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US NUCLEAR EXPORT CONTROLS: POLICY AND PROCEDURES

I. Policy

(For the purposes of this particular paper, it is assumed that no detailed study is needed of US policy and procedures regarding export of nuclear-connected items to the Sino-Soviet Bloc. This policy is one of rigorous control and denial to the Soviet Union, Communist China, or other states inimical to the US of anything which would be helpful to them in achieving or improving a nuclear weapons capability. Adequate enforcement machinery exists, there are no countervailing policy considerations of significance to be taken into account, and while the situation in regard to Soviet and Chinese nuclear weapons development is by no means what we would want, US export control policy and procedures have not been of any significance in bringing about this situation.)

General

Our major export control problems related to proliferation lie within the Free World rather than with the Communist countries, although our anti-proliferation goal is the same with respect to everyone. Since World War II, the policy line of the US Government on proliferation has been clear and consistent--we have been opposed to the development of national nuclear weapons capabilities by any additional countries (except the UK, which was a special exception due to the intimate World War II US-UK collaboration in the nuclear field). Our basic legislation in this field dating from 1946 and as since amended bears clear witness to this, as do pronouncements of do pronouncements of Executive Branch spokesmen at every level.

However, the world of 1964 is markedly different from the world of 1946, and the current expression of our anti-proliferation and corresponding export control policy is best understood when we recognize that US policy to be realistic must take into account inter alia the following facts and developments:

a. The gradual spread throughout the world of a general understanding of nuclear technology, both in theoretical and technological terms.

b. The growth of a significant nuclear industry and civil programs in the US and abroad, especially since the 1953-54 period and the subsequent establishment of the IAEA. (The US peaceful uses program is addressed fully in another paper in this series, but a short account is attached as an annex to this paper for convenience.)

c. The continuation of UK weapons research and development, with US assistance, throughout a considerable portion of the postwar period.

d. The Soviet weapons program and nuclear threat, and, subsequently, the French program and the first Chinese explosion.

e. NATO nuclear weapons sharing arrangements as presently constituted, and the possibility of a more direct sharing via MLF or an Allied Nuclear Force as now suggested by the British.

f. Increased emphasis on the fact that delivery vehicles as well as nuclear warheads must be dealt with in any realistic anti-proliferation policy.

g. Conclusion of the limited Test Ban Treaty.

NSAM 294

The most recent authoritative expression of US policy for internal guidance in this area is NSAM 294 of April 20, 1964, in which the key general paragraph is as follows:

"It is the policy of this government to oppose the development of nuclear forces by additional states, other than those whose forces would be assigned as part of a NATO nuclear force targetted in accordance with NATO plans, and except when supreme national interests were at stake, used only for the defense purposes of the alliance."

This formulation is not intended nor does it profess to oppose all types of nuclear activity by all states. Its target is a nuclear weapons capability in the hands of and therefore at the unilateral disposal of any individual nation. It will be recognized that the language can accommodate the present UK nuclear force. It cannot accommodate the present and prospective French force, although the door is left open should the French Government place its force at NATO disposal. It cannot accommodate nuclear forces in the hands of any inimical or neutral power, inasmuch as the possibility of NATO direction of such forces would be out of the question.

The NSAM 294 expression of US opposition applies without doubt to export of nuclear weapons, weapons design information, fissionable material for use in nuclear weapons, nuclear delivery systems, and the testing of nuclear weapons, insofar as these are being developed for national purposes. The policy does not oppose these things per se, (except for testing--see below), nor does it oppose foreign production of fissionable materials or

dissemination of nuclear information per se, since it has been the US Government view that atomic energy is capable of major peaceful as well as military uses, and that it is in our interest to carry out a peaceful uses program both at home and in cooperation with foreign countries. It does not oppose military nuclear cooperation per se. To reiterate, it opposes one thing only--the development of nationally-held nuclear forces.

After the general expression of opposition quoted above, NSAM 294 goes on to particularize one target country--France--and to delineate the export control and cooperation policy to be followed with respect to that country. It is described as a policy of denying to France those things which would be "reasonably likely to facilitate these efforts (France's strategic nuclear weapons program) by significantly affecting timing, quality, or cost, or would identify the US as a major supplier or collaborator." The policy "is not intended to restrict unduly full and useful cooperation in non-strategic programs and activities."

Nature of Policy

While NSAM 294 specifically names only France as a target country, it is intended to be of broader application, and the cooperation and export control policy enunciated has been assumed to be generally applicable by the enforcement agencies concerned. It will be noted that it is a highly selective and highly discriminating policy. It aims at learning about any national weapons program planned by any Country X and at persuading Country X not to undertake a program or not to persevere if one is already under way.

If Country X will not be persuaded, the policy aims at denying such US assistance as would be of material benefit to the weapons program, in terms both of warheads and means of delivery. This policy has envisaged only such US counter-measures as are directly related to impeding the weapons program itself, i.e., it has not envisaged punitive or broad measures of other kinds unrelated to the weapons program to attempt to force friendly countries into compliance. In essence, the policy is one of attempting to isolate and hamper Country X's nuclear weapons program on a selective denial basis, while preserving intact or as nearly intact as possible the fabric of US-Country X relationships otherwise. Given the general nature of Free World industrial and trading interrelationships, the particular nature of the relationships obtaining between the US and our allies, and the interrelationship of any given weapons program and the scientific-industrial base which sustains it, it can be seen that problems of the utmost complexity can arise in implementing this policy.

Testing

US opposition to nuclear weapons testing, as compared to other facets of a weapons program, is based on a treaty obligation rather than on US unilateral policy. In adhering to the Test Ban Treaty we renounced for ourselves testing in the three prohibited environments and concurrently assumed an obligation not to assist others in such testing. This has obvious export control consequences, and since France is the country with which most of our problems in this area are likely to arise, we explained

our policy in an Aide-Memoire given the French Government last February. The purport of the Aide-Memoire is that the US will not find it possible to permit export to France of any material, equipment, or information to be used in devising, conducting, or evaluating any sort of nuclear test as long as the French contemplate testing in any environment prohibited by the Treaty. The criterion here is not that the assistance be of "significant" benefit to testing; it is only that it be intended for some direct use in testing. In such event it is to be denied.

II. Procedures

Three complementary regulatory systems are involved in the implementation of US policy described above: (a) the system administered by the Department of Commerce to enforce the Export Control Act of 1949, as amended; (b) the regulatory structure administered by the Department of State to control International Traffic in Arms, derived from Section 414 of the Mutual Security Act of 1954, as amended; and (c) the regulatory activities prescribed under the Atomic Energy Act to control source material, by-product material, special nuclear material, facilities for the production or utilization of special nuclear material, and technical data relating thereto. There is another organization which plays a parallel or reinforcing role: The United States Military Information Committee (US-MICC), which coordinates the release to other governments of classified military information and material, except for Restricted Data under the Atomic Energy Act, foreign dissemination of which is administered by the AEC and Department of Defense.

In summary, these control systems comprehend the following objectives:

A. The Export Control Act of 1949, as amended, sets forth as policy that the US will use export controls to the extent necessary:

1. To protect the domestic economy from the excessive drain of scarce materials and to reduce the inflationary impact of abnormal foreign demand;

2. To further the foreign policy of the US and to aid in fulfilling its international responsibilities;

3. To exercise necessary vigilance over exports, from the standpoint of their significance to the national security of the US;

4. To formulate and apply such controls to the maximum extent possible in cooperation with allies with which the US has defense treaty commitments;

5. To formulate a unified commercial and trading policy to be observed between non-Communist and Communist-dominated nations;

6. To use US economic resources in trade with Communist-dominated nations to further US national security and foreign policy objectives.

To carry out these objectives, the Department of Commerce has established an Export Control Review Board, an Advisory Committee on Export Policy, and an Operating Committee, in descending order of hierarchical importance. This committee structure enables all possibly concerned agencies of the Government, ranging from Commerce to the Office of Emergency Planning, to express their views and, in case of major policy disagreement, to achieve resolution by the Secretaries of State, Defense and Commerce.

B. The International Traffic In Arms Regulations derives from Section 414 of the Mutual Security Act of 1954, as amended. This Act confers upon the President authority to control, in the furtherance of world peace and the security and foreign policy of the US, the export and import of arms, ammunition and implements of war, including technical data relating thereto. The President, by Executive Order, conferred these functions upon the Secretary of State, in consultation with appropriate agencies. In turn, the Secretary of State delegated authority to the Deputy Assistant Secretary for Politico-Military Affairs, who assigned functional responsibility to the Director, Office of Munitions Control.

C. The Atomic Energy Act prescribes control over atomic weapons or parts thereof; any parts of atomic weapons systems or any other items or information revealing Restricted Data; and activity, classified or unclassified, which would constitute directly or indirectly engaging in the production of special nuclear material outside the United States; source, by-product and special nuclear materials; utilization and production facilities; and any other item or technical data to be exported subject to the terms of an atomic energy Agreement for Cooperation with another nation.

The Atomic Energy Commission may distribute special nuclear material abroad, may license the export of production and utilization of facilities, and may permit the communication of Restricted Data abroad, only pursuant to an Agreement for Cooperation. However, source and by-product material may be distributed abroad either by an Agreement or when the Commission determines such exports will not be inimical to the United States.

D. The US Military Information Control Committee (US-MICC) derives authority from Presidential delegation to the Secretaries of State and Defense. US-MICC is responsible for policy and procedures designed to enable disclosures of classified military information to foreign governments and international organizations, taking into account both US foreign policy-military objectives and the preservation of the security of US military secrets. In so doing, US-MICC, among other activities, reviews its existing policies and procedures to keep them up to date, assures that the releasing agencies act consistently in applying these policies and procedures, and evaluates foreign government security systems to determine their ability to protect US classified information. The Committee consists of representatives of the Secretaries of State, Defense, Army, Navy, Air Force, the AEC, and Director of CIA. The Department of State provides the Chairman and Deputy Chairman. JCS are entitled to have an observer, as is NASA. Other departments and agencies may participate as US-MICC deems appropriate.

As to implementing procedures, it should be noted that the regulatory systems concerned must deal with a wide variety of materials, which might be sought by a wide variety of countries, both friendly and unfriendly. Because of the highly selective and discriminating nature of the US policy outlined in I above, it is necessary, in implementation, to use what amounts to a case-by-case approach, taking into account for a country like France, for example, such things as:

1. Technical state-of-the-art and industrial know-how available to France internally or from other countries;

2. Competitive hardware available to France;

3. US military hardware and data currently in French hands (received via formal channels or obtained by other means);

4. Ongoing data exchange and military hardware agreements;

5. Foreign subsidiaries and licenses of US companies;

6. Military hardware and data previously cleared by the US to countries other than France;

7. Evaluation with respect to the current US policy on expansion of exports, and effect on the US economy (positive or negative) of the specific release and potential related releases:

(a) US competitive position, employment, and profit dollars;

(b) Balance of Payments.

8. In certain instances, receipt by the US on a reciprocal basis of significant technology, or other items of military value.

The object of such a case-by-case approach would be two-fold: to determine the technical significance of the proposed export, and to identify other considerations involved. The final result is a determination as to approval or denial which takes both technical and other factors into account. To date it has been principally Defense, State, and the AEC which have been concerned in such determinations as have been made; Commerce has been relatively uninvolved, since the principal Commerce concern has been in the East-West trade. The agencies concerned are still in the process of devising the machinery and accumulating the supporting body of facts necessary to do

a fully comprehensive export-control job. In the meantime they are applying the above criteria on an ad hoc basis, and are working out recommendations to the White House for improved procedures.

III. Effectiveness

Before addressing the effectiveness of the policy and procedures described above, several general observations may be in order:

a. In the world of today prevention of nuclear weapons proliferation cannot be achieved through a policy of denial by the US, even if that denial were carried to a point of total embargo, as was substantially the case during the 1946-53 period. A policy of US denial can hamper to a greater or lesser degree and it can make the weapons-acquiring process slower and more expensive, but US denial action alone cannot prevent a modern industrialized nation from attaining a nuclear weapons capability of some sort if it so desires.

b. It should be recognized that the US peaceful uses program, the space cooperation program, and the program of nuclear weapons cooperation with NATO allies have unquestionably contributed in some degree to the ultimate weapons-making and delivery potential of the foreign countries involved. This is a calculated risk which the US has run. It is not believed that the contribution to nuclear weapons potential has been significant, and there are grounds for believing that in terms of adversely affecting intention to unilaterally construct weapons these programs may have been helpful.

c. The foregoing points up the fact that while anti-proliferation is a US goal with high priority, it is not the only US goal, and our other goals must be taken adequately into account in attempting to achieve the anti-proliferation goal.

d. Assessing the effectiveness of our policy of selective denial is also complicated by the fact that our export control mechanisms have as yet not been focused on trade with friends except in very limited respects, and the US Government has not kept records on US-friendly country trade in the detail which would now enable us to say quickly and with exactitude what has gone to a given country, in terms of the entire range of equipment, materials, technology, etc., which could be useful in a weapons program.

In coming to grips with the effectiveness question, it may be useful to think of all potential US assistance to another country's weapons program as lying along a spectrum. At one end would be the most important and obvious items of assistance--such things as nuclear warheads themselves, weapons design information, and fissionable material for weapons use. At this end of the spectrum our controls are comprehensive, detailed and fully effective. Weapons have been transferred to no country. Weapons design information and fissionable material for use in weapons have gone only to the British.

Control of these items is relatively simple because their nature is unmistakable; the intent of a would-be possessor is unmistakable; and the US Government is in full possession of whatever is proposed to be transferred.

To a great extent the same thing is true of complete delivery vehicles. Some vehicles, such as Polaris or Minuteman missiles, are so uniquely pinked with nuclear warheads that there can be no uncertainty as to their intended use and hence no difficulty in ruling on any proposed transfer. Other vehicles, such as the F-104, may be employed in either a nuclear or a conventional role, so there obviously cannot be the same degree of certainty as to type of use that might or could be made. The control of total delivery systems including aircraft is still comparatively simple, however, and an adequate basis exists within the US Government for review and decision with respect to proposed transfer of any such systems.

It is when we must deal with sub-systems and componentry that the task becomes really difficult, for two reasons. One is that at this level, it becomes difficult or impossible to categorize items as being unmistakably for utilization in a nuclear weapons program. Inertial guidance technology, for instance, is obviously important to a missile program. It is also important in a number of civilian uses and non-nuclear military programs, however, and it is therefore necessary to assess very carefully the utilization intended by a would-be possessor.

It is also more difficult to use the "significant assistance" criterion meaningfully at this level. To do so demands a very high degree of knowledge about individual country programs, potentialities, and intentions, which the enforcement agencies have not generally accumulated as yet. An individual item may well seem to be of no great significance in itself, and thus go unchallenged, or be approved after review, although from a cumulative point of view the over-all potentiality of the receiving country

may be significantly improved if enough individual items are received. Such things as computers and integrated circuitry pose difficulties for both the foregoing reasons.

Thus, in assessing our policy and procedures we must realize that there is what could best be called a "threshold" of assistance. Items above the threshold are relatively easy to spot and easy to control. Items below the threshold are difficult to identify as significant, and in fact may not even be recognized. If known, these may be difficult to stop, because considerations arguing for approval are quite important, and other major policy goals of the US are advanced by cooperation with friendly countries. Extensive denial of sub-threshold items to friendly countries in fact poses a serious foreign policy dilemma to the US.

France is of course the principal country of present concern and a look at the effectiveness of our selective denial policy there may be worthwhile. We have not given the French any assistance in terms of weapons or material for weapons, and our principal direct contribution to their over-all program is probably a 1959 agreement under which we have furnished fuel for a land-based prototype submarine reactor, under safeguards which give us the right to inspect the fuel and facility. But through French purchases, through service-to-service agreements, and trhough industry-to-industry agreements of various kinds, we have unquestionably given France a good deal of the scientific-technological-industrial underpinning required for a weapons and delivery systems effort.

It was essentially the realization of the cumulative effect of our cooperation with France, carried out over a period of years, which led to the re-affirmation of policy represented by NSAM 294. We have not completed the stocktaking effort envisaged by NSAM 294, which of course applies to other countries as well as France, or fully evaluated the ramifications of the policy. It is clear however that if we are to move into more restrictive controls on the great range of sub-threshold items, this will call for a drastic re-vamping of the US export control system and profoundly affect our industrial-business community as well as our relationships with France and other countries against which we exercise such controls.

Attachment:

1. Annex - Export Control: Peaceful Uses

Department of State
December 10, 1964

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ANNEX

Export Control: Peaceful Uses

The following report contains a summary of the nature and effectiveness of US policy and procedures regarding controls on the export of nuclear equipment, materials, or technology, directly or indirectly useful for the production of fissionable materials for peaceful purposes.

In the Atomic Energy Act, provision is made for "a program of international cooperation to promote the common defense and security and to make available to cooperating nations the benefits of peaceful applications of atomic energy." The Act provides further that no cooperation with any nation shall be undertaken until an agreement for cooperation has been developed which contains (1) the terms, conditions, duration, nature, and scope of the cooperation; (2) a guaranty by the cooperating party that security safeguards and standards as set forth in the agreement for cooperation will be maintained, and (3) a guaranty by the cooperating party that "any material to be transferred pursuant to such agreement will not be used for atomic weapons, or for research on or development of atomic weapons or for any other military purpose," and a guaranty by the cooperating party "that any material...transferred pursuant to the agreement for cooperation will not be transferred to unauthorized persons or beyond the jurisdiction of the cooperating party, except as specified in the agreement for cooperation."

Under this legislative authorization the Department of State and the Atomic Energy Commission have joined in working out a broad-scale international Atoms for Peace Program with many countries around the

world. This program is controlled by bilateral agreements for cooperation in the civil uses of atomic energy which provide for the transfer abroad of special fissionable materials of US origin. These agreements (of which there are now 37 in force with 35 different countries) include a requirement that any such material that is transferred abroad be subject to US safeguards (controls to ensure that material which is transferred for peaceful purposes is not diverted to a military purpose.)

These bilateral agreements are of two kinds: those covering small transfers for research purposes and those covering large amounts of material for power projects. All research agreements include the provision that, if AEC requests, its representatives will be permitted to inspect materials and equipment to ensure that they are not being used for military purposes. Inasmuch as power reactors require much larger quantities of fissionable material as fuel and may also produce substantial quantities of plutonium or Uranium 233, the safeguards provisions in power agreements are more elaborate than those in research agreements and give the US the following rights:

(1) To review the design of reactors and pertinent associated facilities.

(2) To require the maintenance and submission to USG on demand of fuel and operating records.

(3) To request periodic or special reports on the operation of the facility.

(4) To require storage in AEC-designated facilities of any fissionable materials not currently being utilized by the cooperating governments.

(5) To have access to all places and data necessary to verify compliance with the terms of the agreement.

(6) To have a first option to purchase all special nuclear materials that such reactors generate.

(7) To approve in advance any reprocessing facility in which irradiated fuel of US origin is reprocessed.

(8) In the event of non-compliance with the provisions of the cited Article, or the guaranties set forth elsewhere, and the failure of the cooperating government to carry out the provisions of the cited Article within a reasonable time, to suspend or terminate the agreement and require the return of any materials, equipment, and devices transferred under it.

In recent years, in recognition of the preferability of international safeguards to bilateral safeguards, most US bilateral agreements function to the International Atomic Energy Agency (IAEA) at Vienna at a mutually agreeable time. During the past two years some 14 countries have agreed to such transfer.

The IAEA safeguards system provides the Agency with essentially the same rights that are granted to the US Government under its bilateral agreements. In the event that the IAEA discovers a violation, or what appears to be a violation, of the undertaking that material will be used only for peaceful purposes, Article XII C of the Statute of the Agency provides in part that:

"The Board shall call upon the recipient State or States to remedy forthwith any noncompliance which it finds to have occurred..., shall report the noncompliance to all /IAEA/ members and to the Security Council and General Assembly of the United Nations. In the event of failure of the recipient State or States to take fully corrective action within a reasonable time, the Board may take one or both of the following measures: direct curtailment or suspension of assistance being provided by the Agency or by a member, and call for the return of materials and equipment made available to the recipient member of group of members. The Agency may also, in accordance with Article XIX suspend any noncomplying member from the exercise of the privileges and rights of membership."

In addition to material that is sent abroad under bilateral agreements and subject either to bilateral or IAEA safeguards, material for peaceful purposes can also be sent abroad under two other agreements. One is a US-IAEA agreement which came into force on August 7, 1959. Under this agreement the US Government has made available to the IAEA 5,000 kilograms of U-235, which can be distributed (either by sale or grant) to member states under IAEA safeguards. Under this Agreement, arrangements have been completed for the supply of US materials under IAEA safeguards to the following countries: Pakistan, Finland, Yugoslavia, Congo (L), Norway, and Mexico.

Also, under agreements signed between the European Atomic Energy Community (EURATOM) on February 18, 1959, and July 25, 1960, as amended, the US Government has made available to EURATOM 70,000 kilograms of U-235.

This material is to be supplied (on a sale or lease basis) to EURATOM itself or to EURATOM member states through the EURATOM Supply Agency. This material is not subject to US bilateral safeguards, nor is it subject to those of the IAEA. It is, however, fully subject to EURATOM safeguards, which are compatible with those of the US Atomic Energy Commission and those of the IAEA. Periodic meetings are held between representatives of EURATOM, the US AEC and the US Department of State to verify that the methods and procedures followed by EURATOM are compatible with those of the US Government and the IAEA.

With regard to the effectiveness of US policies and procedures on nuclear exports for peaceful purposes three things can be said:

1. As a result of the above-described bilateral and international controls that have been operative during the term of the US Atoms-for Peace Program, it can be said with a high degree of assurance that US nuclear materials and equipment supplied for peaceful purposes to foreign countries have not been diverted to military uses.

2. The policies and procedures covering the peaceful program which are now in force are not designed in such a way that they would be certain to prevent diversion of materials or equipment to military purposes. The intent is rather to give a high degree of assurance that if such diversions are made, they will be detected at a very early stage, so as to provide the United States Government or the international organization a basis for taking early corrective steps.

3. The US policies and procedures now in operation are designed to prevent the misuse only of nuclear materials and equipment which are brought into a country from an outside source. They are not designed to prevent the internal development of a nuclear weapons program using only indigenous materials and equipment.

To clarify this point a bit further, the US policies and procedures have been designed to encourage countries to forswear the internal development of a nuclear weapons capability, but up to the present time there are no international controls which would prevent such development unless a country were to submit to them voluntarily. This, of course, stems from the fact that the primary leverage we have in getting countries to accept controls exists only in those instances where the US Government is supplying materials or equipment.

Department of State
December 10, 1964

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Congress of the United States
House of Representatives
Washington, D. C.

Kortumeier Str.

December 7, 1964

The Honorable Dean Rusk
Secretary of State
Washington, D. C.

Dear Mr. Secretary:

Although we are presently scattered throughout the country, we join in writing you on a matter which is very much on our minds.

The issue of control and diffusion of nuclear weapons, particularly as it is presented by the proposed multilateral force, is emerging as an important public question. Various national groups and members of the intellectual community are surprisingly well informed about MLF and have expressed apprehension about what they see as its potential consequences. Others who are not yet specifically aware of the MLF proposal show strong feelings in favor of strict Presidential control over nuclear weapons and in opposition to their further dissemination.

These sentiments have been sharpened by the Chinese test of a nuclear device and the President's statement that an end to nuclear weapons proliferation is a pre-eminent goal of our foreign policy. Together with the changes of leadership in Great Britain and the Soviet Union, these developments also impress us as calling for a recharting of the course presently set for the MLF.

We urge postponement until next January of any steps which could irreversibly commit the United States to a nuclear multilateral force. We ask this, not because we are necessarily adverse to the multilateral force concept or to nuclear consultation with our allies, but because we cannot now be certain how recent events will affect the need for MLF, its feasibility, or its wisdom. Consequently, we are anxious to have a personal meeting with you at the beginning of January in order to know more clearly the thrust of the multilateral force proposal as it relates to new directions in the Western Alliance, to the policy of non-proliferation, to a German-American nuclear alliance, and to new initiatives which might be made vis-a-vis the present Soviet government.

We also respectfully request that every precaution be observed to avoid the possibility that those in the Department most dedicated to developing the MLF might take action which would completely foreclose reconsideration of the matter after Congress reconvenes. Needless to say, we appreciate the paramount role which the Department must exercise in the conduct of our foreign policy. But we do not want, and we are sure that you would not want, the Congress to be presented with a fait accompli on an issue which, especially now, requires the most careful deliberation.

We are taking the liberty of sending copies of this letter to the President and the Vice-President elect.

cy to Keeny for Gilpatric Group

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Sincerely yours,

Joseph P. Addabbo
Thomas L. Ashley
Walter S. Baring
Charles Bennett
George E. Brown, Jr.
Phillip Burton
Earle Cabell, M. C.-Elect
Lionel Van Deerlin
Charles C. Diggs, Jr.
John G. Dow, M. C.-Elect
Donlon Edwards
Leonard Farbstein
Jacob H. Gilbert
Edith Green
Robert W. Kastenmeier
Robert L. Leggett
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Benjamin S. Rosenthal
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Peter Frelinghuysen, Jr.
James G. Fulton
Seymour Halpern
Charles MC. Mathias, Jr.
Bradford F. Morse
Charles A. Mosher
Thomas M. Pelly
Alexander Pirnie
Ed. Reinecke, M. C.-Elect
Henry P. Smith, III, M. C.-Elect

U.S. INTERNATIONAL PROGRAM FOR THE PEACEFUL USES OF ATOMIC ENERGY

Introduction and Historical Background

1. This paper outlines the history and major elements of the U.S. international program of cooperation for the peaceful uses of atomic energy, giving particular attention to the relationship of this program to the U.S. objective of preventing the proliferation of nuclear weapons. This program is now more than ten years old and, thus, has its foundations not only in the Atomic Energy Act of 1954, but in the precedents and policy declarations of the past three Administrations as well. Its basic principles and commitments are expressed in the 40 Agreements for Cooperation in the peaceful uses of atomic energy that have been concluded with other nations and international organizations, as well as from the Treaty obligations the U.S. has assumed through its membership in the IAEA. The program has been oriented throughout its history so as to minimize the problem of proliferation of nuclear weapons. In fact, one of its motivating purposes has been the desire on the part of the United States to direct the nuclear aspirations of other countries to peaceful rather than military purposes.

2. The beginnings of the program took place in the post-war period when the U.S. sought to achieve disarmament under international controls. As will be recalled, under the stimulus of its own development of the atomic bomb and the belief that the possession of this technology was an American monopoly, this country initially tried, in the post-war period,

to bring about an international renunciation of the ownership and use of nuclear weapons under a system of international ownership and control. Concurrently, the United States enacted legislation in 1946 instituting a stringent system of secrecy and control which essentially completely barred peaceful international cooperation, pending broader international agreement on the control of nuclear weapons. In the period from 1946 to 1953, several developments took place which resulted in a modification of this policy. First, a number of other countries established independent national atomic energy programs ranging from modest scientific undertakings to full-scale military productions. By the end of 1953, the Soviet Union had achieved a thermonuclear weapons capability and substantial atomic energy programs were in being in Canada, France, and the United Kingdom. This suggested that continued secrecy might be unrealistic and counter productive insofar as the peaceful uses of atomic energy were concerned since the U.S. might lose an opportunity to orient these foreign programs to beneficial uses through adherence to a policy of nuclear isolation. Second, despite our efforts in presenting disarmament proposals, it proved impossible to achieve agreement with the USSR on the subject of atomic weapons control. Third, there was a growing expectation in the United States that the civilian application of atomic energy would in time be of great value in improving man's standards of living and that the U.S. was under moral and political obligation to share the benefits of this technology with its friends and allies. Fourth, a stage had been reached where less-advanced nations were tending to look elsewhere (e.g., USSR) for assistance; and U.S. prestige as a

world leader in atomic energy development was at stake. It was felt that if the U.S. were able to assist foreign atomic energy programs, we would then be in a position to follow these activities, to receive information on their technological developments, to influence and, in some measure, to control their directions through the application of guarantees and safeguards rights. Fifth, it was felt that by encouraging the diversion of military materials to peaceful uses under a system of international safeguards, we might establish a new common ground with the USSR and also hasten in time the adoption of broader disarmament measures. As a result of these developments, the U.S. conceived a new policy at the end of 1953 aimed at redirecting the use of atomic materials from military to civil programs and sharing the benefits of peaceful uses of atomic energy with other countries.

3. These various factors led President Eisenhower, in his speech to the United Nations' General Assembly on December 8, 1953, to propose that an International Atomic Energy Agency be formed and that the major atomic powers cooperate and diminish the potential destructive power of their atomic stockpiles by making joint contributions of fissionable material to this Agency. They also led, in part, to the presentation and passage of the Atomic Energy Act of 1954 which provided, for the first time, the mechanism for a new and broad program of international cooperation in areas relating to the peaceful as well as the military uses of atomic energy.

4. The Atomic Energy Act is an important document from the policy and procedural standpoint in understanding the scope and direction the

"Atoms for Peace" program has taken. In presenting the Act to Congress President Eisenhower stressed that one of the primary purposes would be to broaden cooperation with our allies in certain military atomic energy matters and in the peaceful uses of atomic energy under assurances against military use by the cooperating party. This purpose is recognized in the Act, e.g.:

> "Sec. 3 - Purpose - It is the purpose of this Act to effectuate the policies set forth above by providing for--
>
> * * * * *
>
> "e. a program of international cooperation to promote the common defense and security and to make available to cooperating nations the benefits of peaceful applications of atomic energy as widely as expanding technology and considerations of the common defense and security will permit;"

The motivations for departing from the strict secrecy philosophy of the 1946 Act and permitting international cooperation in atomic energy activities are illustrated in the testimony before the Joint Committee on Atomic Energy of the then Secretary of State John Foster Dulles. Mr. Dulles emphasized the importance to U.S. interests of our staying "ahead of the USSR in providing knowledge of how to put atomic energy to peaceful uses". In the same vein, it was pointed out that a trend of less-advanced nations to turn to the other countries which had made substantial progress in the atomic energy field could only be detrimental to the interests of the U.S. Further, Mr. Dulles pointed out the importance to U.S. prestige of world leadership in atomic energy.

5. The Senate Report on the draft 1954 atomic energy legislation described the changed circumstances necessitating the departure from the

philosophy of the 1946 Act in part as follows:

> "Today we are not alone in the drive to achieve peacetime atomic power. Eight years ago, besides the United States, only the United Kingdom, Canada, and--as we have recently come to find--the Soviet Union, had major atomic energy projects in being. The possibility of cooperating with other nations to gain mutual advantage in the area of peacetime power appeared far in the future. As against this, however, more than 20 countries now have vigorous atomic energy programs, and several of them are pressing toward the construction of atomic power plants to turn out useful amounts of electricity.
>
> "In 1946, our nation earnestly hoped that worldwide agreement on international control of atomic energy might soon be secured. It was reasonable, therefore, that the original act should prohibit an exchange of information on commercial uses of atomic energy with other nations until such time as the Congress declared that effective and enforcible international safeguards against the use of atomic energy for destructive purposes had been established.
>
> "But our hopes of 1946 have been thwarted by unremitting Soviet opposition to the United Nations plan for the control of atomic energy. Although we would be morally derelict if we abandoned our hopes for the eventual effective international regulation of all armaments, legislative policy cannot now be founded on the expectation that the prospect of such control is either likely or imminent."

The objectives of the international cooperation program were thus identified in the Act and its legislative history. At the same time, much attention was given to the statutory limitations on and procedures implementing this program.

6. In this regard, the Act provides, with regard to the civil uses program, in substance, that distributions of special nuclear material, exports of production or utilization facilities (reactors for the most part) or the communication of Restricted Data may be carried out only under an Agreement for Cooperation. An Agreement for Cooperation must

include the terms, conditions, duration, nature, and scope of the cooperation and the following guarantees by the cooperating nation: that the security safeguards and standards as set forth in the agreement will be maintained; that any material transferred under the agreement will not be used for atomic weapons, atomic weapons research and development, or any other military purpose; and that any material or Restricted Data transferred will not be transferred to unauthorized persons or beyond the jurisdiction of the cooperating party (except as specified in the Agreement for Cooperation).[1/]

7. The execution of the Agreement must be approved and authorized by the President, who has to determine in writing that the performance of the proposed agreement "will promote and will not constitute an unreasonable risk to the common defense and security".

8. The proposed agreement must then lie before the Joint Committee on Atomic Energy for 30 days before becoming effective.

9. Distributions of source material and byproduct material, ~~exports of components of production or utilization facilities~~, and activities which may constitute directly or indirectly engaging in the production of special nuclear material outside of the United States may only be carried out either under an Agreement for Cooperation as just

1/ The phrase "except as specified in the Agreement for Cooperation" has typically been implemented as follows: "except as the Commission may agree to such transfer to another nation and then only if in the opinion of the Commission such transfer falls within the scope of an agreement for cooperation between the United States and the other nation."

described, or, pursuant to Commission determination that statutory criteria with respect to the interests of the United States are satisfied.

10. The report on the draft legislation made the following observation on this subject:

> "Through the provisions that are required to be incorporated in the agreement for cooperation and through the procedures set forth in this section, there are ample and sufficient statutory safeguards on the international cooperation. Almost any cooperation with any foreign country can be said to involve some risk to the common defense and security of the United States. The provisions incorporated in section 123 are designed to permit cooperation where, upon weighing those risks in the light of the safeguards provided, there is found to be no unreasonable risk to the common defense and security in permitting the cooperation."

The dissenting section on international cooperation of the Senate Report agreed that "these conditions (Sec. 123a) are indeed adequate to protect the national interest."

11. On the same subject, Senator Hickenlooper stated in the extended debates on the international cooperation portion of the atomic energy bill:

> "Mr. HICKENLOOPER. Mr. President, if the Senator from Ohio (Mr. Bricker) will yield further, let me say that I know of the great concern of the Senator from Ohio and of other members of the joint committee in connection with the matter of safeguarding vital secrets, the loss of which might endanger our national security. No Member of Congress has been more concerned about that than I have. At all times, I have attempted to watch that situation very carefully. I have not changed my position regarding the necessity of safeguarding such secrets, and I know the Senator from Ohio has not changed his position or his zeal regarding their being adequately safeguarded.

"But with the unfolding or progressive development of conditions in the world in connection with atomic energy, I believe we can now, under careful safeguards, go forward with friendly nations in aiding them in their development. In my judgment, this bill will not, under the safeguards it provides, subject us to undue or unnecessary risks, especially when we consider the equities of the situation and the value and benefits which we and the other sincerely peaceful nations of the world can receive as a result of proper, honest, and vigorous cooperation along this line." 1/

12. The Act does not require the application of safeguards and controls by the United States to assure that materials and equipment transferred pursuant to an agreement for cooperation would be used only for peaceful purposes. Only guarantees to this effect are required. However, at an early date the Executive Branch adopted the policy that rights of inspection and other controls should be incorporated in civil agreements to furnish the U.S. with the opportunity to independently verify that the material and equipment transferred to the cooperating country was being used only for peaceful purposes. Moreover, the U.S. pursued a vigorous effort during development of the Statute of the IAEA to assure that the IAEA was given the requisite powers to apply effective safeguards to the assistance it provided and followed this by helping the Agency establish the details of an effective safeguard system to discharge its statutory responsibilities. These safeguards and controls are described in detail in a latter section of this report.

1/ The references to safeguards in the legislative history of the Atomic Energy Act do not use the term safeguards in the current sense of measures designed to assure against diversion of nuclear material. The safeguards referred to in the legislative history are the statutory procedures designed to ensure careful executive and legislative review of proposed international cooperation.

SCOPE AND OBJECTIVES OF THE PROGRAM

In practice, the AEC program of international cooperation and peaceful uses of atomic energy has been implemented through two principal activities -- the supply of nuclear materials such as enriched uranium and heavy water, and the exchange of technical information. In both instances the cooperation takes advantage of resources which have been created primarily to meet domestic needs. Thus, with a few relatively minor exceptions, the program does not include direct financial assistance to the atomic energy programs of other nations and has involved only modest costs. Assistance to nuclear power, such as in the case of the Tarapur project in India, has been funded by the Agency for International Development within previously established ceilings for aid to the nation involved.

Objectives

The objectives of the program fall in two general categories. First, the advancement of U.S. prestige and interests by sharing with other friendly nations the benefits of the U.S. program in the peaceful uses of atomic energy. At the inception of the program, objectives of this type were paramount.[1/] The second category of objectives are those which involve concrete benefits to specific United States economic and technical interests.

1/ See entire next page for footnote.

1/ identified the objectives of the international program as follows:

OBJECTIVES

"28. To the extent consistent with 'the common defense and security of the United States:

"a. Pre-eminence by the United States and leadership by it and other appropriate Free World countries in peaceful atomic energy development and international cooperation, particularly in the development and application of nuclear power.

"b. Use of such pre-eminence and leadership to promote cohesion within the Free World and to forestall successful Soviet exploitation of the peaceful uses of atomic energy to attract the allegiance of the uncommitted peoples of the world.

"c. International development of atomic energy along lines which provide adequate protection for the health and safety of the individual and the international community.

"d. The use only for peaceful purposes of source, special nuclear or other nuclear materials and equipment, and materials derived therefrom, except in the case of the United States and selected allies; recognizing that the achievement of this objective requires effective implementation of safeguards under bilateral agreements and under the IAEA, but that national nuclear weapons programs can be controlled only through safeguarded disarmament agreements."

This document also contained the following statement:

"Relation of U.S. Policy on Peaceful Uses of Atomic Energy to National Security Objectives"

"26. The maintenance of U.S. supremacy in peaceful uses of atomic energy overseas and in nuclear technology, both in fact and in the eyes of the world, is an important element of U.S. national security policy. As long as U.S. activities and capability in peaceful uses of atomic energy overseas and in nuclear technology provide the United States with continued recognition as the Number One country in the field, friendly competition between the United States and other Free World countries would not detract from U.S. pre-eminence and would contribute to Free World leadership. U.S. pre-eminence and influence in peaceful uses of atomic energy overseas and in nuclear technology will enhance general acceptance of effective safeguards to minimize diversion of nuclear material to weapons purposes. Loss of such U.S. pre-eminence would gravely damage the prestige of the United States."

Recent developments in the United States and abroad have placed increased emphasis on these objectives which originally appeared to be of only secondary importance. The supply of U.S. materials, particularly enriched uranium fuel for power reactors, has a good prospect for becoming a major positive item in the U.S. international balance of payments.[2/] It has also been recognized[3/] that the development of strong economic and political ties with other nations will result from their procuring from the United States, in the form of enriched uranium, a major portion of their essential power reactor fuel needs. Finally, the recent growth of nuclear power development programs, particularly those in Western Europe and Japan, with an aggregate scale at present comparable to that of the United States program, provides a major source of technological development which should increase the pace and reduce the cost of development of economic nuclear power in the United States and elsewhere in the world.

2/ See report entitled "Foreign Sales of Enriched Uranium Fuels and U.S. Type Reactors: Actual, Potential and Factors for the Future", April 16, 1964, prepared by the Department of the Treasury. This report foresees the possibility of an aggregate foreign sale of enriched uranium by 1980 of $6-$8 billion.

3/ In the report of the sub-group on U.S. Assistance to the Development of Nuclear Power Abroad prepared following the "Report of the Advisory Committee on U.S. Policy Toward the International Atomic Energy Agency" of May 19, 1962.

AGREEMENTS FOR COOPERATION

U.S. Agreements for Cooperation on Civil Uses of Atomic Energy fall into two general categories: Those which provide only limited quantities of material for research reactors and other small-scale research purposes and those which provide much larger quantities of material for use in power reactors and related development work. Historically, the research agreements preceded the power agreements and, in some cases, research agreements entered into with certain countries were subsequently converted into or superseded by power agreements. This sequence reflects the fact that the security and control problems attendant on the supply of limited quantities of material for research purposes were simpler than those in the case of supply of material for power reactor purposes, and were succeptible to solution by relatively simple control mechanisms. Nevertheless, the expectations that material would be made available for power purposes was present in the program from the outset, as President Eisenhower's speech of December 1953 makes clear.

The Agreements with the United Kingdom, Canada and Belgium are exceptions to this sequence of events. These three agreements were the first concluded, having been negotiated shortly after the passage of the Atomic Energy Act of 1954 in recognition of the close collaboration which had existed between the United States and those countries during the Second World War. The Agreement with the United Kingdom provided for the transfer of only research quantities of special nuclear material since, in view of the U.K.'s own diffusion plant capability, there was no foreseeable need for the supply of sizeable quantities of U-235 by the United States. The Agreements with Belgium and Canada both provided for the supply of

enriched uranium for power reactor utilization, without a quantitative ceiling. None of the three agreements contained safeguard provisions as such. However, the material to be supplied for other than research purposes was to be limited in enrichment to 20% U-235. In addition, in the Belgian Agreement, it was required that the irradiated fuel be returned to the United States for reprocessing. The Belgian Agreement contains provisions enabling U.S. purchase of plutonium produced through the use of U.S. fuel not needed in Belgium's peaceful programs. There also were provisions giving the United States limited rights over the transfer of produced plutonium by either Belgium or Canada to third countries. The original Belgian Agreement was amended in 1956 to include safeguards provisions of the type which had been adopted for standard use in other power agreements. The British and Canadian Agreements remain, however, as exceptions to the general rule that safeguards are provided for in all U.S. Agreements for Cooperation in Civil Uses.

Research Agreements

On November 5, 1954, Ambassador Lodge announced to the U.N. General Assembly that the U.S. was prepared to negotiate with other countries bilateral agreements which would make it possible for the U.S. to furnish technical assistance and fissionable material for research reactors. It had been concluded that the U.S. should proceed with such a program of bilateral cooperation as an interim step pending the establishment and effective operation of the proposed International Atomic Energy Agency. It was hoped, however, that at an early stage the IAEA would take on

responsibility for administering safeguards to assure that the assistance transferred pursuant to these bilateral agreements was being used only for peaceful purposes.

The research reactor agreements, in their original form, contained limited safeguard rights on behalf of the United States. They also provided for the transfer of only a limited amount of enriched uranium, as required for the operation of one, or in a few cases, more than one research reactor; for a limitation on the enrichment of fuel supplied to 20% U-235; and for return of the fuel elements to the United States for reprocessing. It was felt that the limited safeguards rights accorded to the United States under these agreements were adequate in relation to the amounts and types of fuels permitted to be transferred and the fact that no appreciable plutonium production would take place in reactors of this type.

These agreements, in addition to meeting most immediate needs, were a stopgap while the approach applicable to the supply of much larger quantities of material for power reactors was being developed. It was recognized that safeguards provisions of a more comprehensive nature would be desirable in such agreements. This feeling was strengthened by the fact that the Statute of the International Atomic Energy Agency was, by then, under development in New York. Since the Agency could constitute a channel for the delivery of United States special nuclear material to the Soviet Bloc or to other countries whom we might be reluctant to supply bilaterally, it was clear that the Agency Statute would have to contain a safeguards system. The development of bilateral agreements without comparable provisions would undercut the Agency and its ultimate ability to acquire a dominant

position in the field of international cooperation in atomic energy.

Power Agreements

The first power agreements were concluded in early 1957 with Switzerland and Australia. Thereafter, a number of similar agreements were concluded with countries where the prospects for early application of nuclear power appeared possible. These included all of the Euratom member states other than Luxembourg. All of these agreements contain what have been designated "comprehensive safeguards rights". These afford to the United States extensive rights of access designed to assure accountability for any special nuclear material supplied by the United States or produced as a result of material and equipment supplied by the United States. The breadth of these rights of access is best illustrated by the following quotation from the safeguards provisions:

/The United States shall have the right/

"To designate . . . personnel who . . . shall have access to all places and data necessary to account for the source and special nuclear materials ..."

These safeguards rights were modeled after those incorporated in the Statute of the International Atomic Energy Agency, the negotiation of which had been completed in late 1956.

Like the earlier research agreements, these power agreements originally placed a limitation on the enrichment of U-235 to be furnished to 20%. However, in recognition of the likelihood that the transfer of large quantities of irradiated material from power reactors to the United States for reprocessing would be economically impractical, they contained a provision which permitted, with U.S. approval, the reprocessing of irradiated

material in facilities other than those of the United States. Finally, and most importantly, these agreements provide that any plutonium produced by the other country through the use of United States material or equipment might be retained by the other country to the extent needed in its own program for the peaceful uses of atomic energy. The United States acquired a first option to purchase any material in excess of the other country's peaceful requirements and the right to approve the transfer of produced material to any other country or international organization. Thus, these agreements contemplated the possession by the other country of sizeable amounts of material suitable for use as atomic weapons; that is, plutonium produced from U.S.-supplied reactors or enriched uranium. It was in recognition of this fact and of the desire not to undercut the Agency that the comprehensive safeguards rights referred to above were insisted upon.

In addition to the safeguards provisions of the types referred to above, both research and power reactors contain two other general types of provisions; those providing for the supply of material and those providing for the exchange of information. In the case of research agreements, the provisions for the supply of material are simple and, as already noted, cover only the limited amounts required for operation of one or more research reactors. The fuel provisions of power agreements are considerably more complex. They not only provide for much larger quantities of fuel but describe in general terms the nature of U.S. commitment to supply fuel and how this commitment will be implemented. Their purpose has been to provide an assurance to the using country that

U.S. material will be supplied as needed within the quantitative limits of the agreement, since without such assurance, there is little likelihood that a country would proceed with the construction of a reactor of U.S. design. The duration of most research agreements has been limited to 5 or in some cases 10 years. On the other hand, most recent power agreements, beginning with that concluded with Italy in 1957, have been for terms of 20 years or more, thus providing for a supply of fuel over a term comparable to the economic life of a power reactor.

Agreements for Cooperation are not required by the Atomic Energy Act for the communication of unclassified information in the atomic energy field. However, where agreements have been negotiated for the supply of fuel and reactors, provisions covering the exchange of information have also normally been included. In the case of research agreements, the information exchange provisions are limited to information on research reactors and other fields of basic science. In power agreements, the information provisions call for exchange of information on essentially all peaceful uses of atomic energy including nuclear power. A number of the earlier power agreements, including those with the U.K., Canada, and Belgium provide for exchange of classified information in civil uses of atomic energy. (Classified information can be exchanged only under an Agreement for Cooperation.)

As information on peaceful uses, particularly nuclear power, was progressively declassified, the need to provide for the exchange of classified information in civil bilateral agreements disappeared and recent agreements contain no provisions toward this end. In addition,

there has been essentially no active implementation in recent years of the provisions that do exist in the earlier agreements for the exchange of classified information.

Transfer of Safeguards to the IAEA

The comprehensive safeguards arrangements of power agreements have contained from the outset provisions permitting the transfer of safeguards to the IAEA, and calling for consultation between the parties, following establishment of the Agency, on the possibility of effecting such a transfer. These consultations contain the sanction that in the event of failure to agree, the agreement might be terminated by either party. These provisions were incorporated to avoid undercutting the IAEA, which was then in the process of formation, and to give effect to the U.S. belief, which existed from an early date, that international safeguards were preferable to bilateral safeguards.

Similar provisions were not present in the early research agreements, since these were of limited duration and were explicitly identified as stop gap arrangements. However, recent extensions of research agreements have contained provisions authorizing the transfer of safeguards responsibility to the IAEA. These provisions have constituted the legal basis of the recent numerous transfers of safeguards to the Agency.

Supply of Materials and Services

While the Atomic Energy Commission itself was (and remains) the producer of the principal nuclear materials, the manufacturer of reactors, their fuel elements, the supply of some specialized materials, and the furnishing of

engineering, processing and other services related to atomic energy activities has for some time been a responsiblilty of private enterprise. Agreements for cooperation therefore contain provisions authorizing private industry to supply these items within the subject matter covered by the agreement. This authority, in general, is implemented through the issuance of specific or general licenses by the Commission to industry to supply the materials, equipment, or services in question.

The most significant private activity in these categories is the supply of reactors abroad, hence the outset of the program of international cooperation in peaceful uses of atomic energy, U.S. industry has competed actively in the foreign market for research and power reactors. This has been done both through direct sale of U.S. equipment abroad, and through the licensing of foreign affiliates or subsideries to manufacture reactors of American design. While the supply of enriched uranium fuel, now manufactured only by the AEC, will in the aggregate constitute a far larger source of revenue to the U.S. than will the sale of reactors, the promotion by U.S. industry of U.S. reactor technology and designs abroad is the keystone to the sale of enriched uranium by the AEC.

Supply of Highly Enriched Uranium and Plutonium

As observed earlier, both the original research and power agreements limited the enrichment of materials distributed abroad, in general, to 20% U-235. (Although the agreements with Canada, the U.K. and Belgium had no enrichment limitation on material supplied for research purposes, the amounts of material which could be supplied under these research quantities articles were not specified but were understood to be comparatively small.) In 1956, Belgium requested 90% material for use in a materials testing reactor. Belgium made a convincing case that the operation of a reactor of this type would be economically and technically unattractive, if not impractical, with material of 20% enrichment.

In considering the Belgian request, it was recognized that the power agreements then under negotiation already contemplated that the cooperating country would acquire sizeable quantities of plutonium which it could retain for use in its own peaceful program. The comprehensive safeguards and controls were designed to provide adequate assurance that this plutonium would not be diverted to unauthorized uses. The same system should be equally effective in assuring against the diversion of any highly enriched uranium supplied by the United States. As a result, the Commission approved a policy which would permit the supply of uranium enriched up to 90% U-235 for use in a materials testing reactor capable of operating with a fuel load not to exceed 8 kg. of U-235. This provision was included in the Belgian Agreement of 1956 and in a number of agreements negotiated during the same time period or subsequently.

The 8 kg. limitation was intended to limit the amount of highly enriched uranium, particularly in unirradiated form, present in the country at any one time and also to insure that the facility in which the material is to be used and any associated facilities were of such a size that the overall problem of applying safeguards would be manageable. While this limitation is sometimes misunderstood as requiring that no more than 8 kg. of highly enriched material may be present in the other country at one time, it was understood at the outset that the quantities of highly enriched U-235 could be much higher since a materials testing reactor requires frequent renewal of the fuel. This necessitates the presence in the "pipe line" /material in transit, spare elements, the core loading proper and decay storage/ of material equivalent to several cores.

The next problem involving the 20% limitation was encountered when research reactor fuel elements of 20% enrichment supplied to several countries by U.S. manufacturers proved to be defective. This was due to the fact that the technology for production of research reactor fuel elements in the United States had been developed using material of 90% or greater enrichment and unexpected difficulties were encountered when it was attempted to produce elements using U-235 of 20% enrichment. While it appeared that these difficulties could be overcome by further development work, it also appeared that such fuel elements would be intrinsically more expensive than those containing 90% enriched uranium. As a result, in 1958, the policy was further modified to permit the transfer of 90%

enriched material for research reactor fuel elements in addition to materials testing reactor elements. The considerations involved were essentially the same as those applied in the case of materials testing reactors; that is, that safeguards and controls adequate to assure against diversion of large quantities of plutonium must be employed and that these were equally capable of assuring against diversion of highly enriched uranium. In both cases, the discretion as to whether 90% material would be supplied was retained by the United States but it was understood that we would normally supply 90% material when its use was technically or economically advantageous to the cooperating country.

In subsequent years additional modifications were made in the policy regarding maximum enrichment of fuel to be supplied. Reactor experiments, again with a limitation on core loading of 9 kg. of U-235, were added as a category of reactors eligible for the supply of highly enriched uranium. Certain specific requests for material of higher enrichment; for example, French requirements for 300 kg. of material enriched to 60% for fast reactor experimental work (1960) and for 100 kg. of material enriched to 90% for criticality experiments (1962) were approved and incorporated in amendments to the Agreements for Cooperation, without any change in general policy. The limitation of 20% enrichment for material supplied for power reactors was retained in effect in view of the lack of specific instances where higher enrichment appeared to be justified and the continuing desire to limit the supply of highly enriched uranium to circumstances justified by strong technical and economic reasons.

In 1961, in former Commissioner Wilson's speech in Tokyo on materials policy, the AEC indicated that it would be prepared to consider, on a case-by-case basis, making highly enriched uranium available for other uses when the situation warranted. While nuclear power reactors generally use uranium of low enrichment, it was recognized that a few power reactor types, such as the high temperature gas-cooled reactors, required such highly enriched uranium to meet their technical objectives. However, no transfers have been made for this purpose thus far. More recently, the U.S. has modified its policy slightly to permit the supply of uranium containing 93% U-235 for those uses previously qualifying for 90% material. This step was taken since (a) there is essentially no difference between the two enrichments insofar as weapons potential is concerned and (b) 93% is the standard enrichment of highly enriched uranium in use in domestic programs.

Following the development of the policy permitting the sale of 90% enriched uranium for research reactors, research agreements were amended on request of the other party to reflect this provision. In all such cases, however, the limited safeguards provisions of the research agreements were replaced by the comprehensive safeguard provisions of power agreements.

Most research agreements have been modified to permit the sale of 90% enriched uranium. A few remain unchanged, reflecting either the unwillingness of the country to accept the more comprehensive safeguards, or the fact that the reactor involved is of a type not requiring the use of uranium enriched to more than 20% U-235. (Some small research reactors of comparatively recent development utilize 20% enriched fuel elements.)

Until 1963, plutonium had been supplied under Agreements for Cooperation only in minor quantities for purposes such as small scale research and plutonium-beryllium neutron sources. The largest distribution of plutonium had been the supply of 9 kg. to Euratom for research and development on plutonium recycle for thermal reactors, an area which was specifically identified as a subject of cooperation in the Joint Program Agreement of 1958. The fact that only limited quantities of plutonium had been supplied abroad reflected as much the deficiency of plutonium for other purposes, which prevailed until fairly recently, as it did a policy against the supply of plutonium for safeguard reasons. As noted earlier, the safeguards and controls system has been designed to assure against the diversion of plutonium produced by cooperating countries. There is no apparent distinction from the safeguards standpoint between such produced plutonium and plutonium supplied in the first instance by the United States.

Beginning in 1962, the increasing interest in fast reactors led to requests from France and Euratom for large quantities of plutonium for use in fast reactor development. This request was considered by the Atomic Energy Commission over a period of time and ultimately, after careful review, a decision was made in late 1962 that the material should be supplied, subject to obtaining the necessary Presidential allocation and authorization by the Congress. These authorizations have now been obtained and a memorandum of understanding covering the transaction has been concluded and a definitive contract is now under negotiation.

Three agreements for cooperation are of particular importance and deserve special mention. These are the two agreements with Euratom and that with IAEA. All of these agreements are characterized by the fact that the safeguards, while similar in form to those incorporated in regular bilateral agreements, are to be administered by the international organizations involved.

Euratom Agreements

The U,S. has entered into two Agreements for Cooperation with Euratom; one in 1958, the second in 1959, which has been amended on several subsequent occasions. The 1958 agreement is concerned with the U.S.-Euratom Joint Program, which had as its objective the construction of approximately one million kilowatts of nuclear power in Euratom countries by the end of 1965. The agreement calls for the supply of 30,000 kg. of U-235, the quantity estimated to be required for the long term needs for the one million kilowatts of installed nuclear capacity. A major purpose of this arrangement was to lend support from the standpoint of U.N. integration by strengthening and demonstrating our confidence in Euratom.

During negotiation of this agreement, there was extensive debate both between the parties and within the U.S. government on the safeguards arrangements to be applied. Euratom contended that as a supernational organization representing five of the most advanced nations of the western world, with an aggregate population and productive capacity comparable to that of the U.S., they merited a special status insofar as safeguards are concerned

comparable to that already accorded to the U.K. and Canada. The Euratom Treaty gives to Euratom full rights for control of special nuclear material in the Community, and it was Euratom's position that safeguards over the material supplied by the U.S. should be implemented exclusively by Euratom with the U.S. receiving a guaranty that the material and equipment supplied by the U.S. would be used only for peaceful purposes.

The Euratom position was questioned in the U.S. from two points of view. First, it deviated from the normal practice (excluding the arrangements with the U.K. and Canada) of the U.S. acquiring the right to apply safeguards itself; second, it provided no recognition, as did other bilateral agreements, for the expectation or hope that the IAEA might ultimately administer the safeguards provisions of the Agreement. In subsequent intense negotiations with Euratom, a compromise formula was reached under which the U.S. would have the opportunity to review the effectiveness of the Euratom system and its comparability to the IAEA system by receiving from Euratom information on the nature of the system which it applied. In addition, Euratom agreed to a formula calling for consultation in the future on the role which the Agency might play in administration of the safeguards. As a final element of the compromise, it was agreed in an exchange of letters that the U.S. opportunity to acquire information on the Euratom system included the opportunity to "verify by mutually approved scientific methods, the effectiveness of the safeguards and controls systems". While not generally recognized, the safeguards arrangements between the U.S. and Euratom are reciprocal. Euratom has the same rights with reference to any material returned to the

U.S. under the agreements as the U.S. has acquired with regard to the material and equipment supplied to Euratom. This reciprocity is not academic since substantial quantities of plutonium are likely to be returned by Euratom to the U.S.

The subsequent agreement with Euratom, entered into in 1959, accommodates Euratom's requirements for U.S. material outside those of the joint program. It has been amended several times and now provides for the supply of such quantities of special nuclear material as the U.S. may be authorized to supply and as the parties may agree. To date the U.S. has been authorized to supply 70,000 kg. of enriched uranium, 500 kg. of plutonium, and 30 kg. of U-233. This agreement incorporates by reference the safeguards provisions of the 1958 agreement. The rationale of the safeguards arrangement between the U.S. and Euratom is that Euratom's assurances are trustworthy, and that the area of legitimate concern is whether Euratom has developed and is applying a technically adequate system to give substance to these assurances. In the implementation of these safeguard provisions, the U.S. has acquired through visits and discussions information on the Euratom safeguards system which indicates that it is a conscientious, objective, and effective one. Because of the relatively small quantity of material transferred to date no active implementation has been given to the understanding on the use of mutually approved scientific methods. This subject is under discussion in the periodic meetings which are held between U.S. and Euratom safeguards staffs.

IAEA Agreement

In 1959 the U.S. concluded an Agreement for Cooperation with the IAEA which constitutes the legal authorization for the U.S. to provide the agency with 5000 kg. of enriched uranium, plus such additional quantities of special nuclear material as may be authorized for distribution to the Agency. Analogous with the Euratom agreement, safeguards under this arrangement are administered by the Agency. The U.S. retained no special rights of review or audit of the Agency system, since as a member of the Agency and of its Board of Governors, it was assumed that ample opportunity would exist for the U.S. to be fully informed on and able to influence the nature of the Agency's safeguards system.

Only a few countries have availed themselves of the Agency channel for the supply of special nuclear material. However, most of the cases where this has occurred (Finland, Yugoslavia, Mexico, the Congo) are important, since they represent countries which would find it difficult or impossible, for political reasons, to deal directly with the United States. It can be said that without the Agency, we would have been unable to cooperate in any significant way in atomic energy with these nations.

The importance of the Agency supply and safeguards functions was appreciated from the outset of the program, and U.S. efforts to avoid undercutting the Agency by the establishment of a bilateral program pending the Agency's creation are apparent. However, review of the record, including the legislative history of the U.S. ratification of the IAEA Statute, does not indicate a clear cut distinction at that time between the relative importance of the Agency's safeguard and supply functions,

nor a clear-cut decision that the Agency should be exclusively employed in either of these fields. In fact, there was a considerable belief that a major importance of the Agency would be as a supplier or safeguards authority for countries which would prefer not to deal bilaterally with the U.S. In practice, while as noted above, a few such cases have arisen, the general rule has been a marked preference for bilateral rather than Agency administration of these functions. Gaining acceptance of Agency safeguards has, therefore, been a difficult uphill task.

As a consequence of recent policy reviews, a clear-cut distinction has been made between the supply and safeguards functions of the Agency. Fortunately, the Agency Statute makes this distinction practical by giving the Agency authority to apply safeguards in any of three situations: (a) where the Agency has supplied assistance, (b) where the assistance has been supplied bilaterally, and the parties request the Agency to apply safeguards, and (c) where a party unilaterally places its own activities under Agency safeguards.

The supply function would have been important had there been a shortage of special nuclear material for distribution abroad, necessitating the allocation of material between competing claimants. With the abundance of material which has developed, it has become recognized that the Agency supply function is essentially an intermediate step of paperwork in what is in essence a bilateral transaction. At the same time, it has been recognized that the establishment of Agency safeguards is of great importance, and that this can probably not be accomplished without the pursuit of a conscious

policy of giving the Agency the exclusive responsibility for this function with respect to all arrangements for the supply of nuclear materials and equipment for peaceful purposes from one nation to another.

NUCLEAR MATERIALS SUPPLY

It has been AEC's policy since the beginning of the international program to supply, within statutory limitations, the reasonable needs of cooperating nations for nuclear materials which are not available commercially. At present, these materials are primarily the special nuclear materials, enriched uranium, plutonium, U-233, heavy water and certain radioisotopes. To date enriched uranium has been by far the most important of these materials; the amounts transferred abroad thus far are detailed in Appendix " ".

Fuel Supply Policy

The central feature of our materials supply policy is our willingness to undertake long-term commitments to supply enriched uranium fuel for the nuclear power programs of cooperating countries. This policy has been repeatedly reiterated at all levels of the U.S. Government, including the President. For example, in 1956 President Eisenhower stated:

> "This nation attached highest importance to the development of nuclear power both at home and abroad.....These and other actions (making available 20,000 kg. of U-235 and setting terms and conditions for its distribution abroad) are designed to enable other nations or groups of nations to have firm assurance of the fuel supplies necessary to the continued operation of nuclear power installations, and thus to facilitate arrangements for financing."

(Other Presidential statements on this point are given in Appendix " ".)

At the same time, the Chairman of the AEC observed:

> "The information and assurances given are necessary for estimating cost of power, for justifying the capital required and assuring operation of nuclear power plants over a period of years."

In a 1957 Joint Communique by the Department of State, the AEC and the Euratom Committee it was stated:

> "Examination of the Committee's program (the construction of nuclear power plants in the

community with a total generating capacity of 15,000 MWe by 1967) indicates that the objective is feasible. Under present circumstances, the availability of nuclear fuels is not considered to be a limiting factor."

Most recently in Brussels during September 1964, Chairman Seaborg gave a speech before a group representing western European governments, industries and utilities which again affirmed the principles of U.S. nuclear fuel supply policy. It is because of such assurances that other nations have been able and willing to undertake nuclear power programs involving capital investments in the millions of dollars, based on the use of enriched uranium fuel. The figure in Appendix " " for such power reactor investments already committed (and the resultant revenues anticipated by the U.S.) are considered only a modest start on the foreign nuclear power programs envisaged for the future.

The supply of nuclear fuel involves several steps:

a. Presidential determination of special nuclear material availability, as required by the Atomic Energy Act. At present 150,000 kg. of U-235 have been determined to be available for distribution abroad, with the indication that more will be made available when needed. (Appendix " ")

b. Conclusion of a long-term agreement for cooperation between the United States and the other nation, or group of nations, providing for the supply of fuel for the latter's anticipated nuclear power program. Such agreements have already been concluded with Euratom, India and Italy and are anticipated in the relatively near future with Spain, Sweden, Switzerland, Australia, Japan and possibly with the U.K.

c. Execution of a long-term contract, within the specified amounts and other provisions of the agreements, covering the supply of fuel for each reactor project as it is undertaken. The major provisions of such contracts are given in Appendix "I".

As the almost exclusive world supplier of enriched uranium for peaceful pruposes, we have concluded that if enriched uranium power reactors are to gain wide acceptance abroad, the supply of enriched uranium must be on as nearly a normal commercial basis as possible. (Of course, it is recognized that certain aspects of its supply -- particularly in the area of safeguards and controls -- will always make it unique.) For this reason, we do not attach any condition requiring the use of U.S. services or goods to our supply of enriched uranium abroad. Another step resulting from recent passage of our Provate Ownership Act, which we believe will enhance the use of enriched uranium in foreign nuclear power programs is our ability, beginning on January 1, 1969, to "toll enrich" uranium supplied by other nations. This will permit delievery of uranium, produced indigeneously or purchased on the world market, by another nation to the AEC for enrichment in our gaseous diffusion plant facilities. (The same safeguards and controls will apply to enriched uranium produced by toll enrichment as to that produced from U.S.-supplied material.)

OTHER ACTIVITIES

In completing its program for the peaceful uses of atomic energy abroad, the major elements of which havebeen described in previous sections, the U.S. also has:

a. Arranged for the training of foreign nationals in (i) unclassified areas of the AEC's domestic program, (ii) U.S. universities and other educational institutions and, (iii) U.S. industry. Similar training opportunities are provided by other nuclear powers, including the U.S.S.R.

b. Entered into special information exchange arrangements in fields where other nations have major technical programs at a level comparable with ours. A history of such exchanges is presented in Appendix "K"; the scope and financial support of peaceful research programs from which such exchanges may develop is shown for some selected nations in Appendix "L".

c. Provided financial grants toward the cost of research reactors and nuclear research equipment obtained by certain cooperating countries.

d. Authorized private U.S. individuals and companies to engage in unclassified, peaceful atomic activities with friendly foreign nations without specific approval of the Commission (10 CFR 110).

e. Established licensing procedures for the export of production and utilization facilities and of source material (natural uranium and thorium).

f. Provided, through the Export-Import Bank, capital loans for the U.S.-procured portion of power reactors of U.S. design constructed abroad and for the enriched uranium fuel required for the first core of such reactors.

SAFEGUARDS AND CONTROLS

Introduction

The technology of nuclear power for peaceful purposes is closely related to the technology used in the production of materials for weapons purposes. Moreover, the operation of most types of power reactors results in itself in the production, as a by-product, of plutonium or U-233 suitable for use in atomic weapons. The application of the peaceful uses of atomic energy abroad, therefore, raises the question of how these activities can be brought under controls which assure against diversion of the weapons materials utilized or produced in them to weapons purposes.

As noted earlier, the Atomic Energy Act requires a guaranty from the recipient country that any material or equipment supplied by the U.S. is not employed for weapons purposes. This requirement has been supplemented by the Executive Branch policy of requiring safeguards, that is, concrete measures of physical control--to bolster and enforce the guaranty of the other party.

Both the guarantees and the safeguards it must be emphasized, apply only to the concrete items of assistance supplied by the United States--materials and equipment.

It was recognized early that the imposition of safeguards on abstract assistance, that is, information and know-how, would, in general, not be feasible, since these are by their nature not susceptible to accountability.

Moreover, the safeguards program of the United States, as well as that of other nations following a similar policy, applies only to those activities of the other country assisted from the outside. It has never been considered

practical to secure from a country a general commitment to place its entire nuclear program under safeguards, in exchange for assistance to that country on specific projects or in specific fields.

In view of these factors, any consideration of the effectiveness of safeguards in preventing proliferation must take into account (a) the fact that activities undertaken by a country without outside assistance from a source requiring safeguards are not subject to safeguards, (b) there is present in the public domain all the basic knowledge necessary for the production of weapons materials--particularly plutonium. Moreover, natural uranium required for such an activity is widespread, as are many of the other raw materials and much of the fabricated equipment.

Finally, it should be emphasized that safeguards are essentially an investigative technique. They are designed to detect diversion; they do not directly prevent it. Moreover, no system of safeguards that is technically, politically, and economically feasible can provide absolute assurance of detection of diversion. Nevertheless, reasonable systems, employing on-site inepsections, have been devised which expose those who would divert material to a high risk of detection. It has always been felt that this factor would exert a strong deterrent effect on any nation considering the diversion to military use of any material supplied under guarantees of peaceful application.

Procedures

The U. S. bilateral safeguards system is based on the right of access to independently verify the quantity of material on hand at any time and to verify the use being made of materials and facilities. In the development of the system varying degrees of control were exsmined ranging from stationing U.S. custodians in other countries to the peaceful uses guarantee without inspection provisions. Consideration of (a) possible control that any of the systems might achieve; (b) the likelihood of acceptance of these systems, particularly as a basis for an international system of safeguards and control; and (c) the practical matter of establishing the work force to carry out the proposed schemes led to the system that is now reflected in the comprehensive safeguards article of our agreements for cooperation. This system which is based on the right of access for independent verification, is supported by provisions for: (a) the review of the design of facilities supplied by the U.S. using or processing nuclear material supplied by the U.S.; (b) the maintenance of accountability and operating records by the cooperating country; and (c) periodic reporting of the location and quantitites of materials and the use being made of these materials.

To date the right of access destribed above has been implemented by the periodic inspections summarized in Appendix "E". An inspection consists of a review of the facility operating records, material accountability records and the experiemental program. The material inventories at a facility may be verified by a variety of techniques including: piece counting, sampling, weighing, chemical analysis and radioactivity checks. It is recognized that in some cases verification by direct means is not feasible. For example, the amount of nuclear material contained in an operating reactor, or in highly radioactive fuel elements cannot be

measured directly. In such cases, however, indirect assurance is gained from a comparative review of facility operating and accountability records on a continuing basis and from data which becomes available when material is reprocessed.

International Safeguards

As reflected in Secretary Dulles' testimony on ratification of the IAEA Statute, the superiority of international safeguards to those of a bilateral nature have long been recognized. If the sole purpose of safeguards were to give assurance to the United States that nuclear assistance provided by it is not diverted to military purposes, bilateral safeguards under the sole control of the United States might be regarded as preferable. However, safeguards must be credible not only to the country which has supplied assistance but to other nations as well. In addition, from the United States standpoint, nuclear assistance supplied by other countries should be made available under a safeguards system whose effectiveness is known to the United States.

These objectives can be met only by the establishment of a broadly based international safeguards system under the aegis of an organization, through membership in which the United States can be aware of and influence the nature of the system.

There are other collateral benefits of an international system. By providing a uniform system, it will deter the tendency for suppliers to compete with each other in the avoidance or weakening of safeguards to promote sales of their own goods. From the standpoint of recipient nations, it can simplify the application of safeguards and reduce their burden by consolidating all safeguards under a single authority. By avoiding duplication, international safeguards can be more economical, and their cost can be spread among all nations, since all benefit from their application.

At the same time, it must be acknowledged that the delegation of safeguards responsibility to an international organization carries with it a risk that the system, or its application, might be weakened through pressures from the recipient countries in whose territories the safeguards will be applied. So far, experience in the IAEA has demonstrated that through strong U.S. leadership this risk can be successfully avoided.

During the formative days of the IAEA, it was thought that many countries, including particularly neutrals such as India, would welcome international safeguards in whose development they themselves participated, as being less a remnant of "imperialism" than those applied by the major powers.

For complex and, in part, elusive reasons, this expectation has not come to pass. As a result, in order to gain acceptance of international safeguards, the United States, as the principal supplier of nuclear assistance abroad, has had to adopt a firm position on the use of international, rather than bilateral safeguards. Only in this way is there a reasonable chance that the international safeguards of the IAEA will be accepted by supplier and recipient alike and displace the varied, uncertain, and doubtlessly in some sames inadequate safeguards of some suppliers.

The logical culmination of the bilateral safeguards program is the transfer to the International Atomic Energy Agency of the responsibility for administration of the safeguards which the United States has carried out under its bilateral agreements. A step toward this goal was taken when the first transfer was accomplished by means of a trilateral agreement

which was signed by the United States, Japan and the IAEA on September 23, 1963. Under this agreement the Agency now administers the safeguards arrangements between the two signatory countries. Since that time, arrangements have been made for the IAEA to administer the safeguards applied to the nuclear materials, equipment and technology supplied to 11 countries. These countries include: Japan, Norway, Greece, Austria, the Philippines, Viet-Nam, Argentina, Portugal, Thailand, Iran and Nationalist China. Negotiations are continuing for additional transfers of the administration of U.S. safeguards to the IAEA.

The International Inspectorate

Considerable attention has been devoted to the composition of the Agency's safeguards and inspection staff. In this context, the term safeguards personnel means those responsible for the development of the Agency's system, while inspection personnel means those who implement it, especially through the performance of on-site inspections. Particular individuals may perform both functions, and to date this has frequently been the case.

It has been tacitly accepted that the safeguards staff--those responsible for development and evaluation of the system--should be broadly based in terms of nationality, with representation from the West, the East, and the neutral nations.

The IAEA safeguards and inspection staff is headed by the Inspector General, a position which is now occupied by an Australian national. The Safeguards Division has from the start included an American as one of the senior professional members of the staff under the Division Director. There are presently two senior staff members in the Safeguards Division,

the other being a U.K. national. Members of the safeguards staff itself are selected in accordance with normal IAEA hiring practices, i.e. approved by the Director General taking into account equitable geographical distribution of professional positions. Selection of the highest ranking staff members, such as the Inspector General and the Director of the Division of Safeguards, are made by the Director General with the approval of the Board of Governors of the IAEA. The Director of the Division has for some time been a Yugoslav national and a Hungarian national is a member of the staff.

The question of the composition of the inspection staff proper is still in a state of flux. The Agency has a roster of personnel who have been designated by the Director General and approved by the Board of Governors to undertake inspections. This roster includes, at present, all member of the Safeguards Division, which has recently been redesignated the Safeguards and Inspection Division, plus some technical personnel of the Division of Reactors. It includes nationals from all blocs. In practice, however, the nationality of inspectors actually utilized is not determined by the breadth of the Agency roster. The Agency statute provides that inspectors shall be designated by the Agency after consultation with the country concerned. While this is not, formally, a veto on behalf of the inspector country, it was intended and does serve as a strong right on their behalf to reject inspectors so long as this can be done without prejudice to the system.

While no firm approach has been decided upon, the tendency to date is to have inspection teams drawn from among the more advanced neutral

nations or, at least, nations other than the major military or civil nuclear powers. Most inspections in the U.S. have been conducted by nationals of Yugoslavia, Argentina, Sweden and Japan. However, the Agency system provides great flexibility in choice of inspectors, and the approach can be changed at any time to meet changing conditions. It is probable that, if facilities in the Soviet Bloc were open to inspection (as may well occur in Rumania, for example) the Agency Inspectorate will make use of inspectors drawn from the nuclear powers themselves, or countries closely associated with them.

Adoption of Safeguards by Other Suppliers

It is evident that the effectiveness of safeguards is dependent on their being required by all suppliers of nuclear assistance. In recognition of this fact, the United States has consulted with other major suppliers of nuclear materials and assistance, specifically the United Kingdom and Canada, from an early date and achieved their agreement to following a safeguards policy on material and equipment supplied by them comparable to our own. In 1959 the United States brought about the first meeting of a group which has come to be known as the Western Suppliers Group. Originally confined to the major potential suppliers of natural uranium, it was designed to achieve informal agreement that natural uranium would be supplied only under safeguards. The original members of this group in addition to the United States were the U.K., Canada, South Africa, Australia, France and Belgium. In recent meeting, it has been recognized that the group should be broadened to bring about similar agreement among major equipment suppliers. As a consequence, Japan was invited to the last meeting of this group and West Germany has been kept informed of the consultations. The agreement among this group is informal and not binding. In general, however, it can be said that with one exception its members have agreed to hold the line on safeguards as long as no major breaches occur by other members of the group or countries outside to it.

The French have indicated that they do not regard themselves as bound by the common understanding. Notwithstanding this, the French have indicated a concern over non-proliferation and an intention to act

responsibly in terms of nuclear assistance made available by France. It appears that France desires that assistance in supplies not be devoted to military purposes, that it is prepared to place more emphasis than did we on assurances other than those acquired through a formal system of safeguards--for example knowledge as to whether or not the recipient country has a processing capability in being.

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ACHIEVEMENT OF A WEAPONS CAPABILITY BY ADDITIONAL NATIONS

The capability of other nations to attain nuclear weapons depends upon the following factors: (1) availability of uranium, (2) the ability to produce U-235 or plutonium, (3) a substantial nuclear scientific and technological capability, (4) a major scientific and engineering capability in electronics, explosives, etc. for non-nuclear components, and (5) the ability to make the needed investments within available national resources for a weapons program. These factors, of course, bear upon but are independent of the most important factor in embarking upon a nuclear weapons program, which is a national decision to do so. N.I.E. 4-2-64 of October 21, 1964, assesses these factors and concludes that within the next decade those countries capable of developing independent nuclear weapons programs are India, Israel, Sweden, West Germany, Italy, Japan, and Canada. Of the countries having a capability, the estimate concludes that only in the case of India are the chances better than even that a decision will be made to develop nuclear weapons within the next few years. The judgment with respect to Israel is conditioned upon political factors including their ability to receive security guarantees from the United States and the Israeli estimate that the threat from the Arab states is increasing beyond Israel's ability to cope with it by conventional means. With respect to all the other countries analyzed, the judgment is that the chances are less than even to unlikely that a national decision to acquire nuclear weapons will be taken.

What, then, are the elements in support of civilian atomic energy programs that could assist these nations and perhaps others having lesser capabilities should they decide at some point in the future to embark upon

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a weapons program. Basic information has already been published and widely disseminated on nuclear physics, neutron cross sections, uranium and plutonium metallurgy, power reactor technology, and chemical processing technology. In addition, the field of controlled thermonuclear reactions is unclassified and much literature is available internationally in this field. On the basis of the existing fund of information, those nations having the scientific and technical personnel to apply it to a weapons program also probably have at hand much of the capability required to achieve the special nuclear materials production base involving plutonium essential to a weapons capability. A sufficient amount of information is generally known with respect to the design of nuclear fission weapons so that once special nuclear material not subject to safeguards is available, the problem of testing a device and developing deliverable weapons is not regarded as an insurmountable limitation. The National Intelligence Estimate generally describes this in terms of a time factor of one to three years.

What are the factors determing whether a nation can produce its own special nuclear material? Appendix N desicribes free world availability of natural uranium and concentrate production capability, exclusive of the United States. It can be seen that over the next decade it will be increasingly difficut to maintain complete safeguards on the supply of natural uranium, which is basic to the production of either enriched uranium or plutonium. Moreover, over the next five to ten years, the world supply of natural uranium will probably exceed demand, thereby making for a highly competitive situation which will not be conducive to establishment of uniform and rigorous safeguards over its end use. Appendix Q contains a table setting forth major free world reactor supporting facilities exclusive of the United States which constitutes an indication of the level in various countries

of available nuclear technology which could be used as the base for a weapons effort.

Appendix P describes the nuclear reactors of the free world excluding those of the United States and the United Kingdom and notes the amount of estimated annual plutonium production for each. It can be seen from this appendix that large quantities of plutonium will be produced in a number of countries. It should be noted, however, that the plutonium produced in the majority of these facilities is subject to guaranties and safeguards against use of generated material for any military purpose. In connection with the world-wide availability of power reactors, the United Kingdom, Canada, and France all are active in seeking foreign markets for their reactor concepts. As all of these concepts involve the use of natural uranium fuel, other factors being equal they have a competitive advantage over U.S. enriched uranium reactors, since other nations prefer natural uranium fuel over enriched uranium because of the former's much wider availability under more normal market conditions. (Thus far the U.K. has sold two large power reactors abroad; Canada one, with at least two others under active negotiation; while France recently sold a 500 MWe reactor to Spain with few if any safeguards comparable to those required by the U.S., insofar as we have been able to determine.) However, in most instances, the economic superiority (particularly in capital cost) of U.S. power reactors, together with our long-term fuel supply policy for enriched uranium fuel, has led to the selection of a U.S. reactor. For example, until the last moment, the Indians were unwilling to consider other than a natural uranium reactor for installation at Tarapur. Nevertheless, the decisive economic superiority of the General Electric offer on an enriched uranium reactor led to its ultimate acceptance and, as a further consequence, the acceptance of international safeguards on the reactor as well. (Although the Tarapur reactor received AID financing assistance, the assistance was from AID funds already allocated to India and, hence, displaced other high priority Indian development projects.

Appendix Q sets forth chemical processing facilities outside the United States that are built or will be constructed through 1970 and is an important indication of the extent to which chemical separations technology can be, and is being, developed independently by those desiring to do so.

N.I.E. 4-2-64 estimates that the cost of a modest program for producing plutonium weapons would not be prohibitive to most of the middle powers. "A program to produce one or two low yield (about 20 kt) plutonium fission weapons per year would cost $140,000,000 to $180,000,000 through the first detonation, and $20,000,000 to $30,000,000 per year thereafter." The estimate points out that cost increases markedly for a more than minimum program and notes, for example, that production of fifteen to thirty plutonium fission weapons per year would probably be $600,000,000 to $700,000,000 plus subsequent annual operating expenses of about $100,000,000. It is important to point out that these cost figures are independent of any costs that might be incurred to produce delivery vehicles.

The bulk of these costs represents building plutonium producing reactors and chemical separations facilities on the assumption that natural uranium can be procured from either internal sources or on the open market without safeguards. In point of fact, this has been the route followed by France in achieving the capability she presently possesses.

The controls envisaged by the Atomic Energy Act to prevent nuclear proliferation are predicated on the assumption that the essential step in a nuclear weapons capability is the possession of special nuclear

material not subject to appropriate safeguards and controls. In keeping with this premise, the United States has even refused to exchange technology on production processes for the enrichment of U-235, developed subsequent to our World War II cooperation, with the United Kingdom. Further, when it became apparent that gas centrifuge technology might be a useful means for producing highly enriched uranium, the United States imposed stringent classification on the process and assumed leadership in persuading those Western countries (Germany and the Netherlands) which were working in the centrifuge area to impose rigid classification on the results of their work as well as on the foreign commercial exploitation of the process. The ability to control plutonium has presented a more complex problem due to the fact that as early as 1953, countries other than the United States had independently developed power reactor technology using natural uranium graphite reactors capable of producing substantial quantities of plutonium.

A major purpose of the Atoms for Peace Program was to deter other countries from developing independent supplies of U-235 or unsafeguarded plutonium which might be available for weapons use. This in turn required the demonstrated willingness on the part of the United States to meet the legitimate peaceful needs of foreign countries under suitable controls both for slightly enriched uranium, as the most desirable fuel for large-scale civilian power reactor programs, as well as the more highly enriched uranium necessary for basic supporting nuclear technology.

The actions taken under the Atoms for Peace Program to encourage United States industry to develop economic nuclear power reactors, to

encourage simultaneously interest in using power reactors as a basic energy source abroad, and to assist in the building abroad of supporting facilities for a civilian nuclear power industry were undertaken at a time when the production of electricity by nuclear energy was not economic. Within the last two years, nuclear power has economically come of age and the efforts abroad organized to exploit the nucleus as a source of electric energy have not been, in any sense, oriented toward the production of weapons. In the majority of instances, there has also developed a recognized dependence upon the United States as the exclusive long-term supplier of slightly enriched uranium for economic power reactor systems as developed by the AEC and U. S. industry. This latter fact is extremely important since all supply of enriched uranium by the United States has been predicated on arrangements calling for safeguards and inspection to assure that the special nuclear material used and plutonium produced will always be used exclusively for civil purposes. The growing commitment, then, of many foreign nations to civilian nuclear power programs based on slightly enriched uranium under safeguards and controls requires that any national decision to embark on a weapons program involve new facilities for the production of special nuclear materials for use in weapons. This in turn tends to require the development of independent weapons production facilities as against multi-purpose (plutonium production and power) facilities and has the continuing effect of keeping the cost of entry into a special nuclear material production program for a weapons effort at a fairly high level. In those countries where national programs must be

mounted on the basis of relatively limited resources, the extent to which money and scientific and technical manpower are engaged already in important nuclear programs related to civil uses may well have a further limiting effect on any decision to establish an independent nuclear weapons capability.

Finally, in the long-term, dependence upon the United States as the economic supplier of uranium 235 will provide increasingly an important leverage in diplomacy for assuring that materials dependent countries pursue policies in support of non-proliferation, since the possibility of withholding special nuclear material or reactor technology will increasingly entail profound consequences on foreign economies.

APPENDIX "A"

TYPICAL GUARANTEES AND SAFEGUARDS AND CONTROLS
PROVISIONS OF VARIOUS TYPE AGREEMENTS FOR COOPERATION

A. Guarantees in Research and Comprehensive Power Bilaterals:

"The Government of _____ guarantees that:

"(a) Safeguards provided in Article ___ shall be maintained.

"(b) No material, including equipment and devices, transferred to the Government of _____ or authorized persons under its jurisdiction, pursuant to this Agreement, by lease, sale, or otherwise will be used for atomic weapons or for research on or development of atomic weapons or for any other military purposes, and that no such material, including equipment and devices, will be transferred to unauthorized persons or beyond the jurisdiction of the Government of _____ except as the Commission may agree to such transfer to another nation or an international organization and then only if in the opinion of the Commission such transfer falls within the scope of an agreement for cooperation between the Government of the United States of America and the other nation or international organization."

B. Safeguards Provisions in Research Bilaterals:

"1. The Government of _____ agrees to maintain such safeguards as are necessary to assure that the special nuclear materials received from the Commission shall be used solely for the purposes agreed in accordance with this Agreement and to assure the safekeeping of this material.

"2. The Government of _____ agrees to maintain such safeguards as are necessary to assure that all other reactor materials, including equipment and devices, purchased in the United States under this Agreement by the Government of _____ or authorized persons under its jurisdiction shall be used solely for the design, construction, and operation of research reactors which the Government of _____ decides to construct and operate and for research in connection therewith, except as may otherwise be agreed.

"3. In regard to research reactors constructed pursuant to this Agreement, the Government of _____ agrees to maintain records relating to power levels of operation and burn-up of reactor fuels and to make annual reports to the Commission on these subjects. If the Commission requests, the Government of _____ will permit Commission representatives to observe from time to time the condition and use of any leased material and to observe the performance of the reactor in which the material is used."

C. Safeguards Provisions in Comprehensive Power Bilaterals:

"A. The Government of the United States of America and the Government of _____ emphasize their common interest in assuring that any material, equipment, or device made available to the Government of _____ pursuant to this Agreement shall be used solely for civil purposes.

"B. Except to the extent that the safeguards provided for in this Agreement are supplanted, as provided in Article ___, by safeguards of the International Atomic Energy Agency, the Government of the United States of America, notwithstanding any other provisions of this Agreement, shall have the following rights:

(1) With the objective of assuring design and operation for civil purposes and permitting effective application of

safeguards, to review the design of any

(i) reactor and

(ii) other equipment and devices the design of which the Commission determines to be relevant to the effective application of safeguards,

which are to be made available to the Government of _____ or persons under its jurisdiction by the Government of the United States of America or any person under its jurisdiction, or which are to use, fabricate, or process any of the following materials so made available: source material, special nuclear material, moderator material, or other material designated by the Commission;

"(2) With respect to any source or special nuclear material made available to the Government of _____ or persons under its jurisdiction by the Government of the United States of America or any person under its jurisdiction and any source or special nuclear material utilized in, recovered from, or produced as a result of the use of any of the following materials, equipment, or devices so made available:

(i) source material, special nuclear material, moderator material, or other material designated by the Commission,

(ii) reactors,

(iii) any other equipment or device designated by the Commission as an item to be made available on the condition that the provision of this subparagraph B(2) will apply,

"(a) to require the maintenance and production of operating records and to request and receive reports for the purpose of assisting and ensuring accountability for such material; and

"(b) to require that any such material in the custody of the Government of _____ or any person under its jurisdiction be subject to all of the safeguards provided for in this Article and the guarantees set forth in Article ___;

"(3) To require the deposit in storage facilities designated by the Commission of any of the special nuclear material referred to in subparagraph B(2) of this Article which is not currently utilized for civil purposes in _____ and which is not purchased or retained by the Government of the United States of America pursuant to Article IV, paragraph F and paragraph G(a) of this Agreement, transferred pursuant to Article IV, paragraph G(b) of this Agreement, or otherwise disposed of pursuant to an arrangement mutually acceptable to the Parties;

"(4) To designate, after consultation with the Government of _____, personnel who, accompanied, if either Party so requests, by personnel designated by the Government of _____, shall have access in _____ to all nuclear materials which are subject to subparagraph B(2) of this Article to determine whether there is compliance with this Agreement and to make such independent measurements as may be deemed necessary;

"(5) In the event of non-compliance with the provisions of this Article, or the guarantees set forth in Article IX, and the failure of the Government of _____ to carry out the provisions of this Article within a reasonable time, to suspend or terminate this Agreement and require the return of any materials, equipment and devices referred to in subparagraph B(2) of this Article;

"(6) To consult with the Government of _____ in the matter of health and safety.

"C. The Government of _____ undertakes to facilitate the application of the safeguards provided for in this Article."

D. As will be noted, the above safeguard provisions parallel those in Article XII of IAEA Statute as follows:

"A. With respect to any Agency project, or other arrangement where the Agency is requested by the parties concerned to apply safeguards, the Agency shall have the following rights and responsibilities to the extent relevant to the project or arrangement:

1. To examine the design of specialized equipment and facilities, including nuclear reactors, and to approve it only from the viewpoint of assuring that it will not further any military purpose, that it complies with applicable health and safety standards, and that it will permit effective application of the safeguards provided for in this article;

2. To require the observance of any health and safety measures prescribed by the Agency;

3. To require the maintenance and production of operating records to assist in ensuring accountability for source and special fissionable materials used or produced in the project or arrangement;

4. To call for and receive progress reports;

5. To approve the means to be used for the chemical processing of irradiated materials solely to ensure that this chemical processing will not lend itself to diversion of materials for military purposes and will comply with applicable health and safety standards; to require that special fissionable materials recovered or produced as a by-product be used for peaceful purposes under continuing Agency safeguards for research or in reactors, existing or under construction, specified by the member or members concerned; and to require deposit with the Agency of any excess of any special fissionable materials recovered or produced as a by-product over what is needed for the above-stated uses in order to prevent stockpiling of these materials, provided that thereafter at the request of the member or members concerned special fissionable materials so deposited with the Agency shall be returned promptly to the member or members concerned for use under the same provisions as stated above;

6. To send into the territory of the recipient State or States inspectors, designated by the Agency after consultation with the State or States concerned, who shall have access at all times to all places and data and to any person who by reason of his occupation deals with materials, equipment, or facilities which are required by this Statute to be safeguarded, as necessary to account for source and special fissionable materials supplied and fissionable products and to determine whether there is compliance with the undertaking against use in furtherance of any military purpose referred to in sub-paragraph F-4 of Article XI, with the health and safety measures referred to in sub-paragraph A-2 of this article, and with any other conditions prescribed in the agreement between the Agency and the State or States concerned. Inspectors designated by the Agency shall be accompanied by representatives of the authorities of the State concerned, if that State so requests, provided that the inspectors shall not thereby be delayed or otherwise impeded in the exercise of their functions;

7. In the event of non-compliance and failure by the recipient State or States to take requested corrective steps within a reasonable

time, to suspend or terminate assistance and withdraw any materials and equipment made available by the Agency or a member in furtherance of the project.

"B. The Agency shall, as necessary, establish a staff of inspectors. The staff of inspectors shall have the responsibility of examining all operations conducted by the Agency itself to determine whether the Agency is complying with the health and safety measures prescribed by it for application to projects subject to its approval, supervision or control, and whether the Agency is taking adequate measures to prevent the source and special fissionable materials in its custody or used or produced in its own operations from being used in furtherance of any military purpose. The Agency shall take remedial action forthwith to correct any non-compliance or failure to take adequate measures.

"C. The staff of inspectors shall also have the responsibility of obtaining and verifying the accounting referred to in sub-paragraph A-6 of this Article and of determining whether there is compliance with the undertaking referred to in sub-paragraph F-4 of article XI, with the measures referred to in sub-paragraph A-2 of this article, and with all other conditions of the project prescribed in the agreement between the Agency and the State or States concerned. The inspectors shall report any non-compliance to the Director General who shall thereupon transmit the report to the Board of Governors. The Board shall call upon the recipient State or States to remedy forthwith any non-compliance which it finds to have occurred. The Board shall report the non-compliance to all members and to the Security Council and General Assembly of the United Nations. In the event of failure of the recipient State or States to take fully corrective action within a reasonable time, the Board may take one or both of the following measures: direct curtailment or suspension of assistance being provided by the Agency or by a member, and call for the return of materials and equipment made available to the recipient member or group of members. The Agency may also, in accordance with article XIX, suspend any non-complying member from the exercise of the privileges and rights of membership."

APPENDIX "B"

TECHNICAL AND ECONOMIC ADVANTAGES IN THE USE OF HIGHLY ENRICHED URANIUM OVER USE OF URANIUM CONTAINING 20% U-235

Research Reactors

1. Lower fabrication cost per fuel element;
2. Greater availability of performance data (since most domestic research reactors use highly enriched uranium);
3. Domestic reactor designs directly applicable;
4. Decreased critical mass (and higher flux);
5. Less possibility of precipitation in aqueous solution-type (homogeneous) reactors; and
6. Lower chemical processing costs.

Test Reactors

1. Higher neutron flux; and
2. At a specific flux:
   a. Safer operation (lower power level);
   b. Lower U-235 burn-up and inventory;
   c. Minimal plutonium production; and
   d. More compact core.

APPENDIX "C"

ESTIMATED PU PRODUCTION IN FOREIGN REACTORS

Assumptions

Natural uranium fueled reactors (excluding CANDU type)

Efficiency - 25%
Pu Production Rate - 0.7 gms Pu/MWD(t)
Plant Factor - 0.8

Slightly enriched uranium fueled reactors and CANDU type

Efficiency - 30%
PuP roduction Rate - 0.4 gms Pu/MWD(t)
Plant Factor - 0.8

The table below excludes reactors

a. in U.K. and U.S.S.R.
b. with enrichments greater than 10%
c. with power of 5 MWt or less
d. going critical after 1970

Country	Reactor	Critical	Kgs Pu/yr.	Kgs Pu By Jan. 1965	Kgs Pu By Jan. 1968	Kgs Pu By Jan. 1970	Applicable Safeguards
Belgium	BR-1	5/56	1.6	13.6	18.4	21.6	
	BR-3	8/62	4.8	9.6	24.0	33.6	U.S.
Canada	NPD	4/62	10.4	26.0	57.2	78.0	
	NRU	11/57	23.4	163.8	234.0	280.8	
	NRX	7/47	4.7	80.0	94.1	103.5	
	CANDU	1965	80.8	-	242.4	404.4	
	WR-1	1965	4.7	-	14.1	23.5	
France	EDF-1	9/62	61.4	122.8	307.0	429.8	
	EL-3	7/57	2.0	14.0	20.0	24.0	U.S.
	G-1	1/56	7.8	66.3	89.7	105.3	
	G-2	6/58	40.9	271.8	403.5	485.3	
	G-3	6/59	40.9	230.9	362.6	444.4	
	EDF-2	1965	161.8	-	485.0	807.0	
	EDF-3	1966	306.2	-	612.4	1224.8	
	EDF-4	1968	409.0	-	-	818.0	
	EL-4	1965	65.4	-	196.0	326.5	U.S.
	SENA	1965	84.0	-	252.0	420.0	Euratom
	Rapsodie II	1969	116.8	-	-	116.8	U.S.
Germany	FR-2	3/61	2.4	8.4	15.6	20.4	U.S.
	RWE	11/60	7.0	28.0	49.0	63.0	U.S.
	KRB	1965	94.6	-	189.2	378.4	Euratom
	MZFR	1965	81.8	-	163.6	327.2	U.S.
	GKSS	1967	4.4	-	4.4	13.2	Euratom
	KBWP	1968	108.9	-	-	217.8	Euratom
India	CIR	7/60	8.2	32.8	57.4	73.8	Canada
	Tarapur	1967	147.8	-	147.8	443.4	U.S.
	CANDU Type	1968	77.8	-	-	155.6	Canada
	Swedish Type	1968	77.8	-	-	155.6	Sweden
Italy	SELNI	6/64	93.5	-	280.0	467.0	Euratom
	SENN	6/63	59.2	59.2	236.6	355.4	Euratom
	SIMEA	12/62	144.2	288.4	722.0	1008.0	U.K.

APPENDIX "C"

Country	Reactor	Critical	Kgs Pu/yr.	Kgs Pu By Jan. 1965	Kgs Pu By Jan. 1968	Kgs Pu By Jan. 1970	Applicable Safeguards
Japan	JRR-3	9/62	2.0	4.0	10.0	12.0	U.S.
	JPDR	8/63	5.3	5.3	21.0	31.6	IAEA
	JAPCO #1	1965	119.7	-	239.4	478.8	U.K.
	JAPCO #2	1968	245.2	-	-	245.2	IAEA
	Ship Propulsion	1968	4.7	-	-	9.4	IAEA
	Fast Breeder	1968	58.5	-	-	117.0	IAEA
Netherlands	SEP	1967	19.5	-	19.5	58.4	Euratom
Norway	HBWR	6/59	4.1	20.5	32.8	41.0	IAEA
Spain	UEM	1968	59.5	-	-	119.0	U.S.
	CENUSA	1968	97.3	-	-	194.6	U.S.
	DON	1968	14.0	-	-	28.0	U.S.
	NUCLENOR	1968	97.3	-	-	194.6	
Sweden	R-3	7/63	I3.3	13.3	53.2	79.8	
	R-4	1968	163.3	-	-	326.6	
	Simpevarp	1968	49.0	-	-	98.0	
Switzerland	DIORIT	8/60	4.1	16.4	28.7	36.9	U.S.
	ENUSA	1965	3.5	-	10.5	17.5	
Tunisia	Power/ Desalting	1968	116.9	-	-	233.8	IAEA
Yugoslavia	RA	12/59	2.0	10.0	16.0	20.0	
Red China	TVR-S	1958	2.0	12.0	18.0	22.0	
Czecho-slovakia	KS 150	1966	122.8	-	245.6	491.2	
Israel	DIMONA	1964	5.1	-	15.3	25.5	

November 23, 1964

APPENDIX "D"

EFFECTIVE AGREEMENTS FOR COOPERATION IN THE CIVIL USES OF ATOMIC ENERGY

Bilateral

Country	Scope	Effective Date	Termination Date
Argentina	Research b/	7-29-55	7-27-69*
Australia a/	Research and Power b/	5-28-57	5-27-67
Austria	Research	1-25-60	1-24-70
Belgium a/	Research and Power b/	7-21-55	7-31-65
Brazil	Research b/	8- 3-55	8- 2-65*
Canada a/	Research and Power b/	7-21-55	7-13-80
China, Republic of	Research b/	7-18-55	7-17-74*
Colombia	Research	3-29-63	3-28-67
Costa Rica	Research	2- 8-61	2- 7-66
Denmark	Research b/	7-25-55	9- 7-68
France	Research and Power b/	11-20-56	11-19-66
Germany, Fed. Rep. of	Research and Power b/	8- 7-57	8- 6-67
West Berlin, City of	Research b/	8- 1-57	7-31-67
Greece	Research b/	8- 4-55	8- 3-74*
India	Research and Power	10-25-63	10-24-93
Indonesia	Research	9-21-60	9-20-65
Iran	Research b/	4-27-59	4-26-69*
Ireland	Research b/	7- 9-58	7- 8-68
Israel	Research b/	7-12-55	4-11-65*
Italy	Research and Power b/	4-15-58	4-14-78
Japan	Research and Power b/	12- 5-58	12- 4-68
Korea, Republic of	Research b/	2- 3-56	2- 2-66
Netherlands a/	Research and Power b/	8- 8-57	8- 7-67
Norway	Research and Power	6-10-57	6- 9-67
Panama	Research	6-27-63	6-26-68
Philippines	Research b/	7-27-55	7-26-68*
Portugal	Research b/	7-21-55	7-20-74*
South Africa	Research and Power b/	8-22-57	8-21-67
Spain	Research and Power	2-12-58	2-11-68
Sweden	Research b/	1-18-56	6- 1-68
Switzerland	Research	7-18-55	7-17-65
Switzerland a/	Power b/	1-29-57	1-28-67
Thailand	Research	3-13-56	3-12-65
Turkey	Research b/	6-10-55	6- 9-65
United Kingdom a/	Research and Power b/	7-21-55	7-20-65
Venezuela	Research and Power	2- 9-60	2- 8-70
Viet-Nam	Research b/	7- 1-59	6-30-74

Special

Organization	Scope	Effective Date
European Atomic Energy Community (Euratom) b/	Joint Nuclear Power Program	2-18-59
Euratom b/	Additional agreement to Joint Nuclear Power Program	7-25-60
International Atomic Energy Agency (IAEA)	Supply of materials, etc.	8- 7-59
IAEA/Japan	Trilateral for transfer of U.S. Safeguards to IAEA.	11- 1-63
IAEA/Austria	"	Effective Date to Be Established
IAEA/Greece	"	
IAEA/Norway	"	
IAEA/Philippines	"	
IAEA/Viet Nam	"	
IAEA/Argentina	"	
IAEA/Portugal	"	
IAEA/Thailand	"	
IAEA/Iran	"	
IAEA/China	"	

*Extending amendment signed, but not yet in force.

continued

Effective Agreements for Mutual Defense Purposes

Country	Effective Date
NATO a/	3-29-56
Australia a/	8-14-57
Belgium a/	9- 5-62
Canada a/	7-27-59
France	7-20-59
France a/	10- 9-61
Germany, Federal Republic a/	7-27-59
Greece	8-11-59
Italy a/	5-24-61
Netherlands a/	7-27-59
Turkey a/	7-27-59
United Kingdom a/	8- 4-58
(Amendment to United Kingdom agreement) a/ (NATO Amendment?)	7-20-59

SUMMARY

In effect: 22 research and 15 power agreements, three special agreements (Euratom and IAEA), 11 trilateral safeguards agreements, and 12 Mutual Defense Purposes Agreements. A power agreement with Brazil has been signed but not ratified.

a/ Provides for exchange of classified information.
b/ Subsequently amended.

45d

INSPECTION SUMMARY OF FOREIGN FACILITIES SUBJECT TO U.S. SAFEGUARDS

COUNTRY	FACILITY	INSPECTION DATES
Argentina	RA-1 Research Reactor	12/60, 12/61, 1/63, 12/63
	Storage at Ezeiza	12/63
	Critical Facility	12/63
Australia	HIFAR Research Reactor	3/60, 4/61, 5/62, 4/63
	MOATA Research Reactor	4/61, 5/62, 4/63
Austria	ASTRA Research Reactor	10/61, 6/62, 6/63, 2/64
	Austrian Triga Research Reactor	6/62
Belgium	BR-1 Research Reactor	1/60
	BR-2 Research Reactor	1/60, 3/61, 10/62, 5/63, 10/63, 6/64, 9/64
	Mol Laboratories	1/60, 3/61
	BR-2-0 Critical Facility	3/61, 10/63, 6/64, 9/64
	BR-3 Prototype Power Reactor	3/61, 1/62, 10/62, 5/63, 10/63, 6/64, 9/64
	MMN Fuel Fabrication Facility	10/62, 5/63, 10/63, 6/64
Brazil	University of Minas Gerais Research Reactor	12/60, 12/63
	IEAR-1 Research Reactor	12/60, 12/61, 1/63, 12/63
	Fuel Fabrication Facility	12/63
Denmark	DR-1 Research Reactor	6/59, 5/60
	DR-2 Research Reactor	6/59, 5/60, 5/61, 6/62, 6/63, 4/64
	DR-3 Research Reactor	6/59, 5/60, 5/61, 6/62, 6/63, 4/64
Formosa	CRR Research Reactor	4/61, 5/62, 3/63
France - Civil	EL-3 Research Reactor	1/60, 3/61, 10/62, 10/63, 10/64
	EL-2 Research Reactor	10/64
	Peggy Critical Facility	1/60, 3/61, 10/62, 10/63, 10/64
	CICAF Fuel Fabrication	1/60, 3/61, 10/62, 10/64
	Le Bouchet Fuel Processing Facility	1/60, 3/61, 10/62, 10/63, 10/64
	CERCA (Paris) Fuel Fabrication Facility	1/60, 3/61, 10/62, 10/63, 6/64, 10/64
	CERCA (Romans) Fuel Fabrication Facility	10/64
	Minerve Research Reactor	1/60, 3/61, 1/62, 10/62, 5/63, 10/63, 6/64, 10/64
	SICN Fuel Fabrication Facility	10/64
	Triton Research Reactor	1/60, 3/61, 10/62, 10/63, 6/64, 10/64
	Melusine Research Reactor	1/60, 3/61, 1/62, 10/62, 5/63, 10/63, 6/64, 10/64
	Proserpine Critical Facility	3/61, 10/62, 10/63, 10/64
	Saclay Laboratories	3/61, 10/62, 10/63, 10/64
	Fontenay Laboratories	3/61, 10/62, 10/63
	Grenoble Laboratories	3/61, 10/64
	CESAR Critical Facility	10/64
	ULYSSE Research Reactor	1/62, 10/62, 5/63, 10/63, 6/64, 10/64
	CABRI Research Reactor	10/63, 6/64, 10/64
	Aquilon II Critical Facility	10/62, 10/63, 10/64
	Alecto II Critical Facility	10/63, 10/64
	Siloe Research Reactor	10/62, 5/63, 10/63, 6/64, 10/64
	Siloette Critical Facility	10/62, 10/63, 6/64, 10/64
	Dijon Criticality Test Facility	10/62, 10/64
	Cadarache Storage	10/62, 10/63, 10/64
	Cadarache Plutonium Laboratories	10/62, 6/64, 10/64

INSPECTION SUMMARY OF FOREIGN FACILITIES
SUBJECT TO U.S. SAFEGUARDS

COUNTRY	FACILITY	INSPECTION DATES
France - MD	Alize-Rubeole Critical Facility	1/60, 3/61
	Submarine Prototype Facility	6/64, 10/64
	Alize-II Critical Facility	1/62, 10/62, 5/63, 10/63, 2/64, 6/64, 10/64
	Saclay Cold Scrap Recovery and Storage Facility	2/64, 10/64
	Saclay Fuel Fabrication Facility	10/62, 5/63, 10/63, 2/64
	Trefimetaux Fuel Fabrication Facility-Rugles	10/62, 5/63, 10/63, 2/64, 6/64, 10/64
	Fontenay Chemistry Laboratory	5/63, 10/64
	Fontenay Scrap Recovery Laboratory	10/62, 10/63
	Fontenay Storage	1/62, 5/63, 6/64
	Cadarache Storage	10/62, 5/63, 10/63, 2/64, 10/64
	Azur Critical Facility	10/62, 5/63, 10/63, 2/64, 6/64, 10/64
Germany	FRF Research Reactor	1/60
	Karlsruhe Sub-Critical Facility	1/60
	FRG Research Reactor	1/60, 3/61, 10/62, 1/64, 9/64
	RWE Prototype Power Reactor	3/61, 1/62, 10/62, 5/63, 1/64, 9/64
	FRM Research Reactor	1/60, 3/61, 10/62, 1/64
	Argonaut/Stark Research Reactor	10/62, 1/64
	FR-2 Research Reactor	3/61, 10/62, 1/64
	SUR-100 Berlin Research Reactor	1/64
	SAR-1 Research Reactor	3/61, 10/62, 1/64
	AEG Research Reactor	3/61, 10/62, 1/64
	Dido-Julich Research Reactor	10/62, 1/64
	NUKEM Fuel Fabrication Facility	1/60, 10/62, 1/64, 9/64
	SUR-100 Munich Research Reactor	10/62, 1/64
Germany-W. Berlin	FRB Research Reactor	1/60
Greece	Democritus Research Reactor	9/62, 10/63
India	Zerlina Critical Facility	3/62
Israel	IRR Research Reactor	6/60, 8/61, 3/62, 9/62, 5/63, 9/63, 6/64
	SOREQ-1 Laboratory	3/62, 9/62, 6/64
	Technion Institute Laboratory	3/62, 6/64
Italy	Ispra-I Research Reactor	6/59, 5/60, 8/61, 9/62
	University of Milan Research Reactor	6/59, 5/60
	RS-1 Research Reactor	6/59, 5/60, 8/61, 9/62, 10/63
	CAMEN Research Reactor	5/60, 8/61, 9/62, 5/63, 10/63, 6/64
	University of Palermo Research Reactor	8/61
	TRIGA Mk II-Casaccia	8/61
	RB-1 Research Reactor	9/62, 10/63
	RANA Research Reactor	9/62, 10/63
	Metallurgical Laboratory-Casaccia	10/63

COUNTRY	FACILITY	INSPECTION DATES
Japan	Mitsubishi Plant	3/60
	Sumitomo Plant	3/60
	Toshiba A/E Laboratories	3/60, 5/62
	JRR-1 Research Reactor	3/60
	JRR-2 Research Reactor	3/60, 4/61, 5/62, 3/63
	JRR-3 Research Reactor	3/60, 5/62, 3/63
	SHCA Critical Facility	3/60, 4/61, 5/62, 3/63
	AHCA Critical Facility	3/60, 5/62, 3/63
	Japan Atomic Fuel Corporation Laboratories	3/60
	Hitachi Research Reactor	5/62
	Hitachi Central Laboratory	3/60, 5/62
	Hitachi Research Laboratory	5/62
	Rikkyo University Research Reactor	5/62
	Musashi University Research Reactor	3/63
	Kinki University Research Reactor	5/62, 3/63
	Fast Critical Facility	3/63
	Tank Critical Facility	3/63
	JPDR Prototype Power Reactor	3/63
Korea	KRR Research Reactor	4/61
Netherlands	Delft Laboratory	6/59
	Petten Research Reactor	6/59
	HOR Research Reactor	3/61, 6/62, 6/63, 9/64
	HFR Research Reactor	3/61, 6/62
	LFR Research Reactor	3/61, 6/62, 6/63, 9/64
	KSTR Sub-Critical Facility	6/62, 6/63, 9/64
	KRITO Critical Facility	6/63, 9/64
	BARN Research Reactor	6/63, 9/64
Norway	Kjeller Fuel Fabrication Facility Storage and Laboratories	6/59, 5/60, 5/61
	HBWR Prototype Power Reactor	6/59, 5/60, 5/61, 6/62, 6/63, 4/64
	Drummond Fuel Fabrication	6/59
Philippines	PRR-1 Research Reactor	5/62
Portugal	PRR Research Reactor	10/61, 9/62, 3/64
Spain	JEN-1	6/59, 10/61, 9/62, 4/64
	Bilbao Research Reactor	9/62
	Barcelona Research Reactor	9/62
	JEN Fuel Fabrication Facility	6/60, 10/61, 9/62
	JEN Physics Laboratory	9/62
	JEN Storage	4/64
Sweden	R-2 Research Reactor	5/59, 5/60, 5/61, 1/62, 6/62, 6/63, 10/63, 4/64, 9/64
	R-2-0 Research Reactor	5/61, 6/62, 6/63, 10/63, 4/64, 9/64
	Fuel Fabrication Facility-Stockholm	5/60
	R-0 Critical Facility	10/63, 4/64
	FR-0 Critical Facility	10/63, 4/64, 9/64
	Studsvik Laboratories	4/64
	National Defense Research Laboratory (Sundbyberg)	4/64, 9/64
	ZEBRA-I Critical Facility	4/64
	ZEBRA-II Critical Facility	4/64
	Studsvik Plutonium Laboratory	4/64, 9/64

INSPECTION SUMMARY OF FOREIGN FACILITIES
SUBJECT TO U.S. SAFEGUARDS

COUNTRY	FACILITY	INSPECTION DATES
Switzerland	Saphire Research Reactor	6/59, 6/60, 10/61, 6/62, 6/63, 3/64
	Aladin Research Reactor	6/59
	University of Basel Research Reactor	6/59, 6/63, 3/64
	Diorit Research Reactor	6/59, 6/60, 10/61, 6/62, 6/63, 3/64
Thailand	Thai Research Reactor	5/62, 4/63
Turkey	CEKMECE TR-1 Research Reactor	8/61, 9/62, 10/63
Venezuela	RV-1 Research Reactor	12/60, 12/61, 1/63, 12/63
Viet-Nam	Viet-Nam Research Reactor	4/63

SUMMARY

Countries	26
Facilities	140
Inspections	410

APPENDIX "F"

WESTERN SUPPLIER MEETINGS

DATE	ATTENDEES		DISCUSSION TOPICS
February 26 to March 3, 1959	Australia Canada Union of South Africa United Kingdom United States		Uniform standards for safeguards requirement and need for a common front among the western suppliers.
May 27-28, 1959	Australia Belgium Canada Euratom France	Portugal Union of South Africa United Kingdom United States	Application of safeguards to bilateral exports.
December 15-16, 1960	Australia Belgium Canada France	Union of South Africa United Kingdom United States	Need for an agreed western line for IAEA January 1961 meeting.
June 12-13, 1961	Australia Belgium Canada France	Union of South Africa United Kingdom United States	Problems of safeguards as a result of the supply of materials and equipment; need for uniformity of safeguards practices; registration of transfers.
February 14-15, 1963	Australia Belgium Canada France	Union of South Africa United Kingdom United States	Extension of IAEA safeguards to large reactors; definition of substantial assistance.
February 19-20, 1964	Australia Belgium Canada France Japan	Union of South Africa United Kingdom United States	Tactics for IAEA meeting on extension of safeguards to large reactors and the review of the Agency safeguards.

APPENDIX "G"

PRESIDENTIAL STATEMENTS CONCERNING INTERNATIONAL COOPERATION IN THE FIELD OF ATOMIC ENERGY

Excerpt from the Address by President Eisenhower Before the General Assembly of the United Nations, December 1953:

"I therefore make the following proposals:

"The Governments principally involved, to the extent permitted by elementary prudence, to begin now and continue to make joint contributions from their stockpiles of normal uranium and fissionable materials to an International Atomic Energy Agency.

". . . I would be prepared to submit to the Congress of the United States, and with every expectation of approval, any such plan that would:

"First - encourage world-wide investigation into the most effective peacetime uses of fissionable material, and with the certainty that they had all the material needed for the conduct of all experiments that were appropriate;

"Second - begin to diminish the potential destructive power of the world's atomic stockpiles;

"Third - all peoples of all nations to see that, in this enlightened age, the great powers of the earth, both of the East and of the West, are interested in human aspirations first, rather than in building up the armaments of war;

"Fourth - open up a new channel for peaceful discussion, and initiate at least a new approach to the many difficult problems that must be solved in both private and public conversations, if the world is to shake the inertia imposed by fear, and is to make positive progress toward peace."

Presidential Announcement of Allocation of Nuclear Materials for "Atoms for Peace" November 1954.

The President approved the recommendation of the United States Atomic Energy Commission for allocating 100 kilograms (220 lbs. of U-235) for use in the construction of small scale research reactors and for other research programs in selected foreign countries as part of the United States "Atoms for Peace" program.

Excerpts from the Address by President Eisenhower at the Centennial Commencement Ceremonies, Penn State University, June 1955.

"We propose to offer research reactors to the people of nations who can use them effectively for the acquisition of the skills and understanding essential to peaceful atomic progress. The United States, in the spirit of partnership that moves us, will contribute half the cost. We will also furnish the acquiring nation the nuclear material needed to fuel the reactors.

"Within prudent security considerations, we propose to make available to the peoples of such friendly nations as are prepared to invest their own funds in power reactors, access to and training in the technological processes of construction and operation for peaceful purposes."

Announcement of Allocation of Nuclear Materials for "Atoms for Peace", June 1955.

The Chairman of the Atomic Energy Commission on behalf of the President announced that the President had approved supplementing the original 100 kilograms of U-235 by a second 100 kilograms for use abroad.

Presidential Message to the First Geneva Conference on the Peaceful Uses of Atomic Energy, August 1955:

"We hope that the free exchange of technical information and ideas among leading scientists and engineers of many nations will stimulate even greater progress months and years ahead. . . . In this cause, the United States is firmly dedicated to promote international cooperation and to contribute its share of scientific knowledge and resources."

Presidential Announcement of the Allocation of Nuclear Materials for "Atoms for Peace", February 1956.

The President announced the approval of the recommendations of the Chairman of the Atomic Energy Commission to make available 20,000 kilograms of U-235 for distribution abroad.

Presidential Announcement of the Allocation of Nuclear Materials for "Atoms for Peace", July 1957.

The President announced that pursuant to Section 41b of the Atomic Energy Act of 1954, 59,800 kilograms of U-235 in addition to previous allocations, would be made available for peaceful uses at home and abroad under conditions prescribed by the United States Government. Of this total 29,800 kilograms were for distribution outside the United States, through sale or lease, to Governments of individual nations or to groups of nations with which the United States concludes Agreements for Cooperation. He also stated that the distribution of the special nuclear material would be subject to prudent safeguards against diversion of the material to non-peaceful purposes.

Presidential Request for Congressional Approval of United States - European Atomic Energy Community International Agreement, June 1958.

The President transmitted to Congress and asked for early approval of an International Agreement between the United States and the European Atomic Energy Community. The program involved a joint research and development effort, availability of enriched reactor fuel from the United States, and mutually satisfactory safeguards and controls so that both EURATOM and the United States would be assured of the peaceful purposes of the joint program.

Presidential Offer to the Second International Atomic Energy Agency General Conference, September 1958.

The President offered to make available 5,000 kilograms of U-235 to the Agency and also offered to match on comparable terms the allocations of special nuclear materials to the Agency by all other member nations through June 30, 1960.

Signature of the United States - European Atomic Energy Community Agreement, November 1958.

The United States and Euratom signed an agreement to spur power output and share technical experience. The United States pledged a $135 million loan and enriched uranium for twenty years in support of the joint program. The Presidential statement said, "American knowledge and industrial capacity will be joined with the scientific and industrial talents of Europe in an accelerated nuclear power program to meet Europe's presently urgent need for a new source of energy."

Signature of the United States-International Atomic Energy Agency Agreement for Cooperation, August 1959.

The offer made in September 1958 was formalized as a provision of this Agreement. It also provides that the United States, from time to time, would also make available to the Agency such additional quantities of special nuclear materials, including contained uranium-235, as might be authorized by the United States, and that the United States will permit persons under U.S. jurisdiction to transfer and export materials, equipment or facilities, and to perform services in the peaceful uses of atomic energy for the Agency or Member States.

Announcement of the Allocation of Enriched Uranium to the International Atomic Energy Agency, September 1959.

At the Third IAEA General Conference, the United States offered to make available to the IAEA for the Calendar Year 1960 enriched uranium valued at $50,000 for use in Agency-sponsored research projects, and has made a similar offer for each year thereafter.

United States Offer of Four Reactors, September 1960.

During the Fourth General Conference of the International Atomic Energy Agency, the United States offered to place four United States reactors under Agency safeguards to demonstrate that Agency safeguards do not infringe on national sovereignty.

Presidential Message to Congress, February 1961.

In his special message to the Congress on natural resources, the President pledged the sharing of our technology in this area with all nations who wished it. He stated: "This administration is currently engaged in redoubled efforts to select the most promising approaches to economic desalinization of ocean and brackish waters. . . I now pledge that, when this know-how is achieved, it will immediately be made available to every nation in the world who wishes it, along with appropriate technical and other assistance for its use. Indeed the United States welcomes now the cooperation of all other nations who wish to join in this effort at present."

Presidential Announcement of the Allocation of Nuclear Materials for "Atoms for Peace", September 1961.

The President announced that pursuant to Section 41b of the Atomic Energy Act of 1954 the amount of enriched uranium to be made available for peaceful uses at home and abroad would be increased to a total of 165,000 kilograms of U-235. Of this total, 100,000 kilograms were to be available for distribution within the United States under Section 53 of the Atomic Energy Act, and 65,000 kilograms for distribution to other countries under Section 54.

Presidential Announcement of the Allocation of Nuclear Materials for "Atoms for Peace", July 1963.

The President announced that pursuant to Section 41b of the Atomic Energy Act of 1954, as amended, the quantities of U-235 in enriched uranium to be made available were raised from 100,000 to 200,000 kilograms for domestic distribution under Section 53 and from 65,000 to 150,000 kilograms for foreign distribution under Section 54. The material was to be distributed, by lease or sale, as required over a period of years and would be subject to prudent safeguards against unauthorized use.

Excerpts from the Address by President Johnson at the Chaim Weizmann Institute, February 1964:

"We, like Israel, need to find cheap ways of converting salt water to fresh water. . . .So let us work together. This nation has begun discussions with the representatives of Israel on cooperative research. . . . We will pool the intellectual resources of Israel and America, and all mankind, for the benefit of all the world. . . . We are equally ready to cooperate with other countries anxious to cure water shortages."

Presidential Announcement of the US-USSR Cooperative Program in Desalting, June 1964.

The President announced a US-USSR cooperative program for the exchange of technical information in the field of nuclear desalting. He stated, "I am happy to announce that the United States and the Soviet Union have agreed to explore the possibility of scientific cooperation on methods of desalting sea water, including the possible use of nuclear power."

APPENDIX " H"

CONTRACTS FOR LONG-TERM U.S. SUPPLY OF ENRICHED URANIUM FUEL FOR POWER REACTORS ABROAD

COUNTRY	REACTOR	POWER, MWe	CAPITAL COST OF REACTOR, MM$	APPROX. VALUE ENRICHMENT URANIUM UNDER CONTRACT, MM$
ITALY	SENN (BWR)	150	66.0	29.0
ITALY	SELNI (PWR)	266	75.0	73.0
GERMANY	KRB (BWR)	242	70.0	50.0
FRANCE-BELGIUM	SENA (PWR)	266	84.0	73.0
INDIA	TARAPUR (BWR)	380	101.0	100.0
SPAIN	ZORITA (PWR)	154	34.0	28.0

All of these contracts are executed or in a relatively advanced stage of negotiation. In the case of the Zorita reactor, the enriched uranium would be provided under a so-called "barter arrangement".

APPENDIX "I"

GENERAL FEATURES OF LONG-TERM ENRICHED URANIUM

FUEL SUPPLY CONTRACTS

The essential features of long-term contracts between the U.S. and cooperating foreign government for the supply of fuel for power reactors abroad are:

1. Contract is pursuant to an Agreement for Cooperation, which includes comprehensive safeguards and controls.

2. Purchaser agrees to obtain all of his enriched uranium fuel requirements from the U.S., subject to five-year cancellation provision, and U.S. agrees to supply all of the uranium ordered, up to specified ceiling amount. (There is no provision for U.S. cancellation.)

3. Purchaser is assured that he will pay the same prices as those for domestic distribution by the AEC.

4. Enrichment normally is limited to 20% U-235 (most power reactors are in the range of 2.5 to 4% U-235).

5. Contract usually covers anticipated economic life of reactor, 20 to 25 years.

APPENDIX "J"

COMPARISON OF ENRICHED URANIUM SUPPLIED TO FOREIGN GOVERNMENTS AGAINST AGREEMENT ALLOCATIONS THROUGH SEPTEMBER 30, 1964

Country	Agreement Quantity Kgs U-235	Material Supplied Through 9-30-64 Percent Enrichment	Kgs U-235	6 Mo. Shipment Forecast Percent Enrichment	Kgs U-235	Balance Kgs U-235
ARGENTINA	65.0	20-24	6.0	20-24	7.2	
		90	6.0			
			12.0			45.8
AUSTRALIA	500.0	90	8.6			491.4
AUSTRIA	50.0	20-24	7.2			
		90	5.9			
			13.1			36.9
BELGIUM	No limit	1- 5	99.5			No limit
		6- 9	3.8			
		20-24	2.0			
		90	41.3			
			146.6			
BRAZIL	15.+1 Core	20-24	19.8			Partial Core
CANADA	No limit	1- 5	96.6			No limit
		6- 9	30.8			
		20-24	5.3			
		25-74	13.1			
		90	132.0	90	51.1	
			277.8			
CHINA	6.+1 Core	20-24	4.7			1.3+1 Core
COLOMBIA	6.+1 Core			90	2.2	3.8+1 Core
DENMARK	50.0	20-24	1.4			
		90	20.0			
			21.4			28.6
FRANCE (Civil Uses)	2,500.0	1- 5	567.0	1- 5	69.5	
		6- 9	1.4			
		20-24	60.5			
		25-74	85.0	25-74	66.0	
		90	158.5	90	118.6	
			872.4		254.1	1,373.5
FRANCE (Mutual Defense)	440.0	90	171.0			269.0

APPENDIX "J" (Cont'd)

Country	Agreement Quantity Kgs U-235	Material Supplied Through 9-30-64 Percent Enrichment	Kgs U-235	6 Mo. Shipment Forecast Percent Enrichment	Kgs U-235	Balance Kgs U-235
GERMANY	2,500.0	1- 5	263.6			
		10-19	1.5			
		20-24	307.3			
		90	33.5	90	7.2	
			605.9			1,886.9
GERMANY (W. Berlin)	6.0+1 Core	20-24	2.8			3.2+1 Core
GREECE	6.0+1 Core	20-24	6.0			1 Core
INDONESIA	6.0+1 Core			20-24	2.4	3.6+1 Core
ISRAEL	10.0	90	7.2			2.8
ITALY	7,000.0	1- 5	2.8			
		20-24	30.8			
		90	12.0			
			45.6			6,954.4
JAPAN	2,700.0	1- 5	287.1	1- 5	35.6	
		6- 9	2.8			
		10-19	8.8			
		20-24	40.4	20-24	2.0	
		90	22.6			
			361.7		37.6	2,300.7
KOREA	6.0+1 Core	20-24	2.3			3.7+1 Core
NETHERLANDS	500.0	1- 5	73.8			
		90	18.6			
			92.4			407.6
NORWAY	500.0	1- 5	37.5	1- 5	57.9	404.6
PHILIPPINES	6.0+1 Core	20-24	4.3			1.7+1 Core
PORTUGAL	6.0+1 Core	20-24	6.0			1 Core
SOUTH AFRICA	500.0			1- 5	12.0	
				90	4.3	
					16.3	483.7
SPAIN	500.0	20-24	14.0			
		90	4.0			
			18.0			482.0

APPENDIX "J" (Cont'd)

Country	Agreement Quantity KGS U-235	Material Supplied Through 9-30-64 Percent Enrichment	Kgs U-235	6 Mo. Shipment Forecast Percent Enrichment	Kgs U-235	Kgs U-235
SWEDEN	200.0 plus material in pipeline	1- 5	36.5	1- 5	2.6	Negative
		10-19	3.7			
		20-24	120.2			
		90	55.9	90	20.6	
			216.3		23.2	
SWITZERLAND	500.0	1- 5	18.6			
		20-24	7.4			
		90	11.7			
			37.7			462.3
THAILAND	10.0	90	4.8			5.2
TURKEY	15.0	90	4.8			10.2
UNITED KINGDOM	400.0	1- 5	2.6			
		90	206.9	90	100.0	
			209.5			90.5
VENEZUELA	800.0	20-24	4.9			795.1
VIETNAM	6.0+1 Core	20-24	2.4			3.6+1 Core
EURATOM	70,000.0	1- 5	2,333.0			
		6- 9	1.8			
		20-24	8.5	20-24	110.0	
		90	363.8	25-74	502.0	
				90	141.5	
			2,707.1		753.5	66,539.4
IAEA	5,000.0+	20-24	2.5	20-24	2.6	4,994.9+
GRAND TOTAL			5,927.1		1,315.3	

APPENDIX "K"

Special Technical Information Exchange Arrangements Between the USAEC and Cooperating Foreign Governments

1. U.K.:

   a. AGR/EGCR: Advanced Gas Cooled Reactors

   b. Libby-Cockcroft: (1) Research and development information on CTR, (2) Gas coolants and graphite, (3) Be and BeO, (4) Pu metallurgy, and (5) UO_2 fuel.

   c. Production-information Exchanges: (1) Chemical reprocessing, (2) Feed materials, (3) Operation of production reactors, (4) Pu finishing.

   d. Fast Reactors: Efforts continue on negotiation of new agreement.

   e. Gas Centrifuge (classified): To be continued in the less sensitive areas until Civil Uses Agreement expires in July 1965.

   f. Submarine Reactors (classified): Superseded procedurally by Mutual Defense Agreement of 1958.

   g. Nuclear Cross Sections Data: Formerly the TNCC, with Canada also participating; now expanded as EANDC and includes many European countries in addition to U.S., U.K., and Canada.

   h. Hot Loop Information: Tripartite with Canada (cf. under Canada); now being put on a more formal basis.

   i. Heat transfer studies (2-phase)

   j. Miscellaneous: (1) Reactor Physics, (2) Instrumentation, and (3) Reactors (research, test and power).

   k. Waste Disposal

   l. Water Reactors (including nuclear superheat): Negotiations under way.

2. Canada:

   a. Heavy Water Power Reactors

   b. Organic Reactors (being negotiated)

   c. Sheath (classified fuel element technology)

   d. Hot Loop Information: Tripartite with U.K. (cf. under U.K.); now being put on a more formal basis.

3. Australia:

   High Temperature Gas-Cooled Reactors

4. Dragon:

   High Temperature Gas-Cooled Reactors

5. Euratom:

   a. Organic Reactors: Cooperative arrangement being explored.

b. Fast Reactors

c. Molten Salt Reactors

6. Eurochemic:

Chemical reprocessing

7. France:

Consolidated Information Exchange: Fast reactor technology including liquid sodium technology, beryllium oxide technology, beryllium clad and stainless steel clad UO_2, reactor safety and shielding, gas-cooled reactors (including fuel element technology, pre-stressed concrete pressure vessel technology, gas-graphite interactions, moderator technology, and heat transfer), reactor physics, research and development on fuel element reprocessing for power reactor fuels, test reactors, transuranium elements, waste management, and iron-aluminum alloys.

8. Germany:

a. High-Temperature Pebble Bed Reactor: Negotiations under way.

b. Fast Reactors

c. Nuclear Superheat

9. Halden:

Boiling Water Reactors: Negotiation of a research contract nearing completion.

10. India:

Multi-topic exchange under consideration.

11. Japan:

Ceramic reactor fuels

12. Netherlands:

KEMA: Homogeneous Slurry Reactors

13. Spain:

Organic Reactors: Negotiations under way.

14. Sweden:

a. Burnout measurements on fuel rods

b. Nuclear Superheat: Negotiations nearing completion.

15. IAEA

Waste Disposal

APPENDIX "L"

PEACEFUL NUCLEAR R&D PROGRAMS OF SELECTED NATIONS AND EURATOM

A. Approximate Expenditures

Country	Date Program Began	Millions of Dollars	
		Total Spent to Date	Current Annual Rate
Canada	1942	500	60
Euratom	1958	382	94
India	1954	220	63
Israel	1952	115	20
Italy*	1952	520	60
Japan	1954	440	82
W. Germany*	1956	850	200

*On national program, exclusive of contributions to Euratom.

B. Major Emphasis of Research Programs

a. Canada - heavy water moderated reactors for nuclear power.

b. Euratom - broad support of Member State nuclear development projects, including testing and development of reactor fuels, moderators, and coolants; reactor design and operation and application of various radioactive materials.

c. India - nuclear power development augmented by development of indigenous nuclear raw materials.

d. Israel - research and training programs, production of radioisotopes and nuclear physics experiments.

e. Italy - broad nuclear power development, training and research programs including raw materials development, physics research and fusion.

f. Japan - nuclear power development supported by extensive research reactor and critical facilities.

g. W. Germany - accelerated development of competitive nuclear power; broad research reactor and critical facility program supporting current and fast breeder/advanced concepts.

APPENDIX "M"

Peaceful and Possible Military Use of Various Type Reactors

Facility	Peaceful Use	Military Potential
Research Reactor	Training, radioisotopes for medical agricultural and industrial uses, basic research, activation analysis, etc.	Basic nuclear data for weapons design 1/
Test Reactor	Irradiation testing of materials and fuels; electronic component and control instrumentation development	Materials testing plus limited Pu production
Power Reactor	Production of electrical power, process heat and steam	Similar potential but limited economic and logistic utility

1/ Most such information already published in open literature.

APPENDIX "N"

Free World Availability of Natural Uranium and

Concentrate Production Capacity, Excluding U.S.

	Short Tons of U_3O_8			
	$8 Reserves @ $8 or less per lb. U_3O_8	Higher Cost Reserves to $30.00/lb.	Additional Geologically Prognosticated Reserves	Concentrate Production Capacity Per Year
Spain	10,000	?	Possibilities Good	85
Portugal	6,000	4,000	"	100
Germany	3,000	None known	?	130
Italy	5,000	" "	?	
France (Including Gabon)	40,000	Moderate	Probably Limited	2,600
UAR	Serious prospecting			
Sweden	Minor	1,000,000	10,000,000	180 in 1965
Australia	12,000	None known	Possibilities Good	1,300
Argentina	3,500	3,500	"	60-120
Brazil		5,500	"	--
Mexico	1,300	None known	Possibilities Fair	Small pilot plant
India	10,000	6,000	Not known	about 300 at end of 1964
Japan	2,000		Probably not large	Unknown
South Africa	150,000	Large	Small	4,600
Canada	210,000	240,000	1,000,000	5,000 in operation Possible total 15,000 with reactivated
Israel	Process phosphate rock and byproduct of process is uranium.			

APPENDIX "O"

Free World Nuclear Reactor Support Facilities, Excl. U.S.

A. Fuel Fabrication

The following countries have demonstrated at least a pilot plant capability for the fabrication of fuel elements:

Country	Commercial Facilities
Argentina	
Austria	Stickstoff Werke AG - Linz
Belgium	Belgonucleare, Syndicat d'Etudes de l'Energie Nucleaire, Metallurgie et Mechanique Nucleares
Brazil	
Canada	Canadian General Electric - Peterboro Canadian Westinghouse - Port Hope Eldorado Mining & Refining Co. - Port Hope
Denmark	
England	Nuclear Developments Ltd. - London Rolls Royce - London
Finland	Ahlstrom Osakeyhtis - Helsingfors
France	Trefimetaux - Paris CERCA - Paris CICAF - Orsay Pechiney - Paris SICN - Paris
Germany	Mannesmann - Export GMBH - Dusseldorf NUKEM, GMBH - Hanau, Main Vereignigte Kesselwerks, AG - Dusseldorf
Israel	
Italy	Italatom - Saluggia (Fiat-Montecatini) CNEN
Japan	Mitsubishi Atomic Power Industries - Tokyo Showa Denko - Tokyo Sumitomo Electric Industries Ltd. - Osaka Furukawa Electric Co. Ltd. - Tokyo
Netherlands	
Norway	
South Africa	
Spain	
Sweden	A.B. Atomenergi - Stockholm A.S.E.A. - Vesteras

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APPENDIX "P"

NUCLEAR REACTORS IN THE FREE WORLD EXCLUDING U.S. AND U.K.

A. Research and Test Reactors Constructed or Under Contract

	Country	Number	Power Level, MWt
Research	All	109 1/	0-5
Test	All	25 2/	5-50

1/ Approximately 85 use enriched uranium fuel supplied by the U.S.
2/ Approximately 10 use enriched uranium fuel supplied by the U.S.

B. Power Reactors

1. Already Built

Country	Designation	Type	Power (MWe)	Estimated Annual Plutonium Production, Kgs.
Belgium	BR-3	Enriched Uranium	10.5	4.8
Canada	NPD	Natural Uranium	20	10.4
France	G-1	Natural Uranium	5	7.8
	G-2	Natural Uranium	37	40.9
	G-3	Natural Uranium	37	40.9
	EDF-1	Natural Uranium	70	61.4
	EL-3	Enriched Uranium	5	2.0
Germany	RWE	Enriched Uranium	15	7.0
Italy	SELNI	Enriched Uranium	176-240	93.5
	SENN	Enriched Uranium	150	59.2
	SIMEA	Natural Uranium	200	144.2
Japan	JPDR	Enriched Uranium	12.5	5.3
Sweden	R-3	Natural Uranium	16	13.3

APPENDIX (Cont'd)

2. Under Construction

Country	Designation	Type	Power (MWe)	Estimated Annual Plutonium Production, Kgs.
Canada	CANDU	Natural Uranium	200	80.8
France	EDF-2	Natural Uranium	170	161.8
	EDF-3	Natural Uranium	375	306.2
	EDF-4	Natural Uranium	500	409.0
	EL-4	Natural Uranium	80	65.4
	SENA	Enriched Uranium	240	84.0
Germany	AVR	Enriched Uranium	15	7.0
	KRB	Enriched Uranium	237	94.6
	MZFR	Natural Uranium	50	81.8
	GKSS (ship propulsion)	Enriched Uranium	10	4.4
Japan	JAPCO #1	Natural Uranium	169	119.7
	JAPCO #2	Enriched Uranium	250-300	245.2
Spain	UEM	Enriched Uranium	153	59.5

3. Planned

Country	Designation	Type	Power (MWe)	Estimated Annual Plutonium Production, Kgs.
France	EDF-5	Natural Uranium	500	Project in early planning stage
	Rapsodie II	Fast Breeder	100-150	116.8
Germany	KBWP	Enriched Uranium	240	108.9
	VEW	Enriched Uranium	160+90 fossil fuel superheat	Project in early planning stage
India	Tarapur	Enriched Uranium	380	147.8
	CANDU Type	Natural Uranium	200	77.8
	Swiss Type	Natural Uranium	170-200	77.8
Japan	Ship Propulsion		10	4.7
	Fast Breeder			58.5
Netherlands	SEP	Enriched Uranium	50	19.5

APPENDIX (Cont'd)

3. Planned (Cont'd)

Country	Designation	Type	Power (MWe)	Estimated Annual Plutonium Production, Kgs.
Spain	CENUSA		250	97.3
	DON	Enriched Uranium	30	14.0
	NUCLENOR		250	97.3
Sweden	SIMPEVARP	Enriched Uranium	50-60	49.0
	R-4	Enriched Uranium	200	163.3
Switzerland	ENUSA	Enriched Uranium	7	3.5

APPENDIX "Q"

CHEMICAL PROCESSING

COUNTRY	DATE COMPLETED	EST. ANNUAL THROUGHPUT
A. Built or under construction		
U.K.		
Dounreay	1957	5.7 kgs of U/day of highly enriched
Windscale	1964	10 tons/day of U low enriched
Eurochemic	1966	350 kg/day of natural U 200 kg/day of < 5% enriched
ITALY		
PCUT	1968	15 kgs/day of UO_2-ThO enriched to 10% or less in U-233
EUREX	1969	1 kg of U/day, highly enriched
INDIA (SEE NOTE #1)		
PHOENIX	1964	100 tons/yr, natural uranium
B. Planned		
JAPAN (SEE NOTE #2)	1970	210 tons/yr of natural U
GERMANY		
Karlsruhe	1970	30-40 tons/yr, natural U plus slightly enriched < 3%
ARGENTINA	1968	1 kg of U/day, highly enriched

NOTE #1 - Phoenix Project - Chemical Processing Plant located at Trombay, India.

This plant has been designed and built in accordance with readily available technology on reprocessing of irradiated fuel, starting with the first Geneva conference and since then other available literature. In addition, the Vitro Engineering Company has been retained as a consultant on the overall project.

The plant and equipment was built entirely by Indian labor. They created their own shop facilities for fabricating the towers and tanks required for such a project.

NOTE # 2 - Japanese Chemical Processing Plant

In Japan the law provides that only the Atomic Fuel Corporation is qualified to undertake fuel reprocessing.

Preliminary design of the plant was awarded to a British firm, Nuclear Chemical Plant Limited at a price of 76,000 pounds. The Corporation (AFC) decided to purchase head-end process facilities (chop-leach method) from American Machine and Foundry Company, U.S.A. Saint Gobain of France will provide waste disposal facilities. Preliminary design of plant scheduled for completion October, 1964. Detail design will then be advertised for bids based on preliminary design of Nuclear Chemical Plant Limited.

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N. Y.

Letters to The Times

Atomic Energy Safeguards

Seaborg Backs System of Controls Through I. A. E. A.

TO THE EDITOR:

I was gratified by the appearance of your Nov. 10 editorial entitled "Halting Nuclear Spread." The application of effective controls to peaceful uses of atomic energy is a subject which we in the Atomic Energy Commission have long considered to be of major importance to our national security and to world peace, but which to date has received surprisingly little public attention here and abroad.

While welcoming your recognition of the importance of the subject matter I should like to comment on several specific opinions expressed.

Much of the world is familiar with the limited test-ban treaty and the continuing negotiations in Geneva seeking agreement on disarmament, but comparatively few people know that functioning control systems, including actual on-site inspections, are already in widespread use for the peaceful applications of atomic energy. These bilateral and multilateral control systems, and the basic agreements under which they are applied, represent an unprecedented development in the willingness of sovereign nations to submit their activities to outside control.

Contribution Made

Clearly, international controls can make the greatest contribution to preventing the proliferation of nuclear weapons, since they provide a single consistent system whose results will be credible to all countries. We have therefore strongly favored the adoption by all countries of the controls of the International Atomic Energy Agency. However, in the necessarily lengthy period required for the development and acceptance of an international system, bilateral and multilateral controls have been widely employed and have made an important contribution to assuring the peaceful use of nuclear assistance.

You commented on the practices of other Western reactor suppliers in requiring safeguards on their own foreign sales. Britain and Canada, while strongly favoring I.A.E.A. safeguards as do we, have so far followed a more permissive approach on this question than have we. We hope that they will strengthen their policies favoring I.A.E.A. safeguards in the months ahead—both suppliers and recipients of nuclear assistance alike. Moreover, I wish to make it clear that the system adopted by the International Atomic Energy Agency is an effective one and is not diluted in its application by the agency's responsibilities for encouraging the peaceful uses of atomic energy.

We believe that the United States public can take some pride in its Government's early recognition of and effective action to counter the problem of nuclear proliferation arising from the peaceful uses of atomic energy. The Atomic Energy Commission will certainly continue to do all it can in furthering the development and adoption of the controls of the International Atomic Energy Agency.

GLENN T. SEABORG.

Washington, Nov. 16, 1964.

The writer is chairman of the United States Atomic Energy Commission.

However, it would be unfair not to acknowledge that Britain and Canada have been stalwart in requiring effective bilateral safeguards in all recent significant cases of supply of nuclear equipment abroad. The arrangement covering the Canadian-Indian test reactor, to which you referred, was developed before the importance of safeguards in such arrangements was generally recognized, and in all subsequent arrangements Canada has insisted upon adequate controls.

Further, both Canada and Britain (as well as the Soviet Union in recent times) have given us close and effective support in the development of a satisfactory system of I.A.E.A. safeguards.

Your statement that the Indian chemical separation plant is subject to no external inspection, and thus enables India to extract weapons-grade plutonium from the fuel elements in its reactors, is somewhat misleading. Under the arrangements made by the United States and other Western suppliers and those of the I.A.E.A., plutonium produced in a safeguarded reactor remains subject to controls wherever it is taken or processed.

No New Agency

Most importantly, I should like to comment on your suggestion that consideration should be given to the assignment of inspection responsibility to an arms control agency other than the I.A.E.A. The present encouraging stature of the I.A.E.A. in the field of international inspection is the product of more than seven years of patient effort, culminating most recently with the actual acceptance of the system by more than 17 countries.

The fact that the International Atomic Energy Agency has, in addition to its safeguards responsibilities, an important role in encouraging the use of nuclear energy for peaceful purposes around the world has been an indispensable ingredient in securing acceptance by so many nations of the agency safeguards system.

I can think of few steps that would risk a more serious setback for the objective of constantly growing acceptance of international control of peaceful uses of atomic energy than an attempt to create and substitute a new and untested agency for one which is gradually acquiring technical competence and, along with it, the respect of its members

2. Safeguards

a. In my letter to the Editor of The New York Times (printed November 22), I replied to a November 10 editorial which argued that the International Atomic Energy Agency should be relieved of its responsibility for safeguarding nuclear materials and equipment against diversion to military use. My letter emphasizes the specific and concrete role which these control systems are playing in limiting the spread of nuclear weapons and their importance in developing, demonstrating and securing acceptance of the principles and techniques of international control.

b. Inspectors from the International Atomic Energy Agency are performing the first safeguards inspection of U. S. reactors pursuant to a new agreement with the Agency signed on June 15, 1964, for the application of Agency safeguards to certain U. S. reactor facilities. This agreement replaced a more limited two-year agreement which had expired. Following the inspection of the Brookhaven Graphite Research Reactor, which began on November 12, inspection of the Yankee Nuclear Power Station at Rowe, Massachusetts, began on November 16. This is the first time a large U. S. power reactor has been inspected by the Agency.

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Johnson to Take New Step on Pr

Scheduled to Meet on Tuesday I Set Up to Study Proliferati

By Chalmers M. Roberts
Staff Reporter

President Johnson is about to launch a new effort to find a so far elusive answer to the question how to prevent the spread of nuclear weaponry all around the world.

He is due to meet on Tuesday with a task force he has set up to study the problem of nuclear proliferation. It is headed by Roswell L. Gilpatric, former Deputy Secretary of Defense and now a New York lawyer. The names of other members of the panel will be made public at that time.

As one top official here put it, "If we don't get a handle on this problem in the Johnson Administration years, we never will."

Gilpatric has a very wide mandate, according to officials who helped set up the task force. He himself is reported to be enthusiastic about taking on the job.

Staff Lined Up

He will examine policy at State, Defense, the Atomic Energy Commission, the Central Intelligence Agency, the White House, the A-Arms Control and the Disarmament Agency and other groups such as the International Atomic Energy Commission. He has already made some soundings and lined up a staff, lent largely by the Administration but including some outside specialists.

The Gilpatric mission springs from what is described here as a strong feeling by the President that the problem deserves new attention and the belief that, as one official put it, "the problem has as many arms as an octopus."

There is no deadline for the study since it is not involved in the legislative calendar, but it does affect certain weapons decisions now pending.

Reactors Supplied

What is so alarming are the signs that no agreement now is in sight with the Soviet Union to halt proliferation, though many months of negotiations have been held at Geneva. The issue will come up at the forthcoming United Nations General Assembly.

One reason for worry is a fear that the spread of nuclear reactors around the world, with American, British, Canadian or Russian help, has created a foundation for other nations to get into the nuclear weapons business. The United States alone has supplied such reactors to about 25 nations in its program for the peaceful use of the atom.

A number of nations clearly have the capacity to make such weapons and there are suspicions here that some are doing considerable clandestine work toward that end, even if no firm policy decision has been made to manufacture A-bombs.

The advent of Red China

eventing A-Arms Spread

ith Task Force n Problem

as a nuclear power with its first test explosion on Oct. 16 could lead such Asian nations as India and Japan to alter policies of opposition.

Indian Prime Minister Lal Bahadur Shastri said on Tuesday that his country's opposition policy was still sound.

Mideast Area of Worry

But he added that "our policies need not be rigid or valid for all time, but we should not be carried away by panic."

Some officials here feel that Homi J. Bhabha, head of India's atomic energy program, is strongly in favor of going into the weapons business.

The Middle East, too, is an area of worry. Both Israel and Egypt have nuclear reactors and there is a feeling here that they are up to things they have not disclosed.

West Germany has pledged not to make nuclear weapons in that country and it hopes to have some say in the Atlantic alliance's nuclear policy through a role in the proposed multilateral nuclear force.

The Soviet Union, as well as some Western officials, consider MLF itself a form of nuclear proliferation, but this is strongly disputed by the United States.

Both the United States and the U.S.S.R. are testing nuclear weapons underground, the sole loophole in the test-ban treaty. Whether the treaty should be broadened, and can be done so safely, is another topic for investigation.

The United States has also trained many troops of Allied nations in handling weapons suitable for employing nuclear warheads. This military assistance program also will come within the purview of the Gilpatric task force.

ROSWELL L. GILPATRIC

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AGENDA

Task Force on Nuclear Proliferation
Room 303, Executive Office Building
December 1, 1964

10:00 AM	Opening Remarks - Mr. Gilpatric
10:15	General Discussion
11:00	U.S. Dispersal - Mr. Howard, DOD
11:45	Lunch - White House Mess
12:45 PM	Intelligence Briefing - Mr. Cline, CIA
2:30	U.S. Overseas Peaceful Uses Program - Mr. Palfrey, AEC
3:30	Status U.S. - Soviet Non-Proliferation Proposals - Mr. Fisher/Mr. DePalma, ACDA
4:30	General Discussion
6:00	Meeting with the President

Irving

legal advice — State Dept legal office.
Tentative dates for Mtgs

~~Dec. 16-17~~

Dec. 15-16 or 16-17

Jan. 5 or 6

" 18

2nd Mtg

~~2nd~~

MLF

NY the Country

Trust Law Technology

THE NEW YORK TIMES
Monday, November 2, 1964

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President Appoints Panel to Seek Halt In Nuclear Spread

Special to The New York Times

WASHINGTON, Nov. 1 — President Johnson named a special group today to study new policies to help prevent the spread of nuclear weapons in the world.

Roswell L. Gilpatric, who was Under Secretary of Defense until last January and now practices law in New York, was appointed as chairman.

Officials said Communist China's detonation of a nuclear device last month was a major element in the decision to review United States policies on the problem of nuclear proliferation.

They said that if China continued to test nuclear devices, other countries in Asia competent to develop nuclear weapons—such as India and Japan—might begin to question the wisdom of refraining from doing so themselves.

Possible Report to U.N.

George Reedy, White House press secretary, said Mr. Johnson had asked the group "to explore the widest range of measures that the United States might undertake in conjunction with other governments or by itself to accomplish" the objective.

"Full consideration will be given to the adequacy of existing policies designed to limit the spread of nuclear weapons," Mr. Reedy said. "The task force will examine the implications of the development of peaceful uses of atomic energy on this problem and of safeguards associated with this problem."

It appeared likely that the group's report might serve as the basis for presenting to the United Nations General Assembly specific proposals on controlling the spread of nuclear weapons. The Assembly is scheduled to meet Dec. 1.

Of the five countries in the world with nuclear capability, the United States, Britain and the Soviet Union have agreed to cease testing in the atmosphere, in space and under water, in accordance with the test ban treaty signed in Moscow in August, 1963.

France, which had developed a nuclear strike force, refused to sign the treaty. China also refused to do so, presumably in anticipation of achieving a nuclear explosion.

While the problem of preventing profileration had long concerned the United States, it was the Chinese explosion and its political and military impact on Asia that convinced the Administration that an urgent new look at the whole problem was required.

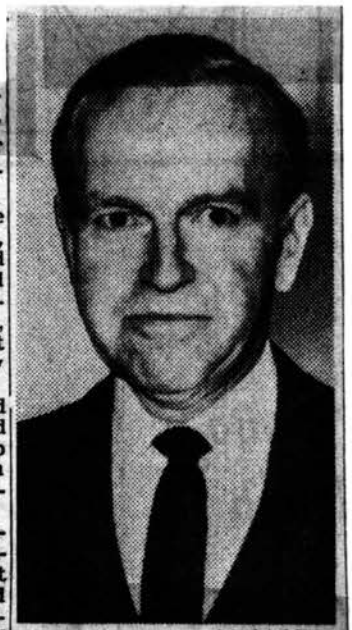
Servant Not Master

President Johnson told Mr. Gilpatric that "humanity cannot tolerate a step-by-step spread of nuclear weapons."

"We in this generation," the President said, "must establish the atom as the servant of the world's future and not its master."

He declared that while the problem of halting the spread of weapons was difficult this year, it would be more so in 10 years.

Mr. Gilpatric's task force includes Robert M. Lovett, a former Secretary of Defense; Dean Acheson, a former Secretary of State; John J. McCloy, who was director of the United States Disarmament Agency, and Arthur Dean, former delegate to the United Nations Disarmament Commission. The full list of members was not available tonight.



Associated Press

Roswell L. Gilpatric

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON 25, D. C.

NOV 17 1964

MEMORANDUM FOR: Mr. Charles N. Johnson
Office of Special Assistant to the
President for National Security Affairs
The White House

SUBJECT: SUMMARY OF ENRICHED URANIUM TRANSFERRED UNDER AGREEMENTS FOR COOPERATION

Mr. Charles W. Thomas of the Department of State recently transmitted to you information on U. S. commitments for the supply of enriched uranium fuel to foreign reactor operators. The attached table is intended to give, in detail, the quantities of materials transferred to date together with a forecast of deliveries for the next six months and the quantities as permitted under the agreement but for which we have as yet no firm commitment.

If you have any further questions please do not hesitate to get in touch with me.

Myron B. Kratzer

Myron B. Kratzer, Director
Division of International Affairs

Attachment:
Table on Supply of Enriched Uranium Fuel

2180

Comparison of Enriched Uranium Supplied To Foreign Governments Against Agreement Allocations Through September 30, 1964

Country	Agreement Quantity Kgs U-235	Material Supplied Through 9/30/64 Percent Enrichment	Kgs U-235	6 Mo. Shipment Forecast Percent Enrichment	Kgs U-235	Balance Kgs U-235
ARGENTINA	65.0	20-24	6.0	20-24	7.2 ✓	
		90	6.0			
			12.0			45.8
AUSTRALIA	500.0	90	8.6			491.4
AUSTRIA	50.0	20-24	7.2			
		90	5.9			
			13.1			36.9
BELGIUM	No limit	1-5	99.5			No limit
		6-9	3.8			
		20-24	2.0			
		90	41.3			
			146.6			
BRAZIL	15.+1 Core	20-24	19.8			Partial Core
CANADA	No limit	1-5	96.6			No limit
		6-9	30.8			
		20-24	5.3			
		25-74	13.1			
		90	132.0	90 ✓	51.1 ✓	
			277.8			
CHINA	6.+1 Core	20-24	4.7			1.3+1 Core
COLOMBIA	6.+1 Core			90 ✓	2.2 ✓	3.8+1 Core

Country	Agreement Quantity Kgs U-235	Material Supplied Through 9/30/64 Percent Enrichment	Kgs U-235	6 Mo. Shipment Forecast Percent Enrichment	Kgs U-235	Balance Kgs U-235
DENMARK	50.0	20-24	1.4			
		90	20.0			
			21.4			28.6
FRANCE (Civil Uses)	2,500.0	1-5	567.0	1-5	69.5 ✓	
		6-9	1.4			
		20-24	60.5			
		25-74	85.0	25-74	66.0 ✓	
		90	158.5	90	118.6 ✓	
			872.4		254.1 ✓	1,373.5
FRANCE (Mutual Defense)	440.0	90	171.0			269.0
GERMANY	2,500.0	1-5	263.6			
		10-19	1.5			
		20-24	307.3			
		90	33.5	90	7.2	
			605.9			1,886.9
GERMANY (W. Berlin)	6.0+1 Core	20-24	2.8			3.2+1 Core.
GREECE	6.0+1 Core	20-24	6.0			1 Core
INDONESIA	6.0+1 Core			20-24	2.4	3.6+1 Core
ISRAEL	10.0	90	7.2			2.8

Country	Agreement Quantity Kgs U-235	Material Supplied Through 9/30/64 Percent Enrichment	Kgs U-235	6 Mo. Shipment Forecast Percent Enrichment	Kgs U-235	Balance Kgs U-235
ITALY	7,000.0	1-5	2.8			
		20-24	30.8			
		90	12.0			
			45.6			6,954.4
JAPAN	2,700.0	1-5	287.1	1-5	35.6	
		6-9	2.8			
		10-19	8.8			
		20-24	40.4	20-24	2.0	
		90	22.6			
			361.7		37.6	2,300.7
KOREA	6.0+1 Core	20-24	2.3			3.7+1 Core
NETHERLANDS	500.0	1-5	73.8			
		90	18.6			
			92.4			407.6
NORWAY	500.0	1-5	37.5	1-5	57.9	404.6
PHILIPPINES	6.0+1 Core	20-24	4.3			1.7+1 Core
PORTUGAL	6.0+1 Core	20-24	6.0			1 Core
SOUTH AFRICA	500.0			1-5	12.0	
				90	4.3	
					16.3	483.7

Country	Agreement Quantity Kgs U-235	Material Supplied Through 9/30/64 Percent Enrichment	Kgs U-235	6 Mo. Shipment Forecast Percent Enrichment	Kgs U-235	Balance Kgs U-235
SPAIN	500.0	20-24	14.0			
		90	4.0			
			18.0			482.0
SWEDEN	200.0 plus material in pipeline	1-5	36.5	1-5	2.6	Negative
		10-19	3.7			
		20-24	120.2			
		90	55.9	90	20.6	
			216.3		23.2	
SWITZERLAND	500.0	1-5	18.6			
		20-24	7.4			
		90	11.7			
			37.7			462.3
THAILAND	10.0	90	4.8			5.2
TURKEY	15.0	90	4.8			10.2
UNITED KINGDOM	400.0	1-5	2.6			
		90	206.9	90	100.0	
			209.5			90.5
VENEZUELA	800.0	20-24	4.9			795.1
VIETNAM	6.0+1 Core	20-24	2.4			3.6+1 Core

Country	Agreement Quantity Kgs U-235	Material Supplied Through 9/30/64 Percent Enrichment	Kgs U-235	6 Mo. Shipment Forecast Percent Enrichment	Kgs U-235	Balance Kgs U-235
EURATOM	70,000.0	1-5	2,333.0			
		6-9	1.8			
		20-24	8.5	20-24	110.0	
		90	363.8	25-74	502.0	
				90	141.5	
			2,707.1		753.5	66,539.4
IAEA	5,000.0+	20-24	2.5	20-24	2.6	4,994.9+
GRAND TOTAL			5,927.1		1,315.3	

FORM DS-14
4-1-55

DEPARTMENT OF STATE
WASHINGTON

INTERDEPARTMENTAL REFERENCE

DATE: 11/10/64

REFERRED TO: Mr. Charles Johnson
Room 368, EOB

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RE:

WRITER ☐ HAS ☐ HAS NOT BEEN INFORMED OF THIS REFERENCE

COMMENTS:

Dear Chuck-

Attached is the material which the AEC has prepared. I hope it will serve your purpose.

1 cy to Seeny
1 cy to Pilpatrick

SIGNATURE

Charles W. Thomas

OFFICE OR DIVISION

International Scientific Affairs

Our original Agreements for Cooperation generally included a ceiling of 20% on the enrichment of uranium in the isotope U-235. In 1956, the Commission adopted a policy of making material containing up to 90% of U-235 available for use, on a case-by-case basis, in foreign materials test reactors when there appeared to be a bona fide technical and economic need for material of such higher enrichment. This step was prompted by the fact that experience had demonstrated that the use of such highly enriched material was particularly advantageous in maximizing the performance and efficiency of high-flux reactors. In 1958, this policy was further extended to include research reactors and reactor experiments, again on a case-by-case basis, and only when the use of uranium of more than 20% appeared, in the Commission's view, to be warranted for technical or economic reasons.

As a general rule nuclear power reactors require fuels of low enrichment. The Commission was aware, however, that there were certain power reactor types, such as the high-temperature gas-cooled reactors, operated on the thorium cycle, which required highly enriched uranium for optimum use. Accordingly, Commissioner Wilson, in his statement on U.S. nuclear fuel supply which was given in Tokyo in December 1961, (and with power reactors in mind) indicated that the Commission would be prepared to consider, on a case-by-case basis, making highly enriched uranium for some specific reactor type if such use was clearly warranted.

I believe it should be emphasized that the provisions we have included in our agreements covering such transfers are permissive rather than obligatory and that in each case the Commission has the sole discretion to determine whether a request for highly enriched uranium should be approved. Moreover, as you know, it is our policy to only include such permissive

language in agreements if the country is also prepared to submit to comprehensive safeguards and controls. This, of course, excludes our special arrangements with Euratom, the United Kingdom, and Canada.

The recent Austrian inquiry refers to the decision the Commission made a year or so ago to permit foreign users, subject to appropriate amendments to their Agreements for Cooperation, to receive uranium enriched to more than 90% in the isotope U-235 for those selected uses that heretofore qualified to receive material of up to 90% enrichment. This policy was designed to remove a minor anomaly in our policy by enabling U.S. fuel fabricators and processors to use the same "on the shelf" grade of uranium of high enrichment in filling foreign orders as they had previously been able to use in filling domestic orders. As noted in most of our agreements for cooperation providing for the transfer of highly enriched material, a ceiling of 90% was placed on the enrichment. In the domestic program, however, the use of highly enriched uranium containing up to about 93% of U-235 had become customary for selected uses. The necessity for handling and segregating materials of these two slightly different enrichments served to increase costs and add to the complexity of nuclear fuel fabrication and related activities. By adopting a common maximum enrichment, we hope to remove these irritants.

Our original Agreements for Cooperation generally included a ceiling of 20% on the enrichment of uranium in the isotope U-235. In 1956, the Commission adopted a policy of making material containing up to 90% of U-235 available for use, on a case-by-case basis, in foreign materials test reactors when there appeared to be a bona fide technical and economic need for material of such higher enrichment. This step was prompted by the fact that experience had demonstrated that the use of such highly enriched material was particularly advantageous in maximizing the performance and efficiency of high-flux reactors. In 1958, this policy was further extended to include research reactors and reactor experiments, again on a case-by-case basis, and only when the use of uranium of more than 20% appeared, in the Commission's view, to be warranted for technical or economic reasons.

As a general rule nuclear power reactors require fuels of low enrichment. The Commission was aware, however, that there were certain power reactor types, such as the high-temperature gas-cooled reactors, operated on the thorium cycle, which required highly enriched uranium for optimum use. Accordingly, Commissioner Wilson, in his statement on U.S. nuclear fuel supply which was given in Tokyo in December 1961, (and with power reactors in mind) indicated that the Commission would be prepared to consider, on a case-by-case basis, making highly enriched uranium for some specific reactor type if such use was clearly warranted.

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MATERIAL PROVISIONS IN AGREEMENTS FOR COOPERATION IN CIVIL USES OF ATOMIC ENERGY

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
Argentina	As may be agreed.	65 Kg (net)*	At Commission's discretion, and within net ceiling of 65 Kg, uranium of up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, reactor experiments, and power and demonstration power reactors each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Australia	" "	500 Kg (net)	At Commission's discretion, and within net ceiling of 500 Kg, uranium of up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Austria	" "	50 Kg (net)	At Commission's discretion, and within net ceiling of 50 Kg, uranium of up to 90% enrichment in the isotope U-235 may be provided for use in research or materials testing reactors, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
Belgium	As may be agreed.	No quantitative ceiling although there are quantitative limits on purposes for which reactor fuel may be transferred.	At Commission's discretion, uranium up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Brazil	As may be agreed except quantity of special nuclear materials limited to 100 gm contained U-235, 10 gm U-233, 250 gm plutonium in form of foils and sources, and 10 gm plutonium in other forms.	Up to 15 Kg of contained U-235 in uranium may be in the custody of cooperating country at any one time plus amount necessary, in opinion of Commission, for replacement core while replaced elements are cooling or in transit.	20% limit.
Canada	As may be agreed.	No quantitative ceiling.	Commission, at its discretion, may make a portion available at enrichments of greater than 20% when a technical or economic justification exists.
China	As may be agreed, except quantity of special nuclear materials limited to 100 gm contained U-235, 10 gm U-233, 250 gm plutonium in form of foils and sources, and 10 gm plutonium in other forms.	Up to 6 Kg of contained U-235 in uranium may be in custody of cooperating country at any one time plus amount necessary, in opinion of Commission, for replacement core while replaced elements are cooling or in transit.	20% limit.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement: Total Contained U-235	Quantity Under Fuels Article of Agreement: Enrichment
Colombia	As may be agreed.	10 Kg (net)	At Commission's discretion and within net ceiling of 10 Kg, up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Costa Rica	As may be agreed except of special nuclear materials limited to 100 gm contained U-235, 10 gm U-233, and 10 gm plutonium.	Up to 6 Kg may be in custody of cooperating country plus amount necessary in opinion of Commission for replacement core while replaced elements are cooling or in transit.	20% limit.
Denmark	As may be agreed.	50 Kg (net)	At Commission's discretion and within net ceiling of 50 Kg, up to 90% enrichment in the isotope U-235 may be provided for use in research reactors and materials testing reactors, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
France	As may be agreed.	2,500 Kg (net)	Of this net amount up to 300 Kg may be made available at Commission's discretion at an enrichment of up to 60% for use in the reactor experiment Rhapsodie. A portion of the net amount may also be made available at enrichments of greater than 20% when technically or economically justified for (a) use in research reactors, materials testing reactors, and reactor experiments each capable of operating with a fuel load of not to exceed 8 Kg of contained U-235, & (b) criticality experiments provided not more than 100 Kg of U-235 in the aggregate will be available for such experiments.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
Germany	As may be agreed.	2,500 Kg (net)	At Commission's discretion and within the net ceiling of 2,500 Kg, up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Germany W. Berlin	As may be agreed except special nuclear materials limited to 100 gm U-235, 10 gm U-233, 250 gm plutonium in form of foils and sources, and 10 gm plutonium in other forms.	Up to 6 Kg of contained U-235 in uranium may be in custody of cooperating country at any one time plus amount necessary, in opinion of Commission, for replacement core while replaced elements are cooling or in transit.	20% limit.
Greece	" "	Up to 6 Kg of contained U-235 may be in custody of cooperating country plus amount necessary, in opinion of Commission, for replacement core while replaced elements are cooling or in transit.	20% limit.
Indonesia	" "	" "	20% limit.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
Iran	As may be agreed.	Up to 6 Kg of contained U-235 may be in custody of cooperating country plus amount necessary, in opinion of Commission, for replacement core while replaced elements are cooling or in transit.	At Commission's discretion up to 90% enrichment in the isotope U-235 may be provided for use in research reactors capable of operating with a fuel load not to exceed 6 Kg contained U-235.
Ireland	As may be agreed except special nuclear materials limited to 100 gm U-235, 10 gm U-233, 250 gm plutonium in form of foils and sources, and 10 gm plutonium in other forms.	Up to 6 Kg of contained U-235 may be in custody of the cooperating country plus amount necessary, in opinion of Commission, for replacement core while replaced elements are cooling or in transit.	20% limit.
Israel	As may be agreed.	10 Kg (net)	At Commission's discretion and within the net ceiling of 10 Kg up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
India	As may be agreed when needed for use at or in Connection with Tarapur Atomic Power Station.	14,500 Kg (net)	20% limit for use as fuel in Tarapur Atomic Power Station.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
Italy	As may be agreed.	7,000 Kg (net)	At Commission's discretion and within the net ceiling of 7,000 Kg up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Japan	As may be agreed except special nuclear materials limited to 100 gm U-235, 10 gm U-233, 250 gm plutonium in form of foils and sources, and 10 gm plutonium in other forms.	2,700 Kg (net)	At Commission's discretion and within the net ceiling of 2,700 Kg up to 90% enrichment in the isotope U-235 may be provided for use in research and materials testing reactors, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Korea	As may be agreed except special nuclear materials limited to 100 gm U-235, 10 gm U-233, and 10 gm plutonium.	Up to 6 Kg of contained U-235 may be in custody of cooperating country plus amount necessary, in opinion of Commission, for replacement core while replaced elements are cooling or in transit.	20% limit.
Netherlands	As may be agreed.	500 Kg (net)	At Commission's discretion and within the net ceiling of 500 Kg up to 90% enrichment in the isotope U-235 may be provided for research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
Norway	As may be agreed except special nuclear materials limited to 100 gm U-235, 10 gm U-233, and 10 gm plutonium.	500 Kg (net)	At Commission's discretion and within the ceiling of 500 Kg, up to 90% enrichment in the isotope U-235 may be provided for use in a materials testing reactor capable of operating with a fuel load of not to exceed 6 Kg contained U-235.
Panama	As may be agreed except special nuclear materials limited to 100 gm U-235, 10 gm U-233, 250 gm plutonium in form of foils and sources, and 10 gm plutonium in other forms.	Up to 6 Kg may be in custody of cooperating country plus amount necessary in opinion of Commission for replacement core while replaced elements are cooling or in transit.	20% limit
Philippines	" "	" "	20% limit
Portugal	As may be agreed.	" "	At Commission's discretion up to 90% enrichment in the isotope U-235 may be provided for use in research reactors capable of operating with a fuel load of not to exceed 6 Kg contained U-235.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
South Africa	" "	500 Kg (net)	At Commission's discretion and within the 500 Kg ceiling up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Spain	As may be agreed except special nuclear materials limited to 100 gm U-235, 10 gm U-233, and 10 gm plutonium.	500 Kg (net)	At Commission's discretion and within the 500 Kg ceiling up to 90% enrichment in the isotope U-235 may be provided for use in a materials testing reactor capable of operating with a fuel load of not to exceed 6 Kg contained U-235.
Sweden	As may be agreed.	200 Kg (net)	At Commission's discretion and within the 200 Kg ceiling up to 90% enrichment in the isotope U-235 may be provided for use in a materials testing reactor capable of operating with a fuel load of not to exceed 8 Kg contained U-235.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
Switzerland	As may be agreed.	500 Kg (net)	At Commission's discretion and within the 500 Kg ceiling up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 6 Kg contained U-235.
Thailand	As may be agreed.	10 Kg (net)	At Commission's discretion and within the 10 Kg ceiling up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.
Turkey	As may be agreed.	15 Kg (net)	At Commission's discretion and within the 15 Kg ceiling up to 90% enrichment in the isotope U-235 may be provided for use in research reactors, materials testing reactors, and reactor experiments, each capable of operating with a fuel load of not to exceed 8 Kg contained U-235.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
United Kingdom	As may be agreed.	400 Kg (net)	The Commission may at its discretion may make available a portion of the material at enrichments higher than 20% when technically or economically justified, for use in fueling reactors in civil research and development programs.
Venezuela	As may be agreed except special nuclear materials limited to 100 gm U-235, 10 gm U-233, and 10 gm plutonium.	800 Kg (net)	At Commission's discretion and within the 800 Kg ceiling up to 90% enrichment in the isotope U-235 may be provided for use in a materials testing reactor capable of operating with a fuel load of not to exceed 6 Kg contained U-235.
Viet-Nam	As may be agreed, except quantity of special nuclear materials limited to 100 gm contained U-235, 10 gm U-233, 250 gm plutonium in form of foils and sources, and 10 gm plutonium in other forms.	Up to 6 Kg of contained U-235 may be in custody of cooperating country plus amount necessary, in opinion of Commission, for replacement core while replaced elements are cooling or in transit	20% limit.

Country	Quantity Under Research Materials Article of Agreement	Quantity Under Fuels Article of Agreement	
		Total Contained U-235	Enrichment
Euratom Community	As may be agreed	70,000 Kg (net)	The Commission at its discretion may make a portion of the material available at an enrichment of more than 20% when technically or economically justified.
International Atomic Energy Agency	" "	5,000 Kg plus additional quantities as may be authorized.	Limited to 20% except Commission at its discretion may furnish higher enrichment for research reactors, materials testing reactors, or for research purposes.

* Net amount is the gross quantity of contained U-235 in uranium sold or leased to cooperating country during the period of the Agreement less the quantity of contained U-235 in recoverable uranium which has been resold or otherwise returned to the U.S. during the period of the Agreement or transferred to any other nation or international organization with the approval of the U.S.

C. JOHNSON

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THE WHITE HOUSE

WASHINGTON

~~CONFIDENTIAL~~ November 25, 1964

NATIONAL SECURITY ACTION MEMORANDUM NO. 320

TO: The Secretary of State
The Secretary of Defense
The Director of Central Intelligence
The Chairman, Atomic Energy Commission
The Director, Arms Control and Disarmament Agency

SUBJECT: Task Force on Nuclear Proliferation

The President has appointed a special Task Force on Nuclear Proliferation, under the Chairmanship of Mr. Roswell Gilpatric, to study means to prevent the spread of nuclear weapons. The Task Force has been asked to examine the problem in its broadest ramifications. It is expected that the Task Force report will be available for the President by the end of January 1965.

In addition to Mr. Gilpatric, the members of the Task Force are:

Mr. Arthur H. Dean
Mr. Allen W. Dulles
General Alfred M. Gruenther
Dr. George B. Kistiakowsky
Mr. John J. McCloy
Dr. James A. Perkins
Mr. Arthur K. Watson
Mr. William S. Webster
Dr. Herbert F. York

Mr. Spurgeon M. Keeny, Jr., National Security Council staff, will serve as Staff Director for the Task Force.

The President assigns great importance to the work of the Task Force and has asked that all agencies assist the Task Force in the execution of its assignment.

In view of the urgency of the nuclear proliferation problem, the responsible government agencies should continue their work in this field on a high priority basis in parallel with the work of the Task Force.

McGeorge Bundy