June 23, 1963

National Intelligence Estimate NIE 4-63, 'Likelihood and Consequences of a Proliferation of Nuclear Weapons Systems'

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Summary:

This NIE comes to the general conclusions that “there will not be a widespread proliferation of nuclear weapons over the next 10 years” and discusses programs in various countries (Israel, China, Sweden, India, West Germany, Japan, etc.) This copy includes newly declassified references to the Israeli nuclear weapons program, including the conclusion that “the Israelis, unless deterred by outside pressure, will attempt to produce a nuclear weapon some time in the next several years.”

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Likelihood and Consequences of a Proliferation of Nuclear Weapons Systems

Submitted by the
DIRECTOR OF CENTRAL INTELLIGENCE

Concurred in by the
UNITED STATES INTELLIGENCE BOARD

As indicated overleaf
28 JUNE 1963

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The following intelligence organizations participated in the preparation of this estimate:

The Central Intelligence Agency and the intelligence organizations of the Departments of State, Defense, the Army, the Navy, the Air Force, AEC, and NSA.

Concurring:

Director of Intelligence and Research, Department of State
Director, Defense Intelligence Agency
Assistant Chief of Staff for Intelligence, Department of the Army
Assistant Chief of Naval Operations (Intelligence), Department of the Navy
Assistant Chief of Staff, Intelligence, USAF
Director for Intelligence, Joint Staff
The Atomic Energy Commission Representative to the USIB
Director of the National Security Agency

Abstaining:

The Assistant Director, Federal Bureau of Investigation, the subject being outside of his jurisdiction.

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LIKELIHOOD AND CONSEQUENCES OF A PROLIFERATION OF NUCLEAR WEAPONS SYSTEMS

THE PROBLEM

To estimate the capabilities and intentions of additional countries to develop and produce nuclear weapons and compatible delivery systems over the next decade; and to estimate the consequences thereof.

CONCLUSIONS

A. With the increasing availability of uranium, and nuclear technology and technicians, the development of a minimal nuclear weapons capability has come increasingly within the reach of nonnuclear states. A program for one or two low-yield fission weapons a year would cost, through the first detonation, about $140–$180 million and some $20–$30 million a year thereafter. However, costs rise steeply for more than a minimal program and become very large when advanced delivery systems and compatible weapons are required. Political and military considerations are likely to prove more important in determining the pace and scope of nuclear diffusion than differences in national wealth and technical skill. Where the motivation is strong enough, a country might attempt to overcome a lack of native resources by importing materials, technology, and technicians, or even weapons themselves. (*Paras. 1–6*).

B. We believe that eight countries, in addition to France, have the physical and financial resources to develop an operational nuclear capability (weapons and means of delivery) over the next decade. However, we believe that only Communist China has actually started a weapons program. The Chinese may be

able to detonate a first nuclear device by early 1964, but a more likely date is late 1964 or beyond. Approximately two years after a test the Chinese could probably produce their first crude fission weapon. [redacted] Thus far the remaining countries—India, Japan, Sweden, Canada, Italy, and West Germany—have limited their nuclear programs to demonstrably peaceful purposes. They will, however, almost certainly continue development of their peaceful nuclear programs, some to a point which would significantly reduce the time required to carry through a weapons program. (*Paras. 7–21*)

C. We do not believe that the explosion of a first device, or even the acquisition of a limited nuclear weapons capability, would produce major changes in Communist China's foreign policy in the sense that the Chinese would adopt a general policy of open military aggression, or even become willing to take significantly greater military risks. It would, however, increase Chinese self-confidence and prestige and reinforce their efforts to achieve Asian hegemony through political pressures and the indirect support of local "wars of liberation." India probably would not embark on a nuclear weapons program on the basis of a Chinese detonation of a nuclear device, but is likely to continue its present nuclear program to a point where a crash weapons program could be developed relatively quickly. Japan also would feel an increased sense of pressure, but would be more reluctant than most other countries to develop a weapons capability. We believe the Israelis would probably employ a nuclear capability to intimidate the Arabs, but not to make war forthwith. The Arab States would probably blame the West, particularly the US, and the Soviets would probably finds ways of exploiting the situation. (*Paras. 25–31*)

D. The French force has as its primary purpose heightening French prestige and assisting France to assume leadership of a Europe less dependent on the US and with a voice in the management and control of Western nuclear power. While many Europeans are in general sympathy with de Gaulle's objectives, they also fear that the French program will stimulate further nuclear proliferation, erode the NATO concept, and perhaps most im-

portant, lead to German acquisition of nuclear weapons. We believe, however, that the Germans will limit themselves to peaceful nuclear programs over the next few years. If the Germans began to believe that their Allies, and especially the US, might not use nuclear weapons in the defense of the Federal Republic, German interest in a national capability would rise. (*Paras. 32–37*)

E. We believe that the USSR desires to prevent the diffusion of nuclear weapons, but that this desire will not prove so strong as to produce major changes in its policy. The Soviets have thus far proved unwilling to conclude nondiffusion agreements save on unacceptable terms. Even if the Soviets conclude that West Germany was moving toward a nuclear status, they would probably not make radical changes in their policy, but employ instead a mixture of threats, appeals, and proposals for regional disarmament. (*Paras. 38–41*)

F. Even if the US, the UK, and the USSR could agree on terms of a nondiffusion agreement, Communist China would almost certainly refuse to sign, and French and Israeli adherence would be doubtful. Nevertheless, the very existence of such an agreement would inhibit other nonsignatories and reinforce internal opposition where it already existed. A comprehensive nuclear test ban treaty would impose serious limitations on the development of nuclear capabilities by nonnuclear signatories but would be subject to many of the same difficulties as a nondiffusion agreement. (*Paras. 44–46*)

G. In strictly military terms, the nuclear proliferation likely to occur over the next 10 years will almost certainly not upset global power relations nor do we believe it will produce major realignments in the relations of states. The impact will be in the political and psychological effects of the existence of such new weapons, the greater unpredictability of relations within and between alliance systems, and the possibility that hostilities arising out of existing or future controversies could escalate into a serious confrontation involving the major powers. (*Paras. 47–48*)

H. The possession of nuclear weapons may encourage a new nuclear power to pursue policies which might result in a local

crisis, but the possibility that such weapons could be used will almost certainly introduce a strong element of prudence into the calculations of regional enemies. As the number of countries with nuclear weapons programs increases, the likelihood of accidental detonation of weapons will also rise, particularly because safety measures are expensive and temptingly easy to dispense with. An unintentional nuclear explosion in some circumstances might even touch off a nuclear exchange, though we believe the major nuclear powers would react cautiously to such an accident. A serious nuclear reactor accident or a nuclear weapons detonation established as unintentional would almost certainly intensify domestic opposition to the country's nuclear weapons program, and would cause other governments considering a weapons program to hesitate. If US nuclear forces were stationed in the area concerned, there might be considerable regional pressure for their withdrawal. (*Paras. 50–54*)

DISCUSSION

I. GENERAL CONSIDERATIONS BEARING ON NUCLEAR PROLIFERATION

1. Twenty-one years after the beginning of the atomic age, the world has clearly entered a period in which the prerequisites for developing at least a minimum nuclear weapons program are becoming increasingly available to nonnuclear states. This condition has been created by a wide diffusion of basic knowledge and technical skills and by easier access to the necessary materials. Natural uranium, once a scarce and tightly controlled commodity, is now considerably easier to obtain. The plutonium route to a weapons program has become a well marked trail, and one which in its earlier stages is scarcely distinguishable from a purely peaceful program. There are already more than a hundred reactors, most of the small research variety, now operational or under construction in the nonnuclear states. A growing number of technicians, both native and imported, are available to any country interested in a nuclear program.

2. Cost is becoming less a barrier to the acquisition of nuclear weapons as fissionable materials become more plentiful and the spread of information lessens the likelihood of expensive mistakes. The cost of a weapons program will vary considerably, depending upon the level of technical and economic development of the country involved and the size and type of weapons program desired. Regardless of expenditure, countries which do not have a substantial technological base cannot produce nuclear weapons without considerable assistance from foreign sources. For countries possessing an adequate technological base, however, a minimum program for producing one or two low-yield fission weapons per year would cost $140–$180 million to produce the first detonation, and $20–$30 million a year thereafter.

3. Once a country attempts more than a minimum program, the costs begin to rise steeply. For example, the initial cost of a program leading to the production of 15–30 fission weapons per year is probably about $600–$700 million to achieve the detonation of a first device, plus subsequent annual operating expenses of $70–$100 million. The costs of a substantial capability, including sophisticated delivery vehicles, compatible weapons packages, and the production of U–235, can become astronomic. For example, the French have already spent $2.5 billion on their nuclear program with at least two-thirds of this expenditure related to military programs. (See Annex A for details on a hypothetical minimum program and on the cost of the French program.)

4. It must also be kept in mind that a lack of suitable test sites could present difficult problems for some countries. An untested weapon would be of uncertain reliability unless a country were supplied with

detailed designs of previously tested weapons. It is unlikely, therefore, that any country would stockpile weapons of original design without first having conducted tests, except under the most unusual and pressing circumstances. In any event, refinement of warheads for sophisticated weapons systems would require testing. While underground testing could be a feasible solution in some instances, such testing would add costs, involve considerable time delays, and reduce diagnostic returns.

5. Technical and economic factors help establish limits to the possible proliferation of nuclear weapons, but actual decisions will depend on political and military considerations as well. Indeed, national differences in political determination and strategic objectives are likely to prove more important in determining the pace and content of nuclear diffusion than differences in national wealth and technical skill. Moreover, political and military considerations will weigh heavily in decisions as to the size and sophistication of weapons programs. Thus, a country such as France may be satisfied only by the development of weapons systems which enable it to "share" in deterring the USSR, and which strengthen its position in international councils. A country such as Israel, with more limited objectives, can accept a more limited capability.

6. A country considering the acquisition of nuclear weapons must take into account its potential enemies and the kind of weapons systems it believes will be necessary to deter or deal with them. It must decide whether it has strategic requirements, political pretensions, or territorial ambitions which it believes can only be served by the acquisition of nuclear weapons. More broadly, it must estimate the probable impact of the weapons program it can afford on its national prestige and its influence within existing alliances. No matter how attractive the prospects for a nuclear program may appear, they must be balanced against whatever doubts a country might have whether nuclear weapons constitute a prudent form of defense expenditure and against other sobering considerations such as possible domestic resistance to a weapons program. The weight of arguments pro and con may change as the scope and concomitant financial demands of the program become clearer through experience (e.g., the British experience with strategic missiles), and as the political and strategic situation changes.

II. CAPABILITIES AND INTENTIONS OF POTENTIAL NUCLEAR CANDIDATES

7. We believe that eight countries in addition to France and the three major nuclear powers have the physical and financial resources to develop an operational nuclear capability (weapons and means of delivery) within the next decade. Table 1 lists these eight countries and the probable time periods they would require to explode a nuclear device after a decision to go ahead. Of these eight nations, we believe that only Communist China has actually embarked on a nuclear weap-

ons program. [redacted] Thus far the remaining countries have limited their nuclear programs to demonstrably peaceful purposes, although we assume that they are not ignoring possible military applications.

TABLE 1

ESTIMATED TIME REQUIRED FOR SELECTED COUNTRIES TO PRODUCE AND TEST A FIRST NUCLEAR DEVICE [a]

COUNTRY	FIRST DEVICE [b]
Canada	1–2 years after decision
Israel	2–3 years after decision
Sweden	2–3 years after decision
West Germany	4–5 years after decision
India	4–5 years after decision
Italy	5–6 years after decision
Japan	5–6 years after decision
Communist China	Possibly as early as 1964

[a] The estimates of time required are for decisions made within the next year or so. If the decisions were to be made later than this, the time required might be shortened by intervening developments.

[b] In most cases, a first weapon deliverable by aircraft, weighing some 5,000–10,000 pounds and with a diameter of 50–60 inches, could be produced in about a year after the first test device if sufficient materials were at hand. In the case of programs which were aimed at a specific delivery system requiring significantly smaller weights and diameters, the production of the required weapons would take much longer.

A. The Status of the Eight Candidates

Communist China

8. The Communist Chinese appear to have given a very high priority to their nuclear weapons program for a number of years and, despite serious difficulties occasioned by the cutoff of Soviet assistance and domestic economic problems, are likely to continue to press ahead. Our evidence with respect to Communist China's nuclear program is insufficient, however, to make a confident judgment about the likely date of a first nuclear explosion. Recent photographic coverage revealed a highly secure installation in Communist China which includes what we believe to be a small air-cooled reactor together with associated facilities for chemical separation and metal fabrication. The reactor is estimated to be capable of producing enough plutonium for not more than two low-yield fission weapons per year. If the reactor went critical in early 1962—the earliest possible date—and the Chinese experi-

ence no major problems in chemical separation or metal fabrication, the earliest a first device could be tested using plutonium from this reactor alone would be early 1964. If the reactor did not go critical in 1962 or if the Chinese encounter the normal run of difficulties, the more likely date would be late 1964 or beyond.*

9. Approximately two years after a test the Chinese could probably produce their first crude fission weapon. To deliver this weapon, the Chinese would be forced to rely for the next few years on some 15 antiquated TU–4s (BULL) or on their two TU–16 jet medium bombers (BADGER). We believe that the Chinese Communists will probably not develop a missile system (medium range) until the late 1960s. In order to obtain a significant capability in the nuclear weapons field, the Chinese Communists will require a larger plutonium production capacity than we know to exist and facilities for the production of weapon-grade U–235.

Israel

10. Given Israel's capabilities and the strong Israeli desire to maintain its overall military superiority over the Arab States, we believe that the Israelis, unless deterred by outside pressure, will attempt to produce a nuclear weapon some time in the next several years.[1, 2]

[redacted]

[redacted]

[1] This subject will be treated in NIE 13–2–63, "Communist China's Advanced Weapons Program," now in preparation. The most recently completed NIE on this subject is NIE 13–2–62, "Chinese Communist Advanced Weapons Capability," dated 25 April 1962.

[redacted]

India

12. The psychological and political barriers to a nuclear weapons program continue to be strong in India, and it is unlikely that such a program will be authorized so long as Nehru remains in power. Its cost and India's reluctance to divert resources from present economic and military programs also constitute significant barriers. Nevertheless, the border war has convinced most Indians that Communist China represents a clear danger to India's security and prestige, and the threat of Chinese domination may affect the progress and direction of the Indian nuclear program.

13. There are clear indications that India, which already has a fairly advanced nuclear research program including a plutonium separation plant under construction, is actively improving its overall capabilities in the nuclear field, possibly in anticipation that a future decision to develop an operational nuclear capability may be required. In addition to two small research reactors, India has a 40 MWt reactor—the so-called Canada-India Reactor (CIR)—which is capable of producing sufficient quantities of plutonium for about one or two weapons a year. If present plans are carried out, India will soon have a supply of uranium, without safeguards,[a] adequate to operate the 40 MWt reactor for the production of weapon-grade plutonium. Although this reactor is currently operating with safeguarded heavy water supplied by the US, the Indians have a heavy water plant which will soon reach an output sufficient to service the CIR. By replacing the US-supplied heavy water, the CIR would not be subject to safeguards and could be operated for the production of weapon-grade plutonium should the Indians decide to do so. India could reach a position of independence from present controls in about two years, after which it would take another two or three years for India to produce its first nuclear device. By about 1970, India could have a limited nuclear capability using aircraft.

Japan

14. Japan's scientific and technical skills and its industrial resources are at such an advanced state that, if the decision to go ahead were made in the next year or so, Japan could probably develop an operational nuclear capability using aircraft by 1970. The deep-rooted reluctance of the Japanese to undertake a nuclear weapons program, however, makes it unlikely that Japan will initiate such a program within the next

[a] The term "safeguards" refers to the arrangements included in agreements between suppliers (US, UK, South Africa, etc.) and recipients which require strict accountability and inspection by the supplier to ensure peaceful use of the material supplied.

decade. Should the Japanese Socialist Party gain control of the government within the period of this estimate, Japan would be even less likely to do so.

Sweden

15. Sweden has thus far avoided making any clear-cut decisions with regard to a nuclear weapons program, but basic nuclear research is of such high quality that the country is clearly nearing the threshold of a weapons capability. A 65 MWt natural uranium fueled power reactor is expected to reach full power by mid-1963, while a 385 MWt power reactor is scheduled for completion by 1967–1968. The production of weapon-grade material will require the Swedes to build their own chemical separation plant. Although there have been several strong indications that Sweden is preparing to build a separation facility, we have no hard evidence that the Swedes have actually started construction. We believe that if a decision to go ahead is made in the next year or two, the Swedes could test a first device two or three years later. Moreover, if the Swedes decide to press ahead after the first detonation, we believe Sweden could have a weapon deliverable by aircraft by about 1968, and a missile system carrying compatible fission warheads by 1970.

16. The present Social Democratic government, which is likely to remain in power for several more years at least, has indicated a number of times that it was about to reach a decision whether to undertake the production of nuclear weapons, only to procrastinate at the last moment. If the trend toward nuclear proliferation continues and if it appears unlikely that progress is being made toward a test ban or broader disarmament arrangements, the Swedish Government will be under increasing internal pressure to resolve the nuclear weapons question. Whether the Swedes will actually go on to produce nuclear weapons is uncertain and will probably depend largely on the extent of nuclear diffusion and its implication for Swedish neutrality.

Canada

17. Canada initiated its nuclear energy program during World War II in collaboration with the US and UK, and has long possessed all the prerequisites for a weapons program except facilities for the separation of plutonium and the required weapons design research. Canada is second to the US in the Free World production of uranium. Canada has three reactors in operation now producing significant quantities of plutonium and a fourth under construction. The latter, a large nuclear power reactor (693 MWt), is expected to be in full operation in 1965. Canada could easily go into a nuclear weapons program of some size and sophistication but has remained out by choice. The position of all political parties that Canada does not need and should not have its

own nuclear weapons program, reinforced by public sentiment and considerations of cost, will continue to make a decision to proceed unlikely.

Italy

18. Italy has both the skills and the industrial and financial resources for carrying out a nuclear weapons program. The Italians now have under construction three large power reactors capable of producing significant amounts of plutonium. The SENN and SELNI reactors, however, are designed to use only enriched fuel. Because this fuel is available only under adequate safeguards, these reactors could not be used in a weapons program. On the other hand, SIMEA, a 705 MWt natural uranium fueled reactor, could produce sufficient plutonium for a weapons program if Italy imported the required uranium. Without a radical change in national sentiment, however, it is highly unlikely that Italy will do more than continue with its present nonmilitary program. The swing to the left of the Italian electorate during the 1963 national elections will almost certainly reinforce this decision for some time.

West Germany

19. Although West Germany has the industrial potential, personnel, and technological skills to enter the nuclear weapons field, the obstacles to undertaking such a program are substantial. Treaty restrictions,[1] public opposition, the absence of significant deposits of uranium ore within the country, the lack of testing space, and the current lack of large power reactors and a chemical separation plant, all represent major obstacles to initiating a weapons program. Furthermore, the West German Government almost certainly realizes that to embark on a nuclear weapons program would not only create serious internal political dissension and difficulties with its Allies, but offer a grave provocation to the USSR.

20. Nevertheless, West Germany has spent more on its nuclear program than any country other than the US, USSR, UK, and France. In the period 1956–1962, the Federal and State governments spent roughly $385 million for various nuclear programs. Moreover, the German AEC has recently recommended that the Federal and State governments appropriate some $625 million for the period 1963–1967 to cover a nuclear energy program which would include several large power stations. Despite the size of these programs, however, there are no indications at the present time that West Germany has plans for developing an independent nuclear weapons capability. Its 11 reactors are small and

[1] In October 1954, when the Federal Republic of Germany acceded to the Brussels Treaty, the West German Government made the following pledge: ". . . The Federal Republic undertakes not to manufacture in its territory any atomic weapons, chemical weapons, or biological weapons."

used for research and training, with the production of plutonium apparently limited to laboratory quantities.

21. Our information is insufficient to make a confident judgment as to future developments. We believe that West Germany is probably seeking through its broadly based nuclear program to increase its industrial and technical competence in fields related to nuclear technology and eventually to become a world leader in the nuclear sciences. As a possible consequence of such a program, West Germany may become a major world supplier of nuclear technicians and components. Such a program would reduce the time required for the development of an independent nuclear capability if a decision were made to proceed with a weapons program. Moreover, if the program included large power reactors and plutonium separation facilities it would soon bring West Germany to the threshold of such a capability.

General

22. Certain generalizations are possible concerning the countries just discussed. Communist China and Israel aside, only time and self-imposed restraints stand in the way of their acquiring some kind of nuclear weapons capability. These restraints largely derive from one or more of the following: opposition either internal or external, considerations of cost, and the lack of strong positive motivation to proceed. We cannot exclude the possibility that events which we cannot now foresee will remove these restraints upon some of the countries. Moreover, nuclear policies will continue to be affected by intangibles difficult to assess, such as prestige, and subject to pressures which a government might not be able to resist, e.g., public opinion which became aroused because a prospective enemy had acquired weapons.

23. All the countries which we have considered possible but unlikely candidates are engaged in peaceful nuclear programs. Some have approached the point where they will have all the facilities required to undertake a nuclear weapons program in the event that a decision were made to do so, and the others will reach this position over the next few years. Thus, a situation will arise in which there could be a rapid increase in the number of countries possessing nuclear weapons should the restraints now operating cease to be effective.

B. A Special Case

24. The proliferation of nuclear weapons would not necessarily be restricted to countries which possess the skills, resources and know-how to produce them independently. Where the motivation is sufficiently strong, a country may attempt to acquire weapons by tapping the manpower and industry of other countries or even by direct transfer. The UAR, for example, might fall into this category. We have no evidence

that the UAR is presently engaged in a nuclear weapons program. Moreover, the UAR is so deficient in most of the prerequisites for a weapons program that it could not on its own acquire a capability over at least the next decade. Nonetheless, UAR motivation is presently strong, and would become even stronger should the Israelis explode a nuclear device.

III. IMPLICATIONS OF THE SUCCESS OF SPECIFIC PROGRAMS

A. Communist China

25. We do not believe that the explosion of a first device, or even the acquisition of a limited nuclear weapons capability, would produce major changes in Communist China's foreign policy in the sense that the Chinese would adopt a general policy of open military aggression, or even become willing to take significantly greater military risks. China's leaders would recognize that their limited capabilities had not altered the real power balance among the major states and could not do so in the foreseeable future. In particular, they would recognize that they remained unable either to remove or neutralize the US presence in Asia.

26. Nevertheless, the Chinese would feel very much stronger and this mood would doubtless be reflected in their approach to conflicts on their periphery. They would probably feel that the US would be more reluctant to intervene on the Asian mainland and thus the tone of Chinese policy would probably become more assertive.[5] Further, their possession of nuclear weapons would reinforce their efforts to achieve Asian hegemony through political pressures and the indirect support of local "wars of liberation." Such tactics would probably acquire greater effectiveness, since the Chinese feat would have a profound impact on neighboring governments and peoples. It would alter the latter's sense of the relations of power, even if it made little immediate change in the realities of power, and to a greater or lesser degree would probably result in increased pressures to accommodate to Chinese demands.

27. Communist China's success in the nuclear weapons field will give significant weight to the arguments of those Indians who are convinced that India at some point must have its own nuclear capability if it is to avoid bending to Communist Chinese pressure or being forced into excessive dependence on external support. It is indeed possible that these arguments could prevail and that India would embark on such a program. On balance, however, we do not believe India will make the decision for weapons development on the basis of the Chinese detonation of a nuclear device, especially if India is obtaining military assistance

[5] The Acting Director of Intelligence and Research, Department of State, believes that there is insufficient evidence to warrant such a definite statement about the Chinese appraisal of our intentions and that the statement is somewhat inconsistent with paragraph 25.

in modern defense weapons. The Indians will probably continue what we believe to be their present program of developing their nuclear capabilities to a point where a crash weapons program could be brought to fruition relatively quickly.

28. The Japanese might feel an increased sense of pressure after the Chinese acquire nuclear weapons and opt for developing their nuclear program to a point where they would be on the threshold of a weapons capability. But they would be much more reluctant to cross that threshold than most other countries. The Japanese have particularly strong psychological inhibitions against the acquisition of nuclear weapons and will thus probably continue to rely on the US for support and protection.

B. Israel

29. Considered as a military factor in the East-West power balance, an Israeli nuclear capability would be of negligible significance. But such a capability would be militarily significant in the Middle East and would provoke a sharp reaction there. The Israelis would probably exploit their nuclear advantage, not to make war forthwith, but to intimidate the Arabs. The Arabs would also feel more inhibited in taking actions which might provoke an Israeli military response.

30. The acquisition of nuclear weapons by Israel would compound the already serious problems facing the US in the Middle East. Acquisition of nuclear weapons by Israel would add greatly to Arab hostility toward the West. The US as well as France would receive much of the blame in the eyes of the Arabs. No matter how strongly the US disapproved of an Israeli nuclear capability, Arab dismay and frustration would be directed at the US as the power which in Arab eyes could have prevented it. It would probably then become much more difficult for the US to maintain the delicate complex of its interests in the Middle East.

31. Once Israel has developed nuclear weapons, the UAR will almost certainly strive to offset Israel's advantage. Therefore, we could expect the UAR to step up its efforts to import technicians, materials, and equipment in a major effort to duplicate the Israeli achievement. Moreover, the principal Arab States would probably look to the US and the USSR for help to counter what they would consider a critical threat. The Soviets probably would find ways of exploiting this opportunity. We do not believe, however, that the Soviets would give the UAR nuclear weapons, weapons information, or even a significant amount of technical assistance. It is more likely that the USSR would offer additional modern weapons and a promise, however vague, of nuclear protection.

C. The French Program and the Problem of European Nuclear Diffusion

32. The French nuclear weapons program is very much an instrument of President de Gaulle's foreign policy, and a rather effective one. He has been frank to admit that France cannot hope to achieve more than a modest capability in comparison to that of the US or the USSR. The primary purpose of the French force is to heighten French prestige and status on the continent and thereby assist France to assume leadership of a Europe less dependent on the US and with a voice in the management and control of Western nuclear power. The French program will appeal to those in Europe, at present relatively few, who have qualms about the firmness and the duration of the US commitment to the nuclear defense of Europe.

33. Thus far France's European Allies have avoided confronting de Gaulle on the question of the French nuclear program. Their reaction has been ambivalent. While many Europeans are in general sympathy with de Gaulle's challenge to US dominance of the alliance, they are also fearful that the existence of an independent French nuclear force will increase the likelihood of further nuclear proliferation, further erode the NATO concept, and, perhaps most important, provide the vehicle for German acquisition of nuclear weapons.

34. The French realize that if they are to have nuclear capabilities sufficient to constitute an important element in Soviet calculations, they need sophisticated weapons in some numbers. The cost and difficulty of developing and producing the appropriate weapons systems has proved very great. Together with the expenditures necessary to stay in the race against obsolescence, these costs would be sufficient to dissuade the bulk of European states from undertaking comparable programs, and they would realize that their interests would not be served by a mere token capability. In this connection, the British decision not to develop its own strategic missile system cannot but impress other European countries considering a weapons program.

35. [redacted] If the French continue to encounter technical difficulties in the construction of the Pierrelatte gaseous diffusion plant they might seek German technical assistance, which they probably consider of more immediate benefit than financial assistance. Although German scientists have no experience in the gaseous diffusion of U-235, they could be of great value to the French in certain areas essential to the process. If the French program continues to encounter difficulties the French might find it worthwhile to go to the Germans for financial as well as technical assistance in exchange for some limited degree of German participation in the French program. An additional

motive might be de Gaulle's interest in frustrating a US-sponsored (and, in his opinion, US-controlled) NATO collective deterrent system.

36. We believe that the French program has thus far had little direct effect on German attitudes toward the acquisition of nuclear weapons. We believe the Germans will limit their nuclear development programs over the next few years to projects which are demonstrably peaceful. For the time being, the principal interest is in having nuclear weapons from whatever source immediately available for the defense of German territory. While the Germans are extremely sensitive to any appearance of discrimination within NATO, their sensitivity apparently is thus far not acute with respect to the nuclear restrictions imposed on Germany by treaty. If the Germans began to believe that their Allies, and especially the US, might not use nuclear weapons in the defense of the Federal Republic, German interest in a national capability would rise.

37. Thus far the Germans have endorsed the Nassau proposal for a US-sponsored NATO multilateral nuclear force. We believe that once this force is organized the Germans will expect it ultimately to develop into a force free of a US veto. If this does not occur, the Germans might become interested in a purely European multilateral force or even in some sort of French-German arrangement. However, until such time as West Germany is prepared to loosen its close ties with the US, the attitude of the US with respect to German nuclear policy will continue to be of overriding importance.

IV. POLICIES AND ATTITUDES OF THE MAJOR NUCLEAR POWERS TOWARD PROLIFERATION

A. The Soviet Attitude Toward Proliferation

38. We believe that the USSR is reluctant to see a diffusion of nuclear weapons. Within the Warsaw Pact, it is under no significant pressure to make nuclear weapons available to its European allies, and we believe that it will not in the foreseeable future. The Soviets have no military reasons for doing so, and such action would, in the Soviet view, risk giving an added impulse to West German arguments and efforts to acquire an independent nuclear capability.

39. In general, we believe that the Soviet desire to avoid proliferation will not prove so strong as to produce major changes in their policy. The Soviets probably have doubts about the value of agreements designed to prevent proliferation because of the obvious inability of the US and UK to head off the French program and their own inability to handle China. In any case, the USSR has thus far proved unwilling to reach agreement with the West against the transfer of nuclear weapons and weapons technology, save on unacceptable terms. For example,

the Soviets insist that any such arrangement must have a provision which would exclude Germany from any multilateral nuclear force.

40. While the Soviets probably appreciate that current US proposals for nuclear sharing within NATO are intended to deny the Federal Republic an independent capability, they believe that the German role in NATO is bound to grow. Thus they fear that present multilateral schemes will open the way to Germany's having a major voice in NATO nuclear decisions and perhaps to acquiring an independent national capability. The Soviets are probably also concerned that, even if the multilateral force does not come about, Germany will become a nuclear power through cooperation with France.

41. If the Soviets concluded that West Germany was moving toward the status of a nuclear power, they might feel compelled to take radical measures to head off this development. Such measures might involve, at one extreme, threatening to provoke a major East-West crisis unless assurance was given that West Germany would be prevented from acquiring control of nuclear weapons. At the other extreme, they might offer concessions on reunification and disarmament in return for such assurances. On balance, however, we believe the Soviets will not make any radical changes in their policy, but employ instead a mixture of threats, appeals, and proposals for regional disarmament.

B. The British Attitude Toward Proliferation

42. The British are also concerned about the spread of nuclear weapons to nonnuclear states which could use them independently. The Macmillan government has had a strong interest in both a nondiffusion agreement and a test ban treaty and has long been more hopeful than the US that compromise is possible. If the Labor Party gains power we foresee no change of British policy on this score. Indeed, a Labor government would be even more active in opposing proliferation.

C. The French Attitude Toward Proliferation

43. The French attitude toward nuclear diffusion is as yet difficult to determine. They have, of course, refused to take part in test ban and other disarmament discussions. Once France has a fully operational capability, however, we expect that its attitude on diffusion may well become much the same as that of the other nuclear powers.

V. THE IMPLICATIONS OF A NONDIFFUSION AGREEMENT, A TEST BAN, OR NUCLEAR FREE ZONES FOR NUCLEAR PROLIFERATION

44. Proposals for a broad nondiffusion agreement have included the requirement that the nuclear powers agree not to transfer weapons to the national control of nonnuclear powers or assist them in acquiring

weapons. Nonnuclear signatories would be required to agree not to manufacture nuclear weapons, acquire national control over them, or seek nuclear weapons assistance. If the US, UK, and the USSR could come together on the terms of such an agreement it would, of course, prevent the acquisition of nuclear weapons by any nonnuclear signatories. Communist China would, however, almost certainly refuse to sign. The French would certainly not sign unless they were considered one of the nuclear powers; even if this were done, we believe that French adherence would be doubtful. Israeli adherence would also be doubtful. Nevertheless, the very existence of such an agreement would constitute a political and psychological inhibition to the initiation of an independent weapons capability by other nonsignatories and would reinforce internal opposition where it already existed.

45. A comprehensive nuclear test ban treaty, while also slowing the pace of diffusion, would be subject to many of the same difficulties as a nondiffusion agreement. Communist China would clearly reject such an agreement. France would almost certainly not sign it at least until such a time as it had developed a thermonuclear warhead for medium-range missiles. Israel, after it had tested a nuclear device, might be willing subsequently to sign a test ban agreement. A comprehensive test ban treaty would impose serious limitations on the development of a nuclear capability by nonnuclear signatories. If the agreement was limited to an atmospheric test ban, the development of a nuclear weapons program would be more difficult and expensive for the signatories. Underground testing, although more expensive and technically less rewarding, is one road, albeit a bumpy one, to a weapons capability. Aside from technical considerations, a nuclear test ban agreement, like a nondiffusion agreement, would be a strong political and psychological deterrent to the acquisition of nuclear weapons.

46. The creation of regional nonnuclear zones, such as the one proposed by Brazil for South America, could have a significant long-term effect on the spread of nuclear weapons. There are many regions of the world where there would be wide public support for the creation of such a zone. Prospects for agreement are brightest in those areas, such as South America and Sub-Sahara Africa, where there are presently no aspiring nuclear powers and where the major powers have no desire to locate nuclear weapons systems.

VI. BROAD IMPLICATIONS OF NUCLEAR PROLIFERATION

47. In strictly military terms, the nuclear proliferation likely to occur over the next 10 years will almost certainly not upset global power relationships. None of the prospective or potential nuclear powers will acquire capabilities which, if added to those of the US or the USSR, would significantly affect East-West military relationships, or bulk large militarily as an independent force. We do not believe China capable

of acquiring more than a relatively small operational capability in this decade; Israel would almost certainly not seek to acquire more than a small number of weapons or more than a local delivery capability. The other potential nuclear powers would not, we believe, seek or be able to achieve more than small forces of local significance. Thus the impact of such proliferation as takes place will come from the political and psychological effects of the existence of such new weapons, and the possibility that hostilities arising out of existing or future controversies could escalate into a serious confrontation involving the major powers.

48. Speaking in the broadest of terms, we do not believe that proliferation over the next decade will produce major realignments in the relations of states or lead to new combinations of allies and enemies. What nuclear proliferation will do is to intensify, as it already has, the strains within the major power groupings. The efforts of France and Communist China to develop their own weapons systems represent a direct challenge to the leaders of their respective alliances—the US and the USSR. France, already disposed to pursue independent policies, is further encouraged to do so by its new status as an emerging nuclear power. China has similar aspirations which nuclear weapons would also encourage. Their pursuit of independent policies might encourage others to pursue policies inconsistent with those of their alliance leaders. At least for the foreseeable future, relations within and between alliance systems will probably be made more unpredictable by the addition of new nuclear powers.

49. The foregoing conclusions are based on our estimate that there will not be widespread proliferation of nuclear weapons over the next 10 years. We have estimated that an increasing number of nations will actively pursue nuclear energy programs right up to the threshold of a weapons capability. Such programs could be justified domestically as a source of energy and as providing a stimulus to the development of technological skills and sophisticated industries. Such a threshold capability would facilitate the development of a weapons program if circumstances required. This is the road Sweden and India have apparently taken, and it may well be the path of others. National imperatives and ambitions change, and with such changes could come new nuclear powers. Moreover, we cannot exclude the possibility that some time within the next decade a country with a growing sense of national ambition such as Indonesia may decide to enter the nuclear weapons field. Finally, the development of broadly based peaceful programs by additional countries could lay the foundation for weapons programs beyond the next 10 years.

50. A new nuclear power may be emboldened by the possession of nuclear weapons to a more vigorous pursuit of its objectives against enemy states, and the result may be an increase in the frequency of

local crises. However, we do not believe that in the case of most of the potential nuclear powers considered earlier, the acquisition of a nuclear arsenal would produce more aggressive international behavior. In any case, the psychological impact of becoming a nuclear power will in due course diminish, and countries with this new capability will probably experience the practical and difficult problem of translating it into measurable political gains. Furthermore, the very presence of nuclear weapons, an entirely new element in the experience of regional enemies, will probably bring a new sense of prudence into the calculations of such rivals when one or another is considering the aggravation of a local controversy.

51. Should local crises actually erupt into open conflict, it is more difficult to estimate the probable effect of nuclear weapons in the hands of one or more of the antagonists. It seems clear, however, that the situation would be potentially more dangerous than in the absence of such weapons, if only because of the additional uncertainties introduced by their presence. There is a tendency for the US and the USSR to become involved in local crises in any event, but their involvement might in some cases be more likely if the possible use of nuclear weapons was at stake. Although the involvement of the major powers in such a conflict would create the potential for escalation into general war, we believe that such an escalation is unlikely. The possession of nuclear weapons by local antagonists would almost certainly introduce elements of prudence into their own calculations and the pressure of world opinion for restraint would be of maximum effectiveness against the smaller powers. The involvement of the US and USSR could be expected to add to the forces of prudence and restraint, since it would almost certainly be in the US and Soviet interest to see the hostilities brought to a halt. Moreover, we do not believe that even in the event that one or the other of the local antagonists actually uses a nuclear weapon, the major powers would necessarily feel compelled to raise the crisis to the level of an East-West confrontation.

52. As the number of countries with nuclear weapons increases, the risk of unintentional or unauthorized detonation of such weapons will also rise, and for more than purely statistical reasons. Elaborate safety measures such as those developed by the US are expensive and temptingly easy to dispense with, even by a country with considerable financial and technological resources. The accidental detonation of a nuclear weapon in any part of the world could have far reaching consequences. Unless the circumstances were very quickly explained, understood and believed, the reaction of peoples and perhaps governments would probably be confused, even panic stricken. If the occurrence was in the territory of one of the major powers (e.g., through the accidental firing from another country of a missile with a nuclear warhead), there is some slight chance that a nuclear exchange would

be touched off immediately. The odds are, of course, strongly against such an escalation; the major powers recognize that the diffusion of nuclear weapons will increase the chances of an accidental detonation and would probably react cautiously to any such incident.

53. In the case of a serious reactor accident, or an accidental weapons detonation on the soil of the owner, the consequences would depend on the attendant circumstances. In general, the impact of a nuclear accident on world opinion, particularly if life and property were lost, and considerable contamination occurred, would almost certainly serve to restrain most governments considering a weapons program. More specifically, if the accident came as the result of a country's efforts to develop a national weapons capability and occurred within a populated area, domestic opposition might become strong enough to cause abandonment of the program. There would also be strong public pressure within the area where the accident occurred to remove all nuclear weapons systems, regardless of origin. For example, a French nuclear accident might not only affect the future of the French program by arousing domestic resistance but also provide an emotional issue which would be exploited by those who want US nuclear weapons withdrawn from Europe.

54. The spread of nuclear weapons also raises the possibility that the actions of a nuclear power other than the US and USSR could trigger a general war. We believe, however, that a deliberate nuclear attack on the Soviet Union or the US by one of these powers is extremely unlikely. Nonetheless, even the possibility is enough to inject a new element of uncertainty into both alliance systems and into East-West relations.

ANNEX A

ESTIMATED COSTS OF DEVELOPING AN OPERATIONAL NUCLEAR CAPABILITY

I. HYPOTHETICAL MINIMUM PROGRAM

A. Nuclear Weapons

1. A program for the production of one to two low-yield all-plutonium fission weapons per year, to be delivered by existing aircraft (bombers or modified commercial aircraft), would cost on the order of $140 million to $180 million. This total includes $70 million to $90 million for the construction and operation of basic research facilities; $40 million to $50 million for the acquisition of materials and the production of plutonium; and $30 million to $40 million for weapons research, development, and fabrication. Additional outlays of $20 million to $30 million per year would be required for the annual operation of this program.

B. Delivery Vehicles

2. The actual costs of delivery systems, aircraft or missiles, would depend upon the sophistication desired and whether or not these systems were developed indigenously or procured from an external source. If the requirement were only to obtain from others a delivery vehicle large enough to accommodate a crude weapon, the incremental costs would be relatively small—much smaller for an aircraft system than for a missile system. The costs of developing and producing a delivery system would, of course, be large.

II. A MODERATE PROGRAM: THE FRENCH EXAMPLE

A. Nuclear Program

3. On the basis of official French figures, we estimate that, by the end of 1962, France had spent about $2.5 billion on its nuclear program, including expenditures for peaceful purposes. More than one-third of this total has been expended for parts of the program that are exclusively of a military nature. Most of the remaining expenditures must be regarded as joint costs of military and nonmilitary projects. It is difficult to separate these costs, but it is estimated that at least two-thirds of the total expenditure of $2.5 billion has been associated with military aspects of the French nuclear program.

4. During the past three years (1960–1962), expenditures on military aspects of the nuclear program have probably averaged more than $330 million per year. If the present trends continue we estimate that during the next four years (1963–1966) such annual expenditures will average about $870 million and by 1966 will be about $1.3 billion. The future increases in the cost of the program will be caused by heavy investment in several major production facilities (including the costly gaseous diffusion plant at Pierrelatte), by additional operating expenses, and by costs of testing and refining a variety of weapon types.

B. Delivery Capabilities

5. For the next few years, the French intend to use the Mirage IV light jet bomber for the delivery of nuclear weapons pending the development of a nuclear powered submarine ballistic missile system. A token delivery capability with the Mirage IV will probably exist by the end of this year, but the projected force of 50 will not be operational before the end of 1966. The French have announced that they will achieve an initial operational capability with nuclear submarines by 1969. We believe this may be somewhat optimistic. Alternative surface-to-surface missile systems have been or still are being considered, but are not included in present French plans.

6. Delivery systems will add appreciably to the costs of the French nuclear weapons program. Thus, the force of 50 Mirage IV's might well cost a total equivalent to some one-half billion US dollars, including one-quarter billion for the basic aircraft and the balance for KC–135 tankers, modifications, and such possibilities as an air-to-surface missile. The three nuclear-powered ballistic missile submarines now programmed will cost on the order of $1.5 billion to $2 billion, exclusive of warheads, and a modest surface-to-surface intermediate range ballistic missile program $650 million to $850 million, also exclusive of warheads.[6]

C. General

7. The costs of these programs are to be met in part by increases in total military spending and in part by reductions in conventional forces. Defense Minister Messmer noted in a recent article that an increase in military expenditures of one billion new francs (NF) per year is expected until 1970 even though military expenditures are limited to a constant share of gross national product. Earlier in the article he cited the present military share of GNP as 7.4 percent (presumably at factor cost).

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[6] These estimated costs are for developing and producing the delivery systems and do not include costs for operation and maintenance.

8. In very general terms we believe that French average annual expenditures for acquiring a strategic nuclear strike force could be as follows:

a. 1960–1962, the equivalent of about US$600 million to $700 million, or about 15 to 20 percent of the defense effort and one to 1.5 percent of GNP;

b. 1963–1966, about $1¼ billion to $1½ billion, or between 25 and 35 percent of the defense effort and two to 2½ percent of GNP;

c. 1967–1970, about $2 billion to $3 billion annually, or between 40 and 60 percent of the defense budget and between three and four percent of GNP.

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