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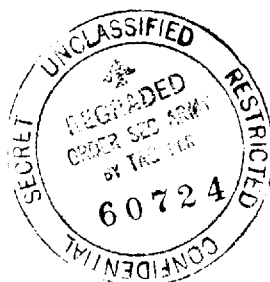
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NATIONAL ARCHIVES MICROFILM PUBLICATIONS

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For the Atomic Energy Commission

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H. P. ...
TC
Chief, Declassification Branch
Report of

Committee on Postwar Policy

December 28, 1944

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1. Authorization and Membership.

On 29 August 1944, after discussion with the Military Policy Committee, Major General L. F. Groves appointed a committee "for the purpose of securing a considered recommendation, from a technical standpoint, of the postwar policy for governmental research and development in the field of utilizing the potential atomic energy of uranium and plutonium".

The Committee appointed consists of Dr. W. K. Lewis, Professor of Chemical Engineering at the Massachusetts Institute of Technology, Rear Admiral E. W. Mills, Assistant Chief of the Bureau of Ships U.S.N., Dr. H. D. Smyth, Professor of Physics at Princeton University, and Dr. R. C. Tolman, Vice-Chairman of the National Defense Research Committee. On the invitation of General Groves, Captain T. A. Solberg U.S.N. has sat with the Committee to assist Admiral Mills and to serve as his Deputy in case of necessity.

2. Basis of Information.

The technical information on which this report is based was to some extent already available to members of the Committee previously associated with the project, to some extent obtained by specific request from General Groves' office, and to a very large extent obtained directly from the principal scientists who have been responsible for the research and development work of the project.

To secure this third type of information the Committee invited the directors of the scientific work of the project, together with their scientific associates, to appear for interview and also to present such written memoranda on postwar policy as seemed to them desirable. As a consequence the Committee has had a total of forty-four direct interviews with the directors and scientists responsible for the five principal phases of the scientific work of the project, - on the separation of U²³⁵ by diffusion

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through barriers, on the separation of U²³⁵ by thermal diffusion, on the separation of U²³⁵ by the electromagnetic method, on the preparation of Pu²³⁹ by pile operation, and on the military utilization of U²³⁵ and Pu²³⁹ as high explosives. In addition the Committee has received from scientists on the project a total of thirty-seven memoranda on different phases of postwar policy. (A list of the scientists interviewed or presenting memoranda will be found in Appendix to Section 2). The Committee considers that it has received a quite complete statement of the views held by the scientists working on the project as to the technical factors affecting postwar policy.

While principally concerned with receiving opinions on technical matters, the Committee has encouraged a full and frank expression by the scientists as to their views on administrative factors affecting postwar policy. It may be remarked that substantially complete agreement among scientists was found as to their views on technical factors and a large measure of agreement as to their views on administrative factors.

The Committee has not undertaken any inquiry into the views held by industrialists engaged on the project. Such a study could be made prior to a later report if the Committee is so instructed.

3. Philosophy of the Report.

The results of the Committee's study will be found in the next two sections entitled "Comments on Administrative Matters" and "Technical Recommendations." Before proceeding to them, it will be advantageous to make certain remarks as to points of view which have governed the thinking of the Committee in preparing this report.

The most important conclusion of the Committee is that the military objectives involved in the field properly have overriding importance. The Committee feels that as regards the future security of the nation the military potentialities are great enough to warrant continuing the overriding priority on military objectives into the peace period.

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In reaching the technical recommendations made at the end of the report the Committee, in accordance with the above conclusion, has regarded the maintenance of military superiority as the primary objective which must dictate present national planning on the utilization of nuclear energy in this country. The first four recommendations of the Committee, as to the necessity for further governmental work on the separation of U²³⁵, on the production of Pu²³⁹ and U²³³, on the development of military weapons, and on the development of naval power, are evidently directly related to this problem of military protection. In addition, however, the two further recommendations, as to the necessity of adopting vigorous policies of governmental encouragement to fundamental research and to industrial development in the general field of nucleonics, are regarded by the Committee as themselves essential to the maintenance of a sufficiently advanced scientific and technical position so that the military protection of the country will be assured. The Committee believes that a strong development of the science and technology of nucleonics would in any case be a major national asset.

The technical recommendations made at the end of the report are presented without detailed discussion of the considerations on which they are based or the consequences which they entail. This is done partly in the interests of brevity and clarity of expression, and partly in order to make a first report possible at this time. It is the intention of the Committee to amplify the report from time to time by presenting appendices which include more detailed discussions. In the meantime, the recommendations as made present the well considered views of the Committee on the technical aspects of a proper postwar policy.

In addition to considering the technical matters upon which the Committee was specifically asked to report, the Committee has also given some attention to administrative questions, since the scientists interviewed have themselves expressed much interest and concern in such matters, and since the possibility of any recommended technical program is itself partly dependent on the administrative framework within which it operates. In view of this interrelation between technical and administrative possibilities, the Committee presents in the next section a number of comments on administrative matters, reserving its definite recommendations on technical matters for the final section of the report.

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4. Comments on Administrative Matters.

The postwar policy of Government as to the administration of activities in the field of utilizing nuclear energy is a matter of deep interest to all who are concerned with the military safety of the country, and with scientific and industrial development in the general field of nucleonics. Wise decisions as to the nature of this policy, arrived at as soon as may be practicable, would serve to allay anxieties as to the future now expressed by scientists working in the field, and would make it possible to plan for postwar work with minimum losses due to interruption of effort and dispersal of personnel.

Certain administrative features of the present program of work in the field may be commented on as follows: -

a. At the present time, the entire program for research, development, production and utilization in the field of nuclear energy is carried out under the immediate administrative control and detailed supervision of Government.

In view of the close relation of work on nuclear energy to national defense, it appears to the Committee that postwar work in this field should still remain under the general administrative control of Government.

b. The present agency of Government principally concerned with the direction of the program is the War Department. The actual work is carried out partly by already-established government laboratories, but largely by extensive special laboratories and manufacturing plants which have been set up for the purpose through government contracts with universities and industrial companies.

In the opinion of the Committee, consideration should be given to the postwar establishment of a special government authority for the control of funds and distribution of work in the field of nucleonics. This postwar authority should have military as well as civilian members, but it is felt that the project should not be under the immediate direction of the Armed Services except for those developments of a strictly military nature. The agency should determine the distribution of work among government, military and civil laboratories, academic institutions and industrial organizations. Insofar as security requirements permit, it would appear important to promote supplementary independent scientific and technical developments by academic and industrial laboratories,

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under the general administrative control but not detailed supervision of Government. The authority should also see that proper steps are taken to survey and insofar as feasible control the sources and supplies of the fundamental materials uranium and thorium.

c. The present program is a very large and expensive one, operated with the purpose of achieving maximum speed rather than economy, and entirely financed by Government.

It appears clear to the Committee that the total postwar government budget for work in the field of nucleonics will have to be much smaller than that which has been appropriate in wartime. Nevertheless, it is felt that fundamental research in the field should be carried on at a substantially undiminished rate.

d. Substantially the sole purpose of the present program is the development and production of powerful weapons for use in the present war.

In the opinion of the Committee, postwar policy should be concerned not merely with the development of military weapons, but with the general development of the field of nucleonics including possible peacetime applications.

e. At present the scientific personnel engaged on various phases of this work has been largely drawn from the universities. This has led to a complete interruption of the training of young men in the fundamental knowledge of nuclear physics and chemistry.

In the future it is essential that able young men become interested in nucleonics and thoroughly trained in its fundamentals. The university departments of physics and chemistry must have their strength restored and if possible augmented. Students at all levels must be encouraged. To avoid a serious hiatus in the supply of such men appropriate steps should be initiated now.

f. In the interests of military security, the present program is carried out under a policy which enforces utmost secrecy as to the nature, extent and results of the work and which provides for compartmentalization of effort with severe restrictions on the flow of scientific and technical information between different groups of scientists and industrialists.

The Committee expresses approval of the war time policy of maintaining utmost secrecy concerning work on the utilization of

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nuclear energy, including restrictions on the flow of information between different groups working in the field. The postwar policy as to secrecy, especially after demonstrated military use of the weapon, can be relaxed in certain aspects to advantage, since a wider dissemination of scientific and technical knowledge will lead to more rapid progress. Nevertheless the Committee is of the opinion that much information as to scientific and technical details, as to methods of manufacturing active materials, as to the nature and mode of use of military weapons, and as to locations of time schedules will still have to be kept as secret as practicable in the postwar period. The frequent argument -- that the information will leak out anyhow -- does not mean that its dissemination cannot be importantly delayed by an appropriate security policy. And the other frequent argument -- that military safety depends primarily on keeping ahead in the development of superior nuclear weapons -- does not cover the whole story in a situation where even less well developed weapons may nevertheless be sufficient to produce disastrous results if used just prior to a formal declaration of war. On the other hand the Committee emphasizes the stultifying effect of too much secrecy on fundamental research and on the training of young scientists in this field. Hence, in the absence of international agreements to the contrary, the Committee believes that a well considered postwar security policy will have to be established in which careful consideration is given to the relative advantages and disadvantages of each proposed disclosure of information.

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3. Technical Recommendations.

In the light of the previously-stated conviction that military considerations must be paramount in the field of nucleonics, the Committee makes the following recommendations as to the technical aspects of the postwar policy of Government:

a. Separation of U²³⁵. The Government should arrange for continued development and operation of the existing plants for the manufacture of U²³⁵, using the methods of diffusion through membranes, of thermal diffusion and of electromagnetic separation, until it has become clear which method or combination of methods is most advantageous. Work on existing plants should be supplemented by research and design studies of possible basic improvements in the separation methods employed which might change their relative advantages. In addition research should be encouraged on the possible separation of U²³⁵ by centrifugal methods, by alternative electromagnetic methods, by chemical exchange processes, or by other methods not now developed. Special attention should be given to processes which might be carried out successfully with such small scale apparatus as to escape notice. The operation of existing plants should in any case be continued for the production of such amounts of active material as are needed for military security, for use in scientific and engineering investigations, and for use in any industrial applications that may be authorized.

b. Production of Pu²³⁹ and U²³³. The Government should arrange for continued study and operation of the existing graphite piles for the manufacture of plutonium, until the potentialities of this method of producing active material have become clear. The operation should also be continued to produce plutonium for the previously mentioned military, investigational and industrial needs. This operation should be supplemented by research and design studies on improved production piles, giving consideration to alternative moderators and coolants. In this connection it is already clear that heavy water would have some important advantages over graphite as a moderator, that the use of beryllium as a moderator must be considered, and that coolants other than air or water present important possibilities. The development work on piles for the production of U²³³ which has been started should be continued. The theoretical considerations of the possibilities of the complete burning of uranium and thorium which have been initiated should be continued. Special attention should be given to the possibility that U²³³ could be multiplied in amount if allowed to undergo fission in the center of a thorium absorber where fresh U²³³ would be produced by neutron capture.

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c. Military Weapons. The Government should continue the development of nuclear weapons as a project of overriding urgency so long as national security may be endangered. Nuclear fission bombs of greatly improved efficiency are certainly in sight, and thermo-nuclear bombs of ten thousand fold greater power may even be feasible. These latter would permit an enemy in a single day preceding declaration of hostilities to carry out an action which might be decisive for the outcome of a war. Studies of the possible use of fission products as radioactive poisons should be undertaken at such priority as is necessary for military security.

d. Power Production. The Government should initiate and push, as an urgent project, research and development studies to provide power from nuclear sources for the propulsion of naval vessels. It might be advisable to authorize the initiation of these studies at once, without waiting for the postwar period, in order to utilize scientific personnel already familiar with pile theory and operation. The development of fission piles solely for the production of power for ordinary commercial use does not appear economically sound nor advisable from the point of view of preserving national resources.

e. Fundamental Research. The Government should pursue a policy of vigorous encouragement to fundamental research in the general field of nucleonics. Such research should include studies of the physical, chemical, metallurgical and nuclear properties of materials useful as reactants, moderators and coolants in nuclear chain reactions, or useful for construction, shielding and control. Research should also include studies of the physics and chemistry of the fission products produced in pile operation, and of isotopes that can be produced by exposure to pile neutrons. Separation methods for the production of isotopes in general from natural materials should also be investigated at the research level. The application of isotopes as tracers and agents in biological and medical research should be pushed. The therapeutic use of isotopes and of radiation from piles should be investigated. Attention should be given to the construction of small enriched piles which would be especially useful for scientific and possible commercial applications. Above all, however, a strong attack should be made on the basic problems of nuclear structure in order to provide a sound nuclear theory which can be applied to neutron chain reactions, thermo-nuclear reactions, and other nuclear processes. It will be such studies motivated by scientific considerations that may be expected to disclose the most important unforeseen possibilities that lie in the field of nucleonics.

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2. Industrial Development. The Government should pursue a policy of vigorous encouragement to the development of a strong nucleonics industry. Isotopes isolated from the fission products of piles or directly produced by neutron bombardment in piles should be made commercially available. They will find applications as tracers in scientific and technological studies, as therapeutic agents in medicine, and as concentrated sources of radiation or energy for use in attacking special problems as in radiography, geophysical exploration, illumination, packaged power production, and other fields. Attention should be given to the direct use of radiation from active piles for medical treatment and for producing useful modifications in the structural properties of solids, or for inducing desirable chemical reactions.

The development of a strong nucleonics industry is regarded by the Committee as a very important means of insuring national superiority in the new field. At the start such a development would require support from the Government which at present controls all raw materials, production plants, fissionable materials and fission products. Moreover, the commercial applications already in sight are not sufficient to give assurance that a major non-military industry could be developed in the immediate future. In the long time future, however, growth of a self-supporting industry of great magnitude and many ramifications seems possible.

W. K. Lewis
Dr. W. K. Lewis

E. W. Mills
Rear Admiral E. W. Mills USN

H. D. Smyth
Dr. H. D. Smyth

R. C. Tolman
Dr. R. C. Tolman, Chairman

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PROBABLE ADVANTAGES OF THE USE OF A SUBSTITUTE OF FUEL OIL AS
A SOURCE OF POWER IN NAVAL VESSELS, FROM A STANDPOINT OF LOGISTICS

by

E. W. Mills



30 May 1945

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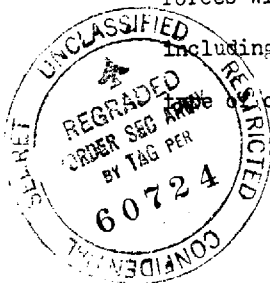
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APPENDIX

Probable Advantages of the Use of a Substitute of Fuel Oil as a Source of Power in Naval Vessels, from a Standpoint of Logistics.

1. The following discussion is submitted with respect to the advantages which would probably accrue, from the standpoint of logistics, if fuel oil, as a source of power in Naval vessels, could be replaced by a substitute based on the utilization of power from atomic energy thus permitting Naval vessels to have very much greater endurance at all speeds than with present fuel oils and diesel oils. This discussion does not attempt to cover any design advantages which might accrue, such as the possibilities of improved military characteristics resulting from weight-savings, simplification of arrangements and installations, etc.; it treats merely the possibilities of operational advantages to task forces operating under conditions similar to those which have been met in combat operations during the present war.
2. The basic assumption is made that the substitute for fuel oil or diesel oil would be of such a nature that any ship which used it could operate at any and all speeds required for combat operations (up to maximum design speed in each case) without the necessity of replenishment, for a period of six months. The present fueling intervals in our task forces will, of course, vary widely depending on a number of factors, including size and type of ship, fuel capacity, fuel consumption rate, mode of operations, weather and sea conditions, etc. In general, of



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course, for the larger types such as battleships, carriers, and cruisers with large fuel capacity to give a long cruising radius, the fueling interval is much greater than for the smaller types, such as destroyers. In fact, it is common practice for the larger types to fuel the smaller types at sea. As a rough indication of the fuel interval of battleships, it is noted from a recent press report, that the NORTH CAROLINA cruised approximately 250,000 miles during the first three years of her life. This is an average of approximately 7,000 miles per month. It seems reasonable to assume, therefore, that this ship might have re-fueled on the average of about once every two months or oftener. In the case of destroyers engaged in active combat operations with speeds from 15 to 20 knots and occasionally higher, the fueling interval is reduced to a matter of days. Re-fueling is, in fact, required every two or three days in very active operations, particularly when the ships are not permitted to go below a certain minimum of fuel on board in order to maintain a factor of safety against complete immobility.

3. It is not considered practicable to operate a task force continuously for a period of 6 months. A number of factors other than fuel must be considered. Ammunition must be replenished. This is preferably done in port although means are available and are being further developed for performing this operation at sea if required by the urgency of the military situation. Stores must be replenished at various intervals from one month for refrigerated fruit, vegetables, etc., to about three months for dry provisions. Recent action reports, however, indicate that regardless of ammunition or stores, it is not feasible to operate a task force under combat conditions continuously for more than a month without some brief



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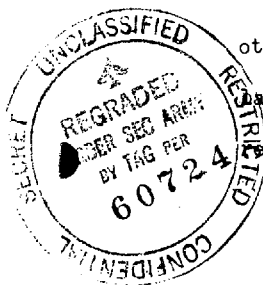
period in port for rest and recreation of officers and crew. If one month be taken as the criterion or the maximum practicable length of a continuous combat operation, it is seen that ships which require fueling oftener than once a month would be the principal beneficiaries of the substitute arrangements; the larger ships which do not require fueling more than once a month could accomplish the re-fueling in port during the rest and recreation period, and hence would not gain the same advantages as the smaller ships.

4. The principal advantages which would accrue from eliminating the necessity for re-fueling the smaller ships at sea are as follows:

(a) Elimination of the hazard from enemy action against ships at a fueling rendezvous. At present, ships in a fueling rendezvous are particularly vulnerable to enemy action because of a reduced speed, restriction of maneuvering, blanking of AA guns on certain sectors, etc.

(b) Elimination of the hazard from sudden storms during re-fueling operations. Under present conditions, commitment to a given fueling rendezvous at a given time makes avoidance of storm centers somewhat difficult. The necessity for de-ballasting prior to commencement of fueling reduces the resistance of ships concerned to torpedo attack and also reduces stability.

(c) Saving in actual time required for re-fueling which could otherwise be devoted to active operations. This amounts to the larger part of a day for each fueling operation. Also, a fueling rendezvous is selected where possibility of contact with the enemy



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during fueling operations is minimized, so time for going to and returning from fueling rendezvous is chargeable to the re-fueling operation.

(d) Elimination of the expense in terms of manpower and materials for bringing oilers to the fueling rendezvous, in cases where oilers are now used. This includes the escorts used to protect the oilers.

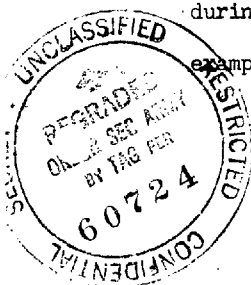
(e) Elimination of the reduction of fuel supply for the larger ships, in cases where such larger ships are used to re-fuel the smaller ships.

(f) Considerable reduction in probability of ships running out of fuel during a long drawn-out engagement (see para. 6 (b)).

5. If it be assumed that the substitute fuel is of such a nature that it could be transported in ordinary cargo ships and that large quantities of it could be stored in warehouses at advanced bases, then an overall advantage to the Navy would accrue from the complete elimination of the time, manpower and materials now devoted to the construction and operation of oilers for the service of the Fleet. As of 1 December 1944, there were 76 AO's in service. With an average complement of 20 officers and 280 men, this means that 1520 officers and 21280 men are required to operate the oilers. There are also 150 YO's and 10 YOS's in service.

6. To illustrate the handicap that has been imposed on our forces during the present war, due to necessity for fueling, take several examples:-

(a) In North Atlantic escort work, it was necessary to use several local escort groups operating out of Halifax and out of



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Londonderry to escort convoys the first and the last 400 miles of the trips, so that the ocean escorts could make the trip across, by using economical speed and most direct route for the first and last 400 miles. It was also necessary routine to relieve some escorts when south of Iceland and refuel them in Iceland. Even so, it was frequently necessary for escorts to drop out before being relieved and to proceed to port at most economical speed. On occasions they ran out of fuel before reaching port. Those with low cruising radius had their effectiveness seriously impaired by being unable to patrol effectively. At the same time, they were better targets, as they could not operate at much higher speeds than the convoy was making. This deficiency in fuel capacity of escorts cost us many merchant ships, escorts, and lives. This situation was partially alleviated during the second year by having an especially equipped tanker in each convoy for the sole purpose of fueling escorts. Weather frequently prevented their getting fuel.

(b) The BISMARCK nearly escaped because many of the ships searching for her had to return to port for fuel and those which remained at sea were forced to reduce speed in order to conserve fuel. They were able to engage as a result of an "Ark Royal" aircraft obtaining a torpedo hit which jammed BISMARCK's rudders hard over, and reduced her speed.

(c) The necessity for ballasting with water to maintain the stability characteristics of Naval vessels, as fuel oil and



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ammunition are expended, is a procedure which may get certain vessels in trouble depending upon the state of the weather and the need for continuing certain planned offensive or scouting operations. As fuel and ammunition are expended, an increasing amount of water must be taken in as ballast to compensate for the reduction in weights low down in the ship, but when time comes to re-fuel, it is necessary to pump out this water ballasting in order that the fueling operation from a tanker or other large ship can be carried out expeditiously. Of course, the operation can be carried out in such manner that a tank can be pumped free of water just before it is necessary to fill it with fuel oil thus maintaining the proper weights in the ship to assure adequate stability, but such procedure would make fueling a very slow and tedious operation. As a calculated risk to expedite this operation, the ships are pumped free of water ballast before coming along side the fueling source and thus all tanks are ready to receive oil and the operation can be carried forth rapidly. This condition of empty tanks, however, during the period just before fueling, may leave the ship in a critical condition with respect to stability so that if any rough seas are encountered, the ship may actually be in a serious and dangerous condition. The only alternative is to delay greatly the fueling operation or assume the risk. In recent months in the Pacific, this light condition with empty tanks preliminary to fueling was a contributing factor to the loss of several destroyers in a severe typhoon which built up mountainous seas and made it desirable

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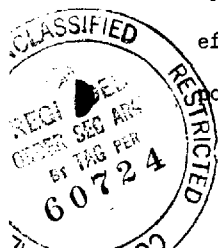
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that the ships involved have available all of their inherent stability when properly loaded. In the particular case in question, the destroyers concerned had pumped out their water ballast to expedite fueling in order that they could carry out the missions to which they were assigned. While fueling, very bad sea conditions set in making it necessary to discontinue fueling and for the ships to change course in an endeavor to preserve their safety. Sea conditions became increasingly difficult so rapidly, however, that before the ships could be re-ballasted they had built up such a severe roll as to become unmanageable, and resulting hull damage from the force of the sea resulted in loss of power and eventual loss of the ships. This illustration indicates that an available source of power which would obviate the ballasting and de-ballasting before fueling would be very advantageous from the standpoint of keeping ships continuously available with adequate stability characteristics.

7. In accordance with the above discussion, the Navy feels that research and experimentation towards the development of power for certain types of Naval vessels from atomic sources should be instituted in order that any possibility in this field may not be overlooked. It is realized that such development is a long step to the future and that there are no practical applications of atomic power in ship propulsion at the present time. However, it is submitted that many other developments have not been apparent at the time research was instituted and it is believed that every effort should be made to exploit fully the possibilities of propulsive power from atomic sources.



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E. W. Mills

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THE PROBLEM OF SECRECY AND THE FUTURE OF THE DSM PROJECT

by

H. D. Smyth



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For The Atomic Energy Commission

H. F. Arnold
To
Chief, Declassification Branch

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Revised April 25, 1945

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THE PROBLEM OF SECRECY AND THE FUTURE OF THE DSM PROJECT

The Problem

During the past four years over a thousand scientists and engineers have been concerned with various aspects of atomic bombs and atomic power. This work has been carried out under the restrictions of wartime secrecy but, as the end of the war in Europe approaches, it is essential to consider the extent to which this policy should be maintained in the coming years. It is to be remembered that in peacetime it will be impossible to continue the present system of research in this field. Not only will it be difficult to justify continuance of the present scale of financial support, but it will be neither possible nor desirable to keep so large a group of able scientific men away from their normal peacetime activities. The problem, therefore, is not one of continuing secrecy in an organization like the present one but of what degree of secrecy can and should be maintained in peacetime work in this field. There are two points to consider: publication of the results obtained during the war, and publication of future results.

The Point of View

Two points of view are possible: the idealistic one, dear to the scientists, that the duty of science is to study the laws of nature and to reveal them to mankind without restriction; the military or nationalistic one that future wars are inevitable and that our object is to keep this country in the strongest possible military position. If the first point of view is accepted, immediate and

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complete publication goes with it and there is no problem. It is the second point of view which will be assumed and examined in this report. Assuming, then, that our objective is to maintain or improve the position of superiority which we hope this country now holds in the field of atomic energy, we must examine how this objective will be best achieved. At first sight it might appear that the best policy would be to maintain the present secrecy restrictions, but further examination of the consequences of such a policy shows that it would be neither practicable nor desirable.

Scientific Research

No one can foresee the scientific developments of the next ten years, but one can predict on the basis of past experience that most of them will come from the minds of young men working untrammelled and undirected in an atmosphere of freedom and with full access to pertinent information. In the past four and a half years it has been demonstrated that the capacity of this country to develop and manufacture new weapons -- in particular, to develop atomic bombs -- depends on the general scientific, technical, and industrial strength of the country, not on secret researches in Government laboratories. This will remain true even though direct military research under Government supervision may be given better support in the future than in the past.

We must, therefore, do everything possible to train able young men in the field of nuclear science and to encourage them to

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do research in that field. The university men now in the DSM project should return as soon as possible to their normal work and should be allowed to impart their knowledge of nuclear science to their students and colleagues. Only in this way will widespread research in the fundamentals of nuclear science be stimulated to the extent that is necessary, and only in this way will new men be drawn into the fields where their contributions will be essential. It has been suggested that this dissemination of personnel could be carried out and the present cloak of secrecy still maintained by forming a guild of scientists, young and old, all sworn to secrecy. This does not seem possible in a free country such as this has always been and, we hope, will continue to be. We conclude, therefore, that as far as fundamental nuclear science is concerned most of the results obtained in the DSM project should be published. We shall return later to the question of how and when this should be done. Similarly, future results in the field of nuclear science should be published in much the same way as before the war.

Technical Research

The technical developments affecting atomic bombs and atomic power in the next ten years will be of two kinds-- those developed specifically for nuclear devices or processes, and those developed for quite other purposes but adapted to bomb or power problems. Evidently the second type of development, like those in the relevant fundamental sciences, should not and can not be controlled or secret (except as certain industrial developments may be company secrets). Presumably

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the first type, specific development of better bombs and possibly of power units, will be carried on in Government laboratories or in industrial laboratories under Government supervision. Similarly, the production of materials for such bombs will probably remain a Government monopoly. Granting the nationalistic point of view that we are assuming, one must conclude that these operations will have to be largely secret. Evidently the technical details of a bomb should not be published, and in the processing of materials there are many technical tricks whose publication would do little to stimulate research or industry but might materially assist our potential enemies; however, some results of general technical interest might well be released. A corresponding policy should apply to the technical work already performed in the DSM project. For example, the development of a satisfactory barrier for the diffusion process has been a tedious and difficult task. There is no reason why the recipes that have proved satisfactory should be published, and strong reasons why they should not. On the other hand, there are many researches of a semi-technical nature, such as corrosion studies, results of which probably should be published.

An Editorial Board

Evidently no simple answer to the question of publication is possible. There is some material which should be published immediately, some which should never be published, and a large amount which has to be considered in detail. In each case the judgment must be made by balancing the importance of the material for fundamental scientific and technical research or development against the possible

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use of the material by our potential enemies. But in weighing the second factor it must always be remembered that others can find out what we have and that most of the principles from which the DSM project has developed were already known to the scientific world before secrecy was imposed. It must also be remembered that the strongest arguments for publication are intangible and that the arguments against publication will always appear specific and of immediate importance. Evidently it will be necessary to set up some kind of editorial board whose members will understand the importance of scientific research and that in the long run it will flourish only in an atmosphere of freedom.

Illustrations

So far our discussion has been very general. We would like now to consider some specific questions and suggest tentative answers. These will necessarily be illustrative rather than complete. To be specific we shall choose the period immediately after the termination of the war in Europe as the time of publication and shall further assume that this time will come within the next six months and that by then a large amount of the data that have been accumulated in reports of the DSM project will be in a form ready for publication. We shall consider in some detail, topic by topic, what should be published at that time, what should be held back, and what is doubtful.

Nuclear Physics. The question immediately arises whether the best known values of the nuclear constants as measured at Chicago, Clinton, and Los Alamos should be published. We believe that as far as uranium and all the ordinary elements of the periodic table are

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concerned they should be. This would include fission cross sections, scattering cross sections, absorption cross sections, the number of neutrons emitted per fission, the nature of the fission spectrum, and so on. It is true that these constants are fundamental to the design of a chain reacting unit and that a competent theoretical physicist knowing these constants could design such a unit, but their approximate values were already known before the war in most instances and there is a strong probability that most of them have been remeasured in other countries during the war. They are fundamental to the further development of nuclear science and, therefore, should be made available to those interested in the field. As far as the constants of plutonium are concerned, there may be room for doubt; others may not have enough plutonium available to have made any good measurements on it. Possibly such constants could be at first circulated privately among those interested. This applies even more forcefully to other isotopes such as U^{233} , but there certainly should not be more than a temporary delay in publishing such values.

The Theory of the Pile. This was partly developed before the war and can be developed by any competent theoretical physicist. If it is not published by the DSM group, it will be worked out and published by someone else in this country and certainly worked out elsewhere. Possibly some of the fast neutron reaction theoretical work should be held up.

Chemistry of Uranium and Plutonium. The scientific material in this field should be published. It is fundamental chemistry, and it should be part of the general background of chemical knowledge

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in this country. There are, however, technical points about the actual industrial process used for separating plutonium from uranium fission products which should not be published. For example, at certain points in the bismuth phosphate process the efficiency depends on whether a "direct strike" or a "reverse strike" is used. Such information is technical and should be withheld.

Metallurgy of Uranium and Plutonium. Here again any scientific results of importance should be published as forming part of the general background of metallurgical information for the country, but there are undoubtedly technical tricks and processes which need not be published.

Fission Products. The information on fission products -- particularly on the existence and life times of large numbers of artificial radioactive materials -- will be of tremendous use to science at large and should be published.

Health. Specific data on the shielding properties of various materials might be withheld, though they should be available to scientists who in the future may need them to protect themselves in their experiments. Assuming that such experiments will be done under a system of Government licensing, general publication would not be necessary. On the other hand, general publication of the studies on the effects of radiation and on metabolism should certainly be published.

Instrumentation. Most of this material should be published, as it is likely to be very useful in future work in nuclear science and in other fields.

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Thermal Diffusion and the Centrifuge. A large share of this material probably should be published. Both methods of isotope separation might prove very useful on a small scale scientifically, and certainly as far as the centrifuge is concerned it is unlikely that the information which would be published would help other countries very much. Much work had already been done on thermal diffusion. In fact, there is an extensive report now being held up by one of the journals which covers the whole theory. Some technical material probably should be withheld.

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very much to the scientific position of the country nor would the general theory help our enemies. The details of the preparation and use of the catalyst in the Trail process should not be published. There has been a great deal of work on isotope separation done at Columbia which probably should be published.

Bomb Theory. The various methods for setting off an atomic explosion and predicting its efficiency certainly should not be published.

The Production Plants. Although we are suggesting the publication of the scientific data on which the designs of the Hanford and Clinton piles are based, we believe that no complete description of those piles -- certainly not of the Hanford pile nor of the associated chemical plant -- should be published. There have been many design problems solved that would be valuable to anyone wanting to reproduce a plant but are of little scientific value. The same remarks apply to the K-25, Y-12, and S-50 plants.

Possibility of a Transition Period

A rather elaborate scheme for presenting the results of the Metallurgical Project has been worked out, and the preliminary steps of writing and organization are under way. This material will certainly have to be carefully reviewed in detail before all of it can be released for general publication. A similar situation exists in other parts of the project although the amount of material suitable for publication is much less. It is probable that many of the scientific men now in the DSM project will be returning to their normal

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positions before final publication arrangements have been completed. This transition period will probably also correspond to a transition period in the research. It will take some time to resume research work in various university laboratories and to work out arrangements for further Government research either in the universities or in Government laboratories. It would be unfortunate if, in this transition period, the scientists were cut off from sources of information. It would be highly desirable to arrange a scheme for circulating information during this transition period. Such a scheme would be more or less similar to the present circulation of reports through various parts of the project but would have to be considerably liberalized in terms of formal classification. Every effort should be made in this period to get reports into the Restricted category rather than Secret or Confidential. They could then be used in the instruction of graduate students and as references for research, but by retaining the classification as Restricted Government reports hit-or-miss publication by individuals would be avoided and a systematic scheme of publication could be carried out.

In the later period, when editing and censoring have been finished and all the material that was to be released had appeared in print, it would still be desirable that a limited number of selected individuals should have access to material still classified as Secret.

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Summary

It is recommended that most of the data accumulated by the DSM project should eventually be published, that some of the technical data — particularly on production plants and final devices — should never be published, and that in the transition period between the end of the war and formal publication some method of circulation of information should be set up. It is felt that an editorial board must be set up to judge in detail what material should and should not be released for publication. It is recommended that work in nuclear science after the war should be carried on without secrecy restrictions except for technical work on military devices and processes.

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Appendix to Section 2
Report of Committee on Postwar Policy

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Persons Who Have Presented Views to Committee

<u>Name</u>	<u>Laboratory</u>	<u>Note</u>	<u>Name</u>	<u>Laboratory</u>	<u>Note</u>
Abelson, Dr. P. H.	NRL	i	Kistiakowsky, Dr. C. B.	Los Alamos	m
Allison, Dr. S. K.	Chicago	i, m	Lawrence, Dr. E. O.	California	i
Alvarez, Dr. L. W.	Los Alamos	m	Leverett, Mr. M. C.	Chicago	i
Anderson, Dr. H. L.	Chicago	i	Morrison, Dr. P.	Chicago	i
Bacher, Dr. R. F.	Los Alamos	m	Mulliken, Dr. R. S.	Chicago	i, m
Bethe, Dr. H. A.	Los Alamos	m	Nordheim, Dr. L. W.	Chicago	i, m
Borst, Dr. L. B.	Chicago	m	Ohlinger, Dr. L.	Chicago	i
Brebeck, Mr. W. W.	California	i, m	Oppenheimer, Dr. F.	California	i
Brown, Dr. H. S.	Chicago	m	Oppenheimer, Dr. J. R.	Los Alamos	i, m
Cohen, Dr. K. P.	Columbia	i, m	Parsons, Capt. W. S.	Los Alamos	i, m
Cohn, Dr. W.	Chicago	i, m	Reynolds, Dr. W. B.	California	m
Compton, Dr. A. H.	Chicago	i, m	Seaborg, Dr. G. T.	Chicago	i
Cooksey, Dr. D.	California	i, m	Segre, Dr. E.	Los Alamos	m
Cooper, Dr. C. M.	Chicago	i, m	Seitz, Dr. F.	Chicago	i
Coryell, Dr. C. D.	Chicago	m	Slack, Dr. F. G.	Columbia	i
Creutz, Dr. E. C.	Chicago	i	Smith, Dr. C. S.	Los Alamos	m
Crist, Dr. R. H.	Columbia	i	Snell, Dr. A. H.	Chicago	m
Curtis, Dr. H. J.	Chicago	m	Soodak, Dr. H.	Chicago	m
Dempster, Dr. A. H.	Chicago	i, m	Szilard, Dr. L.	Chicago	i
Doan, Dr. R. L.	Chicago	i, m	Taylor, Dr. H. S.	Columbia	i
Dunning, Dr. J. R.	Columbia	i	Teller, Dr. E.	Los Alamos	m
Elgin, Dr. J. C.	Columbia	i	Urey, Dr. H. C.	Columbia	i, m
Emmett, Dr. P. H.	Columbia	i	VanKeuren, Adm. A. H.	NRL	i
Fermi, Dr. E.	Los Alamos	m	Vernon, Dr. H. C.	Chicago	i
Frank, Dr. J.	Chicago	i	VonNeumann, Dr. J.	Los Alamos	m
Gibbs, Capt. R. H.	NRL	i	Weinberg, Dr. A. M.	Chicago	i
Gunn, Dr. R.	NRL	i	Whitaker, Dr. M. D.	Chicago	i
Hilberry, Dr. N.	Chicago	i	Wilson, Dr. R. R.	Los Alamos	m
Hogness, Dr. T. R.	Chicago	i	Wollan, Dr. E. O.	Chicago	m
Jenkins, Dr. F. A.	California	m	Young, Dr. A.	Chicago	i
Johnson, Dr. W.	Chicago	i, m	Zinn, Dr. W. H.	Chicago	i
Kennedy, Dr. J. V.	Los Alamos	m	Zirkle, Dr. R. E.	Chicago	m
Kilpatrick, Dr. M.	Columbia	i	Wigner, Dr. E. P.	Chicago	m

Key: i = interview

m = memorandum

"Chicago" includes the Metallurgical, Clinton, and Argonne laboratories

A total of 66 persons are listed above. Of these, 44 were interviewed and 37 submitted memoranda. (15 were interviewed and presented memoranda).

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By: ERC Date: 6-3-74

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NOTES FOR USE OF COMMITTEE ON

POST WAR POLICY

(To be returned at close of meeting.)



ORGANIZATION

I. Military Policy Committee

Appointed by direction of the President.

Dr. V. Bush, Chairman
Rear Admiral W. R. Purnell
Major General W. D. Styer
Dr. J. B. Conant
(Alternate to Dr. Bush, participates in all meetings)

II. In charge of the project, Major General L. R. Groves

Scientific Advisors, Dr. J. B. Conant and Dr. R. C. Tolman

Manhattan District (the direct operating agency)
District Engineer, Colonel K. D. Nichols

III. Principal Research and Development Projects

1. Separation by Gas Diffusion through Barriers.

a. Research and Development.
SAM Laboratories, Columbia University
Director, Professor Harold C. Urey
Associate Director, Professor H. S. Taylor
Associate Director, Dr. L. M. Currie

b. Engineering, Kellogg Corporation.

c. Operation, U. S. Carbide & Carbon Company.

2. Separation by Thermal Diffusion.

a. Research and Development, including small plant.
Naval Research Laboratory
Director, Rear Admiral A. H. Van Keuren
Dr. Ross Gunn
Dr. P. H. Abelson

b. Production Plant under Manhattan District.
Engineering and Operation, H. K. Ferguson Company

3. Separation by Electromagnetic Method.

- a. Research and Development.
Radiation Laboratory, University of California
Director, Professor Ernest O. Lawrence
- b. Engineering, Stone and Webster Corporation.
- c. Operation, Tennessee Eastman Corporation.

4. Production by Pile Operation.

- a. Research and Development.
Metallurgical Project
Director, Professor A. H. Compton
Assistant Director, Dr. W. Hillberry
Metallurgical Laboratory, University of Chicago
Director, Professor S. K. Allison
Assistant Director, Joyce C. Stearns
Argonne Laboratory, University of Chicago
Director, Professor E. Fermi
Clinton Engineer Works
Director, Professor M. D. Whittaker
- b. Engineering and Operation, E. I. du Pont de Nemours & Co.

5. Development of Weapons.

Los Alamos
Director, Dr. J. R. Oppenheimer
Associate Director, Captain W. S. Parsons, USN
Associate Director, Professor E. Fermi

IV. Committee on Post War Policy

Appointed by General Groves after discussion with the Military Policy Committee "to make a considered recommendation, from a technical standpoint, of the postwar policy for governmental research and development in the field of utilizing the potential atomic energy of uranium and plutonium."

Dr. R. C. Tolman, Chairman
Professor Warren K. Lewis
Rear Admiral Earl Mills, USN
Professor H. D. Smyth

Captain T. A. Solberg, USN
(Invited to be present at all meetings in order to assist Admiral Mills and to serve as his deputy in case of necessity.)

FIELDS OF RESEARCH AND DEVELOPMENT

A. Fundamental Physics and Chemistry

1. Physics and chemistry of basic materials - uranium, thorium, plutonium, etc.
2. Nuclear Physics.
3. Radio chemistry of fission products produced in piles.
4. Application of neutron beams (from reacting piles) for the production of isotopes and as a tool of investigation.

B. Separation Processes for 25

1. Gas diffusion through barriers.
2. Thermal diffusion.
3. Electromagnetic.
4. Other possible methods, centrifugal, exchange reactions, photochemical, etc.

C. Production Piles for 49, 23, etc.

1. Graphite Piles for 49.
2. Heavy water piles for 49.
3. Study of other possible production piles, light water, beryllium, seeded.
4. Production of 23 from thorium.

D. Military Weapons.

1. Fission bombs.
 - a. Gun method for 25.
 - b. Implosion method for 25 and 49.
2. Improved fission.
3. Other improved bombs.
4. Radioactive poisons.

E. Utilization of Fission Products and Other Isotopes

1. Scientific use as tracers in chemical and biological processes.
2. Medical use as sources of therapeutic radiation.
3. Industrial uses as tracers, sources of radiation, and sources of energy.

F. Piles for Power Production

1. Power for ordinary commercial use.
2. Power for special purposes such as ship propulsion, particularly naval, use in Arctic, etc.
3. Studies of complete utilization of uranium and thorium.

USEFUL MEMORANDA

A. Composition of Uranium

U_{92}^{238} (99.28%) U_{92}^{235} (0.71%) U_{92}^{234} (0.006%)

B. Production of Plutonium (49)

$n + U_{92}^{235} \rightarrow \text{fission products} + xn$

$n + U_{92}^{238} \rightarrow U_{92}^{239} \rightarrow Pt_{94}^{239} + 2\beta^-$

Moderators to produce slow neutrons, graphite, heavy water, light water, beryllium.

C. Production of Isotope (23)

$n + Th_{90}^{232} \rightarrow Th_{90}^{233} \rightarrow U_{92}^{233} + 2\beta^-$

D. Utilization of Fission Energy

Active materials 25, 49, 23.

$n + \text{active material} \rightarrow \text{fission products} + xn + \text{energy}$

If completely utilized.

1 kg active material	6.1×10^{20}	ergs
	17×10^6	kilowatt hours
	17,000	tons TNT

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November 23, 1944

TO: Major General L. R. Groves

FROM: R. C. Tolman

SUBJECT: Cost Estimates

DECLASSIFIED
E.O. 11652, Sec. 3(c), (1) (C)
NWO 730039
By: ERC NARS Date 6-3-74

Part 1.

The Postwar Policy Committee intends to include in its report recommendations on the postwar operation of plants already built or under construction. It will greatly assist the Committee if estimates of material requirements, operating costs, and stand-by costs can be supplied as suggested in Schedules 1, 2, and 3.

Schedule 1

Estimates on Separation of 25 (as of Jan. 1, 1946)

Estimates are desired, as follows, for the S-50, K-25, and Y-12 plants, operated singly and in appropriate combinations:

Material Requirements:

1. Concentration of 25 in the feed material (%)
2. Annual feed requirements (Kg. of U)
3. Hold-up (Kg. of U)
4. Hold-up (Kg. of 25)
5. Concentration of 25 in the output material (%)
6. Annual output (Kg. of 25)
7. Concentration of 25 in waste material (%)
8. Annual amount of waste (Kg. of U)

Cost Estimates:

9. Operating cost per year
10. Stand-by cost per year

Note on item #9: Operating costs should include cost of ore, ore treatment, chlorination and fluorination, any previous enrichment of the feed material, handling the final materials, storing them, preparing them for shipment,

Major Gen. L. R. Groves
November 23, 1944

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personnel, maintenance, replacement parts, purchased power, and fuel for power and steam produced and used at the site.

For the present purposes, operating costs should not include amortization, depreciation, obsolescence, interest, development, or taxes.

It is to be assumed for the present purposes that the plants will have the general operating characteristics expected to prevail when fully completed, say on January 1, 1946, that they will be operated at or near their presently-anticipated convenient capacity levels, that the qualities of feed materials and final enriched materials will have their presently-anticipated values, and that stripping operations will be carried out according to present plans.

Note on item #10: By stand-by cost is meant annual cost of keeping the plants ready to operate on short notice, - i.e., costs of guarding the property, periodically inspecting and testing equipment, occasionally installing replacement parts, etc. Those "costs" which were excluded under "Note on item #1", should again be excluded.

Schedule 2

Estimates on Production of 49 (as of Jan. 1, 1946)

Estimates are desired for the production of 49 at Site W as follows:

Material requirements:

1. Concentration of 25 in feed material (%)
2. Annual feed requirements (Kg. of U)
3. Hold-up in piles, chemical plants, etc. (Kg. of U)
4. Hold-up in piles, chemical plants, etc. (Kg. of 25)
5. Hold-up in piles, chemical plants, etc. (Kg. of 49)
6. Annual output of 49 (Kg. of 49)
7. Concentration of 25 in waste material (%)
8. Annual amount of waste material (Kg. of U)

Cost Estimates:

9. Operating cost per year
10. Stand-by cost per year

Note on items #9 and #10: The definitions of operating cost and stand-by cost should be taken to correspond to those given under Schedule 1.

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Major General L. R. Groves
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Schedule 3

Estimates on Separation of P-9 (as of Jan. 1, 1946)

Estimates are desired for the Trail plant, and also for the distillation plants taken together, as follows:

Material Requirements:

1. Concentration of P-9 in the output material (%)
2. Annual output (Kg. of P-9)

Cost Estimates:

3. Operating cost per year
4. Stand-by cost per year

Note on items #3 and #4: The definitions of operating cost and stand-by cost should be taken to correspond to those given under Schedule 1.

Part 2.

The Committee intends also to make recommendations, as to the feasibility of constructing 25, 49, and P-9 plants of appreciably lower construction and operating costs, as advances in technology permit. It will assist the Committee if estimates of construction costs for present type plants can be supplied as suggested in Schedule 4.

Schedule 4

Estimates on Plant Construction Costs

Estimates are desired on plant costs for the S-50, K-25, Y-12 plants, for the W plant, for the P-9 plant at Trail, and for the P-9 distillation plants, as follows:

1. Actual cost
2. Scrap value
3. Cost-to-reproduce

Note on item #1: Actual cost refers to plants already built or under construction and should include costs of design and construction of process, power, steam and other auxiliary units, including materials, equipment and installation. However, costs of development work, living quarters, community facilities, external roadways, and costs of constructing factories for producing plant equipment, should not be included.

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Major General L. H. Groves
November 23, 1944

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Note on item #2: Scrap value likewise refers to plants already built or under construction and is defined as the amount which might be received by selling the plant buildings and equipments in their entireties or piecemeal within a year or two after the end of the war, assuming a normal market for industrial equipment.

Note on item #3: Cost-to-reproduce the existing plants should be estimated on the assumption that construction would take place in peacetime, at a reasonable pace, and near an industrial center. Items to be included in cost-to-reproduce are to be taken the same as in actual cost except that the cost of design should be excluded.

It is recognized that the estimates requested are numerous and in some cases difficult to obtain. I shall be glad to receive suggestions as to changes that might lead to more significant figures or equally significant figures that could more easily be obtained.

Sincerely yours,

RCT-kb

Richard C. Tolman
Vice-Chairman, NDRC

By ERC NARS, Date 6-3-74

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16. Tolman 5/16/46

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Report of
Committee on Postwar Policy

December 18, 1944

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1. Authorization and Membership.

On 29 August 1944, after discussion with the Military Policy Committee, Major General L. H. Groves appointed a committee "for the purpose of securing a considered recommendation, from a technical standpoint, of the postwar policy for governmental research and development in the field of utilizing the potential atomic energy of uranium and plutonium".

The Committee appointed consists of Dr. W. K. Lewis, Professor of Chemical Engineering at the Massachusetts Institute of Technology, Rear Admiral E. W. Mills, Assistant Chief of the Bureau of Ships U.S.N., Dr. H. D. Smyth, Professor of Physics at Princeton University, and Dr. K. C. Tolsan, Vice-Chairman of the National Defense Research Committee. On the invitation of General Groves, Captain T. A. Solberg U.S.N. has sat with the Committee to assist Admiral Mills and to serve as his deputy in case of necessity.

2. Basic of Information.

The technical information on which this report is based was to some extent already available to members of the Committee previously associated with the project, to some extent obtained by specific request from General Groves' office, and to a very large extent obtained directly from the principal scientists who have been responsible for the research and development work of the project.

To secure this third type of information the Committee invited the directors of the scientific work of the project, together with their scientific associates, to appear for interview and also to present such written memoranda on postwar policy as seemed to them desirable. As a consequence the Committee has had a total of forty-five direct interviews with the directors and scientists responsible for the five principal phases of the scientific work of the project, - on the separation of U²³⁵ by diffusion

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through barriers, on the separation of U²³⁵ by thermal diffusion, on the separation of U²³⁵ by the electromagnetic method, on the preparation of Pu²³⁹ by pile operation, and on the military utilization of U²³⁵ and Pu²³⁹ as high explosives. In addition the Committee has received from scientists on the project a total of thirty-seven memoranda on different phases of postwar policy. (A list of the scientists interviewed or presenting memoranda will be found in Appendix to Section 2). The Committee considers that it has received a quite complete statement of the views held by the scientists working on the project as to the technical factors affecting postwar policy.

While principally concerned with receiving opinions on technical matters, the Committee has encouraged a full and frank expression by the scientists as to their views on administrative factors affecting postwar policy. It may be remarked that substantially complete agreement among scientists was found as to their views on technical factors and a large measure of agreement as to their views on administrative factors.

The Committee has not undertaken any inquiry into the views held by industrialists engaged on the project. Such a study could be made prior to a later report if the Committee is so instructed.

3. Philosophy of the Report.

The results of the Committee's study will be found in the next two sections entitled "Comments on Administrative Matters" and "Technical Recommendations." Before proceeding to them, it will be advantageous to make certain remarks as to points of view which have governed the thinking of the Committee in preparing this report.

The most important conclusion of the Committee is that the military objectives involved in the field properly have overriding importance. The Committee feels that as regards the future security of the nation the military potentialities are great enough to warrant continuing the overriding priority on military objectives into the peace period.

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In reaching the technical recommendations made at the end of the report the Committee, in accordance with the above conclusion, has regarded the maintenance of military superiority as the primary objective which must dictate present national planning on the utilization of nuclear energy in this country. The first four recommendations of the Committee, as to the necessity for further governmental work on the separation of U²³⁵, on the production of Pu²³⁹ and U²³³, on the development of military weapons, and on the development of naval power, are evidently directly related to this problem of military protection. In addition, however, the two further recommendations, as to the necessity of adopting vigorous policies of governmental encouragement to fundamental research and to industrial development in the general field of nucleonics, are regarded by the Committee as themselves essential to the maintenance of a sufficiently advanced scientific and technical position so that the military protection of the country will be assured. The Committee believes that a strong development of the science and technology of nucleonics would in any case be a major national asset.

The technical recommendations made at the end of the report are presented without detailed discussion of the considerations on which they are based or the consequences which they entail. This is done partly in the interests of brevity and clarity of expression, and partly in order to make a first report possible at this time. It is the intention of the Committee to amplify the report from time to time by presenting appendices which include more detailed discussions. In the meantime, the recommendations as made present the well considered views of the Committee on the technical aspects of a proper postwar policy.

In addition to considering the technical matters upon which the Committee was specifically asked to report, the Committee has also given some attention to administrative questions, since the scientists interviewed have themselves expressed much interest and concern in such matters, and since the possibility of any recommended technical program is itself partly dependent on the administrative framework within which it operates. In view of this interrelation between technical and administrative possibilities, the Committee presents in the next section a number of comments on administrative matters, reserving its definite recommendations on technical matters for the final section of the report.

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4. Comments on Administrative Matters.

The postwar policy of Government as to the administration of activities in the field of utilizing nuclear energy is a matter of deep interest to all who are concerned with the military safety of the country, and with scientific and industrial development in the general field of nucleonics. Wise decisions as to the nature of this policy, arrived at as soon as may be practicable would serve to allay anxieties as to the future now expressed by scientists working in the field, and would make it possible to plan for postwar work with minimum losses due to interruption of effort and dispersal of personnel.

Certain administrative features of the present program of work in the field may be commented on as follows: -

a. At the present time, the entire program for research, development, production and utilization in the field of nuclear energy is carried out under the immediate administrative control and detailed supervision of Government.

In view of the close relation of work on nuclear energy to national defense, it appears to the Committee that postwar work in this field should still remain under the general administrative control of Government.

b. The present agency of Government principally concerned with the direction of the program is the War Department. The actual work is carried out partly by already-established government laboratories, but largely by extensive special laboratories and manufacturing plants which have been set up for the purpose through government contracts with universities and industrial companies.

In the opinion of the Committee, consideration should be given to the postwar establishment of a special government authority for the control of funds and distribution of work in the field of nucleonics. This postwar authority should have military as well as civilian members, but it is felt that the project should not be under the immediate direction of the Armed Services except for those developments of a strictly military nature. The agency should determine the distribution of work among government, military and civil laboratories, academic institutions and industrial organizations. Insofar as security requirements permit, it would appear important to promote supplementary independent scientific and technical developments by academic and industrial laboratories,

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under the general administrative control but not detailed supervision of Government. The authority should also see that proper steps are taken to survey and insofar as feasible control the sources and supplies of the fundamental materials uranium and thorium.

c. The present program is a very large and expensive one, operated with the purpose of achieving maximum speed rather than economy, and entirely financed by Government.

It appears clear to the Committee that the total postwar government budget for work in the field of nucleonics will have to be much smaller than that which has been appropriate in wartime. Nevertheless, it is felt that fundamental research in the field should be carried on at a substantially undiminished rate.

d. Substantially the sole purpose of the present program is the development and production of powerful weapons for use in the present war.

In the opinion of the Committee, postwar policy should be concerned not merely with the development of military weapons, but with the general development of the field of nucleonics including possible peacetime applications.

e. At present the scientific personnel engaged on various phases of this work has been largely drawn from the universities. This has led to a complete interruption of the training of young men in the fundamental knowledge of nuclear physics and chemistry.

In the future it is essential that able young men become interested in nucleonics and thoroughly trained in its fundamentals. The university departments of physics and chemistry must have their strength restored and if possible augmented. Students at all levels must be encouraged. To avoid a serious hiatus in the supply of such men appropriate steps should be initiated now.

f. In the interests of military security, the present program is carried out under a policy which enforces utmost secrecy as to the nature, extent and results of the work and which provides for compartmentalization of effort with severe restrictions on the flow of scientific and technical information between different groups of scientists and industrialists.

The Committee expresses approval of the war time policy of maintaining utmost secrecy concerning work on the utilization of

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nuclear energy, including restrictions on the flow of information between different groups working in the field. The postwar policy as to secrecy, especially after demonstrated military use of the weapon, can be relaxed in certain aspects to advantage, since a wider dissemination of scientific and technical knowledge will lead to more rapid progress. Nevertheless the Committee is of the opinion that much information as to scientific and technical results, as to methods of manufacturing active materials, as to the nature and mode of use of military weapons, and as to locations and time schedules will still have to be kept as secret as practicable in the postwar period. The frequent argument -- that the information will leak out anyhow -- does not mean that its dissemination cannot be importantly delayed by an appropriate security policy. And the other frequent argument -- that military safety depends primarily on keeping ahead in the development of superior nuclear weapons -- does not cover the whole story in a situation where even less well developed weapons may nevertheless be sufficient to produce disastrous results if used just prior to a formal declaration of war. On the other hand the Committee emphasizes the stultifying effect of too much secrecy on fundamental research and on the training of young scientists in this field. Hence, in the absence of international agreements to the contrary, the Committee believes that a well considered postwar security policy will have to be established in which careful consideration is given to the relative advantages and disadvantages of each proposed disclosure of information.

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5. Technical Recommendations.

In the light of the previously-stated conviction that military considerations must be paramount in the field of nucleonics, the Committee makes the following recommendations as to the technical aspects of the postwar policy of Government:

a. Separation of U^{235} . The Government should arrange for continued development and operation of the existing plants for the manufacture of U^{235} , using the methods of diffusion through membranes, of thermal diffusion and of electromagnetic separation, until it has become clear which method or combination of methods is most advantageous. Work on existing plants should be supplemented by research and design studies of possible basic improvements in the separation methods employed which might change their relative advantages. In addition research should be encouraged on the possible separation of U^{235} by centrifugal methods, by alternative electromagnetic methods, by chemical exchange processes, or by other methods not now developed. Special attention should be given to processes which might be carried out successfully with such small scale apparatus as to escape notice. The operation of existing plants should in any case be continued for the production of such amounts of active material as are needed for military security, for use in scientific and engineering investigations, and for use in any industrial applications that may be authorized.

b. Production of Pu^{239} and U^{233} . The Government should arrange for continued study and operation of the existing graphite piles for the manufacture of plutonium, until the potentialities of this method of producing active material have become clear. The operation should also be continued to produce plutonium for the previously mentioned military, investigational and industrial needs. This operation should be supplemented by research and design studies on improved production piles, giving consideration to alternative moderators and coolants. In this connection it is already clear that heavy water would have some important advantages over graphite as a moderator, that the use of beryllium as a moderator must be considered, and that coolants other than air or water present important possibilities. The development work on piles for the production of U^{233} which has been started should be continued. The theoretical considerations of the possibilities of the complete burning of uranium and thorium which have been initiated should be continued. Special attention should be given to the possibility that U^{233} could be multiplied in amount if allowed to undergo fission in the center of a thorium absorber where fresh U^{233} would be produced by neutron capture.

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c. Military Weapons. The Government should continue the development of nuclear weapons as a project of overriding urgency so long as national security may be endangered. Nuclear fission bombs of greatly improved efficiency are certainly in sight, and thermo-nuclear bombs of ten thousand fold greater power may even be feasible. These latter would permit an enemy in a single day preceding declaration of hostilities to carry out an action which might be decisive for the outcome of a war. Studies of the possible use of fission products as radioactive poisons should be undertaken at such priority as is necessary for military security.

d. Power Production. The Government should initiate and push, as an urgent project, research and development studies to provide power from nuclear sources for the propulsion of naval vessels. It might be advisable to authorize the initiation of these studies at once, without waiting for the postwar period, in order to utilize scientific personnel already familiar with pile theory and operation. The development of fission piles solely for the production of power for ordinary commercial use does not appear economically sound nor advisable from the point of view of preserving national resources.

e. Fundamental Research. The Government should pursue a policy of vigorous encouragement to fundamental research in the general field of nucleonics. Such research should include studies of the physical, chemical, metallurgical and nuclear properties of materials useful as reactants, moderators and coolants in nuclear chain reactions, or useful for construction, shielding and control. Research should also include studies of the physics and chemistry of the fission products produced in pile operation, and of isotopes that can be produced by exposure to pile neutrons. Separation methods for the production of isotopes in general from natural materials should also be investigated at the research level. The application of isotopes as tracers and agents in biological and medical research should be pushed. The therapeutic use of isotopes and of radiation from piles should be investigated. Attention should be given to the construction of small enriched piles which would be especially useful for scientific and possible commercial applications. Above all, however, a strong attack should be made on the basic problems of nuclear structure in order to provide a sound nuclear theory which can be applied to neutron chain reactions, thermo-nuclear reactions, and other nuclear processes. It will be such studies motivated by scientific considerations that may be expected to disclose the most important unforeseen possibilities that lie in the field of nucleonics.

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f. Industrial Development. The Government should pursue a policy of vigorous encouragement to the development of a strong nucleonics industry. Isotopes isolated from the fission products of piles or directly produced by neutron bombardment in piles should be made commercially available. They will find applications as tracers in scientific and technological studies, as therapeutic agents in medicine, and as concentrated sources of radiation or energy for use in attacking special problems as in radiography, geophysical exploration, illumination, packaged power production, and other fields. Attention should be given to the direct use of radiation from active piles for medical treatment and for producing useful modifications in the structural properties of solids, or for inducing desirable chemical reactions.

The development of a strong nucleonics industry is regarded by the Committee as a very important means of insuring national superiority in the new field. At the start such a development would require support from the Government which at present controls all raw materials, production plants, fissionable materials and fission products. Moreover, the commercial applications already in sight are not sufficient to give assurance that a major non-military industry could be developed in the immediate future. In the long time future, however, growth of a self-supporting industry of great magnitude and many ramifications seems possible.

Dr. W. K. Lewis

Rear Admiral E. B. Mills USN

Dr. H. D. Smyth

Dr. R. C. Tolson, Chairman

Appendix to Section 2
Report of Committee on Postwar Policy

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Persons Who Have Presented Views to Committee

<u>Name</u>	<u>Laboratory</u>	<u>Note</u>	<u>Name</u>	<u>Laboratory</u>	<u>Note</u>
Abelson, Dr. P. H.	NRL	i	Kistiakowsky, Dr. G. B.	Los Alamos	m
Allison, Dr. S. K.	Chicago	i, m	Lawrence, Dr. E. O.	California	i
Alvarez, Dr. L. W.	Los Alamos	m	Leverett, Mr. M. C.	Chicago	i
Anderson, Dr. M. L.	Chicago	i	Morrison, Dr. P.	Chicago	i
Bacher, Dr. R. P.	Los Alamos	m	Mulliken, Dr. R. S.	Chicago	i, m
Bethe, Dr. H. A.	Los Alamos	m	Nordheim, Dr. L. W.	Chicago	i, m
Borst, Dr. L. B.	Chicago	m	Ohlinger, Dr. L.	Chicago	i
Brobeck, Mr. W. M.	California	i, m	Oppenheimer, Dr. F.	California	i
Brown, Dr. H. S.	Chicago	m	Oppenheimer, Dr. J. R.	Los Alamos	i, m
Cohen, Dr. K. F.	Columbia	i, m	Parsons, Capt. W. S.	Los Alamos	i, m
Cohn, Dr. W.	Chicago	i, m	Reynolds, Dr. W. B.	California	m
Compton, Dr. A. H.	Chicago	i, m	Sanborn, Dr. G. T.	Chicago	i
Cooksey, Dr. D.	California	i, m	Segre, Dr. E.	Los Alamos	m
Cooper, Dr. G. M.	Chicago	i, m	Seitz, Dr. F.	Chicago	i
Coryell, Dr. C. D.	Chicago	m	Slack, Dr. F. G.	Columbia	i
Creutz, Dr. E. C.	Chicago	i	Smith, Dr. C. S.	Los Alamos	m
Crist, Dr. E. H.	Columbia	i	Snell, Dr. A. H.	Chicago	m
Curtis, Dr. H. J.	Chicago	m	Soodak, Dr. H.	Chicago	m
Dampster, Dr. A. H.	Chicago	i, m	Szilard, Dr. L.	Chicago	i
Doan, Dr. R. L.	Chicago	i, m	Taylor, Dr. H. S.	Columbia	i
Dunning, Dr. J. R.	Columbia	i	Teller, Dr. E.	Los Alamos	m
Elgin, Dr. J. C.	Columbia	i	Urey, Dr. H. C.	Columbia	i, m
Emmett, Dr. P. H.	Columbia	i	VanKeuren, Adm. A. H.	NRL	i
Fermi, Dr. E.	Los Alamos	m	Vernon, Dr. H. C.	Chicago	i
Frank, Dr. J.	Chicago	i	VonNeumann, Dr. J.	Los Alamos	m
Gibbs, Capt. R. H.	NRL	i	Weinberg, Dr. A. M.	Chicago	i
Gunn, Dr. R.	NRL	i	Whitaker, Dr. M. D.	Chicago	i
Hilberry, Dr. H.	Chicago	i	Wilson, Dr. R. E.	Los Alamos	m
Hogness, Dr. T. A.	Chicago	i	Wollan, Dr. E. O.	Chicago	m
Jenkins, Dr. F. A.	California	m	Young, Dr. A.	Chicago	i
Johnson, Dr. W.	Chicago	i, m	Zinn, Dr. W. H.	Chicago	i
Kennedy, Dr. J. E.	Los Alamos	m	Zirkle, Dr. R. E.	Chicago	m
Kilpatrick, Dr. M.	Columbia	i	Wigner, Dr. E. P.	Chicago	m

Key: i = interview

m = memorandum

"Chicago" includes the Metallurgical, Clinton, and Argonne laboratories

A total of 66 persons are listed above. Of these, 44 were interviewed and 37 submitted memoranda. (15 were interviewed and presented memoranda).

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DOCUMENT DESCRIPTION *MED Series I, Part II Folder*
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DOCUMENT DATE *Feb 12, 1945*

DATE WITHDRAWN *1-20-72*

C O P Y

20 July 1945.

Dear Dr. Oppenheimer:

You will recall that at the 31 May meeting of the Committee the Scientific Panel was requested to submit recommendations on future policies in this field. Your report of 16 June, which you submitted as a partial answer to this question, has been of material assistance to the Committee in its deliberations; however, it is felt that the Committee's thinking on this matter has now reached a point where more detailed recommendations will soon be needed. The Committee therefore requests that the Scientific Panel submit in considerable detail its recommendations pertaining to the research and development programs in this field for the future.

In making the study, the Panel should feel free to obtain the advice of other scientists and engineers now concerned with the project and to associate with themselves for the study such of these men as they may desire. The program should be considered as far as possible without reference to future organization since no one can now tell how the government will eventually handle this matter. The study should eventuate in a report which could be placed in the hands of those who will have the over-all authority at some later time. It is hoped the report could be ready not later than October 1, 1945.

The Committee feels it important to have clearly defined objectives stated in each of several important areas such as: future military uses, power production, industrial or civic uses of low level power, the thorium program, improved processes for separation, basic research in chemistry, basic research in nuclear physics. It is hoped that the Panel in its report will not only define such objectives but indicate the scale of effort which in their opinion should be maintained in each case in the postwar world. In particular, the Committee would like to know approximately how many of each of the following category of scientists and engineers should be concerned full time with the work required for reaching each objective:

- (a) scientists of the standing of members of the National Academy;
- (b) engineers of the standing of the top group in leading concerns;
- (c) experienced physicists and chemists at or above Ph.D. level; and
- (d) engineers and technicians with collegiate training.

The Committee further hopes that the Panel will where possible give an estimate of the time required to reach certain of the objectives.

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At the present stage of discussion, it seems less important to consider which phases of the work should be done by government agencies, which by industry, which in universities, than to get a comprehensive picture of what is to be done and have this picture in considerable detail. Furthermore, it will be very important for those charged with determining future policy in this matter to have the Scientific Panel's judgment as to relative priorities of work in each area and towards each goal. It would seem to the Committee from the evidence already presented that the field is so vast and the amount to be done so great that the question of priorities is of the utmost importance. In considering this entire matter, the Panel should consider alternatives based on different assumptions as to the availability of the two strategic materials. On account of the limited supplies of tubealloy, the development of the most effective utilization of the raw material is obviously of prime importance. This includes the large stocks of partially depleted material now in our hands. There are clearly two angles to this problem, first the effective use of "25" and second the conversion of the other isotopes.

The Committee realizes that what is being asked requires a great deal of study and is by necessity only a first approximation. Nevertheless, a clear technical outline of the problems ahead is essential for further national planning. General Groves and the Manhattan District are as anxious as the Committee for the early appearance of this report and will be glad to assist in any way.

Very truly yours,

GEORGE L. HARRISON
Acting Chairman
Interim Committee

Distribution:

Copy #1. J. R. Oppenheimer
Copy #2. A. H. Compton
Copy #3. E. O. Lawrence
Copy #4. Enrico Fermi
Copy #5. Interim Committee Files.

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(This copy made for General Groves)

Professor Ernest Lawrence

①

My dear Dr. Lawrence,

When Dr. Oppenheimer was here last week,

~~he obtained some figures on the~~

~~supply of ^{raw} material which he asked~~

us to send you by teletype

certain figures as to ^{supply of}

raw material ^{I understand} which you

requested in connection with

your work on the Scientific

Panel of the Interim

Committee. Owing to the

highly secret character of

this information, I am

sending it instead by registered

mail... you will appreciate

how important a knowledge of potential supplies would be to a possible enemy.

The following figures give our present best estimates:

1. Primary Raw material

a. Concentration greater than 10%

In sight 2×10^4 tons
Presumptive 5×10^4 tons (additional)

b. Concentration 0.1 to 10%

In sight 3×10^4 tons
Presumptive 10^5 tons (additional)

c. Concentration 0.05 to 0.01%

Presumptive 4×10^5 tons

2. Secondary Raw material

Supply essentially unlimited.

It is believed that all of the above material could be profitably processed. The figures given are considerably different from those available last year since they reflect increasing knowledge as to actual deposits.

Sincerely yours

L. P. Groves

Major General USA

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C O P Y

May 16, 1945.

Dr. J. R. Oppenheimer,
P. O. Box 1663,
Santa Fe, New Mexico.

Dear Dr. Oppenheimer:

With the approval of the President, the Secretary of War has appointed a small inter-departmental committee under his chairmanship for the purpose of studying and reporting on the future course of the United States with respect to the field covered by the Manhattan Engineer District.

The committee is anxious to invite a small group of the scientific leaders in the field to meet with the committee and give it the benefit of their ideas. With this in mind, the committee hopes for an opportunity within the near future to hear your views as well as those of Dr. A. H. Compton, Dr. E. O. Lawrence, and Dr. Enrico Fermi. At the moment it is not possible to designate a definite day for you to meet with the committee, but every effort will be made to accommodate the time to your work on the project and to your personal convenience. While the committee will no doubt wish to ask you questions it has formed no definite agenda for its meeting with the scientific group, preferring that you feel free to give your views on any phase of the problem that you may wish to discuss.

In view of the fact that the appointment and work of the committee is for the present closely guarded, it is urgently requested that you regard its existence and its plans as TOP SECRET.

The committee will communicate with you sometime next week to arrange a mutually satisfactory time for you to come to Washington.

Cordially yours,

GEORGE L. HARRISON
For the Secretary of War.

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WASHINGTON, D. C.

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19 June 1945

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By authority of

MEMORANDUM TO Mr. G. L. HARRISON

On 29 August 1944, I appointed a committee to look into the postwar policies with respect to our project. The committee consisted of Dr. R. C. Tolman, Dr. W. K. Lewis and Dr. H. D. Smyth; all of whom were generally familiar with our project and Rear Admiral E. W. Mills, USN, Assistant Chief Bureau of Ships. Although technically an alternate for Admiral Mills, Captain T. A. Solberg, USN, actually participated in all of the Committee's work. The purpose was to secure a considered recommendation, from a technical standpoint, of the postwar policy for governmental research and development in the field of utilizing the potential atomic energy of uranium and plutonium.

This Committee was appointed for three reasons:

1. Because it was desired by Drs. Bush and Conant.
2. To convince the scientists that we were not forgetting the postwar problems.
3. Because I felt it would be of considerable value to me.

No formal action was ever taken on the report of this Committee nor was any ever intended but its work was carefully reviewed by me.

I am enclosing herewith a copy of their report dated December 28, 1944, together with three appendices, listing the persons interviewed by the Committee, presenting certain views on the problem of secrecy, and discussing the probable advantages from a logistic standpoint of the possible use of nuclear energy for the propulsion of naval vessels. These appendices were not formally adopted as a considered expression of the views of the Committee but none of the members took objection to them.

While the Interim Committee will probably not wish to read them in detail I believe it would be desirable for you to have Lt Arneson do so. Additional copies can be provided if you should ever desire.

Sincerely yours,

L. R. GROVES

Major General, USA

Incl-report

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 NND 730039
 By ERC NANS Date 6-3-

By ERG Name Date 8-3-57
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File No. IS 2-9,11
Description - Memo to Mr. J. L. Harrison and 15 agents

Letter	No. of Copies
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Report	50 10
Drawing	
Other	10 70

Date of Document 19 Jan 49
From Mr. [illegible]
To Mr. [illegible]

Inclosures or Attachments *None*

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Sincerely yours,

Incl-report

L. R. GROVES
Major General, USA

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17 August 1945.

The Secretary of War,
War Department,
Washington, D. C.

Dear Mr. Secretary:

The Interim Committee has asked us to report in some detail on the scope and program of future work in the field of atomic energy. One important phase of this work is the development of weapons; and since this is the problem which has dominated our war time activities, it is natural that in this field our ideas should be most definite and clear, and that we should be most confident of answering adequately the questions put to us by the committee. In examining these questions we have, however, come on certain quite general conclusions, whose implications for national policy would seem to be both more immediate and more profound than those of the detailed technical recommendations to be submitted. We, therefore, think it appropriate to present them to you at this time.

1. We are convinced that weapons quantitatively and qualitatively far more effective than now available will result from further work on these problems. This conviction is motivated not alone by analogy with past developments, but by specific projects to improve and multiply the existing weapons, and by the quite favorable technical prospects of the realization of the super bomb.

2. We have been unable to devise or propose effective military countermeasures for atomic weapons. Although we realize that future work may reveal possibilities at present obscure to us, it is our firm opinion that no military countermeasures will be found which will be adequately effective in preventing the delivery of atomic weapons,

The detailed technical report in preparation will document these conclusions, but hardly alter them.

3. We are not only unable to outline a program that would assure to this nation for the next decades hegemony in the field of atomic weapons; we are equally unable to insure that such hegemony, if

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achieved, could protect us from the most terrible destruction.

4. The development, in the years to come, of more effective atomic weapons, would appear to be a most natural element in any national policy of maintaining our military forces at great strength; nevertheless we have grave doubts that this further development can contribute essentially or permanently to the prevention of war. We believe that the safety of this nation - as opposed to its ability to inflict damage on an enemy power - cannot lie wholly or even primarily in its scientific or technical prowess. It can be based only on making future wars impossible. It is our unanimous and urgent recommendation to you that, despite the present incomplete exploitation of technical possibilities in this field, all steps be taken, all necessary international arrangements be made, to this one end.

5. We should be most happy to have you bring these views to the attention of other members of the Government, or of the American people, should you wish to do so.

Very sincerely,

For the Panel

Handwritten: Draft: and copy of the report
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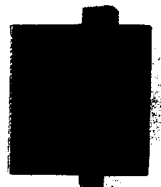
18 August 1945.

OFFICIAL

HAVE BEEN GIVEN THE FOLLOWING ~~OPTIONAL~~ FIGURES ON PRIMARY RAW MATERIAL SUPPLY GREATER THAN TEN PER CENT CERTAIN TWO TIMES TEN TO THE FOUR TONS PRESUMPTIVE A FURTHER FOUR POINT FIVE TIMES TEN TO THE FOUR TONS. IN RANGE ONE ~~TEN~~ TENTH TO TEN PERCENT CERTAIN THREE ~~TEN~~ TIMES TEN TO THE FOUR TONS PRESUMPTIVE A FURTHER TEN TO THE FIVE TONS IN RANGE FIVE TO SEVEN TIMES TEN TO THE MINUS FOUR PRESUMPTIVE FOUR TIMES TEN TO THE FIVE TONS. THESE FIGURES ARE VERY DIFFERENT FROM LAST YEARS AND REFLECT INCREASING KNOWLEDGE OF ~~XXXX~~ ACTUAL DEPOSITS. I CAN NOT GIVE YOU BY ~~TELETYPE~~ THE BREAKDOWN BY LOCATIONS. THE OTHER PRIMARY MATERIAL WAS ESSENTIALLY UNLIMITED ABUNDANCE. IT IS BELIEVED THAT ALL THE MATERIAL SUMMARIZED ABOVE COULD BE VERY PROFITABLY PROCESSED.

jr

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REF ID: A66055
 By: ERC NARS; Date: 12-3-74
~~Top Secret~~

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WAR DEPARTMENT

P. O. Box 2616
WASHINGTON, D. C.

REFER TO FILE NO. _____

21 August 1945

Professor Ernest O. Lawrence
University of California
Berkeley, California

My dear Dr. Lawrence:

When Dr. Oppenheimer was here last week he asked us to send you certain figures as to supplies of raw material, which I understand you requested in connection with your work on the Scientific Panel of the Interim Committee. Owing to the highly secret character of this information, I am sending it by courier. You will appreciate how important a knowledge of potential supplies would be to any foreign nation. I therefore request that this letter be returned and that these figures be guarded from all persons other than the actual panel members. The following figures give the estimates which were given to Dr. Oppenheimer. I have no confidence in them.

1. Primary Raw Material.

a. Concentration greater than 10%

In sight 2×10^4 tons
Presumptive 5×10^4 tons (additional)

b. Concentration 0.1 to 10%

In sight 3×10^4 tons
Presumptive 10^5 tons (additional)

c. Concentration 0.05 to 0.07%

Presumptive 4×10^5 tons

2. Secondary Raw Material

Supply essentially unlimited.

Some people believe that all of the above material could be profitably processed but such a feeling seems to ignore sound economics if military use is disregarded. The figures given are just guesses and are considerably different from those available last year.

Sincerely yours,

L. R. GROVES
Major General, USA

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E.O. 11652, Sec. 3(E) and 5(E) of (E)
NND 730039
BY ERC NARS Date 6-3-74

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Description

2. Scientific Panels to submit recommendations pertaining to the research and development program.

Letter

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Letter of the to Dr Oppenheimer ad 8/9/45 (20/2. A)

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ENG FORM 1352
1 JUNE 45



WAR DEPARTMENT

P. O. Box 2610
WASHINGTON, D. C.

29 August 1945

MEMORANDUM to Mr. George L. Harrison.

1. As a result of your letter of 20 July 1945, requesting the Scientific Panel to submit in considerable detail its recommendations pertaining to the research and development program in the atomic energy field for the future, Professor Lawrence, Professor Urey, and others working on the report have asked for considerable detailed information of a top secret category. For example, Professor Urey has asked for past and predicted production figures for all of the major plants, operating efficiencies, and other related performance data that we have restricted to a very small number of individuals in the organization. They have also asked for exact figures on availability and costs of procuring and refining raw materials. I have authorized the release of some general information on these items but I do not consider that exact figures on production and efficiencies of plants are necessary to enable the Scientific Panel to report on the items mentioned in your letter of 20 July. Moreover, I would not be willing to have these figures disclosed without my personal approval of the methods used in determining them and this I do not have the time to do.

2. I am inclosing a draft of a letter to Dr. Oppenheimer which you may find useful in the preparation of a suitable letter.

L. R. GROVES,
Major General, USA.

Incl.:

Draft of ltr. to Dr.
Oppenheimer, 8/29/45

Distribution:

X-10 - 10000000

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20 August 1945

Dr. J. R. Oppenheimer,
P. O. Box 1683,
Santa Fe, New Mexico.

Dear Dr. Oppenheimer:

In my letter of 20 July 1945, requesting the Scientific Panel to submit its recommendations pertaining to the research and development program in the atomic energy field for the future, I stated that it is hoped the report could be ready not later than 1 October 1945. In view of the successful use of the atomic bomb and the early end of the war, it now appears highly desirable that the report be ready even sooner if that is possible.

In order to expedite completion of your report, I do not believe it is advisable or necessary to attempt to include comprehensive data on production, performance, and costs of existing plants, and exact figures on availability and costs of procuring and refining raw materials. Much of this information is available to the Committee from other sources, and I would prefer that you devote the time available to you to the preparation of the requested recommendations with respect to research and development.

I would appreciate it very much if you would let me know when I could expect to receive the report.

Very truly yours,

Distribution:

Copy #1. J. R. Oppenheimer
Copy #2. A. H. Compton
Copy #3. E. O. Lawrence
Copy #4. Enrico Fermi
Copy #5. Interim Committee Files
Copy #6. Maj. Gen. L. R. Groves

GEORGE L. HARRISON,
Acting Chairman,
Interim Committee.

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BY: DATE: 1/19/54

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FILE NO. T-2-912 (h)

By ERC NARS, Date Aug 31, 1945
 Subject Monographs on future research and development
 Date of Document
 From Mr. L. Harrison
 To J. R. Oppenheimer

Inclosures or Attachments

[illegible]

August 31, 1945.

Dr. J. R. Oppenheimer,
P. O. Box 1663,
Santa Fe, New Mexico.

Dear Dr. Oppenheimer:

When I wrote you on July 20 requesting the Scientific Panel to submit recommendations on the future research and development program in the field of atomic energy, I expressed the hope that these recommendations could be in the hands of the Committee by October 1. In view of the increased tempo of events, the Committee would very much appreciate having your report before that date if possible.

In order to speed completion of your report, you need not attempt to include comprehensive data on production, performance, and costs of existing plants, nor exact figures on availability and costs of procuring and refining raw materials, since much of this information is available to the Committee from other sources. It is felt that our needs would best be met if you would set aside, for the present at least, consideration of many of the time consuming details and concentrate on the broader aspects of future research and development.

I should very much appreciate having your estimate of when the report, recast along the lines indicated, can be completed.

Very truly yours,

GEORGE L. HARRISON
Acting Chairman
Interim Committee

Distribution:

- Copy #1. J. R. Oppenheimer
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DOCUMENT DATE *(Sept. 30, 1944)*

DATE WITHDRAWN *1-21-72*

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Copy 2 of 2 copies each
of 8 pages series A

Thursday, 19 July 1945
10:00 A.M. - 1:15 P.M.

Members of Committee

By Invitation

Maj. Gen. Leslie R. Groves		
Brig. Gen Kenneth C. Royall	)	
Mr. William L. Marbury	)	Consideration
Lt. George S. Allan		of IV.
Lt. George M. Duff, Jr.		

The Committee considered a memorandum prepared by Dr. Bush in consultation with Dr. Conant which they proposed should be sent by the Committee to the Scientific Panel. The memorandum requested the Panel to study in some detail the future program of research and development in this field with particular reference to the scale of effort that should be planned for in terms of scientific and technical personnel and financial outlay. Dr. Bush explained that it was thought desirable to secure at this time the recommendations of the Panel in detail so that the Committee might gain a more specific understanding of the dimensions of this subject and its implications to the scientific resources.

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of the nation and thus be in a position to consider the balance that must be struck between this program and other fields of scientific research in the post-war period. The Committee agreed that, subject to minor verbal changes, the memorandum should go forward from Mr. Harrison to the Scientific Panel.

II. BUSH-CONANT MEMORANDUM CONCERNING INTERNATIONAL RELATIONS:

Drs. Bush and Conant placed before the Committee a memorandum dealing with the question of establishing in the United Nations organization some mechanism for international control in this field. They pointed out in the discussion which followed that the memorandum constituted only a tentative proposal designed simply to raise the issue. In receiving the memorandum the Committee felt, as did Drs. Bush and Conant, that consideration of this question should be deferred until after the Potsdam Conference when the full Committee membership would be available.

III. EXCHANGE OF CABLES WITH THE SECRETARY OF WAR:

As a matter of information, Mr. Harrison read to the Committee his exchanges of cables with the Secretary of War regarding the outcome of the test. In this connection Mr. Harrison raised the question whether a letter of congratulations should be sent on behalf of the Secretary of War to Dr. Oppenheimer. The Committee unanimously agreed this should be done.

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IV. LEGISLATION:

Dr. Bush reported that Senator Magnuson of Washington was that day introducing a bill which followed closely the recommendations made to the President in Dr. Bush's report "Science.- The Endless Frontier." Senator Kilgore probably would also introduce a bill which would not follow the report so closely.

At this point General Royall and Mr. Marbury, and two lawyers from the Manhattan District, Lt. Allan and Lt. Duff, joined the meeting to go over the draft bill which had been drawn up by General Royall and Mr. Marbury. It was learned that Lts. Allan and Duff had been working for some time in New York in gathering together materials pertaining to such legislation and had compiled a most comprehensive document. It was felt that they would be aided in their work by having the benefit of the Committee's discussion of the Royall/Marbury draft.

Mr. Harrison suggested that the Committee should not concern itself at this time with a line by line consideration of the bill but should confine its discussion to general principles.

a. Name of Organisation. It was agreed that the organisation established by legislation should be known as the "Commission on Atomic Energy."

b. Compensation. With regard to the members of the Commission it was felt that they should not receive a salary but rather a per diem so as to avoid making the

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positions susceptible to political pressure. With regard to the administrator and deputy administrator it was agreed that salaries should be on the order of \$15,000 and \$12,000 respectively.

c. Composition. While it was agreed that no member should be named as a representative of any particular agency or interest, some divergence of view developed concerning the provision in the draft for two Army and two Navy officers out of a total of nine members. Dr. Bush favored a commission composed only of civilians, as did Dr. Conant; while General Royall pointed out that in view of the preponderance of the military aspect of this field and the greater likelihood of prompt Congressional action if this fact were reflected in the composition of the Commission, he felt that strong military representation was desirable. Mr. Harrison suggested that the military interest would probably be adequately protected by the existing provision for a Military Board plus a new proviso to the effect that the President should be empowered to turn this field over to the military in time of war or threatened emergency. General Groves expressed the view that it would be desirable to provide that some members should have military experience but not that such members necessarily serve as representatives of the Services.

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d. Control Over Research in the Universities.

Dr. Conant expressed concern about the sweeping powers given to the Commission over research. While he recognized the need for control of the material, he felt that it should be possible to devise some quantitative measure whereby university laboratories could use material and conduct experiments in this field without endangering national security while at the same time preserving considerable freedom to pursue basic research. Dr. Compton suggested that such a measure might be devised in terms of energy release. The Committee agreed that the bill should make some positive statement requiring the Commission to define some quantitative borderline. All agreed that the emphasis should be in the direction of freedom of research in universities to an extent not incompatible with national security.

e. Basic Research. Dr. Bush strongly urged that the bill should contain a positive statement of intent to the effect that the Commission should normally depend on the universities to carry forward the basic research program in this field. He pointed out that unless this were done the bill would be in direct conflict with his Foundation bill, and would be a serious deterrent to the healthy advance of fundamental knowledge in this field. The Committee was

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in general agreement with this view.

f. Censorship. Dr. Bush felt that the censorship and security provisions of the bill were too broad. He suggested that the law should permit any publication of information in this field which did not endanger national security and should require the Commission to draw up rules which would implement this principle. It was generally agreed that the advantage which the United States has in this field might be lost if publication were too narrowly restricted.

g. Patents. It was generally agreed that the section on patents should empower the Commission to impose secrecy orders on patents and prevent issue if and when the Commission determined such action was necessary in the national interest.

h. Assets of the Combined Development Trust. It was agreed that provision should be made in the law to empower the Commission to take over American interests in any existing international agreements.

i. International Relations. Mr. Marbury pointed out that it was not necessary to spell out in the bill any powers with regard to entering into international agreements, for the power to enter into any treaties in this field would automatically stem from the law.

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j. General Accounting Office. It was agreed that the bill should provide that the Commission would have relationships to the General Accounting Office similar to those of TVA, namely, that while the Commission would be accountable to the GAO it should be empowered to certify that certain expenditures were necessary in the national interest and not subject to detailed accounting.

k. Miscellaneous. Other suggestions made by the Committee members were as follows:

(1) General Groves. -- In addition to the four Boards named in the bill the Commission should be empowered to name "such other boards" as in its discretion appear necessary.

(2) General Groves. -- The Administrator should operate under general rules laid down by the Commission; he should not be required to secure specific approval from the Commission for individual decisions.

(3) General Groves. -- It would not be possible to render a "complete" inventory of the holdings of the Manhattan District in three months as provided in the subject draft. The reporting period should also be put on a fiscal rather than a calendar year basis.

(4) Dr. Bush. -- Clerical and administrative personnel should be under Civil Service, but scientific,

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technical, and legal personnel should be exempt.

General Royall pointed out that the bill did not give the Commission any quasi-judicial power. The Committee agreed that it should not have such powers. The Committee also agreed with General Royall's view that no power need be given the Commission in the bill over exports and imports. It was agreed that the language of the law should permit the Commission to make payments for local taxes when circumstances so warranted.

It was agreed that Lts. Allan and Duff should redraft the bill so as to reflect the suggestions brought out at the meeting as well as the more extended comments which Dr. Bush and General Groves would prepare in writing.

V. NEXT MEETING:

No definite time was set for the next meeting. Dr. Conant suggested that 2 August would be desirable from his point of view.

R. Gordon Arneson
R. GORDON ARNESON
1st Lieutenant, AUS
Secretary to the Committee.

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NOTES OF THE INTERIM COMMITTEE MEETING
FRIDAY 6 JULY 1945
9:30 A. M. - 12:45 P. M.

PRESENT:

Members of the Committee

Dr. Vannavar Bush
Dr. Karl T. Compton
Dr. James B. Conant
Mr. George L. Harrison, Acting Chairman

By Invitation

Maj. Gen. Leslie R. Groves

I. SWEDISH DEPOSITS OF URANIUM:

A memorandum prepared by the British dealing with the situation arising from the discovery of large deposits of uranium in Sweden was read by the Committee members. Mr. Harrison explained that the Combined Policy Committee at its 4 July meeting had voted unanimously that prompt action should be taken to enter into a political agreement with the Swedish Government with the object of securing the fullest possible control over the deposits in Sweden. Mr. Harrison reported further that the Secretary of State, on being informed of this situation, favored prompt action along the lines of a political agreement and stated to Mr. Harrison that the resources of the State Department were available to that end, and that he hoped action could be initiated at once.

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II. DRAFT STATEMENTS OF PUBLICITY:

With regard to the draft Presidential statement the British suggestions were accepted by the Committee in toto.

Mr. Harrison reported that the British manifested some concern about mentioning in the draft statement of the Secretary of War the various processes employed and the fact that all of the several processes had proven successful. In view of this objection the Committee agreed that specific reference to processes should be omitted but felt that there was no point in avoiding reference to the fact that several processes were being successfully employed, for this would be realized by any competent physicist as soon as the use of the bomb was made public. It was reported that the British felt that the Section I dealing with a resume of scientific discoveries leading to the development of the bomb was misleading because it was incomplete. In view of this, the Committee agreed that this Section should be abbreviated so as to make only very general reference to the universality of knowledge in the field of nuclear physics before the war without making any mention of the contributions of particular scientists.

With regard to the scientific statement now in process of clearance with the scientists of the project, Dr. Bush reported that at the 4 July CPC meeting he had argued strongly that no useful purpose would be served by withholding from the public the general scientific history of the project. At Dr. Bush's suggestion, the

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Combined Policy Committee had agreed (1) that it should approve a set of principles and conditions governing the release of information on this subject and (2) that the scientific release should be prepared in line with these principles, with Sir James Chadwick being authorized to clear the statement on behalf of the British.

III. DR. UREY:

As a matter of information, Mr. Harrison read his letter of 27 June to Dr. A. H. Compton which stated that the Interim Committee felt it could not enlarge the Scientific Panel at this time, but that the Scientific Panel should obtain from Dr. Urey and others such views on any phase of the project as they might care to express, and that the Panel should decide whether such views as are obtained should be passed on to the Committee for consideration.

IV. THE BIG THREE CONFERENCE:

Mr. Harrison reported that the position taken by the Committee at its last meeting concerning discussion of this subject at the "Big Three" Conference had been communicated to the Secretary of War, and that the Secretary was in complete agreement with the Committee's recommendation, particularly in view of the short time between the Conference and the actual use of the weapon. The Secretary of War had strongly endorsed the recommendation in speaking to the President about it.

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V. LEGISLATION:

After considerable discussion of legislation to establish a post-war Control Commission, it was evident that there were many unsolved problems which would have to be given careful consideration, particularly as regards the relationship of such a Commission to the organization for general research proposed in Dr. Bush's forthcoming report to the President. Mr. Harrison reported that in their thinking thus far General Royall and Mr. Marbury tended to favor a proprietary status for the Commission inasmuch as this status would provide greater power and freedom of action. Mr. Harrison expressed the view that the present organization, namely the Manhattan District, should be kept in being until the new organization established by law could begin to function. The first emphasis should be to get the Commission established with full constitutional power to act and then take up the details of internal organization and the question of relationships with the proposed general research agency.

The Committee agreed that Dr. Bush, with the assistance of Dr. Conant, should draw up a set of principles which should be furnished to General Royall and Mr. Marbury as a guide in drafting legislation.

VI. NEXT MEETING:

Since it was felt that the time of the next meeting would be dependent upon the date of the test, it was agreed that the next

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meeting should take place sometime between the 19th and 21st of July, at which time the Committee would consider a report from the sub-committee on legislation.

The meeting adjourned at 12:45 P. M.

R. Gordon Arneson

R. GORDON ARNESON
1st Lieutenant, A.U.S.
Secretary.

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NOTES OF THE INTERIM COMMITTEE MEETING
THURSDAY 21 JUNE 1945
9:30 A.M.-1:15 P.M.; 2:00 P.M.- 4:15 A.M.

PRESENT:

Members of the Committee

Hon. Ralph A. Bard
Dr. Vannevar Bush
Hon. James F. Byrnes
Hon. William L. Clayton
Dr. Karl T. Compton
Dr. James B. Conant
Mr. George L. Harrison, Acting Chairman

By Invitation

Maj. Gen. Leslie R. Groves
Mr. Harvey H. Bundy (discussion of item III)
Mr. Arthur W. Page

I. DRAFT STATEMENTS OF PUBLICITY:

The Committee went over in detail three sets of statements of publicity designed for use (1) at the time of the test; (2) by the President; and (3) by the Secretary of War. It was agreed that a sub-committee consisting of Mr. Page and a representative from General Groves' Office should redraft the statements on the basis of the detailed suggestions made by the members of the Committee at the meeting and that the redrafts should be transmitted to the Secretary of War for his approval and transmitted, in turn, by him to the President for his approval.

With regard to timing it was agreed that the President's statement should be followed immediately by the release of the

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Secretary of War and the next day by the historical scientific statement. Copy of all three statements should be released to the press at the same time with the proviso that the scientific statement be withheld until 24 hours after the simultaneous release of the other two statements.

General Groves reported that Dr. H. D. Smyth of Princeton was in charge of preparing the scientific release and that it was in the final stages of completion. It was now being cleared with the major participants in the project to insure accuracy. He explained that carefully drawn criteria had been established by which to determine what information could properly be included in the report.

a. Statements to be issued after the test.

In view of the time lag between the test and actual use of the weapon the Committee felt that as little information as possible should be released at the time of the test and that the release should be confined to the local press. It was agreed that draft "A" should be the basic form used whatever the extent of the damage, with the understanding that reference to exploded gas shells should be made if it was necessary to evacuate and that a list of the dead should be added if any fatalities occurred. The Committee realized that the final decision as to the exact content of the statement would, subject to the above considerations, have to be decided on the spot at the time of the test.

b. Statement of the President.

The Committee considered the draft in detail and suggested a number of changes for the guidance of the sub-committee in rewriting the statement. It was agreed that the substance of the last paragraph was a policy matter which the President alone could decide and would have to be held in suspense pending the outcome of the "Big Three" Conference. In any event, it was felt that it would have to be re-written so as not to make any commitment concerning the establishment of international control.

c. Statement of the Secretary of War.

Detailed suggestions were made concerning changes to be made. Particular emphasis was placed on making proper acknowledgment of the activity of American scientists in this field before the war, of the assistance of the Navy Department on the project, and of General Groves' outstanding contribution to the prosecution of the work. It was agreed that all specific reference to the Quebec Agreement, the Combined Development Trust, and negotiations and agreements with respect to the acquisition of ore, particularly with reference to thorium, should be deleted.

II. POLICY WITH REGARD TO GENERAL AND CONTINUING PUBLICITY AFTER USE:

Mr. Harrison raised the question of the welter of publicity which would arise from the release of the initial

statements and pointed out that the nature and volume of this publicity would be such that the Committee would not be prepared to handle it. He suggested, and the Committee agreed, that the responsibility for the preparation of future releases should be turned over to General Groves and Arthur Page. General Groves said he would prepare a list of general rules to be followed in handling future publicity and present them to the Committee for approval.

III. CLAUSE TWO OF THE QUEBEC AGREEMENT:

At this point, Mr. Bundy entered the meeting and raised the question of Clause Two of the Quebec Agreement which provides that the signatories may not use the weapon against a third country except by mutual consent. After some discussion Mr. Bard made the motion that the Secretary of War be advised that the Interim Committee favored revocation of Clause Two by appropriate action. The motion was unanimously carried.

The Committee recessed for luncheon at 1:15 P.M. and reassembled at 2:00 P.M. All who were at the morning meeting were present except Dr. K. T. Compton and Mr. Bundy.

IV. PETITION THAT DR. UREY BE ADDED TO THE SCIENTIFIC PANEL:

Mr. Harrison explained that he had received a petition from certain members of the Chicago Group at the Metallurgical

Laboratory in Chicago and at the Clinton Laboratories requesting that Dr. Urey be made a member of the Scientific Panel. The Committee agreed that Dr. Urey should not be added to the Panel and that in replying to the petition Mr. Harrison should state that the Scientific Panel would consult with Dr. Urey from time to time with regard to his views in his special field of competence.

V. RECOMMENDATIONS OF THE SCIENTIFIC PANEL:

The recommendations of the Scientific Panel, transmitted to the Secretary of War under date of 16 June, were received and read by the members of the Committee. These recommendations were in three parts: (1) future policy with regard to research, development, and control; (2) immediate use of the weapon; and (3) interim program.

a. Future Policy with regard to Research, Development, and Control.

It was the consensus of the Committee, as expressed by Dr. Bush, that consideration of the over-all post-war research and development program should be deferred and that the Committee at this time could properly consider only the problem of establishing a Post-War Commission. Dr. Bush pointed out that any organization for control in this field would have to be integrated with the general organization which was being recommended in his report to the President to have charge of all governmental research and development. Mr. Byrnes felt that the research aspects of this

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field should be tied in with the general governmental research body but that a Post-War Control Commission would have to be established in addition. Dr. Bush thought that the Commission should not itself serve as an operating agency but should be a policy and control body which would farm out operations under contract. The Committee was in agreement with this view. In discussing the membership of the Commission the Committee took the position that civilian members should comprise a majority, perhaps five out of nine, with two Army and two Navy members. At the suggestion of Mr. Harrison, the Committee agreed that a small sub-committee should be set up to work immediately to study this problem in all its ramifications and prepare draft legislation. It was further agreed that Mr. W. L. Marbury, Brigadier General Royall and a representative from General Groves' Office should constitute the sub-committee.

b. Immediate use of the weapon.

Mr. Harrison explained that he had recently received through Dr. A. H. Compton a report from a group of the scientists at Chicago recommending, among other things, that the weapon not be used in this war but that a purely technical test be conducted which would be made known to other countries. Mr. Harrison had turned this report over to the Scientific Panel for study and recommendation. Part II of the report of the Scientific Panel stated that they saw no acceptable alternative to direct military

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use. The Committee reaffirmed the position taken at the 31 May and 1 June meetings that the weapon be used against Japan at the earliest opportunity, that it be used without warning, and that it be used on a dual target, namely, a military installation or war plant surrounded by or adjacent to homes or other buildings most susceptible to damage.

c. Interim Program.

The Committee approved the third recommendation of the Scientific Panel to the effect that the directive to the Manhattan Engineer District be extended to include work of post-war importance, such work not to exceed an annual budget of \$20,000,000.

VI. POSITION OF THIS SUBJECT AT THE "BIG THREE" CONFERENCE.

In considering what might be said by the President concerning the project at the "Big Three" Conference, the Committee discussed at length the many ramifications that had to be taken into account. In the hope of securing effective future control and in view of the fact that general information concerning the project would be made public shortly after the Conference, the Committee unanimously agreed that there would be considerable advantage, if suitable opportunity arose, in having the President advise the Russians that we were working on this weapon with every prospect of success and that we expected to use it against Japan.

The President might say further that he hoped this matter

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might be discussed some time in the future in terms of insuring that the weapon would become an aid to peace. The Committee felt that, should the Russians press for more details, they should be told that we were not ready to furnish more information at present. The Committee agreed that under the provisions of the Quebec Agreement this whole problem should be discussed with the Prime Minister in advance of the Conference.

The Committee asked Mr. Harrison to make known its position, as stated above, to the Secretary of War.

VII. NEXT MEETING:

The next meeting was tentatively scheduled for Friday, 6 July 1945, at 9:30 A.M., the place of meeting to be determined later.

The meeting adjourned at 4:15 P.M.

R. Gordon Arneson

R. GORDON ARNESON
1st Lieutenant, A.U.S.
Secretary.

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NOTES OF THE INTERIM COMMITTEE MEETING
FRIDAY, 1 JUNE 1945
11:00 A.M. - 12:30 P.M., 1:45 P.M. - 3:30 P.M.

PRESENT:

Members of the Committee

Secretary Henry L. Stimson, Chairman
Hon. Ralph A. Bard
Dr. Vannevar Bush
Hon. James F. Byrnes
Hon. William L. Clayton
Dr. Karl T. Compton
Dr. James B. Conant
Mr. George L. Harrison

Invited Industrialists

Mr. George H. Bucher, President
of Westinghouse - manufacture
of equipment for the electro-
magnetic process.

Mr. Walter S. Carpenter, President
of Du Pont Company - construction
of the Hanford Project.

Mr. James Rafferty, Vice President
of Union Carbide - construction
and operation of gas diffusion
plant in Clinton.

Mr. James White, President of Tennessee
Eastman - production of basic chemicals
and construction of the RDX plant at
Holston, Tennessee.

By Invitation

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BY.....DATE

General George C. Marshall
Major Gen. Leslie H. Groves
Mr. Harvey H. Bundy
Mr. Arthur Page

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I. OPENING STATEMENT OF THE CHAIRMAN:

In opening the meeting Secretary Stimson praised the unique contribution of American industry in the prosecution of the war. He expressed his thanks to the industrialists present for their special contributions and for their coming to meet with the Committee to offer the benefit of their views.

The Secretary introduced the members of the Committee and explained that it had been established by him with the approval of the President in order to assist the Secretary and General Marshall in making recommendations to the President concerning control of this weapon during the war period and organization for post-war control.

The Secretary assured the group that both General Marshall and he were fully cognizant of the implications of our discoveries in the field of nuclear energy. They realized that its potentialities extended far beyond the immediate military uses which of necessity in war time were their first concern. This development held tremendous potentialities for the welfare of mankind and any consideration directed toward control of the field had to take these implications into account.

The Secretary expressed the hope that the industrialists present might offer suggestions with regard to the problem of international relations. He pointed out that a most important factor in making decisions concerning the problem of international cooperation

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was the question of how long it would take other nations to catch up with the United States. Accordingly, the Secretary was anxious to secure their estimates on this time factor.

II. COMPETITIVE LAG:

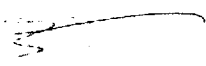
Mr. Carpenter pointed out that it had taken his company twenty-seven months to complete the Hanford project from the date of receipt of the basic plans. In carrying forward the job of industrial design, construction and actual operation, the Du Pont Company enlisted the assistance of from 10,000 to 15,000 other concerns. By being able to call on these other concerns for assistance the Du Pont Company was able to complete construction much more quickly than would otherwise have been the case. He estimated that it would take Russia at least four or five years to construct this type of plant even assuming that they had the basic plans. Russia's greatest difficulty would be in securing the necessary technicians and adequate production facilities. If Russia were able to secure the services of a large number of German scientists -- I. G. Farbenindustrie or Siemens -- they would be able to proceed much more rapidly.

Mr. White, whose primary concern in the program has been the operation of the Y-12 electro-magnetic plant, discussed the great complexity of equipment required in production. He stressed the advantage held by the United States in standardized mass production. Special ceramics, a great number of vacuum tubes,

special stainless steels, and a great variety of special products were needed in his plant, and he doubted whether Russia would be able to secure sufficient precision in its equipment to make this operation possible. Mr. White stated that in his operation that they were using more than 2,000 college graduates and nearly 1500 men of approximate college level, and more than 5,000 skilled workers. In many cases it had been necessary to establish special training schools to train the personnel in the operation of special equipment. With regard to Russia potentialities he felt that one of the greatest problems would be to secure the necessarily large number of skilled workmen and technicians at the college level. In this connection Mr. Clayton expressed the view that we would have to assume that Russia would probably have access to German resources, scientists, and technicians.

Mr. Bucher estimated that if Russia had the services of the technicians and scientists of Siemens and I. G. Farbenindustrie she might be able to produce a sample of the electro-magnetic plant in approximately nine months, but that it would take a total of three years to get into operation. He pointed out that major problems in this type of operation were replacement parts and extremely accurate precision tools. He estimated that Germany, on the assumption of their having the basic information, would require from 15 to 18 months to arrive at the production stage; Italy (Fiat) 15 to 18 months, and England possibly one year.

Mr. Rafferty discussed briefly the process employed at the gas diffusion plant at Clinton, Tennessee. First, the uranium ore containing one-fourth of one per cent uranium is processed to secure twelve per cent concentration. The twelve per cent concentrate is then reduced to a uranium salt from which is derived the pure metal. The pure metal contains only seven-tenths of one per cent uranium 235. The remainder is uranium 238 which is at present non-usable. The next step is to convert the pure metal (containing both U 235 and U 238) to a gas by fluorination. In the gaseous state U 235 is finally separated from U 238 by means of extremely delicate barriers or screens. These barriers are the very core of the process. The Clinton plant employs more than five million of these. The gases are passed through approximately 4,000 stages of operation, a process which takes place under a partial vacuum and requires the use of approximately 8,000 compressors. In order to control the process at all stages an elaborate instrument control system was installed. Mr. Rafferty estimated that Russia would require ten years to build this plant if she had no basic knowledge given to her. He considered Russia's chief lack to be experimental engineers. It would take her at least five years to develop the barrier which is so important to the process. While Russia may be able to get information concerning the barrier through espionage after the war, he estimated that in any event it would take her three years to get a gas diffusion plant into operation.



The meeting recessed for luncheon at 12:30
and resumed at 1:45 P.M.

III. POST-WAR ORGANIZATION - VIEWS OF THE INDUSTRIALISTS:

Mr. Byrnes asked the group for their views concerning the type of organization that should be established after the war to carry on the program. In supplementing this question, Dr. Karl T. Compton pointed out that a very real problem was how best to organize so as to realize all the potentialities of the field with due regard for the industrial aspects.

Mr. Rafferty thought that the present partnership of industry, the universities, and Government should be continued.

Mr. Bucher recommended that the present organization be kept in being for at least another year. He stressed the need for more fundamental research with some provision whereby the results of such research, particularly with regard to power, could be made available to industry. In this connection, Dr. Karl T. Compton suggested that it would be desirable for particular companies to retain a nucleus of research people to evaluate the potentialities in this field as they were uncovered by government-sponsored fundamental research.

Mr. Carpenter pointed out that industrial participation in this endeavor had been, and probably would continue to be, at the operating level. He stressed the need for a great deal more

fundamental research. Industry was not in a position to conduct research on an adequate scale; therefore, the government should assume responsibility for fundamental research with adequate provision for the encouragement of practical research in industry. He was deeply convinced that the all-encompassing nature of this development was so vast that it could not be left to industry. In the national interest it was imperative that the government assume the preponderant role. He held that it was necessary not only for the government to sponsor and control a large-scale program of fundamental research but also that it assume responsibility for securing controlling supplies of uranium. He recommended the following program:

1. Accumulate a stock pile of bombs.
2. Put the plants in a stand-by status.
3. Concentrate on fundamental research.
4. Secure controlling supplies of uranium.

With regard to 2 above, Dr. Bush pointed out that it would be necessary to continue some production of material for use in fundamental research and that access to operating plants would be necessary for the carrying on of certain experiments.

As the representatives of industry were leaving the meeting, Mr. Carpenter expressed on behalf of the industrial group very great appreciation for the excellent job done by General Groves



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in carrying the current program forward.

The Committee reassembled at 2:15 P.M. in

Mr. Harrison's office.

IV. POST-WAR ORGANIZATION - COMMITTEE DISCUSSION:

Dr. Conant reported that the four scientists had completed their memorandum on post-war organization and were submitting it to the Secretary of War through Mr. Harrison. Dr. Conant stressed the great complexity of this problem and the need for securing as members of the board of directors men of the highest competence and wisdom.

Dr. Bush stated that the organization proposed by the four scientists need not be concerned at this time with the problem of an over-all post-war research organization for national security. He said that one of the problems with which the board of directors would have to concern itself was the question of the allocation of material, such as loans to universities and other research groups. He pointed out that the universities not only would want access to certain quantities of material for research purposes, but also access to pilot plants.

Dr. Compton expressed the conviction, which was agreed to by Dr. Conant, that the Interim Committee was not competent to decide upon these detailed questions, but rather that it was responsible for recommendations leading to the establishment of a permanent organi-

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sation which would be competent to deal with these questions.

It was agreed that the organization paper from the scientists, when received, should be considered a basis for the drafting of the necessary legislation.

V. CURRENT APPROPRIATIONS:

General Groves reported that current appropriations for the project would run through June of 1946. Mr. Byrnes pointed out, however, that in the event that the war ended before the end of June 1946 Congress would be disposed to cancel all outstanding authorizations. In this event the Committee would be faced with the immediate problem of taking up with Congress the question of continuing appropriations and in so doing it would be necessary to furnish an estimate of the costs involved.

General Groves reported that the five Congressmen whom he recently took on a visit to the project in Tennessee were very much impressed with the plant and appeared to be most appreciative of the magnitude and national importance of the program.

VI. USE OF THE BOMB:

Mr. Byrnes recommended, and the Committee agreed, that the Secretary of War should be advised that, while recognizing that the final selection of the target was essentially a military decision, the present view of the Committee was that the bomb should be used against Japan as soon as possible; that it be used on a war plant

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surrounded by workers' homes; and that it be used without prior warning. It was the understanding of the Committee that the small bomb would be used in the test and that the large bomb (gun mechanism) would be used in the first strike over Japan.

VII. PUBLICITY:

Mr. Harrison pointed out that the discussions and tentative conclusions of yesterday's meeting had already rendered obsolete the draft Presidential statement prepared by Arthur Page. In the past few days the Secretary had held discussions with Generals Marshall and Arnold concerning targets and would probably discuss this question further with Admiral King and General Marshall. This Committee was not considered competent to make a final decision on the matter of targets, this being a military decision. Accordingly, Mr. Harrison suggested that he be empowered by the Committee to confer with those members of the Committee who would be available as the situation with regard to targets developed and to have prepared new draft statements for the consideration of the full Committee at its next meeting.

VIII. LEGISLATION:

Mr. Harrison urged that prompt consideration be given to the problem of drafting the necessary legislation. It was suggested that the memorandum of the four scientists could be used as a basis for the draft. The Committee agreed that Mr. Harrison should proceed,

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with the assistance of those members of the Committee who were available, with the preparation of an outline of major points to be included in a bill for study by the Committee at its next meeting.

IX. NEXT MEETING:

It was agreed that the next meeting should be held at 9:30 A.M. Thursday, 21 June 1945, the place of meeting depending upon the schedule of the Secretary of War.

It was agreed that the Committee should consider organization proposals and the requirements for legislation. The Committee would also consider at that time the situation with regard to publicity.

The meeting was adjourned at 3:30 P.M.

R. GORDON ARNESON
1st Lieutenant, A.U.S.
Secretary

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NOTES OF THE INTERIM COMMITTEE MEETING
THURSDAY, 31 MAY 1945
10:00 A.M. to 1:15 P.M. - 2:15 P.M. to 4:15 P.M.

PRESENT:

Members of the Committee

Secretary Henry L. Stimson, Chairman
Hon. Ralph A. Bard
Dr. Vannevar Bush
Hon. James F. Byrnes
Hon. William L. Clayton
Dr. Karl T. Compton
Dr. James B. Conant
Mr. George L. Harrison

Invited Scientists

Dr. J. Robert Oppenheimer
Dr. Enrico Fermi
Dr. Arthur H. Compton
Dr. E. O. Lawrence

By Invitation

General George C. Marshall
Major Gen. Leslie R. Groves
Mr. Harvey H. Bundy
Mr. Arthur Page

I. OPENING STATEMENT OF THE CHAIRMAN:

Secretary Stimson explained that the Interim Committee had been appointed by him, with the approval of the President, to make recommendations on temporary war-time controls, public announcement, legislation and post-war organization. The Secretary gave high praise to the brilliant and effective assistance rendered to the project by the scientists of the country and expressed great

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appreciation to the four scientists present for their great contributions to the work and their willingness to advise on the many complex problems that the Interim Committee had to face. He expressed the hope that the scientists would feel completely free to express their views on any phase of the subject.

The Committee had been termed an "Interim Committee" because it was expected that when the project became more widely known a permanent organization established by Congressional action or by treaty arrangements would be necessary.

The Secretary explained that General Marshall shared responsibility with him for making recommendations to the President on this project with particular reference to its military aspects; therefore, it was considered highly desirable that General Marshall be present at this meeting to secure at first hand the views of the scientists.

The Secretary expressed the view, a view shared by General Marshall, that this project should not be considered simply in terms of military weapons, but as a new relationship of man to the universe. This discovery might be compared to the discoveries of the Copernican theory and of the laws of gravity, but far more important than these in its effect on the lives of men. While the advances in the field to date had been fostered by the needs of war, it was important to realize that the implications of the project went far beyond the needs of the present war. It must be controlled if possible to make it an assurance of future peace rather than a menace to civilization.

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The Secretary suggested that he hoped to have the following questions discussed during the course of the meeting:

1. Future military weapons.
2. Future international competition.
3. Future research.
4. Future controls.
5. Future developments, particularly non-military.

II. STAGES OF DEVELOPMENT:

As a technical background for the discussions, Dr. A. H. Compton explained the various stages of development. The first stage involved the separation of uranium 235. The second stage involved the use of "breeder" piles to produce enriched materials from which plutonium or new types of uranium could be obtained. The first stage was being used to produce material for the present bomb while the second stage would produce atomic bombs with a tremendous increase in explosive power over those now in production. Production of enriched materials was now on the order of pounds or hundreds of pounds and it was contemplated that the scale of operations could be expanded sufficiently to produce many tons. While bombs produced from the products of the second stage had not yet been proven in actual operation, such bombs were considered a scientific certainty. It was estimated that from January 1946 it would take one and one-half years to prove this second stage in view of certain technical and metallurgical difficulties; that it would take three

years to get plutonium in volume, and that it would take perhaps six years for any competitor to catch up with us.

Dr. Fermi estimated that approximately twenty pounds of enriched material would be needed to carry on research in current engineering problems and that a supply of one-half to one ton would be needed for research on the second stage.

In response to the Secretary's question, Dr. A. H. Compton stated that the second stage was dependent upon vigorous exploitation of the first stage and would in no way vitiate the expenditure already made on the present plant.

Dr. Conant mentioned a so-called "third stage" of development in which the products of the "second stage" would be used simply as a detonator for heavy water. He asked Dr. Oppenheimer for an estimate of the time factor involved in developing this phase. Dr. Oppenheimer stated that this was a far more difficult development than the previous stages and estimated that a minimum of three years would be required to reach production. He pointed out that heavy water (hydrogen) was much cheaper to produce than the other materials and could eventually be obtained in far greater quantity.

Dr. Oppenheimer reviewed the scale of explosive force involved in these several stages. One bomb produced in the first stage was estimated to have the explosive force of 2,000 - 20,000 tons of TNT. The actual blast effect would be accurately measured when the test was made. In the second stage the explosive force

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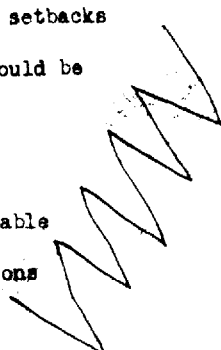
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was estimated to be equal to 50,000 - 100,000 tons of TNT. It was considered possible that a bomb developed from the third stage might produce an explosive force equal to 10,000,000 - 100,000,000 tons of TNT.

III. DOMESTIC PROGRAM:

Dr. Lawrence expressed his great appreciation for the fact that the leaders of the Government had been willing to take the chances inherent in the development of this program. He expressed a view that if the United States were to stay ahead in this field it was imperative that we knew more and did more than any other country. He felt that research had to go on unceasingly. There were many unexplored possibilities in terms of new methods and new materials beyond thorium and uranium. In fact, all heavy elements held potentialities for exploitation in this field. He thought it might be possible one day to secure our energy from terrestrial sources rather than from the sun. Dr. Lawrence pointed out that there was no real doubt about the soundness of the program. Any failures that had occurred or would occur in the future were nothing more than temporary setbacks and there was every reason to believe that such setbacks would be quickly overcome.

Dr. Lawrence recommended that a program of plant expansion be vigorously pursued and at the same time a sizable and material stock pile of bombs/should be built up. For security reasons



plants that were built should be widely scattered throughout the country. Every effort should be made to encourage industrial application and development. Only by vigorously pursuing the necessary plant expansion and fundamental research, and by securing adequate government support could this nation stay out in front. With this view Dr. A. H. Compton expressed complete agreement.

Dr. Karl T. Compton, summarizing the views expressed above, suggested the following program:

1. Expand production under the first stage to produce bombs for stock pile and to furnish material for research.
2. Intensify "second stage" research.
3. Build necessary "second stage" pilot plants.
4. Produce the new product.

Dr. Oppenheimer pointed out that one of the difficult problems involved in guiding a future domestic program would be the allocation of materials as between different uses. Dr. Karl T. Compton added further that every effort should be made to encourage industrial progress in order that our fundamental research program would be strengthened.

The Secretary summarized the views of the group concerning our domestic program as follows:

1. Keep our industrial plant intact.
 2. Build up sizable stock piles of material for military use and for industrial and technical use.
 3. Open the door to industrial development.
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IV. FUNDAMENTAL RESEARCH:

Dr. Oppenheimer felt that the work now being done under war pressure was simply a process of plucking the fruits of earlier research. In order to exploit more fully the potentialities of this field, it was felt that a more leisurely and a more normal research situation should be established. Dr. Oppenheimer strongly urged that numbers of the present staff should be released to go back to their universities and research laboratories in order to explore the many ramifications of this field, to avoid the sterility of the present orientation to specific problems only, and to develop cheaper and simpler methods of production. Dr. Bush expressed the view that while it ^{WAS} imperative in war time to concentrate on specific problems such a narrowing of the field in peace time was completely wrong. He agreed with Dr. Oppenheimer that only a nucleus of the present staff should be retained and that as many as possible should be released for broader and freer inquiry. Drs. A. H. Compton and Fermi reenforced this view by emphasizing that we could never be sure of the tremendous possibilities in this field until thorough fundamental research could be brought to bear.

V. PROBLEMS OF CONTROL AND INSPECTION:

The Secretary inquired what other potentialities beyond purely military uses might be exploited. In reply Dr. Oppenheimer pointed out that the immediate concern had been to shorten the war. The research that had lead to this development had only opened the

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door to future discoveries. Fundamental knowledge of this subject was so wide spread throughout the world that early steps should be taken to make our developments known to the world. He thought it might be wise for the United States to offer to the world free interchange of information with particular emphasis on the development of peace-time uses. The basic goal of all endeavors in the field should be the enlargement of human welfare. If we were to offer to exchange information before the bomb was actually used, our moral position would be greatly strengthened.

The Secretary stated that an understanding of the non-military potentialities was a necessary background to the consideration of the question of interchange of information and international cooperation. He referred to the Bush-Conant memorandum which had stressed the role of science in securing a policy of self-restraint. This memorandum had recommended that in any international organization which might be established complete scientific freedom should be provided for and the right of inspection should be given to an international control body. The Secretary asked what kind of inspection might be effective and what would be the position of democratic governments as against totalitarian regimes under such a program of international control coupled with scientific freedom. The Secretary said that it was his own feeling that the democratic countries had fared pretty well in this war. Dr. Bush indorsed this view vigorously, pointing out that our advantage over totalitarian states had been tremendous. Evidence just in from Germany

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revealed that she was far behind us in the technology of this field and in other scientific fields. He said that our tremendous advantage stemmed in large measure from our system of team work and free interchange of information by which we had won out and would continue to win out in any competitive scientific and technological race. He expressed some doubt, however, of our ability to remain ahead permanently if we were to turn over completely to the Russians the results of our research under free competition with no reciprocal exchange. Dr. Karl T. Compton felt that we would hold our advantage at least to the extent of the construction lag, but, in any event, he felt that secrets of this nature could not be successfully kept for any period of time and that we could safely share our knowledge and still remain ahead.

Dr. A. H. Compton stated that the destructive applications of these discoveries were perhaps easier to control than the constructive ones. He referred to the nucleonics prospectus prepared some time ago in which were indicated certain other potential uses in such fields as naval propulsion, health, chemistry, and industrial development. He pointed out ^{that} Faraday's hopes and predictions in the field of electro-dynamics were realized by Edison only after the lapse of several decades. Such a lag in this field with as yet uncharted possibilities seemed likely. He stressed the impossibility of keeping technological advances secret, as witness the experience of industry. The fundamental knowledge in this field was known

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in many countries and a policy of restraint, of the nationalization of scientific ideas could not work. Unless scientists were able to keep abreast of advances in the field throughout the world they would probably lose out on many developments.

Dr. Conant felt that international control in this field would require the power of inspection and that international arrangements among scientists would be by a means of strengthening this power. Dr. Oppenheimer expressed doubts concerning the possibility of knowing what was going on in this field in Russia, but expressed the hope that the fraternity of interest among scientists would aid in the solution.

General Marshall cautioned against putting too much faith in the effectiveness of the inspection proposal. Mr. Clayton also expressed considerable doubt on this point.

VI. RUSSIA:

In considering the problem of controls and international collaboration the question of paramount concern was the attitude of Russia. Dr. Oppenheimer pointed out that Russia had always been very friendly to science and suggested that we might open up this subject with them in a tentative fashion and in the most general terms without giving them any details of our productive effort. He thought we might say that a great national effort had been put into this project and express a hope for cooperation with them in this field. He felt strongly that we should not prejudice the

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Russian attitude in this matter.

At this point General Marshall discussed at some length the story of charges and counter-charges that have been typical of our relations with the Russians, pointing out that most of these allegations have proven unfounded. The seemingly uncooperative attitude of Russia in military matters stemmed from the necessity of maintaining security. He said that he had accepted this reason for their attitude in his dealings with the Russians and had acted accordingly. As to the post-war situation and in matters other than purely military, he felt that he was in no position to express a view. With regard to this field he was inclined to favor the building up of a combination among like-minded powers, thereby forcing Russia to fall in line by the very force of this coalition.

General Marshall was certain that we need have no fear that the Russians, if they had knowledge of our project, would disclose this information to the Japanese. He raised the question whether it might be desirable to invite two prominent Russian scientists to witness the test.

Mr. Byrnes expressed a fear that if information ~~was~~ were given to the Russians, even in general terms, Stalin would ask to be brought into the partnership. He felt this to be particularly likely in view of our commitments and pledges of cooperation with the British. In this connection Dr. Bush pointed out that even the British do not have any of our blue prints on plants. Mr. Byrnes

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expressed the view, which was generally agreed to by all present, that the most desirable program would be to push ahead as fast as possible in production and research to make certain that we stay ahead and at the same time make every effort to better our political relations with Russia.

VII. INTERNATIONAL PROGRAM:

Dr. A. H. Compton stressed very strongly the need for maintaining ourselves in a position of superiority while at the same time working toward adequate political agreements. He favored freedom of competition and freedom of research activity to as great an extent as possible consistent with security and ^{the} international situation. To maintain rigid security over this project would result in a certain sterility of research and a very real competitive disadvantage to the nation. He felt that within the larger field of freedom for research it would still be possible to maintain close security of the military aspects of the field. We could maintain our technical advantage over other nations only by drawing on the free interchange of scientific investigation and curiosity. He urged the view, expressed earlier by General Marshall, that we should secure agreements for cooperation with other like-minded nations and at the same time work toward solidifying our relations with the Russians.

Dr. A. H. Compton recommended that roughly the following program should be adopted for at least a decade:

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1. Freedom of research be developed to the utmost consistent with national security and military necessity.
2. A combination of democratic powers be established for cooperation in this field.
3. A cooperative understanding be reached with Russia.

The meeting adjourned for luncheon at 1:15 P.M. and resumed at 2:15 P.M. All who attended the morning session were present with the exception of General Marshall.

VIII. EFFECT OF THE BOMBING ON THE JAPANESE AND THEIR WILL TO FIGHT:

It was pointed out that one atomic bomb on an arsenal would not be much different from the effect caused by any Air Corps strike of present dimensions. However, Dr. Oppenheimer stated that the visual effect of an atomic bombing would be tremendous. It would be accompanied by a brilliant luminescence which would rise to a height of 10,000 to 20,000 feet. The neutron effect of the explosion would be dangerous to life for a radius of at least two-thirds of a mile.

After much discussion concerning various types of targets and the effects to be produced, the Secretary expressed the conclusion on which there was general agreement, that we could

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not give the Japanese any warning; that we could not concentrate on a civilian area; but that we should seek to make a profound psychological impression on as many of the inhabitants as possible. At the suggestion of Dr. Conant the Secretary agreed that the most desirable target would be a vital war plant employing a large number of workers and closely surrounded by workers' houses.

There was some discussion of the desirability of attempting several strikes at the same time. Dr. Oppenheimer's judgment was that several strikes would be feasible. General Groves, however, expressed doubt about this proposal and pointed out the following objections: (1) We would lose the advantage of gaining additional knowledge concerning the weapon at each successive bombing; (2) such a program would require a rush job on the part of those assembling the bombs and might, therefore, be ineffective; (3) the effect would not be sufficiently distinct from our regular Air Force bombing program.

IX. HANDLING OF UNDESIRABLE SCIENTISTS:

General Groves stated that the program has been plagued since its inception by the presence of certain scientists of doubtful discretion and uncertain loyalty. It was agreed that nothing could be done about dismissing these men until after the bomb has actually been used or, at best, until after the test has been made. After some publicity concerning the weapon was out, steps should be taken to sever these scientists from the program

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and to proceed with a general weeding out of personnel no longer needed.

X. CHICAGO GROUP:

Dr. A. H. Compton outlined briefly the nature and size of the Chicago program. In line with directives from General Groves it was intended to limit the operations at Chicago to those useful in the prosecution of this war. Its activities fell into the following categories:

1. Aid to the Hanford project on plutonium development.
2. Aid to the Santa Fe group.
3. Research on a thorium using pile.
4. Preliminary investigations of the extension of uranium piles.
5. Studies of the health of personnel working with these materials.

It was pointed out that programs 3 and 4 above did not bear directly on current war use, but that they comprised only about 20 per cent of the work being carried on in Chicago and that it was considered desirable in terms of future development to continue this work.

It was the consensus of the meeting that the Committee should lean on the recommendations of Drs. Conant and Bush as to what should be done with the Chicago group. Dr. Bush, as seconded by Dr. Conant, recommended that the present programs, including

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Chicago, should be continued at their present levels until the end of the war. It was agreed that this recommendation should be transmitted to the Secretary of War.

XI. POSITION OF THE SCIENTIFIC PANEL:

Mr. Harrison stated that the Scientific Panel had been called in at the suggestion of Drs. Bush and Conant and with the heartiest approval of all members of the Committee. It was considered a continuing Panel which was free to present its views to the Committee at any time. The Committee was particularly anxious to secure from the scientists their ideas of just what sort of organization should be established to direct and control this field. The Committee requested the Panel to prepare as speedily as possible a draft of their views on this subject. In this connection Dr. Bush pointed out that there would be no need at this time in drawing up a draft of an organization in this field to consider relationships with the Research Board for National Security. Dr. Karl T. Compton suggested that the organization could be tied in later to the Research Board for National Security through its section on nuclear physics.

The question was raised as to what the scientists might tell their people about the Interim Committee and their having been called before it. It was agreed that the four scientists should feel free to tell their people that an Interim Committee appointed by the Secretary of War and with the Secretary of War as Chairman

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had been established to deal specifically with the problems of control, organization, legislation, and publicity. The identity of the members of the Committee should not be divulged. The scientists should be permitted to explain that they had met with this Committee and had been given complete freedom to present their views on any phase of the subject. The impression should definitely be left with their people that the Government was taking a most active interest in this project.

XII. NEXT MEETING:

The next meeting of the Committee was scheduled for Friday, 1 June 1945, at 11:00 A.M. in the office of the Secretary of War. The purpose of this meeting was to secure the views of four representatives from industry.

The meeting adjourned at 4:15 P.M.

R. GORDON ARNESON
2nd Lieutenant, A.U.S.
Secretary

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THIS DOCUMENT CONSISTS OF 3 PAGES
SERIAL NO. 1 OF 1 SERIES B

Notes of an Informal Meeting
of the
Interim Committee
Friday, May 18, 1945, 2:30 P.M. - 4:30 P.M.

PRESENT:

MEMBERS

Hon. Ralph A. Bard
Hon. James F. Byrnes
Hon. William L. Clayton
Dr. James B. Conant
Mr. George L. Harrison, Acting Chairman

BY INVITATION

Mr. Arthur Page
Maj. Gen. Leslie R. Groves

I. MEETINGS WITH THE PANELS.

It was agreed that the Scientific Panel should be invited to meet with the Committee on Thursday, May 31, and, if possible, the Military Panel and representatives of industry should be brought in for discussions the same weekend. It was suggested that, in addition to inviting Mr. Rafferty of Union Carbide and Mr. Chapman of Eastman Kodak to discuss with the Committee the industrial aspects of the problem, Mr. Carpenter of du Pont might be invited to discuss the problems faced by du Pont in gearing its operations to the project.

II. DRAFT PUBLIC RELEASES.

The Committee considered the draft statements which had been prepared by Mr. Laurence. With respect to the type of

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release that might be made by the Commanding Officer, Alamogordo Air Base, when the test is run, the Committee was in general agreement on the content of Forms A and B. Forms C and D were considered undesirable because of the mention therein of experimentation on new weapons.

The consensus of the Committee relative to the proposed statement to be made by the President after a successful test was that the President should make only a short announcement over the radio, or possibly to the Congress, concerning the general nature of the weapon and its military and international implications. This announcement should be followed by a more complete press release containing a history of the program, a discussion of the technical phases of the project, some indication of our cooperation with the British, and of the intention to take the necessary legislative steps to secure adequate control. It was contemplated that other releases dealing with further details of the program would be issued following these original announcements.

It was agreed that Mr. Page and Mr. Laurence should rework the draft releases along the general lines indicated, bearing in mind that the nature of the statements would depend in large measure on the results of the test and of actual use, and that changes might later be necessary in terms of the international situation existing at the time of release.

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III. BUSH-CONANT MEMORANDUM.

In discussing the points made in the Bush-Conant memorandum, the question was raised concerning our obligations under the Quebec Agreement. This Agreement required that the weapon cannot be used against a third country by one signatory without the agreement of the other. Accordingly, before the United States can use the weapon against any country, it must secure the consent of the United Kingdom. However, it was pointed out that no prior consent is involved in conducting local tests.

The Acting Chairman reported that the British are considering the establishment of a committee similar to the Interim Committee for the purpose of studying problems of publicity and domestic controls. It is likely that in the near future the British group will wish to get in touch with the Interim Committee to coordinate parallel action; however, it was the thought of the Acting Chairman -- and his view was concurred in by the Committee -- that it would be unwise to arrange for any interchange at this time.

IV. NEXT MEETING.

The next meeting was scheduled for Thursday, May 31, 1945, at 11:00 A.M. in the Office of the Secretary of War.

/s/

R. GORDON ARNESON
2nd Lieutenant, AUS
Secretary.

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15 May 1945.

THIS DOCUMENT CONTAINS OF 4 PAGE
COPY NO. 1 SERIES B

Notes of an Informal Meeting
of the
Interim Committee
Monday, 14 May 1945, 10:00 A.M. - 12:30 P.M.

PRESENT:

MEMBERS

Hon. Ralph A. Bard
Dr. Vannevar Bush
Hon. James F. Byrnes
Hon. William L. Clayton
Mr. George L. Harrison, Acting Chairman
(in the absence of the Secretary of War)

BY INVITATION

Maj. Gen. Leslie R. Groves

I. PANELS.

1. Scientific Panel.

It was agreed that the membership of the Scientific Panel should be as follows:

Dr. Arthur H. Compton
Dr. Ernest O. Lawrence
Dr. J. Robert Oppenheimer
Dr. Enrico Fermi

It was agreed further that the Secretary of War or Mr. Harrison, on his behalf, should write to these four scientists inviting them to become members of the Panel. In line with suggestions made by Dr. J. B. Conant and Dr. Vannevar Bush, it was the sense of the meeting that the Scientific Panel should be free not only to discuss technical matters but also

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to present to the Committee their views concerning the political aspects of the problem.

2. Military Panel.

After some discussion the Committee concluded that the Secretary of War should discuss with General Marshall and Admiral King the desirability of establishing a Military Panel and secure their recommendations as to membership. The Committee was of the opinion that the Panel, if constituted, would be most effective if its membership were drawn from high levels of the Army and Navy and, accordingly, expressed agreement that the following membership would be desirable:

For the Army:

General of the Army George C. Marshall
Lt. General Thomas T. Handy
Maj. Gen. Leslie R. Groves

For the Navy:

Admiral of the Fleet Ernest J. King
Admiral Richard S. Edwards
Rear Admiral William R. Purnell

3. The question was raised whether an Industrial Panel should be established to advise on the potentialities of industrial mobilization in this field in other countries. The Committee took the view that no panel on this question should be organized at this time, but that such men as Mr. James A. Rafferty of Union Carbide and Mr. A. K. Chapman of Eastman Kodak should be invited to sit in with the Committee to discuss this question.

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II. PUBLIC STATEMENT.

The inclusiveness of a public statement concerning the weapon was felt to be dependent upon the outcome of the test to be made in July. In the event that the test showed poor results, it would suffice to have only a brief notice made public by the theater commander to the effect that a dump of high explosives had blown up. If, however, the results that are now confidently expected are borne out by the field test, a more complete public statement would be necessary. Such a statement should be made by the President and should indicate the general nature of the weapon, trace the history of its development and of the controls, both national and international, that are contemplated.

It was agreed that William L. Laurence, a science editor of the New York Times, now under contract with the Manhattan District, should be brought in to work up drafts of these two alternative statements and that Arthur Page should review these statements before their presentation to the Committee for consideration.

III. INTERNATIONAL SITUATION.

The international aspects of the program were discussed at some length, the Quebec Agreement and the operations of the Combined Development Trust being stressed. Copies of a memorandum from Drs. Bush and Conant on this question were distributed to

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the Messrs. Byrnes, Bard, and Clayton, and General Groves for further study after the meeting. Copies of a memorandum from certain scientists addressed to Dr. Arthur Compton were also distributed to the Messrs. Byrnes and Bard for further study.

IV. LEGISLATIVE CONTROLS.

The matter of controls and the legislation necessary to effectuate such control were discussed in general terms; no attempt was made, however, to arrive at any definite conclusions.

V. THE CHICAGO SCIENTISTS.

General Groves and Dr. Bush outlined the nature of the work being carried on by the Chicago Group and raised the question as to its future status. It was agreed that the group should continue its work for the present and that the question of future status should be taken up later after the weapon was put to offensive use.

VI. APPOINTMENT OF SECRETARY.

On the recommendation of the Acting Chairman it was agreed that Lieutenant R. Gordon Arneson, Assistant to Mr. Pundy, should be appointed as Secretary of the Committee.

VII. NEXT MEETING.

The next meeting of the Committee was set for 2:30 P.M., Friday, 18 May 1945.

/s/

R. GORDON ARNESON
2nd Lieutenant, AUS
Secretary.

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THIS DOCUMENT CONSISTS OF 3 PAGE
COPY NO. 1 SERIES B

17 May 1945

Notes of an Informal Meeting
of the
Interim Committee
Wednesday, 9 May 1945, 9:30 A.M. - 12:30 P.M.

PRESENT:

MEMBERS

Secretary Henry L. Stimson, Chairman
Hon. Ralph A. Bard
Dr. Vannevar Bush
Hon. James F. Byrnes
Hon. William L. Clayton
Dr. Karl T. Compton
Mr. George L. Harrison

BY INVITATION

Mr. Harvey H. Bundy

I. STATEMENT OF THE SECRETARY OF WAR:

Secretary Stimson outlined the nature of the project and expressed his views as to the purposes and functions of the Committee. Appointed by the Secretary with the approval of the President, the Committee was established to study and report on the entire problem of temporary war-time controls and later publicity, and to survey and make recommendations on post-war research, development, and control, and on legislation necessary for these purposes. It was termed an "Interim Committee" in view of the fact that, at the proper time, Congress would probably establish by law a permanent body to supervise, regulate, and control the entire field. It was pointed out that reports and recommendations made by the Committee

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would be submitted to the Secretary, and through him, to the President.

The full membership of the Committee is as follows:

Hon. Henry L. Stimson, Secretary of War, Chairman.

Hon. Ralph A. Bard, Under Secretary of the Navy.

Dr. Vannevar Bush, Director, Office of Scientific Research and Development

Hon. James F. Byrnes, Special Representative of the President.

Hon. William L. Clayton, Assistant Secretary of State.

Dr. Karl T. Compton, Chief, Office of Field Service, OSRD.

Dr. James B. Conant, Chairman, National Defense Research Committee.

Mr. George L. Harrison, Special Consultant to the Secretary of War, Alternate Chairman.

At 11:15 A.M. the Committee took leave of the Secretary and re-assembled in Mr. Harrison's Office under his chairmanship⁷

II. GENERAL ORIENTATION:

As further background on the subject, General Groves' memorandum of April 23, 1945, to the Secretary of War, which was presented earlier to the President by the Secretary, was read to the Committee and discussed at some length. The Quebec Agreement was also read and discussed. In discussing the nature and functions of the Combined Development Trust, the Committee strongly expressed the view that all possible steps should be taken as promptly as

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- 3 -

possible to build up our supplies of uranium and thorium.

III. NEXT MEETING:

The next meeting of the Committee was called for Monday,
May 14, 1945, at 10:00 A.M.

/s/

R. GORDON ARNESON
2nd Lieutenant, AUS
Secretary.

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NND 230033
P. ERS, NARS, Date 6-3-74

1 May 1945

MEMORANDUM FOR THE SECRETARY OF WAR.

SUBJECT: Interim Committee on S-1.

Last week you presented to President Truman a fairly complete memorandum on the S-1 project, outlining its genesis, its present state of development and in general its availability for military usage. Your presentation was accompanied by a brief memo which you prepared relative to the broader political and international implications of the problem and the need for post war controls, both national and international. You had in mind the advisability of setting up a committee of particular qualifications for recommending action to the executive and legislative branches of the government when secrecy is no longer fully required. The committee would also be expected to recommend actions to be taken by the War Department in anticipation of the post war problems.

In view of the possibly short time available before actual military use and the relaxation of secrecy, it seems to me, -- and as you know both Dr. Conant and Dr. Bush agree -- that it is becoming more and more important to organize such a

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committee as promptly as possible. This committee should, I think, be a relatively small committee which should be prepared to serve temporarily or until Congress might appoint a permanent Post War Commission to supervise, regulate and control the use of the product.

Certain things, however, must be done now before use if we are to avoid the risk of grave repercussions on the public in general and on Congress in particular. For instance, the committee will need to prepare appropriate announcements to be available for issue (a) by the President and (b) by the War Department as soon as the first bomb is used. These announcements or later publicity would presumably give some of the history of the project, its importance from a military standpoint, its scientific background, and some of its dangers. Most importantly as soon as possible after use some assurance must be given of the steps to be taken to provide the essential controls over post war use and development, both at home and abroad. With that in mind it will be necessary as soon as possible after use to make recommendations for the necessary Congressional legislation covering patents, use, controls, etc.

All of these and many other factors will have to be studied by the committee with the understanding that all recommendations must be for your own approval and for submission to the President for his approval.

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All of these and many other factors will have to be studied by the committee with the understanding that all recommendations must be for your own approval and for submission to the President for his approval.

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It seems clear that some machinery is essential now to provide the way for continuous and effective controls and to insure or provide for the necessary and persistent research and development of the possibilities of atomic energy in which the United States now leads the way. If properly controlled by the peace loving nations of the world this energy should insure the peace of the world for generations. If misused it may lead to the complete destruction of civilization.

In the circumstances I suggest that a committee of six or seven be set up at once to study and report on the whole problem of temporary war controls and publicity, and to survey and make recommendation on post war research, development and controls, and the legislation necessary to effectuate them.

The members of this committee should be appointed by you as Secretary of War subject to the approval of the President. When appointed the committee will need promptly to organize appropriate panels to aid in its work -- panels of specially qualified scientists, Army and Navy personnel, Congressional advisers, legislative draftsmen and others.

GEORGE L. HARRISON

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Membership of Interim Committee

with Hon. W. H. Harrison as Special Representative
The Secretary of War or his Representative

Dr. James B. Conant, Chairman, National Defense Research Committee.

Dr. Vannevar Bush, Director, Scientific Research and Development.

Dr. Karl Compton, Chief, Office of Field Service, Office of Scientific Research and Development.

Honorable William L. Clayton, Assistant Secretary of State

Honorable Ralph A. Bard, Under Secretary of Navy.

Special Representative of the President.

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E.O. 11652 OF 1966
NWD 730039
By: ERC NARS, Date 6-3-74

1 May 1945

MEMORANDUM FOR THE SECRETARY OF WAR.

SUBJECT: Interim Committee on S-1.

Last week you presented to President Truman a fairly complete memorandum on the S-1 project, outlining its genesis, its present state of development and in general its availability for military usage. Your presentation was accompanied by a brief memo which you prepared relative to the broader political and international implications of the problem and the need for post war controls, both national and international. You had in mind the advisability of setting up a committee of particular qualifications for recommending action to the executive and legislative branches of the government when secrecy is no longer fully required. The committee would also be expected to recommend actions to be taken by the War Department in anticipation of the post war problems.

In view of the possibly short time available before actual military use and the relaxation of secrecy, it seems to me, -- and as you know both Dr. Conant and Dr. Bush agree -- that it is becoming more and more important to organize such a

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committee as promptly as possible. This committee should, I think, be a relatively small committee which should be prepared to serve temporarily or until Congress might appoint a permanent Post War Commission to supervise, regulate and control the use of the product.

Certain things, however, must be done now before use if we are to avoid the risk of grave repercussions on the public in general and on Congress in particular. For instance, the committee will need to prepare appropriate announcements to be available for issue (a) by the President and (b) by the War Department as soon as the first bomb is used. These announcements or later publicity would presumably give some of the history of the project, its importance from a military standpoint, its scientific background, and some of its dangers. Most importantly as soon as possible after use some assurance must be given of the steps to be taken to provide the essential controls over post war use and development, both at home and abroad. With that in mind it will be necessary as soon as possible after use to make recommendations for the necessary Congressional legislation covering patents, use, controls, etc.

All of these and many other factors will have to be studied by the committee with the understanding that all recommendations must be for your own approval and for submission to the President for his approval.

It seems clear that some machinery is essential now to provide the way for continuous and effective controls and to insure or provide for the necessary and persistent research and development of the possibilities of atomic energy in which the United States now leads the way. If properly controlled by the peace loving nations of the world this energy should insure the peace of the world for generations. If misused it may lead to the complete destruction of civilization.

In the circumstances I suggest that a committee of six or seven be set up at once to study and report on the whole problem of temporary war controls and publicity, and to survey and make recommendation on post war research, development and controls, and the legislation necessary to effectuate them.

The members of this committee should be appointed by you as Secretary of War subject to the approval of the President. When appointed the committee will need promptly to organize appropriate panels to aid in its work -- panels of specially qualified scientists, Army and Navy personnel, Congressional advisers, legislative draftsmen and others.

GEORGE L. HARRISON

GEORGE L. HARRISON

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Membership of Interim Committee

The Secretary of War with Mr. George L. Harrison
as his alternate.

Dr. James B. Conant, Chairman, National Defense Research
Committee.

Dr. Vannevar Bush, Director, Scientific Research and
Development.

Dr. Karl Compton, Chief, Office of Field Service, Office
of Scientific Research and Development.

Honorable William L. Clayton, Assistant Secretary of State

Honorable Ralph A. Bard, Under Secretary of Navy.

Special Representative of the President.

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EO 11652, Sec. 1.4, (a) (5)(D), (a) (5)(F)
NND 750039
E, E, R, C. 63.24

Suggested procedure for meeting with scientists Thursday morning at 10:00 A.M.:

b. ^{On} The purpose of this meeting is to give the Committee and yourself a chance to meet four of the scientists most intimately connected with the project and through them to express appreciation to the whole scientific group who have done so much to develop and make the project possible. On the other hand, the meeting is to give the scientists an opportunity on their side to tell the Committee whatever they may have on their mind and to give the Committee also an opportunity to ask questions so as to increase their knowledge of the whole project from the scientific standpoint.

Types of Questions that may come up:

I. FUTURE MILITARY PROSPECTS.

Future prospects of this project for the development of military weapons:

- (a) Increase in size and power of bombs.
- (b) Sources of power other than uranium or thorium.

II. INTERNATIONAL COMPETITION.

How fast can other nations catch up with us:

- (a) Working under our methods, or
- (b) Working under possible short cuts?

III. FUTURE RESEARCH.

International and national policies in regard to future research, especially with regard to its magnitude, organization and location in this country.

IV. FUTURE CONTROLS.

- (a) What kind of controls are practical.
- (b) Upon what conditions should the United States enter into such a control system.
- (c) What will happen if no controls are established.
- (d) Can our present head start and our attitude toward controls be used to accomplish an extension of democratic rights and the dignity of man.
(Popular governed nations versus single rule nations.)

V. FUTURE NON-MILITARY USES.

Possible use of this project for the benefit of mankind in peaceful activities.

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File No. TS-9.12

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NND 730089
By EBC NARS, Date 6-3-74

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Frga

W. S. Harrison

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Term, Oppenheimer, Lawrence
A. H. Compton

Inclosures or Attachments 2 copies ltr fr Compton to EOL; to JRO; and to AHC.

* * * * *

Charged to : Date : To Be Filled By : Date : Read By (Initialed : Date :
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Office for Emergency Management
Office of Scientific Research and Development
OFFICE OF FIELD SERVICE
1530 P Street NW.
Washington 25, D. C.

May 10, 1945

Dr. Ernest C. Lawrence
Radiation Laboratory
University of California
Berkeley, California

Ernest C. Lawrence
Dear Dr. Lawrence:

As you know, or will soon be officially informed, I have been asked by the Secretary of War with the approval of the President, to serve on a special interim policy committee with particular reference to certain early matters which you know about and, at least in a preliminary way, with reference to the longer term. I hesitated very much to do this because you and several others are very much closer to the problem than I am, but it was put up to me in a manner which could not be refused. Except for Conant and Bush, the other members have no technical background, but they are wise in both national and international affairs. Justice Byrnes is acting as direct representative of the President.

Conant, Bush and I accepted with the clear understanding that we did not undertake to serve as the mouthpiece of the American scientists who have really done the job and with the understanding that you and your several opposite numbers in the other groups will present your own views.

I think that one consideration in this temporary set-up was the desire to have advice and careful consideration in rather concentrated and easily accessible form during the next few months and to have this without interrupting extremely important supervision of the scientific work just at this time.

I know that Bush and Conant feel uncomfortable about their position on this committee, and I feel even more so because of my much less association with the project. We all accepted because it seemed the best thing to do under the circumstances, and we will do our best. But I want you to know the circumstances and my own feeling in the matter.

Cordially yours,

KARL T. COMPTON, Chief

KTC:aec

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Office for Emergency Management
Office of Scientific Research and Development
Office of Field Service
1530 P. Street NW.
Washington 25, D. C.

R

May 10, 1945

Dr. Arthur H. Compton
Metallurgical Laboratory
Lyerson Laboratory
University of Chicago
Chicago, Illinois

Dear Arthur:

As you know, or will soon be officially informed, I have been asked by the Secretary of War with the approval of the President, to serve on a special interim policy committee with particular reference to certain early matters which you know about and, at least in a preliminary way, with reference to the longer term. I hesitated very much to do this because you and several others are very much closer to the problem than I am, but it was put up to me in a manner which could not be refused. Except for Conant and Bush the other members have no technical background, but they are wise in both national and international affairs. Justice Byrnes is acting as direct representative of the President.

Conant, Bush and I accepted with the clear understanding that we did not undertake to serve as the mouthpiece of the American scientists who have really done the job and with the understanding that you and your several opposite numbers in the other groups will present your own views.

I think that one consideration in this temporary set-up was the desire to have advice and careful consideration in rather concentrated and easily accessible form during the next few months and to have this without interrupting extremely important supervision of the scientific work just at this time.

I know that Bush and Conant feel uncomfortable about their position on this committee, and I feel even more so because of my much less association with the project. We all accepted because it seemed the best thing to do under the circumstances, and we will do our best. But I want you to know the circumstances and my own feeling in the matter.

Affectionately,

/s/ Karl

KTC:aec

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OFFICE FOR EMERGENCY MANAGEMENT
OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT
OFFICE OF FIELD SERVICE
1530 P STREET NW,
WASHINGTON 25, D.C.

May 10, 1945

Dr. J. I. Oppenheimer
P. O. Box 1663
Santa Fe, New Mexico

Dear Dr. Oppenheimer:

As you know, or will soon be officially informed, I have been asked by the Secretary of War with the approval of the President, to serve on a special interim policy committee with particular reference to certain early matters which you know about and, at least in a preliminary way, with reference to the longer term. I hesitated very much to do this because you and several others are very much closer to the problem than I am, but it was put up to me in a manner which could not be refused. Except for Conant and Bush, the other members have no technical background, but they are wise in both national and international affairs. Justice Byrnes is acting as direct representative of the President.

Conant, Bush and I accepted with the clear understanding that we did not undertake to serve as the mouthpiece of the American scientists who have really done the job and with the understanding that you and your several opposite numbers in the other groups will present your own views.

I think that one consideration in this temporary set-up was the desire to have advice and careful consideration in rather concentrated and easily accessible form during the next few months and to have this without interrupting extremely important supervision of the scientific work just at this time.

I know that Bush and Conant feel uncomfortable about their position on this committee, and I feel even more so because of my much less association with the project. We all accepted because it seemed the best thing to do under the circumstances, and we will do our best. But I want you to know the circumstances and my own feeling in the matter.

Cordially yours,
/s/ Karl Compton

KARL T. COMPTON, Chief

KTC:aec

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[1-R]

~~CONFIDENTIAL~~

STANDARD FORM NO. 64

Office Memorandum • UNITED STATES GOVERNMENT

TO : Mrs. O'Leary

DATE: 5/15

FROM : pc

SUBJECT:

Col. Consodine took the original and one carbon copy over to Mr. Harrison today. Attached are two copies of each of the letters to Fermi, Compton, Oppenheimer, and Lawrence. Also attached are copies (2) of the letters you said you wanted. Col. Consodine took the originals of these with him also.

~~TOP SECRET~~

A Sg F

~~TOP SECRET~~

THIS DOCUMENT CONTAINS
COPY NO. 1 4 SERIES A

Dr. Enrico Fermi,
P. O. Box 1712,
Wilmington, Delaware.

Dear Dr. Fermi:

With the approval of the President, the Secretary of War has appointed a small committee for the purpose of planning the future course of the United States with respect to the field covered by the Manhattan Engineer District.

The committee is asking a very few of the scientific leaders in the field to meet with it and give it the benefit of their ideas. This committee would appreciate the opportunity of hearing from you. At the moment, it is impossible to designate a day and hour. It is requested that you discuss with Dr. Oppenheimer the question of the time when you will be available to appear before the committee.

We would want to discuss with you the post-war situation, the scope of desirable future experiments, the type of national and international control, the military considerations, the possible commercial advantages, the maintenance of the present leading position of the United States in the world field and other kindred topics.

The committee requests that there be no discussion by you with anyone other than Dr. Oppenheimer of your call to appear. It is assumed that you are conversant with the views of your colleagues and associates and that you can present their general views as well as your own specific ones without the need of prior discussions with them. General Groves knows of this invitation.

For the Secretary of War:

Cordially yours,

George L. Harrison,
Special Assistant to the
Secretary of War.

CLASSIFICATION CANCELLED
ON ~~CHANGING~~
BY AUTHORITY ~~SECRET~~
BY..... DATE ~~SECRET~~

~~TOP SECRET~~

REF ID: A66000
COPY NO. 3 4 SERIES A

Dr. A. H. Compton,
Metallurgical Laboratory,
University of Chicago,
Chicago, Illinois.

Dear Dr. Compton:

With the approval of the President, the Secretary of War has appointed a small committee for the purpose of planning the future course of the United States with respect to the field covered by the Manhattan Engineer District.

The committee is asking a very few of the scientific leaders in the field to meet with it and give it the benefit of their ideas. This committee would appreciate the opportunity of hearing from you. At the moment, it is impossible to designate a day and hour. However, every endeavor will be made to suit both your very necessary activities in behalf of the project and your personal convenience. The committee realizes that the project comes first with all concerned.

We would want to discuss with you the post-war situation, the scope of desirable future experiments, the type of national and international control, the military considerations, the possible commercial advantages, the maintenance of the present leading position of the United States in the world field and other kindred topics. In a general way, the subject matter will be that previously discussed by you informally with General Groves.

The committee requests that there be no discussion by you with anyone of your call to appear. It is assumed that you are conversant with the views of your colleagues and associates and that you can present their general views as well as your own specific ones without the need of prior discussions with them. General Groves knows of this invitation.

For the Secretary of War:

Cordially yours,

George L. Harrison,
Special Assistant to the
Secretary of War.

CLASSIFICATION CANCELLED
BY *[Signature]*
DATE 8/19/78

~~TOP SECRET~~

NO. 2 OF 4 SERIES A

Dr. J. R. Oppenheimer,
P. O. Box 1663,
Santa Fe, New Mexico.

Dear Dr. Oppenheimer:

With the approval of the President, the Secretary of War has appointed a small committee for the purpose of planning the future course of the United States with respect to the field covered by the Manhattan Engineer District.

The committee is asking a very few of the scientific leaders in the field to meet with it and give it the benefit of their ideas. This committee would appreciate the opportunity of hearing from you. At the moment, it is impossible to designate a day and hour. Knowing of your great importance to the project, the committee will suit your call to your responsibilities to the work on which you are now engaged. In your case particularly, the committee realizes that the project must come first and that any absence of yours from the site would be difficult to justify at this time.

We would want to discuss with you the post-war situation, the scope of desirable future experiments, the type of national and international control, the military considerations, the possible commercial advantages, the maintenance of the present leading position of the United States in the world field and other kindred topics.

The committee requests that there be no discussion by you with anyone of your call to appear. It is assumed that you are conversant with the views of your colleagues and associates and that you can present their general views, as well as your own specific ones, without the need of prior discussions with them. ~~General Groves knows of this invitation.~~ Dr. Fermi has been invited to the hearings. He has been advised that he should make his arrangements subject to your approval.

For the Secretary of War:

Cordially yours,

George L. Harrison,
Special Assistant to the
Secretary of War.

CLERK OF THE HOUSE
RECEIVED
JUL 17 1945
6/17/45

TOP SECRET

Dr. E. O. Lawrence,
Radiation Laboratory,
University of California,
Berkeley, California.

Dear Dr. Lawrence:

With the approval of the President, the Secretary of War has appointed a small committee for the purpose of planning the future course of the United States with respect to the field covered by the Manhattan Engineer District.

The committee is asking a very few of the scientific leaders in the field to meet with it and give it the benefit of their ideas. This committee would appreciate the opportunity of hearing from you. At the moment, it is impossible to designate a day and hour. However, every endeavor will be made to suit both your very necessary activities in behalf of the project and your personal convenience. The committee realizes that the project comes first with all concerned.

We would want to discuss with you the post-war situation, the scope of desirable future experiments, the type of national and international control, the military considerations, the possible commercial advantages, the maintenance of the present leading position of the United States in the world field and other kindred topics.

The committee requests that there be no discussion by you with anyone of your call to appear. It is assumed that you are conversant with the views of your colleagues and associates and that you can present their general views as well as your own specific ones without the need of prior discussions with them. General Groves knows of this invitation.

For the Secretary of War:

Cordially yours,

George L. Harrison,
Special Assistant to the
Secretary of War.

CLASSIFICATION CANCELLED
BY 8/19/64

~~TOP SECRET~~

DECLASSIFIED
E.O. 11652, Sec. 3(a) and 5(D) of 4-1
AND 730039
By ERC NARS, Date 6-3-24

Post-War Research and Development

~~J. A. Oppenheimer~~

Draft (2 of 2, B)

En Jones: 6-5-45



TOP SECRET

WAR DEPARTMENT

P. O. Box 2610
WASHINGTON, D. C.

04



REFER TO FILE NO.

1 June 1945

THIS DOCUMENT CONSISTS OF 2 PAGES
2 OF 2 PAGES

Secretary of War, Chairman
Interim Committee
Washington, D. C.

Dear Mr. Secretary:

You have asked us to make recommendations on appropriate procedures for post-war research and development in the field in which we are interested. We have had a very limited opportunity to discuss these matters and would like to be free to present further and more technical reports.

In our opinion the most critical and most urgent step for making possible post-war research and development in the field of atomic energy is the establishment of an authority, qualified to determine, and empowered to implement, national policy in this field. This authority must be supported by the Congress; it must have wide discretion and adequate means for utilizing in the broadest possible way existing research institutions--industrial, academic and military--and for creating such new agencies as may be required. This authority should in our opinion include strong representatives of the Army and of the Navy; it should not be exclusively nor predominantly military. It should include technically qualified scientists; it should certainly include men wise in matters of national policy and national welfare.

The technical and administrative problems of this undertaking are most difficult and complex. We would hope in the near future to present for the consideration of your committee a few suggestions of more detailed and specific nature. Nevertheless, we believe that the decisive step must be the creation of an authority which can act to execute its policies. The fact that at present in the Manhattan Engineer District there exists an agency charged with those aspects of the problem of presumptive importance to the present war, should make it possible for the new authority to enter upon its duties in a considered and gradual way.

We have been shown by Dr. Conant the accompanying draft of suggested enabling legislation for a commission to assume this authority. There are details in this draft which it is neither within our function nor within our competence to consider; but this does afford a concrete example of a proposal which would in our opinion meet the essential needs as we have come to understand them.

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CONFIDENTIAL

8/16/45

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To Secretary of War

1 June 1945

We would most strongly urge that all steps be taken so that the necessary legislation may be introduced and supported at the earliest possible moment. Even now there are many specific questions which are waiting solution for the lack of a more permanent authority.

A. H. Compton
E. Fermi
E. O. Lawrence
J. R. Oppenheimer

For the panel

J. R. Oppenheimer

Incl-draft (dup.)

Dist. of Series A
1 & 2 - Sec'y of War
3 - J. R. Oppenheimer

Dist. of Series B
1 - Col Ladd
2 - Gen. Groves' file

~~TOP SECRET~~

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THIS DOCUMENT CONSISTS OF 2 PAGES

COPY NO. 2 of 2 SERIES B

A commission on atomic energy is established to be appointed by the President, the members to hold office for 5 years (first appointments staggered to provide new appointments each year), as follows: Five scientists or engineers, each named from a list of three recommendations made to the President by the National Academy of Sciences; two Army and two Navy officers appointed on the recommendation of the Secretaries of War and Navy; three civilians appointed by the President directly, each for the term of one year.

The commission to elect its own chairman; appoint necessary executive officers and staff, no compensation for members or chairman, Chief Executive Officer \$15,000 salary.

Commission to publish annually a report.

Commission to have the following powers:

- (a) to issue licenses as provided under 6 below
- (b) to construct and operate experimental facilities and production units, to buy and sell materials, to arrange through contract for research development, or production all such activities to be related to the investigation of the basic phenomena of atomic energy including nuclear fissions, nuclear combination and nuclear transformation and the application of such phenomena to civilian and military uses.
(Annual budget voted by Congress as NACA)

The legislation to provide that the Commission shall have the power to promulgate rules and regulations regulating the following:

- (a) the buying and selling of uranium and uranium products, thorium and thorium products and such other materials as the commission may find essential to control the production of atomic energy and the preparation of dangerous materials by atomic fission or the separation of isotopes;
- (b) the construction and operation of plants and machinery concerned with the production of atomic energy or the production of materials essential for the production of atomic energy particularly the separation of isotopes of elements, the production of radioactive materials by the use of machines in which atomic fission occurs;
- (c) experiments involving the fission of atomic nuclei, the commission being charged, however, to exercise as little interference with normal scientific research as they may judge consistent with the national welfare being empowered to make special exceptions from any regulations in so far as laboratory experiments involving small quantities of matter and small

CLASSIFICATION CANCELLED
OR CHANGED TO
BY AUTHORITY OF 2163-1-1
BY 11/17/74 DATE 11/17/74

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- 2 -

amounts of atomic energy are concerned; the commission being furthermore directed to administer its rules and regulations in such a way as to encourage experimentations by competent persons on as wide a scale as possible.

(d) The commission will issue revocable licenses to persons and corporations for a period of not more than 3 years without charge, in order to permit certain of the activities prohibited by their rules, provided that in the opinion of the commission the issuance of such a license is in the public interest and further provided that all licensees shall report all transactions, operations and discoveries in the licensed field to the commission and assign all patent rights without reservation to the U. S.

The violation of a rule or regulation of the commission shall be subject to fine or years imprisonment or both and all patent rights acquired during the period of violation shall become the property of the U. S. Government and all materials and machines connected with atomic energy production produced shall become the property of the U. S. Government.

The commission is charged with the responsibility of developing as rapidly as possible the uses of atomic energy for civilian and military purposes and shall be the judge of the degree of secrecy required in these matters for the national safety. For the purpose of furthering research and development in the field of atomic energy and all processes connected with the phenomena of nuclear fission or nuclear transformation, the commission shall utilize both its own and other governmental plants and laboratories and by contract, laboratories and plants of universities, research institutions and business corporations.

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RESTRICTED DATA
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