

~~SECRET~~

This document consists of 23 pages
Copy No. 1 of 17 Series A

DECLASSIFIED
E.O. 12958, Sec. 5.8

NW 972006A
AM LSA Date 7/22/02

412007

R

MINUTES

Twenty-fifth Meeting of the General Advisory Committee
to the U. S. Atomic Energy Commission

March 15, 16, and 17, 1951
Argonne National Laboratory

~~RESTRICTED DATA~~

This document contains Restricted Data as defined in the Atomic Energy Act of 1954. Unauthorized disclosure subject to Administrative and Criminal Sanctions.

Restricted Data

This document contains restricted data as defined in the Atomic Energy Act of 1946. Its transmittal or the disclosure of its contents to an unauthorized person is prohibited.

REPOSITORY NARA/Colony Park
COLLECTION EG 326 46-51 Secretary
BOX No. 100 (NW3-326-93 007)
FOLDER 337 (1-3-47) GAC Minutes, 44

NR DECLASSIFICATION REVIEW
Reviewers: D. L. Thomas 11/22/02
NO NNPI P. F. Barts
Classification: Retained, Changed to _____
Cancelled. _____
Information bracketed: _____ yes _____ no

INCLUDES APPX A AND B

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW DATE: <u>02/22/02</u>	DETERMINATION (CIRCLE NUMBER(S))
AUTHORITY: <u>DAOC BANC DADD</u>	<input checked="" type="radio"/> 1. CLASSIFICATION RETAINED
NAME: <u>Billy W. Spencer</u>	<input type="radio"/> 2. CLASSIFICATION CHANGED TO:
2ND REVIEW DATE: <u>10/25/02</u>	<input type="radio"/> 3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: <u>ADD</u>	<input type="radio"/> 4. COORDINATE WITH:
NAME: <u>WKSMA</u>	<input type="radio"/> 5. CLASSIFICATION CANCELLED
	<input type="radio"/> 6. CLASSIFIED INFO BRACKETED
	<input type="radio"/> 7. OTHER (SPECIFY): <u>10/24-206</u>

DEPARTMENT OF ENERGY DECLASSIFICATION REVIEW	
1ST REVIEW DATE: <u>10/11/94</u>	DETERMINATION (CIRCLE NUMBER(S))
AUTHORITY: <u>DAOC BANC DADD</u>	<input checked="" type="radio"/> 1. CLASSIFICATION RETAINED
NAME: <u>W. H. ...</u>	<input type="radio"/> 2. CLASSIFICATION CHANGED TO:
2ND REVIEW DATE: <u>8/5/94</u>	<input type="radio"/> 3. CONTAINS NO DOE CLASSIFIED INFO
AUTHORITY: <u>ADD</u>	<input type="radio"/> 4. COORDINATE WITH:
NAME: <u>...</u>	<input type="radio"/> 5. CLASSIFICATION CANCELLED
	<input type="radio"/> 6. CLASSIFIED INFO BRACKETED
	<input type="radio"/> 7. OTHER (SPECIFY):

1st and 2nd on site reviews conducted by NR-1
11/22/02 Shows NO NNPI equities.

4327-11217-11-2

~~SECRET~~

NW 972006A-184

For routing of this document
in Secretariat see memo Daddson
to Snapp, dated 5-14-51, filed
312.3 GAC (2-7-47)

015420C000137

Report 9-25-51 GAC mtg. attached
as appendix "B"

DECLASSIFIED
E.O. 12958, Sec. 3.8

MI - mail NW 972006A
AM LSA Date 7/22/02

INDEX
Minutes, Twenty-fifth Meeting, GAC

	<u>Page</u>
Schedule.	1 -- Appendix A
Los Alamos Report	1
Ranger Tests.	1
Greenhouse Shots.	2
Greenhouse Structures Program	2
Smaller Diameter Implosion Weapons.	2
Thermonuclear Program	3
Oak Ridge National Laboratory Report.	4
Interrelation of Reactor Programs	4
Electronuclear Program.	5
Chemistry, Separations.	5
Aircraft Reactor, Design.	6
Questions about ARE	6
Future Plans.	8
Significant Research Accomplishments.	8
Reactor Program	9
Future Research Reports	10
GAC Affairs	11,14,18
Argonne National Laboratory Report.	11
Experimental Breeder Reactor.	11
Liaison in Reactor Program.	11
Materials Testing Reactor	12
Argonne Reactors.	12
CP-7.	12
Chemistry	13
Raw Materials Research.	13
Physics	14
Visitor Participation	14,16
Polonium Production Reactor	17
Next GAC Meeting.	14,16 -- Appendix B
Raw Materials Research.	14
Raw Materials Systems Study	16
Report and Minutes, 24th GAC Meeting.	17

~~SECRET~~

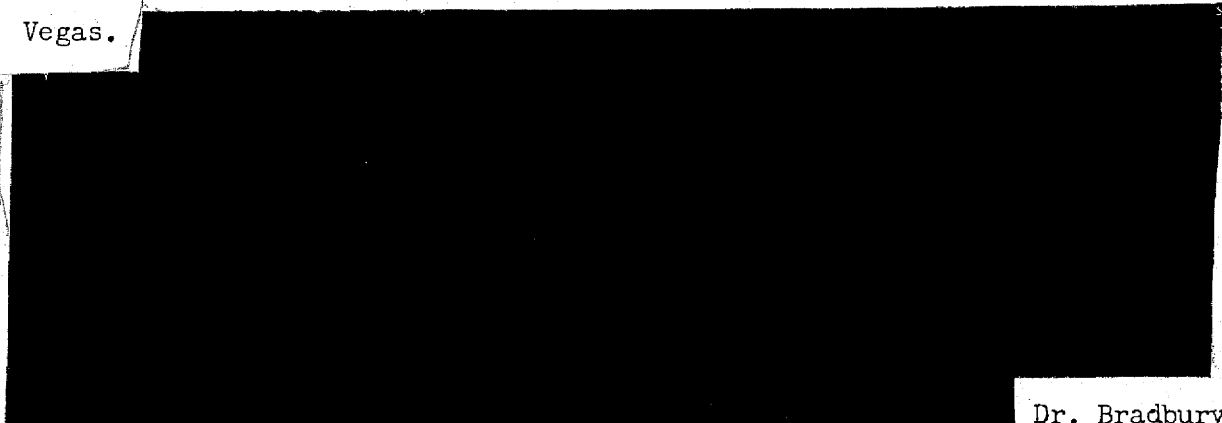
The Twenty-fifth Meeting of the General Advisory Committee was held at the DuPage site of the Argonne National Laboratory on March 15, 16, and 17, 1951. All members were present at each Session. The Secretary and Mr. Tomei were also present at each Session.

FIRST SESSION
(March 15, 1951)

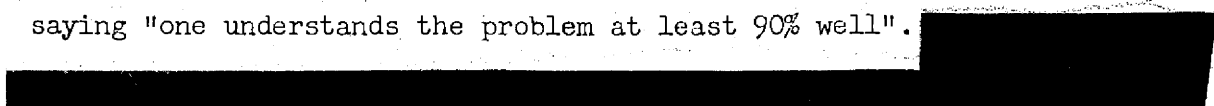
The Meeting was convened in executive session by the Chairman at Schedule 9:30 a.m. The tentative Schedule (Appendix A) was considered and was modified so that the Committee could visit the Argonne installations on the morning of March 16th. The remainder of the executive session was spent in reading the various papers and reports which had been presented to the Committee.

Los Alamos Report At 10:15 a.m. Dr. N. E. Bradbury, Gen. James McCormack, Col. G. F. Schlatter, and Commissioner H. D. Smyth joined the meeting for a discussion of the current weapons program at Los Alamos.

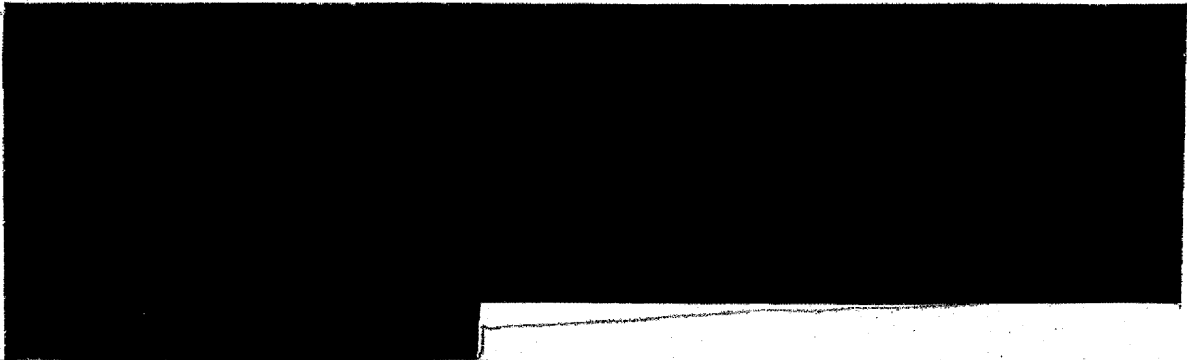
Ranger Tests Dr. Bradbury reported on the results of Operation Ranger at Las Vegas.



Dr. Bradbury expressed the degree in which the measurements verified the theory by saying "one understands the problem at least 90% well".



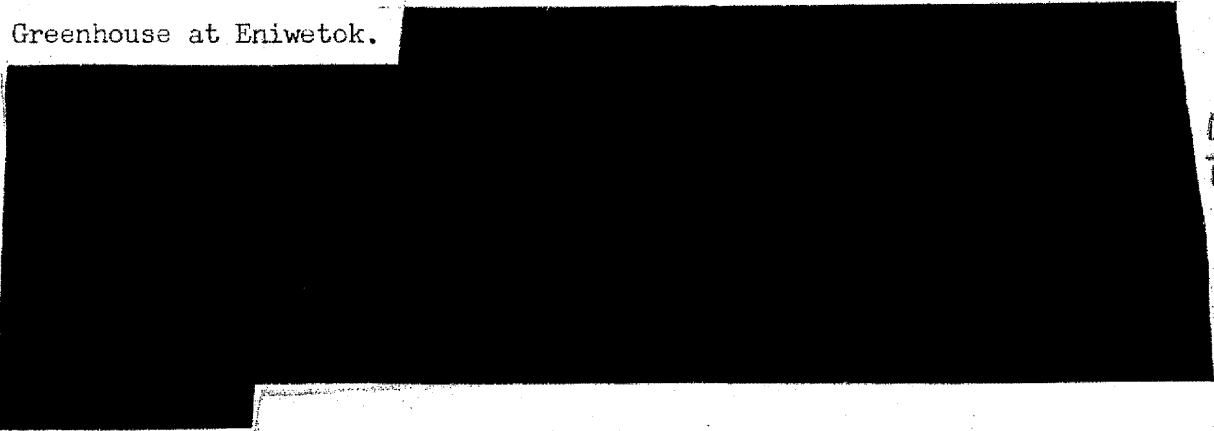
~~SECRET~~



DOE
6.1(a)

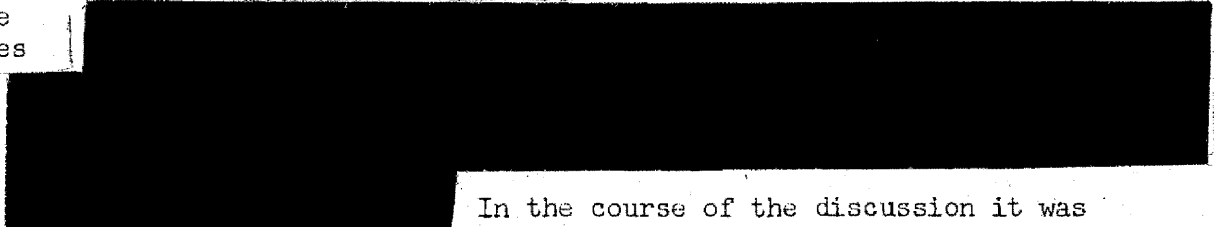
Greenhouse Shots Dr. Bradbury went on to discuss plans for the forthcoming Operation

Greenhouse at Eniwetok.



DOE
6.1(a)

Greenhouse Structures Program



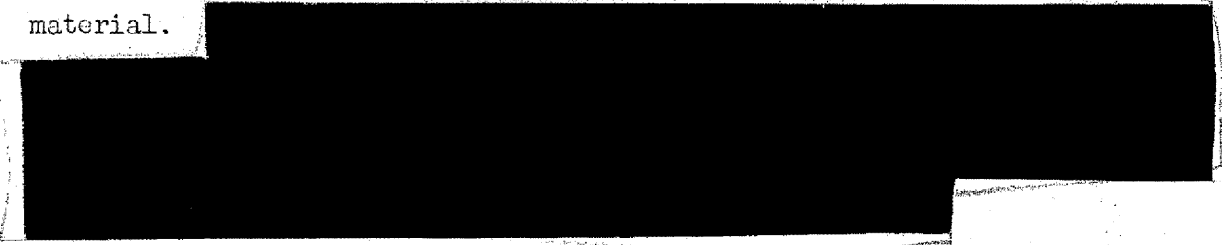
DOE
6.1(a)

In the course of the discussion it was brought out that the tower shot will not, of course, simulate a military drop, but is rather designed to give information on the response of structures to measured pressure waves.

The meeting continued with a general discussion of the effects of Ranger, and further study on the fission weapon program and on the thermo-

Smaller Diameter Implosion Weapons nuclear program. The question of further substantial reduction in size of the implosion weapon was considered; and Dr. Bradbury expressed confidence in graphs which have been prepared giving number of bombs of given

strength versus outside diameter, for a given amount of fissionable material.



Doc
6.16

Questions were asked about development of the hollow implosion and about external initiation. The hollow implosion idea has not been rejected, but Los Alamos has been too busy to devote a well-organized program to it.



Doc
6.16

The thermonuclear program was discussed informally.

Thermo-
nuclear
Program The meeting continued in session through lunch with scattered discussions. At 1:25 p.m. Dr. Bradbury continued his presentation. There was considerable discussion about what scale and character would be appropriate for the thermonuclear program. Dr. Libby emphasized a view that this effort should be stepped up and many hundreds of people be attracted as soon as possible into a large-scale experimental program. General assent to this proposal was lacking, largely because of the apparent sterility of any major purely experimental approach and the conviction that the most efficient present use of available talent would be to emphasize theoretical analysis. The need for weapons systems analysis, for both the thermonuclear and fission weapons, was brought out. This appears to be the kind of problem on which institutions outside Los Alamos could make valuable contributions. The Los Alamos discussions concluded with an expression of thanks by Dr. Oppenheimer to Dr. Bradbury for his excellent report.

In addition to those previously noted, Dr. C. E. Larson, Dr. A. M. Weinberg, Dr. J. A. Swartout and Dr. R. C. Briant of the Oak Ridge National Laboratory, and Dr. P. W. McDaniel of the Research Division of the Commission were present during the last part of the above discussions, and, with Dr. Smyth, remained for the following.

ORNL
Report

The meeting continued (2:20 p.m.) with a consideration of the research and development program of the Oak Ridge National Laboratory, described in ORNL report 51-2-107. The discussion began with scattered questions about the report, addressed for the most part to Dr. Weinberg as Research Director.

Inter-
relation
of
Reactor
Programs

Dr. Weinberg expressed the view that some overlap between the reactor development programs of ORNL and ANL was desirable, that competition was healthy. In contrasting the STR and EBR development at Argonne with the HRE and ARE at Oak Ridge, he felt that while the Argonne program was "on a safe track" and would almost certainly be successful, the Oak Ridge program was less conservative, had a larger element of risk, but if successful would lead to greater returns. In answer to questions about coordination of the programs he said that the two laboratories were well informed as to each other's work but that formal inter-laboratory meetings had not been too successful because people had been so busy with immediate problems that they had not been able to come well prepared to such meetings. With respect to direct scientific contacts with the AEC, he felt that the arrangement under which ORNL makes these through the Division of Research, ANL through the Division of Reactor Development, was rather artificial and not too desirable. Members of the Committee expressed the view that close relations between the reactor development programs at ORNL, ANL, and GE are essential.

~~SECRET~~

-5-

ORNL There was discussion of the electronuclear program at ORNL; some
Electro-
nuclear Committee members expressed doubts about the desirability of carrying on
Program this program, particularly in view of the MTA project. Dr. Weinberg and
Dr. Larson made the points that the real basis for the 86" cyclotron was
the problem of polonium production, that plans for this machine antedated
the Mark I MTA, that, historically, the Y-12 know-how and interests in high
current techniques had favored this program, and that one merit of the pro-
gram would be in keeping together an able group interested in this field.

It was stated that the geographic and industrial character of ORNL
leads to exceptional flexibility for large scale heavy development, par-
ticularly heavy chemical development; Dr. Weinberg acknowledged especially
the dependence of the reactor programs on the large chemical staff. It
was later brought out that of the two main reactor programs, the HRE draws
most heavily on the chemical staff, the ARE on metallurgy, and there was
as yet no serious interference between them because of the size of the
chemical staff.

The basic research programs in physics and chemistry at ORNL differ in
that the former is determined by the facilities available and the interests
of the people, the latter, in large part, by various development needs.

ORNL Dr. Swartout commented on the importance of chemical separations problems,
Chemistry,
Separation- and discussed the solvent extraction program at ORNL, which he characterized
tions as the broadest of those being carried out in AEC laboratories. He men-
tioned the contributions of the Laboratory in developing the TBP process
for recovery of Hanford uranium, the Redox process for plutonium separation,
the Purex process for the Savannah River installation, and the 25 recovery
process for Arco. He felt that solvent extraction processes have out-
stripped other separations methods and that pre- and post-solvent extraction

~~SECRET~~

190

steps are in much more serious need of improvement. However, U^{233} -Th separation is not on a satisfactory basis yet, and solvent extraction, volatility, and ion exchange methods are being investigated. Separations for the HRE solution also pose special problems because of its very high activity. Continuous processing methods are being worked on.

There was also discussion of the cooperation between ORNL and K-25 and X-10. Dr. Larson said that the groups are in close touch, that transfers of groups of personnel have helped foster close cooperation. Dr. Weinberg remarked that ORNL does not consider the diffusion process its major business, but that possible desirability of series operation of reactors with diffusion plants may lead to greater mutual interest.

Aircraft
Reactor,
Design Dr. Briant discussed the ARE program. He described the favored design for the aircraft reactor as a cylindrical structure of BeO bricks with holes (parallel to the axis) containing flowing sodium coolant, the fuel consisting of a static UF_4 -NaF-KF melt contained in hairpin tubes inserted into the holes. The fuel tubes are extended through an upper section of B_4C . The use of this "black curtain" and liquid fuel has the advantage of self-regulation and elimination of the need for control rods. The experimental reactor, designed for 3 megawatts is scheduled to operate in the summer of 1952; the prototype for the actual aircraft reactor, to operate at 200 megawatts, could not be constructed by then or at the Oak Ridge site.

Questions
About
ARE In the discussion on the ARE project, a number of points were of concern to Committee members. One was the mechanical stability of the fluid system, which in present thinking depends essentially on gravity. It was brought out that this may not be as troublesome as it first appears, since only very large (low g) airframes could carry such a power plant (shield

~~SECRET~~

-7-

weight 120,000 pounds). Radiation decomposition of the salt melt may be a difficulty, but preliminary studies are encouraging, possibly because of the rapid recombination of fluorine set free by the radiation. In reply to questions, Dr. Weinberg said that the main things one would get out of the experimental reactor would be information on control, stability, and reactivity problems, on the behavior of the liquid fuel at 1500°, and the practical demonstration of 1500° sodium from a nuclear power source. Some Committee members felt that it would be more sensible to do the ARE after high temperature and radiation testing of components in the MTR. Dr. Smith however cited the desirable psychological aspects of fixing on a definite objective and course, and felt that this supported the ARE. There was also discussion of the fact that whereas the AEC has given the ARE a much lower priority than the HRE, it is being pushed with a much larger budget than the latter. There was general agreement that this is a serious incongruity. Dr. Weinberg felt that if the ARE was worth being undertaken as a weapon development, it should be vigorously pushed. It was also felt that the at present undecided status of the proposed contract with the GE Aircraft Gas Turbine Divisions left the responsibility of ORNL undefined to an undesirable degree.

When asked how he really felt about the prospects for nuclear-powered aircraft, Dr. Briant replied that he believed it possible, that it was a difficult application of nuclear power but would lead to valuable experience.

A general discussion of the size of the ORNL organization and the relative emphasis on various research activities followed. Dr. Larson remarked that the Laboratory is still expanding, but principally by taking

~~SECRET~~

in new groups to deal with new obligations. The research staff has stayed almost constant, at about 3600 people, since 1947. Dr. Buckley questioned the justification for expansion in view of the current mobilization and shortage of manpower. Mr. Murphree felt it might be appropriate to eliminate the electronuclear work.

ORNL,
Future
Plans

Dr. Oppenheimer inquired as to future plans and asked whether there appeared to be serious gaps in the research program. Dr. Weinberg replied that the main line of long-range effort would be the development of low temperature homogeneous reactors for the production of fissionable material, with a $1-2 \times 10^6$ kilowatt aqueous unit as a probable next step. He considered low temperature reactors more favorable for production of fissionable material, but recognized the merit of a possible parallel development in high temperature reactors such as the fast plutonium breeder considered at GE. He felt the following are important matters which should receive much greater attention than they are now getting: (a) a realistic assessment of the various methods of producing fissionable material, with special attention to the ore question; (b) reduction in the cost of heavy water; (c) more economical re-enrichment of uranium. He also felt that radiation chemistry and high temperature aqueous chemistry should receive more attention. He remarked that it had been very difficult to obtain information on raw materials from the AEG; Dr. Larson said this situation is improving.

ORNL,
Signifi-
cant
Research
Accom-
plishments

In answer to a question by Dr. Rabi, Dr. Weinberg said he felt the most significant research accomplishments of ORNL in physics had been (1) characterization of the anti-ferromagnetic state by neutron diffraction;

- (2) development of scintillation spectrometry;
- (3) characterization of short period nuclear isomers;
- (4) measurement of the neutron lifetime.

For chemistry, Dr. Swartout cited

- (1) development of a separation method for rare gases based on low temperature adsorption;
- (2) development of fused fluoride systems;
- (3) development of ion exchange separations;
- (4) recent work on the characterization of tin isotopes, interpreted in terms of nuclear shell schemes.

In biology, the effect of oxygen pressure on radiation damage and the finding that the radiation mutation rate of mice is ten times that expected from work on drosophila were mentioned.

This portion of the Session was concluded at 5:15 p.m., and the meeting continued with a brief executive session. The First Session was adjourned at 5:40 p.m.

SECOND SESSION
(March 15, 1951)

At 9:05 p.m. the Committee met with Commissioner Smyth. The discussion concerned the over-all reactor situation, with special reference to three AEC documents on this subject: AEC 152/15, AEC 17/26, and the Snapp-to-Hafstad memorandum of February 28, 1951 entitled "Commission Action on AEC 152/15".

Reactor
Program

Dr. Smyth stated the aims of the Commission to be: first, the production of the most explosive, e.g. plutonium, from a given amount of ore; second, the generation of useful power. He mentioned the negotiations with

~~SECRET~~

-10-

Monsanto and Detroit Edison-Dow; various Committee members expressed the view that it was a good idea to get new brains interested in the program and that economic self-interest was a desirable basis for this.

The general organization of the reactor program was discussed. It was felt that strong leadership is needed to pull the diverse existing groups together, that some reorganization might be appropriate, and that a truly effective over-all coordinating group would be very desirable. The need for definite goals was noted; and the Chairman remarked that "reactors are like women -- you can't love 'em in general". It was felt that the production reactor program, in particular, needs enthusiastic leadership. In general outline the present program was felt to be healthy; it could profit through a more explicit formulation by the Commission of its actual objectives.

The Session was adjourned at 10:15 p.m.

THIRD SESSION
(March 16, 1951)

After its morning tour of installations at the DuPage site the Committee convened at 1:20 p.m. in executive session.

There was discussion about the expansion tendency of ORNL, the qualitative adequacy of staffing of the aircraft reactor program, and the organizational problems of the AEC in regard to the reactor program. It was generally felt that all AEC laboratories involved in reactor development should be in close touch with the Division of Reactor Development.

Future Research Reports of the research and development programs of the various AEC laboratories.

While it was realized that the present pattern may not be ideal, it was

~~SECRET~~

195

~~SECRET~~

-11-

felt that the reviews should continue, including BNL, Berkeley (especially the MTA program), Ames, and Knolls, probably not Hanford.

GAC
Affairs

The question of how the GAC could increase its usefulness to the AEC was raised, but no definitive conclusions were reached.

ANL
Report

At 2:05 p.m. the following persons joined the meeting: W. H. Zinn, N. Hilberry, F. R. Shonka, S. Untermyer, F. G. Foote, W. M. Manning, H. V. Lichtenberger, S. McLain, J. R. Gilbreath, H. L. Hull, J. R. Huffman, S. Lawroski, J. C. Boyce, H. Etherington, L. A. Turner (of the Argonne National Laboratory); A. Tammaro, J. J. Flaherty, R. C. Hageman (of the Chicago Operations Office); Commissioner Smyth and Dr. McDaniel. The remainder of the afternoon was devoted to the research and development program of the Argonne National Laboratory.

EBR

The discussion opened with a few questions about the Experimental Breeder Reactor (EBR) which had been inspected in the morning. The EBR will be used to obtain an integral measure of breeding gain in the fast neutron transformation of U-238 and Pu-239. It will furnish useful experience on the effects of burn up, high flux, and on the use of liquid metal (Na or Na-K) coolant. The question of plutonium loading was discussed; further information on the metallurgy of plutonium and its alloys is needed.

Liaison
in
Reactor
Program

With respect to liaison between ANL and other laboratories engaged in reactor development it was said that inter-laboratory planning discussions are not held formally, but that contact is maintained through visits and informal discussions. Most people are so busy that it is difficult for them to give proper attention to long-range planning. Dr. Zinn felt that the U.S. reactor program could profit by increased effort; he emphasized

~~SECRET~~

~~SECRET~~

-12-

MTR the need for more experimentation on radiation damage. The MTR will be very useful for this if managed so as to minimize red tape. The difficulties of experimenting at Hanford were contrasted with the excellent cooperation found at Chalk River once official approval was obtained. Dr. Zinn felt that polonium production with the MTR would not necessarily jeopardize research use, and, in any case, that it should not.

Argonne Reactors Dr. Zinn listed Argonne's present reactor development jobs in order of descending priority as: CP-6, STR, EBR, CP-5 (Argonne research reactor), CP-7 -- ANL work on MTR being of unspecified priority. He discussed some of the technical aspects of the Savannah River Reactor (CP-6) design and indicated the feasibility of operating at reduced power with depleted uranium.

At this point (3:15 p.m.) Commissioner Pike joined the meeting.

CP-7 Dr. Zinn said that the cost of the Savannah River reactors would be dominated by an AEC requirement to bomb-proof them; otherwise they might compare favorably with graphite design. He went on to mention some features of the CP-7, essentially a CP-6 design modified to operate at higher temperature and generate usable power. Corrosion was expected to be a serious problem with Al sheathed fuel elements; Zr cladding was deemed feasible but development of Zr metallurgy and increased availability of Zr would be necessary. Radiation decomposition of the water was discussed; the program of basic research on this subject was outlined by Dr. Gilbreath. It was felt that radiative decomposition of the D₂O would not be an insuperable problem in CP-7.

Dr. DuBridge acted as Chairman for a short time while Dr. Oppenheimer was out of the room.

~~SECRET~~

ANL

Chemistry

Dr. Manning described some of the work in chemistry, indicating that a reasonable fraction was basic research. He mentioned research on heavy element chemistry (being pursued with increased emphasis), tritium, and He-3 at low temperatures. As more programmatic studies, he cited experiments to be done with the MTR on successive neutron reactions on plutonium, of interest because of the possibility that curium-244 might be suitable for initiators. He also described the long range fission detection program, based on measuring 9.4 year fission product Kr⁸⁵ in the atmosphere. From the latter measurements it is estimated that integrated external production of plutonium does not exceed 0.2 of the U.S. amount. He stressed the desirability that Hanford contain its Kr effluent, and Commissioner Pike said that this is being started.

Raw

Materials

Research problems is being started; they expect to concentrate on treatment of Florida phosphates. He mentioned difficulties in getting needed information but felt the situation was improving, except for industrial process information. Dr. McDaniel said hold-back on the latter would probably continue; Commissioner Pike felt that such information would be of only limited value anyway. Dr. McDaniel said that the Division of Research expects to be able to supply funds in support of raw materials research.

Dr. Lawroski mentioned the work on volatility separations using BrF₃ and similar compounds as fluorinating agents, and cited several advantages of the method. He felt it could probably not be used with the Savannah River reactors, partly because of further development required, and partly because of the BrF₃ resistance of the Al can; Dr. Libby suggested the cans be opened mechanically. Present work on this process is aimed at pilot plant design.

ANL Dr. Turner briefly described the research program in physics,
Physics mentioning neutron optics, neutron spectroscopy, and cross section

ANL measurements. The question of visitor participation was raised, and it
Visitor was stated that basic research at Argonne has been carried out mainly by
Participa- the full-time staff. It was felt that housing difficulties and home-
tion university responsibilities had severely limited visitor participation
 although the latter has been encouraged.

The Session was adjourned at 5:05 p.m.

FOURTH SESSION
(March 16, 1951)

This executive session opened at 7:40 p.m. The general sentiment
that the laboratory research reports should be continued was reaffirmed;
Next it was the wish of the Committee to consider the programs of the Brook-
GAC haven National Laboratory and Berkeley at its next meeting. It was
Meeting decided that the next meeting should be held in Washington, D. C., on
 May 8, 9, and 10, 1951, with the first day to be devoted to reading and
GAC informal discussions (note Appendix B). The question of how the Committee
Affairs should function and how it can best serve the Commission was further
 discussed.

This Session was adjourned at 8:35 p.m.

FIFTH SESSION
(March 17, 1951)

The Session convened at 9:10 a.m. Besides the Committee members,
Commissioner Pike and Dr. McDaniel were present.

Raw The first subject considered was that of raw materials. Mr. Whitman
Materials Research expressed concern as to the adequacy of support of research on raw
 materials problems. Dr. McDaniel replied that the Division of Research

~~SECRET~~

-15-

had recently assumed responsibility for long-range research in this field and was prepared to support investigations on chemical processes, geo-chemistry, and exploration to the extent of about $\$1.5 \times 10^6$, distributed about half in the National Laboratories, half in universities. The aid of laboratories like Battelle, Gulf, etc., will also be sought if it appears they can be of help. Mr. Whitman remarked that besides willingness to support, encouragement and stimulation would also be necessary. It was also remarked that raw materials reports should be more freely circulated, and suggested that an informal conference between chemists from the National Laboratories and persons familiar with raw materials would be desirable.

Mr. Pike pointed out that mineral geology is much less advanced than oil geology, that theoretical bases for prospecting for mineralization in igneous deposits are undeveloped. Some recent proposals for prospecting were discussed. Mr. Murphree felt it would be well to interest a number of oil company laboratories, expert in geophysical methods, in these problems by issuing small contracts.

With respect to plans for phosphate studies, Mr. Pike mentioned the possibility of extracting uranium in the ordinary superphosphate process as well as in the triple superphosphate process. He also said that the Florida overburden actually has a higher uranium content than the phosphate beds, and that a bright idea is needed on how to get the uranium out without complete acidulation.

Other items mentioned in the discussion were the recently increased domestic production, a contract held by the U.S. Geological Survey for exploration and examination, and the recent policy of the AEC of encouraging in all areas of research, contracts with possibilities of practical value.

~~SECRET~~

200

Dr. Rabi felt that some central laboratory group devoted to raw materials problems was needed to pull work in this field together and that the AEC needs a facility of its own for this. Dr. Buckley suggested that the situation might profit from an interdisciplinary systems study of the Hartwell type; this received general assent. The Chairman expressed also the wish of the Committee to have available at its next meeting a report covering (a) an analysis of raw materials problems; (b) current and prospective research undertakings; (c) gross facts about development and exploration (note Appendix B).

At 10:20 a.m. Dr. Turner, Dr. Boyce, Dr. Hilberry, Dr. Zinn, and Mr. Flaherty joined the meeting for further discussion of ANL matters. Dr. Hull came in shortly thereafter.

Continuing the earlier discussion of the visitor participation program, Dr. Boyce remarked that of the approximately 30 available openings for visitors, only about half were filled. More visiting scientists would be welcome; but it has been difficult, especially for senior people, to leave their universities. A general problem mentioned by Dr. Rabi is that of competition on major research investigations between visitors and the Laboratory's own staff. He felt the only practical way to go in for visitor participation is to have the laboratory's facilities understaffed. Dr. Boyce hopes to attract interest from small institutions without elaborate facilities of their own.

Dr. Boyce went on to comment on the difficulties caused by security restrictions. For example, Q clearance is required for access to an unclassified room if it happens to be in a classified building -- a situation which might be alleviated by physical segregation. However, there were

signs that some of the overstrict security interpretations were easing. Dr. Zinn mentioned again the housing problem which is serious both for temporary appointees and for new staff members. Argonne has considered building apartments, but the plans had not gone through.

Dr. Dodson observed that problems like the above had been encountered at Brookhaven, but that its difficulties with security problems and with housing were somewhat less acute than those of Argonne.

On the breeder program the desirability of bringing out GE people who are interested in fast neutron breeding was discussed. The morale problem of starting projects at ANL and having them go out for completion by other groups was felt by Dr. Zinn to be appreciable; Dr. Buckley remarked that this pattern is standard and very successful in industrial research and development.

At 11:15 a.m. Mr. Tammaro joined the meeting.

Polonium
Production
Reactor

Dr. Zinn next brought up the specific question of the possibility of a special reactor for Po-210 production. If Argonne is asked to undertake this job it will be a heavy burden. Alternative initiator materials were mentioned. He also presented the question of the competition in reactor design between the objectives of plutonium production (most favorable at low temperatures) and power utilization (most favorable at higher temperatures), and felt that policy on this matter should be sharpened.

The Chairman conveyed to Dr. Zinn the Committee's fine impression of the Argonne Laboratory, and at 11:45 a.m. all visitors left the meeting.

Report
and
Minutes, Committee,
24th
Meeting

The Chairman's Report and the Minutes of the 24th Meeting of the Committee, having been read, were unanimously approved.

~~SECRET~~

-18-

GAC
Affairs

The Session continued with some further discussion of items earlier considered. It was agreed that the Chairman would discuss with the Chairman of the AEC the need for more complete and more timely information of the technical problems of policy before the Commission, and the means whereby this information could effectively be made available to the GAC (note Appendix B).

Dr. Buckley emphasized his feeling on two specific points:

- (1) that the table on page 7 of the ORNL report (giving a breakdown of the program into subjects of programmatic, non-programmatic, and miscellaneous character as to budget and fraction classified) was most informative, and a desirable pattern for future laboratory reports; and
- (2) that the high budget for the ORNL aircraft reactor project (ANP) is inconsistent with its low priority, and that this enterprise needs reconsideration and reprogramming.

On the latter point it was felt that since the job is one which requires very large scale effort if properly pursued, it is important to have a better understanding of its motivation than is now available to the Committee.

With the adjournment of this Session at 12:20 p.m., the 25th Meeting of the General Advisory Committee was concluded.

R. W. Dodson
Secretary

Attachments (2)

~~SECRET~~

~~SECRET~~

GENERAL ADVISORY COMMITTEE
to the
U. S. ATOMIC ENERGY COMMISSION
Washington 25, D. C.

March 13, 1951

The following is the tentative Schedule for the 25th Meeting of the General Advisory Committee, to be held at the Argonne National Laboratory on March 15, 16, and 17, 1951:

March 15 (Thursday):

- 9:30 a.m. -- Executive Session
- 10:15 a.m. -- Los Alamos Matters
- 12:30 p.m. -- Executive Session, lunch
- 1:30 p.m. -- Reactor Paper
- 2:00 p.m. -- Oak Ridge Laboratory Matters
- 8:15 p.m. -- Executive Session

March 16 (Friday):

- 9:30 a.m. -- Oak Ridge Laboratory Matters (continued), or
Argonne Laboratory Matters
- 2:00 p.m. -- Argonne Laboratory Matters
- 4:30 p.m. -- Raw Materials Matters

March 17 (Saturday):

- 9:30 a.m. -- Executive Session
- 10:15 a.m. -- Argonne Laboratory Matters (continued), or
Executive Session
- 1:00 p.m. -- Executive Session

Adjournment not after 2:45 p.m.

During the 3-day meeting there will probably be occasion to visit the Argonne installations.

Richard W. Dodson
Secretary

DISTRIBUTION: Gordon Dean
T. Keith Glennan
Thomas E. Murray
Sumner T. Pike
Henry D. Smyth

Marion W. Boyer
Secretary, AEC (11)
Secretary, GAC (11)

~~SECRET~~

204

~~SECRET~~

GENERAL ADVISORY COMMITTEE
to the
U. S. ATOMIC ENERGY COMMISSION
Washington 25, D. C.

Princeton, New Jersey
March 20, 1951

Dear Mr. Dean:

As you know, the 25th meeting of the General Advisory Committee was held at the DuPage County site of the Argonne National Laboratory on March 15, 16 and 17. As Dr. DuBridge and I told you yesterday, the meetings were in many ways very informative. We had an opportunity to learn from Dr. Bradbury about the analysis of the Nevada tests, and to go over with him his plans and policies for the work of the Los Alamos Laboratory in the near future. We had an informative discussion with the Directors of the Oak Ridge National Laboratory, and the Directors of the Argonne Laboratory; and we were also happy to visit typical installations and typical experiments at the Argonne site. We believe the reports and consultations about the work of these laboratories will prove helpful in an overall assessment of the Commission's research program.

It is our plan to hold the 26th meeting of the General Advisory Committee in Washington on the 8th, 9th and 10th of May. We shall probably confine the formal meetings to the 9th and 10th, and devote the first day to study and informal consultation. In addition to a consideration of the problems which the Commission may then wish to refer to us, we would suggest three items for our agenda:

(1) We believe that it would be timely to review the program of the Brookhaven Laboratory.

(2) We believe it would also be timely to review the program of the Radiation Laboratory of the University of California.

(3) We would like to have a substantive report of the Commission's activities in research, development and exploration in the field of raw materials, covering the activities both of the Division of Research and the Division of Raw Materials Operations.

In connection with the first two items, it would be helpful if, well in advance of the 26th meeting, we could have brief summary reports similar in scope to that provided by the Oak Ridge Laboratory.

~~SECRET~~

~~SECRET~~

-2-

Clearly, should the Commission have urgent problems which are in conflict with these suggested agenda items, we would wish to defer to the Commission's interest. In any case, we hope to learn of the technical problems with which the Commission is confronted, and insofar as possible to give help to the Commission in connection with them.

Sincerely yours,

J. R. Oppenheimer,
Chairman

Mr. Gordon Dean, Chairman
U. S. Atomic Energy Commission
Washington 25, D. C.

~~SECRET~~

DECLASSIFIED
E.O. 12958, Sec. 1.6

NW 97206A
By Om 1-3a Date 7/6/65

206