THE SECRETARY OF DEFENSE
WASHINGTON

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DRAFT

MEMORANDUM FOR THE PRESIDENT

SUBJECT: The Diffusion of Nuclear Weapons With and Without a Test Ban Agreement

1. Prospects With Unrestricted Testing

1. Country Capabilities

a. Probably about 16 countries, excluding the four present nuclear countries, will be able to acquire at least a few nuclear weapons and a crude delivery capability during the next ten years assuming no basic changes in technology. See attached table. During this period and with present technology, the cost for one of these countries to develop and produce a few weapons would come to about 150 - 175 million dollars. (Some of this cost might be charged to a nuclear power program.) A program for producing about 1000 weapons would approach a billion dollars in cost. Delivery systems are much more costly; a modest aircraft and medium range missile program including the production of a small force would cost around two billion dollars or more. Simpler, less reliable, and effective delivery methods using aircraft or rockets would cost much less.

b. The costs of nuclear weapons can be expected to decline greatly over time through the diffusion of present weapon technology, through the wider distribution of research and power reactors, and through advances in technology resulting from continued testing.

c. The time required from decision to undertake a program until the first crude weapons are produced would vary from three to ten years depending on level of technology, industrial strength, and resources allocated to the task. The table shows dates both at which a first nuclear test could occur and a first crude delivery capability could be operational assuming a decision to proceed now.

2. Motivations for and Against Possession

a. Most of the countries able to undertake a program have not done so. The motivations not to undertake programs are clearly

strong. They include the high cost of weapons (and especially of sophisticated delivery systems), lack of a clear military need, legal restrictions, concern for international repercussions, moral pressures, lack of effective independence in the case of the satellites to undertake a program, and hope that diffusion will be halted. This combination of motives has clearly been effective in such countries as Canada, Germany, India, Japan, Italy and the European satellites. The pressures for possession: prestige, coercive and deterrent value, and military utility have overridden inhibitions, apart from the two super powers, only in the case of the UK, France, almost certainly China, and, probably, Israel.

b. Many countries have reduced the lead time and cost of acquiring weapons by getting research reactors and starting nuclear power programs. The technology involved is directly related to weapons program and a decision to initiate a "peaceful" program provides a lower cost option, later, to have a military program.

3. Diffusion Over the Next Ten Years

a. It is highly improbable that all the countries able to produce nuclear weapons by 1972 will do so even if testing continues. In addition to the present possessors, China almost certainly will do so. Israel is likely to do so and Sweden and India may. Chinese possession may also lead the Australians and the Japanese to try to obtain nuclear weapons. A Union of South Africa nuclear program cannot be ruled out. None of these countries is likely to have more than a rudimentary operational delivery capability in this time, although the ability to deliver nuclear weapons by short or medium range rockets appears feasible.

b. The pressure on Germany, and in turn Italy, to acquire or share in control of nuclear weapons is likely to build up substantially. The inhibitions in both countries, but especially in Germany, are strong and Europe political developments and the development of a multilateral nuclear force may succeed in greatly weakening the pressures for acquisition.

4. Diffusion Beyond Ten Years

a. A projection fifteen, twenty or more years ahead is extremely difficult. However, with unrestricted testing it appears certain that the cost of acquiring nuclear weapons will go down, perhaps enormously, during this period. Recent U.S. tests have shown that it is possible to reduce very substantially the expensive fissile material component of weapons; future tests may show that an extremely cheap all-fusion weapon is feasible. The cost of weapons may come down by a factor of ten to one hundred times. (Today a representative cost for a U.S.

weapon is about $250,000.) Moreover, the number of countries with a scientific community and industry to support nuclear programs will go up. For example, Argentina, Brazil, Rumania, Bulgaria, Hungary and Yugoslavia would appear to have such capability. And over a 15 year period, political developments in the Bloc might remove the present Soviet restrictions on satellite nuclear programs.

b. In the 1970's it appears that power from nuclear reactors will become competitive in many countries. This development will not only lead to the production of large quantities of plutonium but it will be associated with the spread of reactor technology and skilled nuclear scientists and technicians. Much of the fissile material produced by these reactors will be controlled by international agreement, but the "starting up" costs for weapons programs will be much lower than today - apart from cost reducing technological developments.

c. Advances in technology made by the U.S. and other testing countries diffuse into the general body of technology accessible to all nations. Even the knowledge that a breakthrough has occurred (e.g., the development of a fission-free bomb), without knowing how it was done, eases, [illegible], the task of others who try independently. Moreover, the process of diffusion would accelerate as the number of nuclear powers increased. Components of weapons, or, in time, complete weapons, might be available for purchase.

II. Prospects With a Test Ban

1. A Comprehensive Ban

a. A comprehensive test ban agreed to by the U.S., USSR and UK will work in the direction of slowing diffusion. It is probably not an exaggeration to say that it is a necessary, but not a sufficient, condition for keeping the number of nuclear countries small.

b. A ban on testing would not prevent the continued diffusion of knowledge of existing nuclear technology; for example, in a nuclear power program. However, it would slow the trend towards cheaper nuclear weapons.

c. Even with a comprehensive ban, laboratory experimentation would be legal. Such work will lead to increased knowledge applicable to nuclear weapons but at a greatly reduced rate as compared with a situation with testing.

d. China would almost certainly not wish to sign an agreement. Some other countries, such as France or Israel, would require a mixture of positive incentives (e.g., sharing of weapons) or penalties (economic or military) before signing. In some cases it might take the joint action of the U.S. and USSR to coerce states in signing and observing the agreements. In most cases, a combination of rewards and sanctions by one of the major powers would be sufficient and preferable.

e. Even without testing, it is feasible for a country to produce and stockpile nuclear weapons. (So far as is known, all first tests have been successful.) However, to be sure of its weapons, a country would either have to receive detailed designs of previously tested weapons or test its own. Since a treaty may be abrogated, either for aggressive or defense reasons, some countries may carry forward a program to develop and even to produce weapons without testing them.

f. Neither the Geneva nor the National Systems will reduce the detection threshold to a level that would detect most classes of militarily useful underground tests in alluvium. However, the possibilities of getting agreements on much more effective systems for inspecting non-Bloc countries are generally favorable. Inside the Bloc, China will be a major problem both with respect to adherence and to inspection.

2. Atmospheric Ban Only

a. A ban only on atmospheric tests would have a much more limited effect on diffusion than a comprehensive ban. It would not increase greatly the cost of getting a relatively simple capability (which would be the goal of most of the countries likely to try) and it would not make testing "illegal". The continuation of testing underground legitimizes this activity. It weakens the inhibitions to acquire weapons on the part of the considerable number of countries that are likely to be on the margin of decision at some point during the next few decades.

3. Conclusion

a. The continued diffusion of nuclear weapons is clearly not in the interest of the U.S. Even if these weapons are not used, diffusion will make existing disputes more acute and will generate new ones. And although their use by a weak power would be irrational,

such action cannot be ruled out. Moreover, the existence of additional nuclear countries would make the course of a major crisis involving the U.S. less predictable and more dangerous.

b. Even with unrestricted testing, the number of new nuclear countries during the next decade is not likely to be large. It probably will be a good deal smaller than the potential number able to produce weapons. Beyond about ten years, however, there are likely to be many more nuclear countries unless some effective action is taken.

c. Although the ending of tests would have an important effect on diffusion (especially a comprehensive ban) a more important factor will be the pressures the U.S., the USSR and others are willing to employ in restraining others from testing. The cooperation that may develop between the U.S. and USSR, as a result, has a potential importance. In some cases, we, and others, would probably have to employ stronger incentives and sanctions than has seriously been considered so far. However, a comprehensive test ban would make it more likely that stronger steps could be taken and would be effective.

TABLE ONE
Country Nuclear Weapons Capabilities

xxx Major   xx Moderate   x Small   P Potential   ---No Estimate

Country	Domestic Availability of Uranium	Nuclear Research Program	Nuclear Power Program	Industrial Resources Capability	Time Re- quired to First Test	Aircraft Operational Capability	IRBM Missile Oper. Capability	Motivati
France	xxx	xxx	xxx	xxx	done	1964	'69	High
West Germany	x	xxx	x	xxx	4/5 yrs	6 yrs	7 yrs	Moderate
Italy	x	xx	xx	xx	5/6 yrs	7 yrs	8 yrs	Low
Belgium	---	xx	x	xx	---	---	---	Low
Netherlands	---	xx	P	c	---	---	---	Low
Canada	xxx	xxx	xx	xxx	1/2 yrs	6 yrs	7 yrs	Very low
Sweden	xx	xxx	xx	xx	3/4 yrs	5 yrs	8 yrs	Evaluati
Switzerland	---	x	P	xx	---	---	---	Low
Japan	x	xx	x	xx	5/6 yrs	6 yrs	8 yrs	Very low but depe on Chin
India	xx	xx	x	xx	5/6 yrs	5 yrs	8 yrs	Low but depends China
Israel	---	xx	P	x	1966/67	1968	1968	Moderate to h
UAR	P	P	P	x	Over 10	Over 10	Over 10	Moderate to h
Australia	xx	x	P	xx	---	---	---	Low
South Africa	---	---	---	---	---	---	---	---
ChiCom	xxx	xx	xx	xx	1964/65	1970	1972	High
East Germany	xxx	x	xx	xx	USSR prohibits	USSR prohibits		---
Czechoslovakia	xxx	x	xx	xx	" "	" "		---
Poland	x	x	P	x	" "	" "		---

Source: Latest NIE data, reaffirmed as current estimate