle has sought to eradicate the facade created by the Fourth Republic. He intends to provide France with the necessary sustenance to justify the rating of "great," or at the very least, "near great" status. In so doing, De Gaulle has given a high priority to the *force de frappe.*

Although the decision to develop the nuclear deterrent was a product of the Fourth Republic, De Gaulle has been the driving force behind its material beginnings.[16] This effort has not been accomplished without opposition. Besides the antipathy of the world community, the proponents of the *force de frappe* concept have had to overcome strong opposition within France. The matter was argued at great length in 1960, during the National Assembly debates on the appropriations bill to provide for the

initial development of the nuclear striking force. Opponents of the bill, which included former premiers, Guy Mollet and Felix Gaillard, objected on the grounds that the high cost of the project would make it impossible for France to meet the obligations to NATO and would further alienate French relations with her European and Atlantic allies, particularly the United States.[17] Paul Reynaud, another former premier turned critic, declared as the defeat of the opposition became imminent, "We have pursued a policy of self-esteem instead of one of security."[18] However, it was primarily for reasons of national security that the Gaullist Party managed to win approval for the bill.

French National Security. The official French position states that France requires a nuclear force to preserve its national security. In the words of President de Gaulle: "From the viewpoint of security, our independence requires, in the atomic age we live in, that we have the necessary means to deter a possible aggressor ourselves, without detriment to our alliance, but without our allies holding our fate in their hands."[19]

Prior to the introduction of intercontinental ballistic missiles into the stockpiles of both the United States and the U.S.S.R., France was content to trust her security to the Atlantic Alliance and to the atomic bombs of the American tactical and strategic air force. This nuclear capability coupled with the conventional forces of the alliance was considered an adequate deterrence against an attack on Europe. However, as both Russia and the United States became vulnerable to direct destruction by missiles, De Gaulle began to question the willingness of the United States to risk annihilation in defense of France if it were attacked. In this situation of direct destruction, De Gaulle contends that "no one in the world–particularly no one in America–can say if, where, when, how, and to what extent the American nuclear weapons would be employed to defend Europe." He is convinced that the defense of Europe has "moved by the force of circumstances into second place."[20]

De Gaulle cites the Cuban missile crisis in October 1962, as an example of the "second place" position of Europe:

> The Americans, finding themselves exposed to a direct atomic attack from the Caribbean, acted in such a way as to rid themselves of that menace and if it had been necessary, to crush it without its having occurred either

> to them or to anyone else that the game would necessarily be played in Europe and without recourse to the direct assistance of the Europeans. Moreover, the means which they immediately decided to employ in order to counter a direct attack, whether it came from Cuba only or was combined with another originating elsewhere, these means were automatically set aside for something other than the defense of Europe, even if Europe had been attacked in its turn.[21]

Thus, De Gaulle objected to having the security of France placed in jeopardy without having some voice in the conduct of the action that created the perilous situation. Additionally, he was concerned with the eventuality that the United States would have to employ forces that were originally earmarked for the defense of Europe.

It is conceivable that the application of this same logic to the Vietnam situation explains, to some degree, the French criticism of the American involvement in Southeast Asia.

"Thus principles and realities," De Gaulle concludes, "combine to lead France to equip itself with an atomic force of its own."[22]

The Role of Technology. Another factor that has bearing on the French rationale for the *force de frappe,* albeit less direct than those previously discussed, is technology. France subscribes to the generally accepted theory that a nation cannot attain greatness in the world of today without maintaining a broad base of advanced technology. In delineating the French space research policy, the Minister of State, Gaston Palewski, declared that "history clearly shows that the independence of nations and their ability to survive are intimately bound up with their scientific efforts. . . ."[23] Accordingly, the French Government has been encouraging and, in some instances, subsidizing general scientific research with particular emphasis in the fields of atomic and space science. General Pierre M. Gallois, French military strategist and author, asserts that the United States has a tendency to discourage European basic research and development in many fields because it is an unnecessary duplication of American effort. He argues that this contradicts the need for a Europe capable of real independence and, thus, capable of self-defense. In an interview transcribed in the *U.S. News & World Report,* General Gallois queried:

> What is Europe without the right to develop new techniques, without access to atomic technology, without missile technology, without space programs and the related studies, plus the technical hardware? We can't say to our young people, 'Look, research and development in these new techniques are denied to you because you are Europeans.' That is impossible.[24]

France intends to be a participant in "the 'race for progress' that characterizes the twentieth century."[25] The *force de frappe* represents an assertion of this intention.

France and Disarmament. The subject of disarmament has been closely related to the French nuclear effort from the start of the program. In 1957, Jules Moch, the French U.N. delegate declared that unless a disarmament agreement was reached between the United States and the U.S.S.R., "France would be compelled to develop her own atomic weapons."[26] So it would seem that the French decision to acquire a nuclear weapon capability was attributed, at least partially, to the failure of the nuclear powers to reach agreement in disarmament negotiations. It also appears that France would have readily reversed this decision if at any time a disarmament agreement was reached. However, lacking such accord, the French Government continued its efforts to develop an atomic bomb with the thought that upon attainment they would be in a more influential position to contribute to the disarmament negotiations. Even as France was experiencing the exuberance of its first nuclear success, President de Gaulle observed: "The French Republic is better placed to make its actions felt for the conclusion of agreements among the atomic powers with a view toward realizing nuclear disarmament."[27]

The current French proposal for disarmament is simply stated as "reciprocal controlled destruction of weapons, beginning with vehicles."[28] Until such time as France feels there is a chance of success in disarmament negotiations, it will continue the development of the *force de frappe*. In effect, France is waiting for disarmament negotiators to supplant declaratory policy with action policy.

With respect to the Test Ban Treaty of 1963 (De Gaulle prefers to call it "The Moscow Treaty"), France has a similar, straightforward answer: "This Moscow agreement . . . in no way alters the terrible threat that the nuclear weapons of the two rivals bring to bear on the world, and above all on the people who do not

possess them." De Gaulle suggests the savings accrued from halting the tests could perhaps enable the Soviets and the Anglo-Saxons "to strengthen even further their means of destruction." [29]

Moreover, France considers the admission of Communist China into the United Nations an essential requirement to future disarmament negotiations. Until Communist China is in attendance at the conference table, French Foreign Minister Couve de Murville foresees that "disarmament talks may indeed be undertaken here or there, but the vital elements of conviction are lacking, and consequently those of hope." [30]

Thus, with conviction apparently lacking and little reason for hope, France is continuing its efforts to improve the growing *force de frappe*. It would seem appropriate at this point to examine the extent of the French effort before attempting to derive any attendant lessons with respect to the basic problem of nuclear proliferation.

CHAPTER III

THE FRENCH EFFORT

"Hurrah for France! Since this morning she is stronger and prouder." These were the words with which President de Gaulle hailed the first French nuclear detonation. He noted with pride that "thus France, because of her national effort, can reinforce her defensive potential, that of the [French] Community and that of the West."[1]

Since 1960, France has increased this initial capability into a credible nuclear force which is "designed to deter, and if deterrence does not work, to strike the designated enemy targets within the shortest possible time with nuclear explosives."[2] A review of the French effort is presented to gain an understanding of the size and limitations of their endeavor in the field of nuclear energy.

Early French Technology. The technological base for present-day French accomplishments in the nuclear field had its beginning with the discovery of radioactivity by Frenchman, Henri Becquerel, in 1896. Two years later, the French scientific team of Marie and Pierre Curie succeeded in isolating the radioactive elements, polonium and radium, from a pitchblende source. In 1914, growing interest in the field of radioactivity prompted the establishment of the Radium Institute in Paris under the direction of Marie Curie. Twenty years later, another Curie team, Irene and Frederic Joliot-Curie, made an important addition to the expanding French technology with the discovery of artificial radioactivity. By the start of World War II, French scientists had demonstrated the existence of nuclear chain reactions in small-scale experiments. However, with the invasion of France in 1940, the French efforts were halted and several of the scientists fled to England, taking with them the world's existing stock (43.59 gallons) of heavy water, an essential element in the criticality control of atomic piles. Some of these French scientists resumed their research at Cambridge under the auspices of the British Government. In 1942, a few of these same men held important positions in the joint Canadian, British, and American atomic research effort in Montreal, which made a significant contribution to the first American atomic explosion at Alamagordo, New Mexico, in 1945.[3]

Postwar Atomic Program. As head of the Provisional Govemment following the war, General de Gaulle conceived the need for improved sources of energy in order to bring the French economy to a higher level. To this end, he created the French Atomic Energy Commission charged with conducting "scientific and technical research with a view to the utilization of atomic energy in the various fields of science, industry and national defense."[4]

Initially, development in the scientific and the industrial fields was emphasized. The French nuclear program had to start from where it had been forced to stop in 1940. However, from 1945 to 1952, France succeeded in organizing the prospecting and mining of raw materials; in training teams of research workers and technicians; in constructing a uranium ore processing plant; in equipping a research laboratory; and in fabricating two reactors.[5] Inasmnch as the United States, Great Britain, and Canada had established a monopoly of known deposits of uranium ore, the early French efforts were limited until the discovery of large pitchblende deposits within the boundaries of France in 1948. Supplementary deposits were later acquired through bilateral agreements with African republics and the Repnblic of Malagasy which have alleviated the French problem of uranium ore supply.[6]

Commencing in 1952, France established its nuclear effort within the framework of successive five-year plans to ensure continuity of the development program. At the end of the second five-year plan, France had made impressive progress in the field of atomic power, both in the production of fissionable material and in the nuclear generation of domestic power. By 1963, there existed an array of research centers, accelerators, uraninm production plants, reactors, and nuclear power plants with sufficient capability to rank France as a leader of Western Europe in the nuclear field.[7]

In addition to its national atomic efforts, France has been active in the international atomic community. The French consider the first United Nations Conference on the Peaceful Uses of Atomic Energy, that was convened at Geneva in 1955, to be of major significance. It was here that the existing nuclear powers, United States, Russia, and Great Britain, dropped the closely guarded veil of atomic secrecy in the interest of international cooperation. The nascent French atomic program benefited from the information gained during this and subsequent conferences.[8] France readily accepted the spirit of exchangiug international atomic technology as evidenced by its eleven bilateral agreements

that have been negotiated with countries such as India, Pakistan, Israel, Yngoslavia, and Argentina, to name only a few. The French are also represented in the activities of several European organizations concerned with the peaceful uses of atomic energy.[9]

Military Application. In 1954, Premier Pierre Mendes-France gave his sanction to embark on the first steps leading to the construction of the French atomic bomb.[10] Although the Mendes-France government fell from power before these steps were initiated, his decision was upheld by the succeeding five premiers who governed France for short periods until the return of De Gaulle.[11] This Mendes-France decision led to the creation of the Military Applications Division of the Atomic Energy Commission in 1955. The Military Applications Division was charged with expanding the existing facilities to accommodate the production of nuclear warheads. Its responsibilities were further expanded in 1956 to include plans for conductiug preliminary studies concerned with experimental atomic explosions and with the acquisition of requisite fissionable material.[12]

Two test facilities were constructed in the Sahara Desert to accommodate the Freuch nuclear test program. The first site, completed in early 1960, is located at Reggan in the Tanezrouft region of Algeria, and the other, which became operational in 1961, is in the Algerian Hoggar region. France was granted the use of these sites until 1967 through the Evian Agreements that settled Frenеb-Algerian problems in 1962.[13] In viewof repeated official protests that bave been registered by the Algerian Govemment conceming the Frenеb tests, it appears improbable tbat these test sites will remain available to France beyond the initial five-year period.

Between Febmary 13, 1960, and April 25, 1961, France detonated four atomic devices in the atmosphere over the Reggan site. Since then, an extensive underground test program has been conducted at the Hoggar facility. These tests provided tbe required technology to commence production in 1963 of 60-kiloton nuclear weapons for the French national stockpile.[14]

As a further affirmation of their nuclear power status, France is now concentrating on the development of thermonuclear bombs with yields in the megaton range. However, the Saharan test sites are not adequate to accommodate detonations of this magnitude because of the unacceptable radioactive fallout conditions that would be experienced in tbe bordering states. Consequently,

France is constructing a test center in the Pacific on Mururoa Atoll, about 1,250 miles southeast of Tahiti. The first French hydrogen bomb is expected to be tested at this new facility shortly after it becomes operational in July 1966.[15]

France is also directing attention to space research and the production of military missiles. Numerous research and development agencies have been created to coordinate French efforts in these two related fields. One such agency is the government subsidized Company for the Study and Manufacture of Ballistic Missiles (SEREB), which has the responsibility of constructing missiles for the strategic nuclear force. Test firings have been conducted since 1962. The target date of 1968 has been set for the delivery of operational ballistic missiles to the *force de frappe*. SEREB is also responsible for coordinating the development and the manufacture of the Diamond satellite launcher. The three-stage, 18-ton Diamond rocket successfully carried the first French satellite, weighing 83.7 pounds, into orbit around the earth in November 1965.[16] France has declared that it does not have the resources to undertake sending men into space. "But," Space Minister Palewski has stated, "we must not use the modesty of our contribution as an excuse for dissociating ourselves from space research itself."[17]

A nuclear-propelled submarine has also been under development in France since 1959. After the U.S. Congress, Joint Committee on Atomic Energy, refused to allow the fulfillment of Secretary of State Dulles' offer to help France develop a nuclear submarine, the French became determined to produce one of their own design. They are, however, purchasing enriched uranium from the United States for the development of a land-based prototype of an atomic submarine reactor. This arrangement was made under the terms of a mutual defense agreement signed in 1959. SEREB is concurrently developing the Polaris-type missiles that will provide the French nuclear submarines with a strategic nuclear weapon capability.[18]

The Force de Frappe. As a result of a January 1959 ordinance, the French military forces underwent a reorganization that made the strategic nuclear force a separate entity. Modernization of the reorganized French military was begun under a first program law (1960-64) that provided for the initial elements of the strategic nuclear force. The second program law (1965-70) will provide for the follow-on generation of nuclear weapons.[19]

The French nuclear striking force is currently dependent upon an aircraft delivery system, the Mach 2 Mirage IV bomber. The Mirage IV, equipped with the 60-kilotou weapon, has an unrefueled range of 1,550 nautical miles. This range can be increased to nearly 3,000 nautical miles with inflight refueling. Refueling is accomplished with the service of twelve KC-135 tanker planes bought from the United States in 1963. With refueling, the range of the Mirage IV is sufficient to reach nearly all the key cities in European Russia. Approximately 30 aircraft of an initial purchase of 50 are now in the French inventory with the remainder to be delivered by the end of 1966. An additional planned procurement of twelve Mirage IV's will provide the *force de frappe* with a total of 63 delivery aircraft including the preseries prototype test model.[20]

It is planned to have 30 percent of the available aircraft on a five-minute alert status while approximately 12 aircraft are used for training missions. Survivability of the force is provided by dispersal of the aircraft to several widely separated airfields. The automated command and control facility for the strike force is located in a hardened, underground site at Taverny Air Base about 20 miles from Paris. Early warning information of attack is received automatically in the underground command post from the NATO network.[21]

France also has approximately 90 navy carrier-based, Etendard IV aircraft which are capable of delivering nuclear weapons to a range of 600 nautical miles without inflight refueling. Her two attack carriers, however, do not presently have the necessary facilities for handling and stowing of nuclear weapons.[22]

Future Capability. Commencing in 1968, France expects to have the first generation of operational surface-to-surface missiles with a 2,000-mile range capability. Hardened launch sites for these missiles are being constructed in the foothills of the French Alps. Additional silos are planned for locations in the Vosges Mountains in the northeastern part of France. As the sites become operational and the missiles available, the Mirage IV aircraft delivery system will be phased out of the program.[23]

By 1970, the first of three nuclear submarines, armed with sixteen Polaris-type missiles having thermonuclear warheads, will enter the inventory. The other two submarines will be operational in 1973.[24]

Other nuclear capabilities that are planned for the French military organization include tactical weapons of kiloton or sub-kiloton yield for all three services. Small bombs and air-to-air missiles are programmed for the air force Mirage III and the navy Etendard IV aircraft. The army will be provided a variety of surface-to-surface and surface-to-air missiles with ranges from 25 to 90 miles. Moreover, France has initiated long-range studies and tests for an advanced weapon system that will be space-borne.[25]

Thus, France envisions a formidable military nuclear force that will be available in the 1970-1975 time frame. Can France afford the luxury of an independent nuclear force? France says "yes" and has generated the figures to prove their assertion.

Military Expenditures. After approval of the legislature, the French military program for the succeeding five-year period becomes a law which is not easily altered in the event of a change in administration. Expenditures for the period are predetermined and incorporated in the program law with provisions for yearly allocations of specified amounts. These annual military budgets are limited to 20-25 percent of the national budget. The military budget amounted to $4.2 billion in 1965 and is estimated at $4.5 billion in 1969. Thus far, France has expended $7.5 billion on its nuclear force. By 1970, this figure is expected to rise to more than $13 billion.[26] These cost estimates are met with skepticism by some observers—one being the United States Secretary of Defense, Robert McNamara. He believes the French programmed expenditure of $5.5 billion for the *force de frappe* during the 1965-70 period will be much higher. His opinion is based on the experiences of the United States and that of Great Britain which have found the cost of continned modernization and maintenance of its nuclear offensive capability too much to bear without United States assistance.[27]

However, with the next five-year program (1965-1970) written into law and in view of the $7.5 billion already invested, it appears extremely doubtful that France will forego its *force de frappe* for any reason short of a nuclear disarmament agreement that meets their demands. President de Gaulle's thoughts on the cost of the independent nuclear force is that "these means cost us no more than those which we would have to furnish for Atlantic integration, without thereby being sure of protection, if we were to continue to belong to it as subordinate auxiliaries."[28]

Limitations of the Force de Frappe. To avoid a parochial assessment of the French *force de frappe* limitations, it appears appropriate to consider it from more than one viewpoint.

The French, understandably, look upon their nuclear force with the pride of achievement. They are fully aware that its size cannot compare quantitatively with those of the two superpowers; but by 1970-75, they plan to be ready to compare qualities. The French Government is "convinced of the moderating and even discouraging effect that the existence of a deterrent force, even a small one, must have on the undertakings of a possible aggressor."[29] This adherence to the strategy of a "minimum deterrent" is, of course, prompted by the limitation of resources. Despite various material limitations of the French *force de frappe*, it is generally agreed that it does not lack the one intangible requirement for an effective deterrent–namely, the will to use it. The stigma of previous defeats is considered to be too well implanted in the French mind to accept future infringements without employing all available means as a counterforce.

According to a Department of Defense sponsored study, the Soviets tend to regard the *force de frappe* as a French political instrument rather than a military threat. They feel that the Soviet early-warning network and air defense system are more than adequate to neutralize the French force.[30] Nevertheless, it would seem that the existence of the French nuclear threat must be considered in Soviet defense planning as "X" number of weapons that are poised to inflict "Y" amount of damage within its perimeter. It also seems likely that the Soviets will reevaluate the significance of the *force de frappe* after the introduction of ballistic missiles into the French inventory.

United States officials also have a tendency to belittle the military significance of the French nuclear force; however, they are painfully aware of the disruptive political effect it is having on the American NATO policy. Moreover, the *force de frappe* is resented in Washington as an undesirable proliferation of nuclear weapons. It is feared that the limited size and capability of the force will invite an attack rather than deter one. The United States contends that the expense and effort invested in the *force de frappe* are not commensurate with what France can hope to gain from it. To American policy makers, the solution to the problem created by the *force de frappe* will be found only in its integration into proposed NATO nuclear forces.[31]

Inasmuch as such a solution is unacceptable to France, there remains in being the independent *force de frappe*—a source of consternation to friend and foe alike.

CHAPTER IV

ANALYSIS AND CONCLUSIONS

In reviewing the French case of nuclear weapon development with respect to the basic problem of nuclear proliferation, certain key factors presented in the text invite further analysis. To facilitate discussion, it is convenient to address first the time period prior to De Gaulle's return to power and then the subsequent period.

Analysis. Immediately following World War II, France was near collapse from internal strife. It faced postwar reconstruction with an unstable political system and an acute lack of resources. France survived the period primarily through the financial and material assistance of the United States. Despite its internal weaknesses, France occupied a position of a major power in the international system.

But, with the onset of the cold war, the American policy of maintaining France as a major power in all respects was modified to one that safeguarded against the predominance of French influence in Europe. This policy alteration came about, primarily, as a counter to the large and influential Communist Party in France. As a result, the French role in the Western Alliance became subordinate to that of Great Britain and, of course, the United States. France, however, concluded that Great Britain's apparently favored position was due to its atomic capability that was acquired in 1952. Consequently, France considered an atomic capability essential to gaining a better position of influence and prestige in the Alliance.

Moreover, the early public utterances on French nuclear aspirations were linked to failures in disarmament negotiations, but it seems doubtful that this reason actually influenced the decision to pursue nuclear armament. The French threats to attain a nuclear capability, if disarmament failed, appear to have been a guise for the more probable motive of regaining a position of prestige.

It seems reasonable to discount the motive of national security during this early period, since the American strategy of "massive retaliation" was evidently accepted by Frenchmen

as an adequate deterrent to aggression in Europe. This fact further tends to discredit the foregoing consideration that France needed atomic weapons for defense because disarmament negotiations had failed.

Still another factor that should be considered in this time frame is that of technological development. By the middle of the 1950's, there existed in France a substantial base of nuclear weapon technology. This vital asset was certainly weighed in making the decision to acquire nuclear weapons.

With the return of De Gaulle in 1958, several changes occurred on the French domestic scene and in the conduct of French foreign relations. De Gaulle's presence was immediately felt throughout France. He promptly took steps to resolve the Algerian situation; initiated extensive governmental changes; and established social, economic, and fiscal reforms. As a result of this exceptionally strong leadership, France has made progress toward internal stability and prosperity—a prosperity that is apparently capable of sustaining the high cost of the *force de frappe.*

On the international scene, however, De Gaulle's foreign policy has resulted in the alienation of France from the other nations of the Atlantic Alliance. This situation has come about primarily from the disruptive influence of De Gaulle's intransigence on the French assumption of an independent role within NATO. Despite his opposition to the existing policies of NATO, De Gaulle has repeatedly stated, however, that French forces, including the *force de frappe,* will respond to the military requirements of the Alliance in the event of a crisis.

Although the Fourth Republic initiated the program for nuclear weapon development, De Gaulle confirmed the effort and gave it the impetus needed for culmination. The attainment of nnclear power status meshed with his long-standing plan to "return France to greatness." Consequently, he concurred with the prestige rationale for an atomic capability of his predecessors. He also publicly upheld the questionable motive of enhanced influence at disarmament conferences. In this respect, the absence of French negotiators at disarmament conferences tends to negate this as a valid factor in the French rationale for nuclear weapons. Conversely, De Gaulle, knowing that French agreement is now required to produce a meaningful treaty, may feel that there is prestige value to France in not participating in the negotiations.

Nevertheless, the French Government has always maintained that the official reason for the *force de frappe* is to preserve the national security of France. De Gaulle contends that the credibility of the American nuclear deterrent, with respect to European defense, had become suspect with the introduction of ICBM's which made the United States vulnerable to direct attack. He doubts the American willingness, not their integrity, to sacrifice the United States for the defense of Europe.

And finally, Franco-American relations warrant discussion as a factor that had some bearing on the French decision to produce nuclear armament. Upon assuming French leadership, De Gaulle was rebuffed in his request for nuclear weapons assistance from the United States. Concurrently, his recommended modifications to NATO were ignored by the United States. In what appears to have been retribution, De Gaulle withdrew the French Mediterranean Fleet from NATO command. Continuing in this same vein, one could conjecture that De Gaulle withdrew the French Atlantic Fleet in 1963 following the United States recantation of the offer of assistance in the construction of a nuclear submarine. However, a more plausible explanation of the second withdrawal appears to be that the time was opportune to incorporate the Atlantic Fleet into the French national military command along with the army divisions returning from Algeria. Nevertheless, the human element cannot be ignored. It appears reasonable for De Gaulle to have responded to a series of rebuffs and humiliations in the human way—retaliation in the form of withdrawal of French forces from NATO and, perhaps, a stronger determination to succeed independently in developing the *force de frappe*.

Conclusions. Based on the foregoing analysis and the discussions in the text, the following conclusions are presented:

1. The enhancement of French national prestige in the Atlantic Alliance is concluded to have been the primary motivational factor in the French case of nuclear weapon proliferation.

2. A second, somewhat less impelling, motivational factor for the *force de frappe* was the preservation of national security.

3. The strong leadership of Charles de Gaulle was a contributory factor which provided catalytic action for the acquisition of the French nuclear force.

4. The availability of a nuclear technological base was another contributory factor necessary for the successful achievement of the French nuclear effort.

5. A viable economy capable of supporting the French nuclear program was a third contributory factor.

6. The programmed size and capability of the *force de frappe* will be adequate to provide "minimum deterrence" for France, i.e., to deter an attack on France by assuring that an aggressor's losses would exceed the gains.

7. President de Gaulle provides the element of credibility through his apparent will to use the *force de frappe* in the event of attack.

8. The *force de frappe* will probably continue in being after De Gaulle because of the large investment already made in its development, and because of the importance France attaches to the political and military advantages of an independent nuclear force.

9. The vacillating policy of the United States towards nuclear cooperation with France contributed to the existing strained relations between the two nations.

10. The motivational and contributory factors that were attendant in the French case are applicable as criteria in accessing the potential inclination and capability of other nations to produce nuclear weapons.

FOOTNOTES

Chapter I

1. U.S. Dept. of State, *The International Control of Atomic Energy, Growth of a Policy* (Washington: U.S. Govt. Print. Off., 1946), p. 107.

2. *Ibid.*, p. 21.

3. *Ibid.*, p. 117.

4. United Nations, *Yearbook, 1946-47* (New York: 1947), p. 444.

5. U.S. Congress, Senate, Committee on Foreign Relations, *Disarmament and Security: a Collection of Documents, 1919-1955* (Washington: U.S. Govt. Print. Off., 1956), p. 189.

6. Robert McKinney, *Review of the International Atomic Policies and Programs of the United States: Report to the Joint Committee on Atomic Energy* (Washington: U.S. Govt. Print. Off., 1960), p. 3.

7. Dwight D. Eisenhower, *Mandate for Change, 1953-1956* (Garden City, N. Y.: Doubleday, 1963), p. 254.

8. Dwight D. Eisenhower, *Peace with Justice* (New York: Columbia University Press, 1961), p. 62-64.

9. McKinney, p. 4-5.

10. *Ibid.*

11. *Ibid.*, p. 78G.

12. Atomic power plants use the same materials–U^{235}, plutonium, and U^{233}–as are required to make atomic and thermonuclear weapons; moreover, atomic power plants manufacture plutonium or U^{233}, useful in weapons, in the course of their normal operation.

13. National Planning Association, Special Project Committee on Security through Arms Control, *The Nth Country Problem and Arms Control,* (Washington: 1960), p. 28.

14. John Foster Dulles, "Sharing Nuclear Knowledge with Our NATO Allies," *The Dept. of State Bulletin,* 5 May 1958, p. 740.

15. U.S. Laws, Statutes, etc., *United States Code,* 1958 ed., (Washington: U.S. Govt. Print. Off., 1959), v. VIII, p. 7084.

16. Robert C. Doty, "Dulles Rejects de Gaulle Plea for A-Bomb Data," *The New York Times,* 6 July 1958, p. 1:8, 2:5.

17. Jack Raymond, "Holifield Hits Plan to Sell Submarines," *The New York Times,* 18 October 1962, p. 1:7, 8:3.

18. John Foster Dulles, *War or Peace* (New York: Macmillan, 1950), p. 102.

19. C.L. Sulzberger, "Foreign Affairs: de Gaulle vs. Gaullism," *The New York Times,* 5 December 1965, p. E10:5.

20. Dulles, *War,* p. 102.

21. Bertrand Goldschmidt, "The French Atomic Energy Program," *Bulletin of the Atomic Scientists,* September 1962, p. 39.

22. U.S. Dept. of State. *United States Treaties and Other International Agreements,* (Washington: U.S. Govt. Print. Off., 1964), XIV, p. 1313.

23. Arthur J. Goldberg, "A Society for All Men," *Vital Speeches,* 1 November 1965, p. 36.

Chapter II

1. The English translation of *force de frappe* is "strike force"; however, common usage has established the phrase to mean "nuclear striking force."

2. Charles de Gaulle, "France 1965," *Vital Speeches,* 15 January 1965, p. 212.

3. French Embassy, U.S. Press and Infomation Division, *Major Addresses, Statements and Press Conferences of General Charles de Gaulle, May 19, 1958-January 31, 1964* (New York: 1964), p. 77.

4. *Ibid.*, p. 96.

5. *Ibid.*

6. "France: Domestic Relations," *Deadline Data on World Affairs*, p. 58.

7. French Embassy, *Major Addresses*, p. 96.

8. French Embassy, U.S. Press and Infomation Division, *Full Text of President de Gaulle's Press Conference, January 14, 1963* (New York: 1963), p. 11-12.

9. Paul Reynaud, *The Foreign Policy of Charles de Gaulle* (New York: Odyssey Press, 1964), p. 52-54.

10. French Embassy, *Major Addresses*, p. 96.

11. French Embassy, U.S. Press and Infomation Division, *The First Five Years of the Fifth Republic of France, January 1959-January 1964*, (New York: 1964), p. 1.

12. De Gaulle, "France 1965," p. 212.

13. C.L. Sulzberger, "The Age of Giants Is Over: Ill-France," *The New York Times*, 4 August 1956, p. 14:5 and Raymond Aron, *France, Steadfast and Changing* (Cambridge: Harvard University Press, 1960), p. 148.

14. Harry S. Truman, *Memoirs: Year of Decision* (Gardeu City, N.Y.: Doubleday, 1955), I, p. 14-15.

15. Dorothy Pickles, *The Fifth French Republic* (New York: Praeger, 1962), p. 99.

16. French Embassy, *The First Five Years*, p. 28.

17. W. Granger Blair, "Confidence Test Sought by Debré," *The New York Times*, 20 October 1960, p. 7:1.

18. Reynaud, p. 47.

19. Charles de Gaulle, "The Independence of France," *Vital Speeches,* 15 June 1965, p. 515.

20. French Embassy, *Full Text de Gaulle's Press Conference, January 14, 1963,* p. 9-10.

21. *Ibid.*

22. *Ibid.*

23. Gaston Palewski, quoted in French Embassy, U.S. Press and Information Division, *France Air and Space* (New York: 1963), p. 21.

24. "How U.S. Is Doing in Europe and Asia—a French Size-up, Interview with Gen. Pierre M. Gallois," *U.S. News & World Report,* 20 December 1965, p. 60.

25. French Embassy, *The First Five Years,* p. 59.

26. Kathleen Teltsch, "France to Develop Her Own Atom Bomb in Absence of Arms Pact, U.N. Is Told," *The New York Times,* 23 October 1957, p. 14:5.

27. W. Granger Blair, "France Explodes Her First A-Bomb in a Sahara Test," *The New York Times,* 13 February 1960, p. 1:8.

28. French Embassy, *Major Addresses,* p. 181.

29. French Embassy, U.S. Press and Information Division, *Full Text of General de Gaulle's Press Conference Held as President of the French Republic, July 29, 1963* (New York: 1963), p. 10.

30. French Embassy, U.S. Press and Information Division, *Full Text of Address by His Excellency Maurice Couve de Murville, French Minister of Foreign Affairs, Before U.N. General Assembly on September 29, 1965* (New York: 1965), p. 6.

Chapter III

1. W. Granger Blair, "De Gaulle Claims World Atom Role as Test Succeeds," *The New York Times*, 14 February 1960, p. 1:8.

2. French Embassy, *The First Five Years*, p. 29.

3. Goldschmidt, p. 39-42.

4. French Embassy, U.S. Press and Information Division, *France and the Atom* (New York: 1962), p. 8.

5. *Ibid.*, p. 12.

6. French Embassy, *The First Five Years*, p. 64.

7. French Embassy, *France and the Atom*, p. 12-15.

8. Goldschmidt, p. 40.

9. French Embassy, *France and the Atom*, p. 50.

10. Goldschmidt, p. 41.

11. "France Domestic Relations," *Deadline Data*, p. 5.

12. French Embassy, U.S. Press and Information Division, *France and Its Armed Forces* (New York: 1964), p. 34.

13. *Ibid.*, p. 35-36.

14. *Ibid.*

15. *Ibid.*

16. "France Enters the Space Race," *U.S. News & World Report*, 6 December 1965, p. 8.

17. Palewski, p. 21.

18. French Embassy, *France and the Atom*, p. 39.

19. French Embassy, *France and Its Armed Forces*, p. 43.

20. *Ibid.*, p. 9.

21. "France without NATO," *U.S. News & World Report,* 18 October 1965, p. 75.

22. French Embassy, *France and Its Armed Forces,* p. 9.

23. "France without NATO," p. 75.

24. *Ibid.*

25. French Embassy, *France and Its Armed Forces,* p. 52-53.

26. *Ibid.*, p. 43-51.

27. U.S. Congress, House, Committee on Appropriations, *Department of Defense Appropriations,* Hearings (Washington: U.S. Govt. Print. Off., 1965), p. 25-26.

28. De Gaulle, "Long Live France," p. 157.

29. French Embassy, *The First Five Years,* p. 19.

30. Thomas W. Wolfe, *Soviet Commentary on the French* "Force de Frappe," (Santa Monica, Calif.: Rand, 1965), p. v.

31. U.S. Congress, *Department of Defense Appropriations,* p. 25-26.

BIBLIOGRAPHY

Aron, Raymond. *France, Steadfast and Changing.* Cambridge: Harvard University Press, 1960.

_____. "De Gaulle and Kennedy: the Nuclear Debate." *The Atlantic Monthly,* August 1962, p. 38-38.

Beaton, Leonard. *The Western Alliance and the McNamara Doctrine.* London: Institute for Strategic Studies, 1964.

Beaton, Leonard and Maddox, John. *The Spread of Nuclear Weapons.* New York: Praeger, 1962.

Blair, W. Granger. "Confidence Test Sought by Debré." *The New York Times,* 20 October 1960, p. 7:1.

_____. "De Gaulle Claims World Atom Role as Test Succeeds." *The New York Times,* 14 February 1960, p. 1:8.

_____. "France Explodes Her First A-Bomb in a Sahara Test." *The New York Times,* 13 February 1960, p. 1:8.

Davey, Elizabeth, ed. *France in Crisis.* New York: Wilson, 1957.

Doty, Robert C. "Dulles Rejects de Gaulle Plea for A-Bomb Data." *The New York Times,* 6 July 1958, p. 1:8, 2:5.

Dulles, John Foster. *War or Peace.* New York: Macmillan, 1950.

_____. "Sharing Nuclear Knowledge with Our NATO Allies." *The Department of State Bulletin,* 5 May 1958, p. 740-742.

Eisenhower, Dwight D. *Mandate for Change, 1953-1956.* Garden City, N.Y.: Doubleday, 1963.

_____. *Peace with Justice.* New York: Columbia University Press, 1961.

"France: Domestic Relations." *Deadline Data on World Affairs,* 13 October 1960, p. 58.

"France Enters the Space Race, but–." *U.S. News & World Report,* 6 December 1965, p. 8.

"France without NATO." *U.S. News & World Report,* 18 October 1965, p. 75.

France. Embassy. U.S. Press and Information Division. *The First Five Years of the Fifth Republic of France, January 1959-January 1964.* New York: 1964.

_____. _____. *France, Air and Space.* New York: 1963.

_____. *France and the Atom.* New York: 1962.

_____. *France and Its Armed Forces.* New York: 1964.

_____. *Full Text of Address by His Excellency Maurice Couve de Murville, French Minister of Foreign Affairs, Before U.N. General Assembly on September 29, 1965.* New York: 1965.

_____. *Major Addresses, Statements and Press Conferences of General Charles de Gaulle, May 19, 1958-January 31, 1964.* New York: 1964.

Furniss, Edgar S., Jr. *De Gaulle and the French Army.* New York: Twentieth Century Fund, 1964.

_____. *France under de Gaulle.* New York: Foreign Policy Association, 1960.

Gallois, Pierre M. *The Balance of Terror.* Boston: Houghton Mifflin, 1961.

Gaulle, Charles de. "France 1965." *Vital Speeches,* 15 January 1965, p. 212-213.

_____. "The Independence of France." *Vital Speeches,* 15 June 1965, p. 515.

Goldberg, Arthur J. "A Society for all Men." *Vital Speeches,* 1 November 1965, p. 34-39.

Goldschmidt, Bertrand. "The French Atomic Energy Program." *Bulletin of the Atomic Scientists,* September 1962, p. 39-42.

Harrison, Stanley L. "Nth Nation Challenges: the Present Perspective." *Orbis,* Spring 1965, p. 155-170.

"How U.S. Is Doing in Europe and Asia—a French Size-up, Interview with Gen. Pierre M. Gallois." *U.S. News & World Report,* 20 December 1965, p. 58-60.

Institute for Strategic Studies. *Disarmament and European Security.* London: 1963. v. I.

_____. *The Military Balance 1963-1964.* London: 1963.

McKinney, Robert. *Review of the International Atomic Policies and Programs of the United States: Report to the Joint Committee on Atomic Energy.* Washington: U.S. Govt. Print. Off., 1960.

National Planning Association. Special Project Committee on Security through Arms Control. *The Nth Country Problem and Arms Control.* Washington: 1960.

Nieburg, Harold L. *Nuclear Secrecy and Foreign Policy.* Washington: Public Affairs Press, 1964.

Pickles, Dorothy M. *The Fifth French Republic.* 2d ed. New York: Praeger, 1962.

Raymond, Jack. "Holifield Hits Plan to Sell Submarine." *The New York Times,* 18 October 1962, p. 1:7, 8:3.

Reynaud, Paul. *The Foreign Policy of Charles de Gaulle.* New York: Odyssey, 1964.

Sulzberger, Cyrus L. "The Age of Giants Is Over: III-France." *The New York Times,* 4 August 1956, p. 14:5.

_____. "Foreign Affairs: de Gaulle vs. Gaullism." *The New York Times,* 5 December 1965, p. E10:5.

Teltsch, Kathleen. "France to Develop Her Own Atom Bomb in Absence of Arms Pact, U.N. Is Told." *The New York Times,* 23 October 1957, p. 14:5.

Truman, Harry S. *Memoirs: Year of Decisions.* New York: Doubleday, 1955. v. 1.

United Nations. *Yearbook 1946-47.* New York: 1947.

U.S. Congress. House. Committee on Appropriations. *Department of Defense Appropriations.* Hearings. Washington: U.S. Govt. Print. Off., 1965. 5 pts.

_____. Senate. Committee on Foreign Relations. *Disarmament and Security: a Collection of Documents, 1919-1955.* Washington: U.S. Govt. Print. Off., 1956.

U.S. Dept. of State. *The International Control of Atomic Energy, Growth of a Policy.* Washington: U.S. Govt. Print. Off., 1946.

U.S. Laws, Statutes, etc., *United States Code,* 1958 ed., Washington: U.S. Govt. Print. Off., 1959. v. VIII.

U.S. Treaties, etc. *United States Treaties and Other International Agreements.* Washington: U.S. Dept. of State, 1964. v. XIV.

Wolfe, Thomas W. *Soviet Commentary on the French "Force de Frappe."* Santa Monica, Calif.: Rand, 1965.

BIOGRAPHIC SKETCH

Commander Donald C. Sattler, USN (B.S., U.S. Naval Academy) entered flight training upon graduation from the Naval Academy in 1950. After designation as a Naval Aviator, he served in Attack Squadron 175 and later as a flight instructor in the Basic Training Command. In 1960, Commander Sattler reported to the USS *Bennington* (CVS-20) as an Assistant CIC Officer. Since that time he has served as Executive Officer of Attack Squadron 146 and as Staff Operations and Plans Officer at Headquarters, NORAD/CONAD located at Ent Air Force Base, Colorado. Commander Sattler is presently a student in the School of Naval Command and Staff of the Naval War College.