OD S/AE 3083/144

Filed with ~~FS~~ 15A General

JAEIC

(ODS/AE 3083/144)

ISA gen

S/AE FILE COPY

~~S-E-C-R-E-T~~

A-G-E-N-D-A

THE JOINT ATOMIC ENERGY INTELLIGENCE COMMITTEE

BARTON HALL 1300 HOURS 22 OCTOBER 1959

ITEM 1.

Approval of the minutes of the meeting of 8 October 1959. (Copy attached)

ITEM 2.

Report on Current Activities:

a. Lt. Col. Neuer report on meeting with British.

ITEM 3.

Discussion of ONE draft of NIE 11-8-59, "Soviet Capabilities for Strategic Attack", - including Table A in Annex D - (Copy attached - TS 141956-f)

ITEM 4.

(b)(1)
(b)(3)

ITEM 5.

Informal preliminary discussion of plans for NIE 11-2-60. (No papers)

ITEM 6.

Review of draft NIS Section 63 - HUNGARY. (Secret Copy attached)

ITEM 7.

Review of draft NIS Section 73 (atomic energy), NIS 15 - SWITZERLAND. (Secret copy attached)

Rec'd Oct 15, 1959 2:05 pm

~~S-E-C-R-E-T~~

~~S-E-C-R-E-T~~

14 October 1959

Present Membership

	Agency	Code	Ext.
Chairman			
Dr. Herbert Scoville, Jr.	[redacted]		(b)(3)
Alt. Chairman			
[redacted]	[redacted]		(b)(3) (b)(6)
Members			
Mr. Philip Farley	State	182	4201
Dr. Edwin Davis	Army	11	75121
Dr. A. K. Brewer	Navy	1203	12
Col. William D. Hayes	Air Force	189	652
Dr. Charles Reichardt	AEC	119	3355
Col. Andrew Cox	Joint Staff	11	78450
Mr. Meffert Kuhrtz	FBI	175	517
Mr. Neil Carson	NSA	188	7106
Mr. Leslie Rutledge	Defense	11	57182
Secretary			
[redacted]			(b)(3) (b)(6)
Alternates			
Mr. Charles Flowerree	State	182	4928
Maj. John Brandenburg	Army	11	75121
Dr. Seaborn Newton	Navy	1203	12
Maj. Charles Rupert	Air Force	189	2302
Mr. George Monk	AEC	119	3357
Mr. Edward Risley	Joint Staff	11	78450
Mr. Sam Papich	FBI	175	517
Mr. Brewster Denny	NSA	188	7106
Mr. John Jackson	Defense	11	75574

~~S-E-C-R-E-T~~

3-403

~~SECRET~~

MINUTES

OF

THE JOINT ATOMIC ENERGY INTELLIGENCE COMMITTEE

BARTON HALL 1300 HOURS 8 OCTOBER 1959

ATTENDING:

Members	Others Present
Dr. Herbert Scoville, Jr., Chairman	Mr. Howard Wiedemann, State
Lt. Col. Glenn A. Smith, Acting Chairman (part of meeting)	[redacted] (b)(3) (b)(6)
Mr. Charles Flowerree, State	Maj. John Brandenburg, Army
Dr. Edwin Davis, Army	[redacted] (b)(3) (b)(6)
Dr. Seaborn Newton, Navy	
Mr. Frank Perez, Air Force	
Mr. Edward Risley, Joint Staff	
Mr. Neil Carson, NSA	

ITEM 1. The Minutes of the meeting of 17 September 1959 were approved as circulated; however, in the absence of Dr. Reichardt (AEC), and at his request, Col. Smith stated the comments of the AEC member on paragraphs 4 and 5 of the Summary of Information on US-USSR Exchange Negotiations (attached to minutes) as follows: amend to read - - -

4. Mention was made by Dr. Reichardt of a State Department proposal to establish a continuing exchange through the IAEA on the LENIN and the SAVANNAH.

5. He also mentioned that the President's Special Advisory Committee on High Energy Physics and Accelerators had recommended that the National Academy of Science look into the possibilities of exchange or cooperation with other countries including the USSR on new accelerator concepts.

ITEM 2. Current Activities:

[redacted] (b)(1) (b)(3)

~~SECRET~~

-443

b. GMAIC Memo - The memo to Chairman/JAEIC from Chairman, GMAIC on GMAIC's proposed contribution to NIE 11-5-59 was reviewed and the proposed draft reply was approved with changes. (Copy attached)

c. Consultants Meeting - Mr. Wallace Howard, Chairman of the first JAEIC Consultants Meeting reported on the arrangements that have been made in preparation for the meeting with JAEIC consultants starting 12 October 1959.

d. New AE Information - [redacted] reported on recently obtained new information on Soviet atomic tests. The NSA member was asked to review this information to determine whether NSA might verify or supplement these reports. (b)(3) (b)(6)

e. Second Consultants Meeting - Mr. Perez, Chairman of the Second JAEIC Consultants meeting reported on arrangements for the meeting presently planned for 26 October 1959.

f. Intelligence Objectives - The text of a proposed revision of DCID 1/3 was reviewed and an alternate wording of the portion relating to Soviet nuclear energy was endorsed for submission. (Copy attached)

ITEM 3. NIS-10-Annual on Norway - The JAEIC contribution to NIS-10 was approved as amended.

ITEM 4. NIS-8-Annual on Portugal - The JAEIC contribution to NIS 8 was approved without change.

ITEM 5. [redacted] (b)(1) (b)(3)

ITEM 6. Summary of Production - It was decided that for the forthcoming JAEIC consolidated summary of production the period to be covered would be 1 July 1958 to 30 June 1960. A new date of 5 November 1959 was set for member contributions, and it was decided to publish such a summary in the future at two-year intervals, providing in each publication for an overlap with the last issuance.

ITEM 7. NIE 11-8-59, Soviet Capability for Strategic Attack - The draft of NIE 11-8-59 will be sent to members when it becomes available.

5-044

~~SECRET~~

ITEM 8. Fourth Countries Capabilities - The proposed memorandum to USIB on action taken in response to Post-Mortem on NIE 100-2-58 was approved.

ITEM 9. Visit to USSR - Col. Smith described preparations for a visit to the USSR by a group of US AE experts headed by Mr. McCone.

Adjournment: 1500 hours

Next meeting: 22 October 1959 at 1300 hours

RANSOM L. ENG
Secretary, JAEIC

~~SECRET~~

~~SECRET~~

COPY

12 October 1959

MEMORANDUM FOR: Chairman, Guided Missile and Astronautics Intelligence Committee

SUBJECT : Coordination of Material to be Included in NIE 11-5-59

REFERENCE : Chairman, GMAIC Memo to Chairman, JAEIC dated 29 September 1959; same subject

1. Reference requests JAEIC concurrence or comment on two paragraphs tentatively approved for use in Section IX of NIE 11-5-59.

2. The following changes are proposed:

Paragraph 1.a. - Change the second sentence to read:

The beginning of the nuclear rocket capability may evolve by about 1970 with the first application probably being on either intermediate or final stages.

Add to the third sentence, at the end, these words:

.....and increase the payload.

Paragraph 1.b. - Change the second sentence to read:

We believe the Soviets are interested in and are probably working on nuclear rocket engines for this purpose. However, nuclear propulsion will probably not be used for the first stage. Nuclear rocket engines may be followed by ionic and photonic type engines if they can be proved practical.

Eng for/
HERBERT SCOVILLE, JR.
Chairman

~~SECRET~~

-446

S E C R E T

C
O
P
Y

12 October 1959

MEMORANDUM FOR: Assistant Director/National Estimates

SUBJECT : Annual Review of DCID No. 1/3
Priority National Intelligence Objectives,
30 September 1958

REFERENCE : ONE Memorandum, same subject, 1 October 1959

1. At its 8 October 1959 meeting the Joint Atomic Energy Intelligence Committee reviewed the 1 October 1959 draft revision of DCID 1/3.1 which was an enclosure to reference.

2. The following changes are recommended in the draft, as indicated:

I. Par.c.: Present and future Soviet capabilities for nuclear attack on the US or key US overseas installations by any weapons delivery system, including missiles or by clandestine measures.

II. Par. e.: Soviet and Satellite scientific and technical strengths and weaknesses, including nuclear energy research and development for other than weapons purposes, substantially affecting Bloc military, economic, and political capabilities.

S/
RANSOM L. ENG
Secretary

S E C R E T

-447

~~SECRET~~

DRAFT

14 October 1959

NIS SECTION 63 - HUNGARY

Uranium mining in Hungary started in 1956, when uraniferous sandstone deposits were discovered by Soviet and Hungarian exploration teams in the Pécs area. At that time, expeditions were set up to explore for uranium deposits throughout Hungary, and a joint Soviet-Hungarian uranium mining stock company was formed over which the Soviets have complete control. This company is known as the Bauxite Mining Enterprises with headquarters believed to be in Budapest. The Enterprise is subordinate to the Number 2 Section of the Hungarian Ministry of Chemical Industry and Electric Power. This Section is also called the Uranium Planning Office, and is located at 16 Munkasi Mihaly Ut., Budapest.

Uranium deposits in the Pécs area consist mostly of Paleozoic, Mesozoic, and Tertiary sedimentary rocks, which have been folded and slightly faulted. The uranium deposits are in light-reddish marine sandstones and are widely dispersed. The mountains are of low and hilly relief. Some of the deposits are quite similar to those found in the US Colorado Plateau.

Reportedly, uranium ore is mined in two main areas in Hungary: the vicinity of Pécs, and at Bakonya. The reported mining areas include Kovagoszollos near Pécs (46°05'N-18°05'E) where three mines are also in operation; Balatonfüred (46°57'N-17°52'E); Veszprem (47°05'N-17°54'E);

Kaposvar (46°21'N-17°47 E); Miskolc (48°06'N-20°47'E); Bataszek (46°11'N-18°43'E); and at Lake Balaton and Meczek.

It is believed that a uranium processing plant was built near Pécs during 1958, although no information is as yet available on its size or processes used.

Although the proven Hungarian uranium reserves are quite extensive, they are being exploited at a relatively slow rate by the Soviets. In 1957, the first year of full production, ore containing approximately 100 tons of recoverable uranium metal was produced. In the next few years it is estimated that Hungary will produce ore containing up to perhaps 1000 tons of recoverable uranium metal per year. All the output of Hungarian uranium mines is sent to the USSR for reduction to metal.

~~S-E-C-R-E-T~~
NOFORN

6 October 1959

NIS 15

SWITZERLAND

SECTION 73
ATOMIC ENERGY

This is a preliminary draft of Section 73, NIS 15. It has not been finally edited or reconciled with other NIS sections and should not be reproduced. This section was approved in _____ 1959 by the Scientific Estimates Committee for use in the NIS.

~~S-E-C-R-E-T~~
NOFORN

NIS 15

TABLE OF CONTENTS FOR SECTION 73

LIST OF FIGURES

A. GENERAL

1. Capabilities and Trends

Switzerland has established a modest atomic energy program which is confined to basic nuclear research and the development of the peaceful uses of atomic energy. It has no capability for the production of nuclear weapons, but some government and military leaders are urging that the armed forces be equipped with these weapons. Switzerland does not have the economic and technological strength, nor the scientific manpower, to sustain a really large nuclear program.

Although Switzerland began investigating the possibilities of utilizing atomic energy in 1945 and has some scientists of justifiably high reputation, shortages of research facilities, financial resources, personnel, and raw materials limited the development for a number of years to basic nuclear physics research in the universities. In 1955 private industry took the first steps in establishing a nuclear research program with the formation of a reactor center at Wuerenlingen, and the acquisition of the research reactor displayed by the U.S. at the First U.N. Conference on the Peaceful Uses of Atomic Energy. This leadership by private industry gave Switzerland its first opportunity for applied nuclear research and emphasis was shifted from basic nuclear research to the development of research and power reactors. A second reactor of Swiss design is being

constructed at the Wuerenlingen center, and the research reactor displayed at the Brussels Fair in 1958 by the U.S. was purchased by the Swiss National Fund for Scientific Research for the University of Basel. A prototype power reactor is being developed by one private group while another private group is building a pilot power reactor obtained from the General Electric Company (US). One of the basic problems facing the Swiss is the traditional division between German-speaking and French-speaking Switzerland. Over the years it has been customary to duplicate educational and other facilities in the two parts of the country. This trend is noticeable in the plans for erecting power research reactors. Officials close to the nuclear program fear that Switzerland does not have sufficient resources to maintain a dual program. Because of the increasing expense the Swiss Government has had to appropriate for the support of the research center at Wuerenlingen it is becoming apparent that it will in the next few years come under government control. The economic development of atomic power stations will be left entirely to private industry. Although legislative control over atomic energy was placed under the Federal Government by a national referendum on 24 November 1957, Parliament has not yet passed a federal atomic energy law.

Industry, the universities and the Institute of Technology are keeping pace with nuclear developments. Certain industries have successfully

devoted themselves to the study of nuclear materials, and each of the universities has established a nuclear physics department to the extent of its means. Nuclear training is being carried on in the universities and the nuclear research fields are quite varied. The specialization of each of the seven universities in their own fields and their current capabilities favor the development of nuclear research so as to allow them to work together profitably thus avoiding duplication.

Swiss capabilities are much smaller than those of its larger neighbors, but greater than those of Austria. The participation of Switzerland in international agencies and bilateral agreements with western nations will aid in the development of their atomic energy program, but it will not achieve the large scale program that is being developed in France, Italy and West Germany. Bilateral agreements for the peaceful uses of atomic energy have been negotiated between Switzerland and the United States, France and Canada.

The program will also be assisted by Swiss membership in various international nuclear energy organizations such as the International Atomic Energy Agency (IAEA), The European Agency for Nuclear Energy of the Organization for European Economic Cooperation (OEEC), and The European Center for Nuclear Research (CERN). CERN, a high-energy nuclear physics research center is located at Geneva and is readily accessible to Swiss scientists.

2. Background and Organization

The Swiss Commission for the Study of Atomic Energy (Schweizerische Studienkommission fur Atomenergie), the SKA, was formed in 1945 by the Swiss Government to begin investigating the possibilities of utilising atomic energy in Switzerland. The first objective of the Commission was the construction of an experimental nuclear reactor. The SKA was also instructed to:

1. conduct research on the basic question of atomic energy;
2. provide a reservoir of trained scientists in this field;
3. give adivce to the military as to the maximum amount of protection that could be given to troops and population against the radiological effects of atomic weapons; and
4. maintain contact with private industry.

The driving force behind SKA was Prof. Paul Scherrer, the chairman, who had originally convinced the Swiss Government that there was a need for an atomic energy group. Private industry was also interested in the industrial aspects of atomic energy and wanted to develop and manufacture equipment (turbines, heat exchangers, etc.) that would be necessary in the functioning of the SKA and the interest of private industry little progress was made for a number of years, and the money appropriated by

the Swiss Government for atomic research was in reality used to sponsor basic nuclear physics research in the universities.

In 1955 a Consultative Commission for Nuclear Energy was set up by the Federal Government to coordinate planning activities in the atomic energy field and in January 1956, a Delegate for Atomic Questions was appointed. The appointment of a Delegate of the Federal Council is the Swiss method of establishing a semi-independent agency outside the usual channels. The Delegate was charged with the responsibility of coordinating the efforts of scientific establishments, private industry, and government for the peaceful use of atomic energy and the study of peculiarly Swiss problems.

Because of expansion in the atomic energy program the Study Commission for Atomic Energy, set up in 1945, was disolved at the end of 1958, as was the Consultative Commission for Nuclear Energy. By a decision of the Federal Council, they were replaced on 1 January 1959 by the Federal Commission for Atomic Energy, which is composed of 28 prominent people from science, industry, and government, and which is the high-level consultative body of the Confederation for all governmental atomic affairs. The Swiss National Fund for Scientific Research, is

FIG 73-2

responsible for handling the subsidies appropriated by the Swiss Government. These appropriations are handled by the Fund's Commission for Atomic Science, established in 1958, which has the responsibility for establishing a general plan of research, coordinating the work in the universities, supervising the execution of subsidised research, and maintaining contact with international atomic energy groups. Other organizations which are involved in the developing atomic energy in Switzerland are the Federal Commission for the control of Radioactive Fallout, and the Swiss Association for Atomic Energy.

A group of private industries founded a research organization, Reaktor, A. G. in 1955, and furnished 200 million Swiss francs to establish the first reactor center in Switzerland. Reaktor, A. G. is the main atomic energy research establishment in Switzerland, and has a one thermal megawatt swimming pool reactor in operation and a 50 thermal megawatt heavy water reactor under construction. Two other private organizations, Energie Nucleaire S. A. and Suisatom S. A., have been formed to promote nuclear power developments. The goal of Energie Nucleaire, S. A. is to build, in the French-speaking part of Switzerland, an experimental center for the production of energy. Suisatom S. A. has a pilot

nuclear power plant, purchased from General Electric, under construction not far from the location of Reaktor, A. G.

Switzerland has seven universities and an Institute of Technology. The Institute of Technology is a federal institution, while the universities are under the jurisdiction of the cantons in which they are located. Training in various fields of nuclear physics is carried out in each of these institutions. The number of persons being trained each year is increasing, but there is still a shortage of trained personnel to meet the demands of the growing nuclear program.

3. Financing

The major financial support for the development and operation of the atomic energy program in Switzerland comes from private industry and the federal government. In the early years of the Swiss program the Government appropriated 18,500,000 Swiss francs* (US$4,650,000) for the construction of a research reactor. Because of the apathy on the part of the majority of scientists and private industry, little progress was made on a reactor project, and the appropriation was used largely to promote the training of young nuclear physicists. In 1954 plans were being developed for the construction and operation of a research reactor,

*4.29 Swiss francs = $1.

S-E-C-R-E-T
NOFORN

by private industry. This project was financed largely by private industry and the cantons with 15 million Swiss francs. The Swiss Government also appropriated about 11 million Swiss francs toward this project. In early 1958 the Swiss Government appropriated a special subsidy of 10.5 million Swiss francs (US$2,500,000) to be administered by the Swiss National Fund for Scientific Research for the development of atomic energy, as well as a grant of 4.5 million Swiss francs (about US $1.1 million) for laboratory equipment of the research center of Reaktor, A.G. at Wuerenlingen. At the same time a study was begun to work out a long-range program covering the period 1959-1962. In October 1958 the Swiss Government appropriated 40 million Swiss francs for atomic research during the year 1959-1962. An additional appropriation of 30 million Swiss francs was made to the Wuerenlingen Center, which is administered by Reaktor, A. G. Although the government wants to keep the initiative in atomic energy development in the hands of private industry, the increasingly large governmental appropriations makes this virtually impossible.

FIG 73-2

4. Manpower and Training

The Swiss nuclear energy program has been limited by a shortage of scientists and technicians. Many of those who had the required

qualifications emigrated because of more attractive possibilities abroad. Swiss authorities are aware that Switzerland can only keep up with the rapid progress in this field if there is a supply of highly skilled native scientists and technicians, and although the bulk of the appropriations alloted for atomic energy research were earmarked for the training of nuclear specialists there is still a serious lack of trained personnel in this field.

Each of the universities and the polytechnic schools has a physics department or an Institute of Physics that is doing basic nuclear physics research and training. Several industrial firms have established atomic energy sections which are providing training in the industrial applications of atomic energy which are of particular interest to their special needs. The research center, Reaktor, A. G., has at present a personnel strength of 220. This will likely be increased when this center is taken over by the Federal Government.

Switzerland has also taken advantage of the training programs of other countries, which are available to foreign personnel, particularly that of the United States. Swiss personnel have attended the International School of Nuclear Science and Engineering (a reactor training school) at Argonne National Laboratory, Lemont, Illinois, studied at the Joint

Norwegian-Netherlands reactor center at Kjeller, Norway, and have participated in the basic and pure research of the European Center for Nuclear Research (CERN) located in Switzerland.

B. MAJOR RESEARCH AND DEVELOPMENT

The main nuclear research center in Switzerland is Reaktor, A. G., located at Wuerenlingen, on the Aare River near Baden. Reaktor A. G. was founded in March 1955, with the necessary investment capital furnished by over 170 Swiss corporations from industry, banking, insurance and public utilities. On the other hand, the funds required for the actual operation and the maintenance of the installations in Wuerenlingen are provided by the Federal Government in the form of subsidies. The aims of the enterprise are statutorily fixed as follows:

a. Building and operation of research reactors for the purpose of establishing scientific and technical bases for the construction and operation of power reactors, and to study the development of the necessary machines and equipment for this purpose.

b. Research into methods for protection against nuclear radiations.

c. Production of radioactive isotopes for medical uses, chemistry, agriculture and industry.

d. Training technical personnel for the operation and maintenance of reactors and to provide students with practical knowledge about the properties and behavior of reactors.

This center has a 1 MW swimming pool type research reactor (SAPHIR) in operation, and a heavy water moderated, natural uranium research reactor (DIORIT) under construction. SAPHIR was acquired from the United States after the First UN Conference on the Peaceful Uses of Atomic Energy in 1955, and after some modification went critical in May, 1957. SAPHIR is used for shielding experiments, small engineering tests, and some neutron physics work. Under construction at Reaktor A. G. is a DIORIT, 12.5 MW, heavy water reactor of Swiss design. This thermal, heterogeneous, natural uranium, heavy water cooled and heavy water moderated research reactor will provide beam holes for general neutron physics, good irradiation facilities for isotope production and material testing, space for installation of hot loops and fuel element test loops. The center also has physics, electronics, chemistry and metallurgical laboratories. The question of fuel composition and cladding will be the major subject for research and development of the chemistry and metallurgical groups.

FIG 73-1

Other developments in the atomic energy field are largely concerned with the development of electric power by private syndicates. Suisatom A.G.

Zurich, was formed by a group of important electrical enterprises in the northwest part of the country. This group in collaboration with the International General Electric Company, U.S.A., plans to erect a pilot power plant which will be located in an underground installation at Villegen not far from Wuerenlingen. At the beginning of operation, the plant will have an electric output of about 16 MW which will later be increased to 27 MW. Special parts of the plant will be supplied by IGE, with Swiss manufacturers constructing the rest of the reactor according to the designs of IGE.

Energie Nucleaire S. A. (ENUSA), Lausanne, is another group formed for the development of nuclear power. This syndicate is composed of public corporations, electric power companies, industrial organizations, insurance companies and consulting engineering offices. The goal of this group is the construction, in the French-speaking part of Switzerland, of an experimental nuclear power plant. Plans call for this protype to be built in an underground installation at Lucens in the valley of Broye, in the vicinity of Lausanne. It will be a 20 thermal MW light water boiling reactor, cooled and moderated with natural water and will use slightly enriched uranium oxide (approx. 1.4%). This center which it is planned to have in operation by 1963, will be available to professors

and students, particularly those of the Polytechnic School of the University of Lausanne while also furnishing a training ground for experience on the industrial plane.

A syndicate composed of several large German-Swiss concerns has plans for the construction of an experimental nuclear center. This project is being developed mainly by Sulzer Bros. Ltd. These plans call for 30 thermal MW pressurized water reactor using heavy water as a moderator and coolant, with natural uranium as fuel. The center will be situated in a series of underground caverns which afford a high degree of containment, and will form an extension to the existing District Heating Station of the Federal Institute of Technology in Zurich. At the present time the project is under consideration by the Federal Institute of Technology and the Federal Authorities.

Basic nuclear physics research and training is carried out at the seven universities and the polytechnic school in Switzerland.

C. SOURCES AND PRODUCTION OF BASIC MATERIALS.

In view of the increasing importance of radioactive minerals a "Working Committee for the Investigation of Swiss Rocks and Minerals for Atomic Fuel and Rare Elements" was set up at the end of 1956 which is financed by the Federal Government. The main task of this committee is

to locate economically exploitable uranium deposits. Though extensive prospecting is being carried out, only very small uneconomic deposits have so far been located. The Swiss have a small capability for the production of heavy water by Holzverzuckerungs AG, and the Cece Graphite works of Zurich have done research graphite for nuclear reactors. The other basic materials necessary in the nuclear energy program are acquired through regular commercial channels or from other countries under the terms of bilateral agreements.

D. REACTIVE MATERIALS.

Switzerland has a 1 MW swimming pool type reactor in operation and is capable of producing only very small amounts of plutonium. Plutonium produced in the reactors using fuel purchased from the United States is to be handled as prescribed by the bilateral agreement; and the United States has established a price schedule for the repurchase of the used fuel elements at prices that vary with the amount of irradiation. This bilateral agreement also contains arrangements under which Switzerland may obtain small quantities of plutonium, uranium-235, and uranium-233 for research purposes.

E. APPLICATIONS.

Since a developing shortage of electric power will become more acute

in the next ten to fifteen years, one of the principal objectives of the Swiss nuclear energy program is the development of economic applications of atomic energy, particularly for the production of electric power. At present Suisatom, AG, Zurich, has under construction a small pilot plant facility which will be equipped with a reactor purchased from the International General Electric Company, USA. Other power projects are being planned by Energie Nucleaire S. A., Lausanne, with an experimental 20 thermal MW nuclear power plant to be put into operation in 1963, and by a group of industrial firms for a 30 thermal MW plant to be built as an extension to the District Heating Station of the Federal Institute of Technology.

The facilities of the nuclear research center at Wuerenlingen is providing the Swiss the opportunity to produce radio-isotopes for medical, agricultural and industrial uses, and to do power reactor research. Isotopes have been used for basic research and for medical research and therapy.

F. SUPPORTING FACILITIES.

The Swiss atomic energy program is supported by work conducted at the universities and polytechnic schools in Switzerland, and by a number of industrial organizations. The major supporting organizations are:

Physics Institute, University of Basel (Physikalische Anstalt, Universitat Basel). The University Physics Institute is under the direction of Prof. Paul Huber and the main field of interest is in work on the physics of neutrons and physics of light nuclei. Other research is done on nuclear measurment techniques and absolute precision determinations of radioactive source streagth and of neutron sources. Equipment at the Physics Institute includes the AGN-211 research reactor displayed by the United States at the Brussel Exposition, a 1 MEV linear Accelerator, and a 200 KEV Cockroft-Walton.

Physics Institute, University of Berne (Physkialisches Institut). This institute is under the direction of Prof. F. G. Houtermans, and research is carried on in five main fields. These are: 1) Mass spectrometry; 2) radiation measurements; 3) cosmic rays; 4) Carbon 14 dating; and 5) Registration of neutron of Jungfraujoch.

Institute of Physics, University of Fribourg (Insitut de physique, Universite de Fribourg). Research on beta and gamma spectroscopy is being done here. Plans are underway for the development of a bubble chamber to measure particles of high energies.

Institute of Physics, University of Geneva (Institut de physique, Universite de Geneva). The main activities at the Institute of Physics,

under the direction of Prof. Otto Huber, are in the nuclear field. These include the study of slow and fast neutron, cross sections, nuclear magnetic resonance in very low fields and in very high fields, and paramagnetic resonance. The institute has also received grants from the Swiss Ministry of Public Economy for beta-ray spectrograph development and from the U. S. Air Force for bubble chamber development.

Physics Institute, University of Neuchatel (Institut de Physique, Universite de Neuchatel). This institute under the direction of Prof. Jean Rossel is doing research on neutron induced reaction, nuclear emulsions, and reactor development. A 3 Mev Van de Graaff machine will be installed soon and will serve to do extensive research in the field of reactions of inelastic diffusions of neutrons.

Institute of Physics, University of Zurich, (Physikalisches Institut Universitat Zurich). The Institute of Physics under the direction of Prof. Hans Staub has a 2 Mev Van de Graaff which has been in operation for some years, and has a new 5.5 Mev Van de Graaff which was recently installed. Research studies are concerned with measurement of nuclear reactions, cosmic rays, low energy nuclear physics, and nuclear magnetic resonances. The resonances of several nuclear species have been discovered here.

Physics Institute, Federal Institute of Technology (Physikalisches Institut, Eidgenossische Technische Hochschule), Zurich. The nuclear physics laboratories of the Federal Institute of Technology (ETH) are mainly engaged in medium and low energy research, under the direction of Prof. Paul Scherrer. The ETH has a long tradition as an excellent technological education center, and is one of the outstanding centers for physics in Europe. Prof. Scherrer who has done much in building up this reputation for the ETH will retire at the end of the 1959-60 academic year. His place will be taken by three new professorships in experimental nuclear physics. Prof. Pierre Marmier, will head the first of these new institutes and will carry out research using a 10 Mev Van de Graaff. The exact nature of the other two institutes has not yet been determined. Present research is being carried on at the Physics Institute with a fixed frequency cyclotron, accelerating protons to an energy of 7.5 Mev and deutrons to 12 Mev, a high voltage generator, and a Cockcroft-Walton Generator.

Institute for Nuclear Research, Polytechnic School of the University of Lausanne, (Institut de recherche nucleaire, Ecole Polytechnique Universite de Lausanne). The Institute for Nuclear Research is under the direction of Prof. Charles Haenny, and its main research is with high energies, nuclear emulsion techniques, absolute measurements of

neutron flux, fast neutron generation, and nuclear reactors. The Institute has a strong interest in obtaining a research reactor for research and training purposes.

Brown-Boveri & Cie, Corp. (Brown Boveri & Cie AG) Baden. Brown Boveri & Co. and its president, Dr. Walter Boveri, have played a leading role in the development of the nuclear energy program in Switzerland. It was through Dr. Boveri's influence and interest that the research organization Reaktor AG was founded. The company has completed the design and manufacture of components for the Swiss nuclear research reactor, DIORIT, of Reaktor, AG, and presently has a contract for designing a 27 thermal MW nuclear power plant for Suisatom AG, Zurich. It has a betatron development program and, also participates either directly or through its associated companies in various power plant design projects.

Escher-Wyss Machine Works (Escher-Wyss Maschinenfabriken AG.,) Zurich. This company has engaged in design studies and consulting contracts with the Air Force Office of Scientific Research and Air Research and Development Command in the United States. It manufactures parts and materials for research reactors. These have included shielding materials, shielding assemblies, heat exchangers, reactor vessels and tanks. Escher-Wyss has given financial support to a number of reaktor projects.

Emil Haefeli & Cie, Basel. This company in collaboration with the ETH in Zurich has developed and produced cyclotron equipment. They have also developed a high-voltage Cockcroft-Walton generator. Sulzer Brothers Corporation (Gegruder Sulzer AG.,) Winterthur. Sulzer is the main private share holder of Reactor AG. The Company is building a plant to produce heavy hydrogen for the making of heavy water. The technical studies and reactor development for the syndicate planning a 30 thermal MW power reactor at the ETH is being done by Sulzer. They are also doing work on fuel elements and have zirconium clad uranium fuel element.

G. OUTSTANDING PERSONALITIES

Boveri, Walter Dr. Industrialist, Chairman of the Board, Brown-Boveri and Co. and President of Reaktor AG. Boveri is the most outstanding single private industrialist in the atomic energy field in Switzerland. He was influential in the purchase of the swimming pool reactor by Switzerland and he exerted considerable influence in the negotiations leading to the signing of an atomic energy bilateral agreement with the United States. Boveri was a delegate to the Second United Nations Conference for Peaceful Uses of Atomic Energy in 1958.

Burckhardt, Jacob, Dr. Delegate for Atomic Energy Questions. Member, Steering Committee for Nuclear Energy. European Nuclear Energy Agency. Deputy Delegate for Atomic Energy Questions 1956-1958, and delegate to

the Second United Nations Conference on Atomic Energy.

Clusius, Klaus, Prof. Dr. Ing. Physical chemist. Clusius is regarded as one of the leading physical and organic chemists in Western Europe and has been Director, Institute of Organic Chemistry, University of Zurich since 1947. He was formerly Director, Physical Chemistry Institute, University of Munich (German). The invention of "Clusius Tube." The chief research is connected with the separation of isotope, but he is also doing work on low temperature research and reaction kinetics. Born 19 March 1903.

Fritsche, Andreas. Mechanical Engineer, Chief Design Engineer, Reaktor AG. 1957. Research Engineer, Sulzer Brothers, Winterthur, 1949-1956. Fritsche works on reactor design and reactor control apparatus. He was one of the top three men in the first ISNSE class at Argonne National Laboratory 1955. Born 20 August 1920.

Haenny, Charles, Prof. Dr. Physical chemist. Director of Institute for Nuclear Research and Physical Chemistry, Polytechnic School of the University of Lausanne, and member of the Swiss National Fund for Scientific Research. Born 1906

Houtermans, Freidirck Georg, Dr. rer. Nat. Physicist. Professor for Experimental Physics and Director, Physics Institute, University of Bern, and member of Swiss National Committee for International Geophysical year.

Houtermans was educated at the University of Goettingen and the Technische Hochschule, Berlin, and worked in the USSR and England before World War II. He was imprisoned by the Soviets and the Nazis and left Germany in 1953, although he still retains his German citizenship. Houtermans has attended numerous international meetings and has published widely. His main interest is in classical radioactivity measurments. Other interests are cosmic radiations, mass spectrography, radioactivity, and nuclear reactions. He has achieved considerable success in the investigation of cosmic radiation with the aid of photographic emulsion layers. Born 22 January 1903.

Huber, Paul, Dr. Reactor Physicist, Ordinary Professor of Physics and Director, Institute of Physics, University of Basel; Member, Federal Commission for Atomic Energy; President, Federal Commission for Surveillance of Radioactivity. Huber has attended many international conferences in recent years and was an official delegate to both United Nations "Atoms for Peace" Conferences. Hubers main interests are in low energy neutron physics, accelerators, scattered radiation of neutrons in nuclei, thermodynamics and gas scintillation neutron counters. Born 21 April 1889.

Huber, Otto. Prof. Physicist, Professor of experimental physics and Chairman, Physics Institute, University of Freiburg. Huber came from the

ETH in Zurich in 1953 and built up the Physics Institute from zero.

Marmier, Pierre, Prof. Nuclear Physicist. Professor of Nuclear physics at the ETH, Zurich. Taught at the ETH 1946-51 and was a Senior Research Fellow at the California Institute of Technology 1952-1955. Returned to the ETH in 1955. Marmier's main interest and research are in the field of nuclear reactions and spectroscopy. Born 1922.

Rossel, Jean. Prof. Dr. Physicist. Director, Physics Institute, University of Neuchatel; Member of the Board of Directors, Reaktor AG, and the Federal Commission for Atomic Energy. Rossel was educated at the ETH and taught in the physics department from 1924-47. His research has included work on neutron physics, low temperatures, solid state physics (electronic properties of crystals) and atomic chronometry. Born 1918.

Scherrer, Paul. Prof Dr. Nuclear physicist. Scherrer who is probably Switzerlands outstanding nuclear physicist is Professor and Director of the Institute of Physics of the Federal Institute of Technology (ETH). He plans to retire at the end of the 1959-60 academic year. He is also a member of the Federal Commission for Atomic Energy and a member of the Board of Directors, Reaktor AG, Scherrer who was chairman of the SKA from 1945 to 1958, was the leading proponent for many years in creating interest in the development of atomic energy in Switzerland.

474

Sontheim, Rudolf. Dr Cs. Technical. Engineer. General Manager, Reaktor AG. Sontheim spent four years as a development engineer for General Electric Co. in Lynn Mass., 1947-1950, and was Project Engineer for Albiswerk AG., Zurich, 1950-1955. In 1955 he became General Manager of the Reaktor AG. Born 1916.

Staub, Hans Prof. Physicists. Director Nuclear Physics Institute, University of Zurich. Staub spent some years in the United States at Los Alamos and at Stanford University. He returned to Switzerland in 1949 but still retains his U.S. citizenship. The two activities at the physics Institute in which Staub is primarily interested are the Van de Graaff program and Nuclear Magnetic resonance. The Van de Graaff at the institute is a 1.6 MEV machine built by Staub.

H. COMMENTS ON PRINCIPAL SOURCES

Information on the Swiss Nuclear Energy Program has been obtained from open literature, [redacted] the Department of State, visitors to Switzerland and intelligence sources. In general the information contained in this section is available from several sources. There are no outstanding gaps in intelligence coverage of this subject.

(b)(1)
(b)(3)

Figure 73-1. MEMBERS OF THE FEDERAL COMMISSION FOR ATOMIC ENERGY

C. Aeschimann
Prof. B. Bauer
E. Binkert
W. Boveri
E. Choisy
L. Derron,
Prof. Ch. Gramacher
A. Heil
E. Hess
H. Homberger
Prof. P. Huber
E. Kronauer,
U. Meyer-Boller
C. Meylan
O. Muller
Prof. A. V. Muralt,
Prof. H. Pallmann
E. Primault
R. Reichling
Prof. J. Rossel
A. Schaefer
Prof. P. Scherrer
E. Steiner
A. Winiger
H. Wolfer
E. Wuttrich
H. P. Zschokke

Figure 73-2. APPROPRIATIONS FOR THE DEVELOPMENT OF ATOMIC ENERGY IN SWITZERLAND

Year	Federal Government (Swiss Franc*)	Industry and Cantons (Swiss Francs)	Use
1946	500,000		Research
1947-1951	18,500,000		Research, Training
1954-1957	11,800,000	15,000,000 6,000,000 500,000	Construction and Operation of Reaktor AG. Original capital Suisatom AG. Original capital Energie Nucleaire SA.
1958	15,000,000 4,500,000		Research and Training Operation of Reaktor AG.
1959-1962	40,000,000 30,000,000		Research and Training Operation of Reaktor AG.

*4.29 Swiss Francs = $1.00

Approved for Release: 2017/11/29 C01142960

Figure 73-3. SWISS REACTOR SPECIFICATIONS

	SAPHIR	DIORIT
Type	Swimming Pool	Thermal Heterogeneous
Fuel	MTR-type fuel elements	Natural Uranium
	20% enriched	
	3.5 kg of U^{235}	
Moderator	Ordinary water	Heavy Water
Refector	Ordinary water	Ordinary water and graphite
Max Thermal Power	1 MW	12.5 MW
Primary Coolant	Demineralised water	Heavy water
Secondary Coolant	None	———
Max Thermal flux	6.10^{12} n/cm^{2}sec	$2.2.\ 10^{13}$ n/cm^{2}sec
Thermal shield	Ordinary water	cast iron with cooling coils
		and concrete
Biological shield	None	Baryte concrete

DIRECTOR OF CENTRAL INTELLIGENCE DIRECTIVE NO. 1/6[1]

CONTROL OF INITIAL INFORMATION REGARDING FOREIGN NUCLEAR EXPLOSIONS[2]

(Effective 5 August 1959)

Pursuant to provisions of NSCIDs No. 1 and No. 3, and for the purpose of protecting the intelligence sources and methods used and assuring the availability of a maximum amount of significant technical intelligence data, the following controls are established on the dissemination of information on the detection of foreign nuclear explosions.

[redacted] (b)(1) (b)(3)

[redacted] Evidence of foreign nuclear explosions from other sources will be reported by the member of the United States Intelligence Board (hereafter referred to as the "Intelligence Board") receiving the information to the Chairman of JAEIC.

[redacted] (b)(1) (b)(3)

3. AFTAC will notify operational activities of the Atomic Energy Detection System as required to expedite operations.

4. When evidence of a foreign nuclear explosion is received, the Chairman of JAEIC will inform the individual members of the Committee. JAEIC will then prepare a complete statement summarizing all information available. This complete statement may be used by the individual members of JAEIC to notify the Intelligence Board members of their respective agencies. Further dissemination of information on the event shall be determined by the respective Intelligence Board members. Dissemination of this information from the Intelligence Board members directly to the indicated personnel will be accomplished when appropriate as follows:

a. Director of Central Intelligence:
   The President
   The Executive Secretary of the National Security Council
   The Chairman, Joint Committee of Congress on Atomic Energy
   The Chairman of the Watch Committee of the United States Intelligence Board

b. Joint Staff Member:
   The Secretary of Defense
   The Chairman of the JCS
   Director of the Joint Staff

[1] This Directive supersedes DCID No. 1/6, effective 6 May 1958, which in turn had superseded DCID No. 11/1 of 17 July 1956.

[2] For the purpose of this directive, "foreign nuclear explosions" means nuclear explosions by foreign countries other than Great Britain.

COPY No. 161

-479

Assistant to the Secretary of Defense for Atomic Energy
Chairman, Military Liaison Committee

c. State Department Member:
Secretary of State
Under Secretary of State

d. Army Member:
Secretary of the Army
Chief of Staff

e. Navy Member:
Secretary of the Navy
Chief of Naval Operations

f. Air Force Member:
Secretary of the Air Force
Chief of Staff

g. Atomic Energy Commission Member:
Chairman and Commissioners of the AEC
General Manager
Director, Division of Military Application

h. Federal Bureau of Investigation Member:
The Director, Federal Bureau of Investigation

5. JAEIC will simultaneously prepare a statement which protects intelligence sources and methods and which is suitable for immediate dissemination by means of normal intelligence channels and publications. When requested or appropriate, JAEIC will prepare information on Soviet nuclear tests suitable for release through established intelligence channels to selected foreign governments. Release of such information requires Intelligence Board approval in accordance with paragraph 4*d*, NSCID 1. This should not be construed to restrict the exchange of information with the UK and Canada who are cooperating in the detection program.

6. No public release of information relating to the occurrence of foreign nuclear weapons tests will be made, except as directed by the President or the National Security Council.

ALLEN W. DULLES
Director of Central Intelligence

95-1-AT-480

CONFIDENTIAL

INTERNATIONAL AFFAIRS

Multinational Cooperation

International Atomic Energy Agency (IAEA) (UNCLASSIFIED)

IAEA laboratory site. Representatives of IAEA and the Austrian Government signed an agreement under which the Seibersdorf site near Vienna will be leased to the IAEA for 99 years for construction of an analytical laboratory. The agreement provides for collaboration between the Agency laboratory and the Austrian atomic energy laboratories which are located nearby.

Research contract with the IAEA. Under a letter contract, the United States Atomic Energy Commission will make available $20,000 to the IAEA for research on the production of calcium 47 for use in biological and medical research. This action was the first to be negotiated under the United States offer, announced in October 1958 at the Second General Conference of the IAEA at Vienna, to explore a program in which the United States would assign specific research projects to the Agency.

Agricultural research and atomic energy. A two-month training program on uses of atomic energy in agricultural research was begun at Cornell University under the sponsorship of the United Nations Food and Agriculture Organization and the IAEA. Scientists from 18 countries are participating.

IAEA fellowships. By July 24, the National Academy of Sciences (NAS) had forwarded to the AEC 81 fellowship applications submitted through the IAEA. Of this total, 48 have been accepted, 16 have not been accepted, and 17 were still being reviewed. Twenty-one of those accepted have been trained or are receiving training in AEC facilities. Of the 16 not accepted, some were withdrawn by NAS and others were from applicants whose interests or qualifications could not be matched with AEC training programs.

Technical assistance program. The IAEA authorized $238,000 for technical assistance, composed of equipment and experts, to the United Arab Republic, Thailand, and Indonesia.

International Symposium on Radiation Preservation of Foods. Representatives from 24 countries attended an International Symposium on Radiation Preservation of Foods sponsored by the AEC and IAEA at

81451-481

the Massachusetts Institute of Technology (MIT). A summary report by MIT is being prepared for the AEC, and a collection of papers presented will be published.

Panel on atomic energy documentation. A panel on the documentation of scientific information met in Vienna under the sponsorship of the IAEA. The panel experts advised the Agency on the selection and classification of all documents received from member states, the preparation of accession lists, and the provision of reports, abstracts, bibliographies, and translations to member states. The panel also provided advice on the Agency's programs for library, scientific and technical publications, and for the organization of conferences and seminars.

Radioactive waste disposal at sea. The disposal of radioactive wastes at sea was discussed by a panel of experts sponsored by the IAEA. Participants from nine countries are studying this problem and expect to submit a report to the Director General by the end of 1959.

Panel on transportation of large radioactive sources. The problem of transportation of large radioactive sources and fissionable materials was considered by an IAEA-sponsored panel of experts which began a series of meetings in Vienna. The panel will attempt to formulate draft regulations on minimum safety measures which will be uniform and universally acceptable for air, water, and land transportation of radioactive materials. The work of the panel complements that of the IAEA panel on transportation of radioisotopes which met in Vienna in April.

Seminar on educational problems related to the development of peaceful uses of atomic energy. The IAEA and UNESCO jointly sponsored a seminar on educational problems relating to the development of peaceful uses of atomic energy. Approximately 60 participants from 30 countries attended. The seminar considered the role of universities, engineering colleges, nuclear research centers, and international organizations in the education of nuclear scientists and technicians as well as the need for training health physicists and introducing nuclear science at the secondary school level. Speakers from the United States were Drs. Manson Benedict, Glenn Murphy, and William G. Pollard.

European Atomic Energy Community (EURATOM)

Joint Reactor Board. Representatives of the United States and Euratom were named as members of the Joint Reactor Board. Eildert G. Stijkel is to serve as Chairman of the Board and Amasa S. Bishop as Vice-Chairman. There will also be a member representing the Export-Import Bank in those cases in which a loan from the Bank is involved.

At its first meeting, the Joint Reactor Board discussed administrative procedures, procedures for evaluation of reactor proposals, and the present status of proposals for those reactors to be completed by 1963.

The evaluation of reactor proposals is to be carried out simultaneously by Euratom and the AEC. The staffs of each organization will submit parallel recommendations to their respective representatives on the Joint Reactor Board. The Board will make its decision on the basis of these separate recommendations.

Joint Research and Development Program. Three research contracts were awarded by the United States-Euratom Joint Research and Development Board. The contracts are the first to be negotiated under the joint research and development program. The organizations and the areas of research are listed below.

American Standard Corporation	Cladding ceramic plate fuel elements by spray coating techniques
Battelle Memorial Institute	Heat-transfer and void distribution studies on boiling water coolants
Compagnie Industrielle des Ceramiques Electroniques	Study of the extrusion of uranium oxide.

Joint Nuclear Research Center. Euratom and the Italian Government signed an agreement establishing the Nuclear Research Center at Ispra, Italy. The agreement provides for:

1. Ispra site and facilities to be leased to Euratom for 99 years,
2. Gradual transfer of the Center to Euratom,
3. Joint use of the Ispra-1 research reactor, with Italian projects having priority,
4. Euratom to furnish the Center with additional facilities and equipment to the extent of $24 million, and
5. Euratom to meet operating costs of $15 million per year.

Euratom currently plans to staff the Center with approximately 1,200 persons. By 1962 the Ispra Center is expected to be fully staffed with 1,500 employees.

Meeting of the Council of Ministers of the European Community. At its meeting in July, the Council of Ministers of the European Community:

1. authorized the signature of the Euratom-Canada agreement for cooperation,

2. noted the completion of negotiations of the Export-Import Bank loan agreement with Euratom,

3. requested new proposals by September for the establishment of a European University, and

4. stressed the need for rapid consideration and conclusion of a third party liability convention and basic Euratom health standards. (End of UNCLASSIFIED section.)

Safeguards Activities (OFFICIAL USE ONLY)

Studies of safeguards instrumentation and techniques. Studies of safeguards instrumentations and techniques being carried out by the Westinghouse Electric Corporation are being realigned to conform with experience and data collected. The study has been concerned with the application of tramper-proof features of safeguards instrumentation to commercially available instrumentation, and the testing of protective and communications devices. Future work will emphasize the development of devices which are to facilitate effective but unobstrusive safeguards.

Safeguards discussion at September IAEA Board of Governors Meeting. AEC staff are preparing recommendations for United States policy positions on safeguards for the September meeting of the Board of Governors of the IAEA, and for discussions with other Western nations in preparation for the meeting. Among the problems are: the determination of the quantities of source and special nuclear materials which will invoke IAEA safeguards, and whether other materials, including heavy water, will be considered as materials requiring IAEA safeguards.

Nuclear Cross-Sections Cooperation

The United States was informed that the Euratom members had accepted a proposal of the United States, United Kingdom, and Canada

to establish a Western European nuclear cross-sections group having responsibility for the evaluation and coordination of the measurement of basic constants of unclassified nature. It is expected that members of the Tripartite Nuclear Cross-sections Committee (United States, United Kingdom, and Canada) will participate in the new group which may gradually absorb unclassified activities of the Tripartite group. (End of OFFICIAL USE ONLY section.)

Agreements for Cooperation (UNCLASSIFIED)

The United States-French Agreement for Cooperation for Mutual Defense Purposes and an amendment to the United States-United Kingdom Agreement for Cooperation for Mutual Defense Purposes became effective July 20 with the exchange of diplomatic notes. United States Agreements for Cooperation for Mutual Defense Purposes with Canada, West Germany, and The Netherlands became effective July 27.

The United States-Viet Nam Agreement for Cooperation Concerning the Civil Uses of Atomic Energy became effective July 1. An amendment to the United States-Brazilian Agreement for Cooperation Concerning the Civil Uses of Atomic Energy became effective July 2.

Education and Training

Radioisotopes techniques course. A total of 48 persons are attending the 70th course on radioisotopes techniques offered at the Oak Ridge Institute of Nuclear Studies. Included in the 48 are 11 foreign nationals.

Shippingport Nuclear Power Station training program. Thirteen participants are enrolled in the second course which began in July. Of the five foreign nationals attending, two are from Belgium, two from Japan, and one from Italy.

Activities in Other Countries

Argentina, Brazil, and Uruguay. A special science survey mission composed of representatives of several United States agencies visited Argentina, Brazil, and Uruguay in August to survey the research potential of these countries. The AEC Scientific Representative in Buenos Aires participated in the survey.

Austria. The European Organization for Nuclear Research (CERN) has accepted Austria's application to become the 13th member of the organization.

FIND

-485

Austro-chematom, a private nuclear research group, was established to fabricate fuel elements for nuclear reactors.

Canada. Discussions were held between Mr. J. L. Gray, President of Atomic Energy of Canada, Ltd., and Messrs. McCone, Luedecke, Pittman, and Wells of the United States Atomic Energy Commission concerning cooperation between the United States and Canada. Particular reference was made to closer collaboration on Canada's heavy water-natural uranium reactor.

Costa Rica. The AEC renewed its research contract for another year, effective June 1, 1959, with the Inter-American Institute of Agricultural Sciences at Turrialba in the amount of $118,000. (End of UNCLASSIFIED section.)

Denmark (CONFIDENTIAL). Dr. Flemming Juul, Deputy Director of the research center at Risø, advised the AEC Scientific Representative in Paris of Danish concern over visits of nuclear-propelled ships to Danish ports. He referred particularly to the possibility that the Soviet Union may request permission to send the Soviet icebreaker, Lenin, to Copenhagen without providing sufficient information on the ship's reactors to permit Danish authorities to make a safety judgment. Dr. Juul stated that the N. S. Savannah would be welcome as the Danes believe that the United States would provide a satisfactory safety report on the ship's reactors prior to requesting permission for a visit.

Finland. The Finnish AEC reportedly declined a Soviet offer of a research reactor in return for relocating the Institute of Technology from Helsinki to Leningrad. (End of CONFIDENTIAL section.)

France (UNCLASSIFIED). Dr. John K. Rouleau will assume new duties in August as AEC Scientific Representative in Paris.

The 1,200 thermal kilowatt TRITON research reactor at Fontenay-aux-Roses achieved criticality. It will be used for materials testing, shielding, and protection studies.

The French Commissariat for Atomic Energy plans to request 17 tons of heavy water from the United States, under a lease contract, for a second heavy water moderated, zero energy research reactor to be designated Aquilon II.

Germany. Excavation began in Hamburg for Europe's largest electron synchrotron. Construction of the 6 billion-electron volt electron synchrotron will be completed in four years.

The fifth German research reactor, the Argonaut-type ten kilowatt reactor near Munich, began operation in June. Built by Siemens-Schuckert Werke, and fueled with United States material, the reactor will be used for research in connection with the design of major atomic power plants.

India. A contract between the United States and India was concluded for the lease to India of 15 tons of heavy water for use in a zero energy research reactor. This is the first lease of heavy water under the Commission policy announced in August 1958 for the lease or sale of heavy water for use in research, medical, or testing reactors. (End of UNCLASSIFIED section.)

Indonesia and the Philippines (OFFICIAL USE ONLY). Negotiations of a research agreement for cooperation with Indonesia and an amendment to the agreement for cooperation with the Philippines have been deferred pending the outcome of a review of United States bilateral arrangements in relation to United States support of the IAEA. (End of OFFICIAL USE ONLY section.)

Iraq (UNCLASSIFIED). Iraq announced details of its five-year atomic energy program. The program includes reopening the former Baghdad Pact Nuclear Training Center under the Iraqi AEC, and construction of a reactor with Russian materials under the supervision of Russian technicians. Thirteen students are to be sent to the U.S.S.R. and an unspecified number to the West. (End of UNCLASSIFIED section.)

Israel (OFFICIAL USE ONLY). The Soviet Ambassador to Israel is reported to have recently offered Israel an experimental reactor but was informed by the Israelis that they were satisfied with the reactor received from the United States. (End of OFFICIAL USE ONLY section.)

Japan (UNCLASSIFIED). The National Institute of Radiological Sciences opened at Chiba City, near Tokyo. The Institute will study the effects of radiation on humans, conduct studies on basic medicine through the use of radioactive materials, and carry out research on radioactive contamination of natural surroundings.

The Japanese-Canadian bilateral agreement on peaceful uses of atomic energy was signed. The agreement covers the sale and purchase of reactors, natural uranium, heavy water, and the exchange of technical information.

The Atomic Fuel Corporation at Tokai-mura produced its first uranium ingot under international standards. The corporation will now be able to supply three tons of ingots for Japan's first home-made

research reactor, the JRR-3, to be completed in 1961 at Tokai-mura. The ingots will be produced from six tons of crude uranium ore being purchased from Canada.

In August, the Atomic Fuel Corporation plans to begin refining uranium ore mined at Ningyo Pass in Japan.

Plans of Rikkyo University at Yokosuka have been approved for a 100 kilowatt Triga-II type research reactor to be constructed by General Dynamics Corporation by 1961. The American Episcopal Church is financing the reactor. (End of UNCLASSIFIED section.)

The Netherlands, Italy, and Germany (CONFIDENTIAL). Consideration is being given by the AEC to proposed cooperation with The Netherlands on a nuclear-powered submarine, and to exploratory discussions with Italy and Germany on the same subject. (End of CONFIDENTIAL section.)

Paraguay (UNCLASSIFIED). The first peaceful atomic energy activities in Paraguay were initiated with the opening in Asuncion of a course on the medical uses of radioisotopes. The lectures and laboratory work are being conducted under the auspices of the Brazilian Cultural Mission to Paraguay and the Brazilian AEC. It is reported that Paraguay may now request an Atoms-for-Peace Library.

Norway. The Halden boiling-heavy-water reactor achieved criticality in June and has an initial rated power of 5,000 thermal kilowatts with the first core. The second core is expected to double this rate.

United Kingdom. Sir Roger Makins, formerly British Ambassador to the United States, has been appointed Chairman of the United Kingdom Atomic Energy Authority to succeed Lord Plowden, effective January 1, 1960.

The sixth United Kingdom nuclear power station will be constructed at Dungeness, Kent, on the southeast coast, at a cost of $168.6 million. The station will have an initial electrical capacity of approximately 500,000 kilowatts. The reactors to be constructed will be of the Calder Hall type. Eventually, additional reactors of the advanced gas-cooled type may increase the capacity to 1,500,000 kilowatts. An interesting feature of the station will be its cross-Channel link with the French grid.

The United Kingdom has agreed to discussions, prior to Chairman McCones visit to the United Kingdom in October, of possible arrangements for cooperation in the high temperature gas-cooled reactor area.

Rolls-Royce, Ltd. is building an experimental and developmental plant at Rawynesway, Derby, to fabricate fuel elements for the Royal Navy. The first elements will be for the pressurized water reactor of the Royal Navy's second nuclear-powered submarine. (End of UNCLASSIFIED section.)

NND 45-489

WND [redacted] — 490