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CENTRAL INTELLIGENCE AGENCY

REPORT

INFORMATION REPORT

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COUNTRY	USSR (Gruzinskaya SSR / Urals)
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THIS IS UNEVALUATED INFORMATION

Comments:

1. Throughout the report read Sungul for Sunghul, Voronezh for Voronesh, Noginsk for Nogisnk, Ozeri for Ozieri, Fryazino for Fryasino. 25X1

2. Throughout the report read Professor Nikolay Timofeyev-Ressovsky for Professor N.V. Timofeyef-Resovski, Professor Kalashnikov for Professor Kalashnikhov, Professor Shevchenko for Professor Chevchenko, Zaveryagin for Savergagin, Kerschbaum for Kirschbaum, Dr. Karl Steinal for Steinal. Professor S.A. Voskresenskiy for Professor Vosnesenski, Migulin for Migolin, and Kvartskhava for Kvartshave. 25X1

3. In paragraphs 1 and 2 read Dr. Doeppel as Dr. Robert Doepel, Steenburg as Dr. Max Steenbeck, Born as Dr. Hans Joachim Born, Dr. Katsch as Dr. Alexander Catsch, Dr. G.M. Frank as Gleb Mikhaylovich Frank, Dr. Jung as Dr. Paul Gerhard Jung, Pevsner as Pevsner, and Krueger as Krueger.

4. Kuchakhov and Kusharov referred to in this report is probably Kuchatov, and Professor Volski is probably Professor Volski.

5. In paragraph 2 read Ministry of Semi-Heavy Industry as Ministry of Medium Machine Building.

6. Charitov may be Kharitov but is more likely either Kharitan or Kharitonov.

7. Spesfak should read Spetsfak.

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STATE	X	NAVY	#	X	NSA		[redacted]								
ARMY #	X	AIR	#	X	FBI		CIA			X					

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COUNTRY USSR REPORT NO.

TOPIC Soviet Atomic Energy Program at Sunghul and Sukhumi

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REMARKS

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The present report deals with the following subjects:

1. The Sunghul Institute (August 1948, and September 1950 - September 1952)
2. The "cooling-off period" at Sukhumi (September 1952 - March 1955)
3. Miscellaneous observations.

1. The Sunghul Institute. 25X1

. The following German and Soviet personnel was reported:

German experts — Dr. H.Born, Dr. K.G. Zimmer, Dr. of medicine Katsch, master mechanic Lange (fnu), Dr. H. Becker (nephew of Frau Vollmer), an organic chemist from Sukhumi (name not remembered), and the team of Dr. G. Jung including Dr. H. Stuhldreher, Dr. H. Schmidt, and a man with an undetermined double name (presumably Dr. Schulte-Overberg) 25X1

Soviet experts — Professor N.W. Timofeyef-Resovski, professor S.A. Vosnesenski, Narter (fnu)(phonetic spelling), Pevsner (fnu)(phonetic spelling)(not to be confused with Pevsner of Laboratory II), Polanski (fnu), Anyokhin (fnu)(phonetic spelling).

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[redacted] The following research 25X1
problems were assigned to the institute:

1. Isolation and separation of various fission products.

2. Investigation of the effects produced by these products

3. Fundamental studies of effects of radiation

4. Development of dosimetric methods

[redacted] 25X1

The requested 0.5 g of radium had also arrived.
With the arrival of the "pile soup", positive work was started at the Sunghul institute. Born occupied himself with separating the different fission products and specialized on beta emissions. He succeeded in isolating strontium (Sr), various rare earths such as ruthenium (Ru), cesium (Cs) and cerium (Ce), as well as radioactive barium in a pure state. Although it is known that he extracted his methods from pertinent literature, no details about the procedure followed could be obtained. He worked out a certain sequence for separating the different metals, precipitating the metals along with a carrier precipitate. Subsequent decontamination of the precipitate yielded the metals in the form of pure salts. Born succeeded in eliminating six pure elements. Born trained Soviet operating personnel in this work. The salts were handed over to Katsch for his animal experiments. No details are available. It was only known that Katsch investigated the distribution of injected substances in the different parts and organs of the body. Dr. Zimmer further investigated the results of Born's and Katsch' work. Using Geiger counter, oscillograph and amplifier, he conducted dosimetric testing of the injection experiments. The Timofeyef group ran experiments on the effects of pile soup on plant life. This group had previously worked in the field of genetics and Timofeyef had reached satisfactory results in stimulating plant growth.

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It was a noteworthy fact that favorable results were mostly reached with low-quality seeds and a tentative rule was established:" The better the seed, the lesser the effects of radiation". The seeds were treated for the duration of 24 hours with diluted pile soup. Plant growth stimulation proved effective only with beta emissions, alpha emissions proved destructive. Strontium as a beta emission source appeared to be the most dangerous radiation source. It is closely related to calcium and similarly invades the bones to which it adheres with great persistency.

Plutonium (Pu) which was used as an alpha emission source was delivered in small quantities to Katsch only. Pu proved highly toxic exceeding strontium in its destructive properties.

[redacted] Dr. Orthmann's activities at Sunghul were restricted to luminescence problems, especially to the problem if radium might be substituted by a waste product from the pile soup. No tangible results were reached. 25X1

Further development projects at the Sunghul institute.

In early 1952, the Soviets made attempts to step up the Sunghul production of radioactive isotopes to industrial capacity. Born's field of activity of isolating and separating various fission products was largely to be expanded. By this time, Born had painstakingly worked out the different separation methods and trained an adequate number of Soviet operators. All planning work was exclusively done by Soviets. In the course of 1952, the whole project was handed over to Professor Vosnesenski.
In September 1952, Riehl was transferred from Sunghul to Sukhumi. There he learned at a later period that considerable changes had taken place at the Sunghul institute after removal of the Germans in the autumn of 1952. The planned large-scale production plant of radioactive fission materials had been constructed in the vicinity of the institute and around them a whole town had cropped up. Biological research was said to have been discontinued.
Initially only American equipment was used at Dr. Zimmer's department. In contrast to a Soviet-made amplifier which was said to be of sub-standard quality, Soviet-made Geiger counters worked satisfactorily. The amplifier was manufactured in a Fryasino plant, where German television specialists Dr. Steinel (fnu) and Kirschbaum (fnu) were employed. Soviet professor G.M. Frank from the Moscow Institute of Radiology is known to be working in this field.

[redacted] the Sunghul institute is to produce radioactive isotopes for Soviet research and technical requirements. As early as early 1951, the needs could not be met. 25X1

2. The "Cooling Period" at Sukhumi. (September 1952 to March 1955)

In September 1953, the German experts were transferred from the Sunghul institute to Sukhumi for "cooling off" purposes. Only Dr. Katsch stayed until the summer of 1953 and was then transferred to Kharkov.
On his trip from Sunghul to Sukhumi, source met Savenyagin in Moscow and discussed with him what tasks should be assigned to the German experts during their "cooling off" period. He was shown a complete list of German experts working in the USSR which contained details on the "cooling" schedule. According to this list, Professor Hertz was slated to go to Moscow and to continue there his work on secret problems. Thiessen and his son-in-law were to continue their secret work in Mogisnk, Vollmer and Ardenne were to stay at their location and to continue with non-secret matters, Dr. Doeppel was to go to Voronesh, Steenberg was to go to Leningrad. Soviet Professor

Kalashnikhov (fnu) (phonetic spelling), a physicist from a Moscow physics institute, took part in the discussion the purpose of which was to fix subjects to be posed to the German experts for their "cooling period". In an attempt to pose non-secret yet interesting subjects, the following topics were brought forward:

1. [redacted] research in the field of rare earths. 25X1

2. Savenya in suggested research in the field of zirconium (Zr)

3. Professor Kalashnikhov suggested research in the field of germanium and silicon semi-conductors.

The entire discussion was conducted in a very vague manner and no clear decisions were taken.

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Migolin (fnu) (phonetic spelling) was assigned director of the institute. During the "cooling period", the Agudzeri institute was divided into the following 4 departments including a total of 10 laboratories:

1. Physics department headed by institute director Migolin

2. Dosimetric department headed by Isayev (fnu) (phonetic spelling)

3. Isotope separation department headed by Kvartshave (fnu) (phonetic spelling)

4. Chemical and chemico-physics department [redacted] 25X1

[redacted] 25X1
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Work was started on a slow pace, no precise program having been established. Rare earth problems were investigated. While some of the co-workers took to spectroscopic research, another group pursued the chemical line under the supervision of Dr. Wirths. The Soviets showed little if any interest in this work.
After theoretical preparation, Thieme and his coworkers went into zirconium research. The Soviets were interested in the separation of hafnium (Hf) from zirconium. Using the ether purification method in different stages, satisfactory results were obtained. While the Soviet demanded a 0.02 percent, a percentage of 0.01 was reached. The work was based on publications in the American paper "Nucleonics". In the course of time, it became apparent that Soviet interest in this field was rather limited. Their interest in the germanium - silicon sector, on the other hand, increased gradually and eventually rare earths and zirconium research was skipped from the operation plan. The following requirements were stipulated:

1. High-grade purity of the two elements

2. Large regular crystals (monocrystals)

3. Relatively high electric resistivity

4. Long lifetime of the ions

The desirability of these properties had already been pointed out by Professor Kalashnikov at the above-mentioned discussion with Savenyagin in Moscow on occasion of source's transfer from Sunghul to Sukhumi.

No results had been obtained with silicon at the time the Germans left for Germany. In the field of germanium, a 60 ohm resistance and a 200 microseconds lifetime of ions was reached. Allegedly, the Soviets had obtained the same results. It was learned that the Soviets conducted parallel experiments with these two important semi-conductor elements at the Moscow Institute for Rare Metals. This Moscow institute is subordinated to the 1st Chief Directorate of MVD. The name of its director is unknown. A branch institute has been set up in Odessa.

[redacted] the Soviets are highly interested in the germanium - silicon semi-conductor problem within the framework of remote control research. It may be noteworthy that the Ministry of Semi-Heavy Industry is greatly interested in germanium - silicon work, although the Moscow Institute for Rare Metals is subordinated to another ministry. 25X1

3. Miscellaneous Observations.

a. Institutes and laboratories engaged in nuclear research.

Regarding details on institutes of laboratories engaged in atomic energy research, laboratories Nos 9 and 2 were especially mentioned. Laboratory or Institute 9 was also designated NII 9. NII 9 was the search center for all chemical and metallurgical nuclear problems and, among others, was engaged in the production of pure uranium metal, U_{235}, and heavy water (D_2O), as well as in the separation of plutonium and uranium. Laboratory 2 served research on nuclear problems such as reactors, measuring methods and measuring technique.
NII 9 was subordinated to the MVD 1st Chief Directorate. Laboratory 2 was an Academy laboratory serving the MVD 1st Chief Directorate (The Moginsk Plant 12 was supervised scientifically by NII 9).
During the period under observation, Professor Chevchenko (fnu) (phonetic spelling) was chief of NII 9. Laboratory 2 was headed by Professor Kuchakhov (fnu) (phonetic spelling). Professor Wolski (fnu) (phonetic spelling) worked at NII 9 on the reduction of U_{235}, while Sedemko (fnu) (phonetic spelling) supervised the designing of plutonium and U_{235} equipment. Professor Vollmer's team was subordinated to NII 9. His task chiefly consisted of the development of heavy water production. His coworkers were Dr. engineer Bayerl (fnu) and Dr. Richter (fnu). It was learned from Vollmer and Emilyanov that a plant for heavy water production was built near Kandalaksha north of the Arctic circle. Precise location of this plant could not be learned. After 1948, the Vollmer team also took up the problem of Pu - U separation.
Professor Doeppel (fnu), Schintlmeister (fnu), Kunz (fnu), and Birkenfeld (fnu) worked at Laboratory 2. German emigré Dr. E. Lange worked under Soviet scientists. Professor Doeppel was removed from his work as early as late 1946 and transferred to Osieri because of his independent attitude. He had worked in the field of gamma radiation on a purely theoretical basis.

The Leningrad Radium Institute also worked on nuclear research. In 1951, the institute was headed by Professor Starik (fnu)(phonetic spelling). Various methods for extracting Pu from the irradiated uranium pile rods were developed at the institute.
The Leningrad Radium Institute cooperated closely with the State Planning Bureau No 11 in Leningrad which is believed to design Pu plants in cooperation with NII 9.

b. The distribution of missions and training of operators.

The atomic energy program was directed by the Technical Council (Technical Soviet) consisting of some 25 to 28 scientists. This council held its meetings at the MVD 1st Chief Directorate. [redacted] 25X1

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[redacted] The Council consists of different sections which are believed to frame the research missions which are submitted to the plenary session of the Technical Council. After reading lectures at the sessions, Germans had to leave the lecture room immediately. Presumably the Council subsequently discussed the lecture and took pertinent decision. 25X1

The missions were submitted to NII 9 and Laboratory 2. The same missions were submitted by Savenyagin to the German teams. The Germans were generally expected to perform quicker and better work.
The following persons were reported as working at the atomic section of the Technical Council: Kucharob, Emilyanov, Kokoyen, Charitov, Alikhanov, Alikhanyan, Asimovich (all fnu) (all names in phonetic spelling). The Soviet experts are classified into two groups, the "first-class" group consisted of some 29 scientists, none of them over 55 years of age. The second-class group consists of some 100 men of mediocre qualification who are mostly employed at the different installations. After 1949, a great deal of effort was exerted in training the younger generation of nuclear physicists by establishing special faculties called Spezfaks. Special training was given by these Spezfaks at various universities in the fields of chemistry, physics, and geology . Spezfaks are known to exist in Leningrad and Kharkov, presumably they have also been established in Moscow and other universities. They are subordinated to the MVD 1st Chief Directorate. During the vacation period, the Spezfak students must report at a special office in Moscow from which they are transferred for practical work to special installations subordinated to the MVD 1st Chief Directorate.

c. Procurement of Materials.

1. According to Antropov (fnu) (phonetic spelling), adequate deposits of high-quality uranium ore are available in the USSR. Antropov is Minister of Geology and conducted geological explorations in search for uranium.

2. According to the Soviets, adequate quantities of graphite are available. quality was said to be superior to USA graphite.

3. After 1949, a general increase in the production of raw materials was to be noted.

4. After 1949, the manufacture of auxiliary equipment was considerably expanded.

d. Information gained during the farewell party in Sukhumi in March 1955.

On occasion of a farewell party offered to the departing Germans in Sukhumi in March 1955, [redacted] 25X1

[redacted] Emilyanov disclosed the following facts: 25X1

1. The technical team Savenyagin - Kucharov - Emilyanov is preparing lectures to be read at the atomic energy congress to be held in Geneva in August 1955. Preparatory meetings held on the highest level were attended by Molotov who requested them to speak their minds freely. According to Molotov "the time has come to play with open cards". The Americans are expected to limit their congress activities to discussions on the peaceful use of atomic energy, [redacted] 25X1

[redacted] Some 45 lectures are being prepared by the Soviets for final selection. 25X1

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2. Professor is cooperating with Pontecorvo at the Moscow "Scientific Institute for Physics Problems". They are projecting the construction of a betatron.

3. The USSR has offered China an atomic pile and other piles are to be delivered to other people's republics.(It may be assumed that research piles are involved and not atomic energy plants). As is the case with Rumania, the Eastern Bloc countries are, however, underdeveloped and trained operating personnel as well as auxiliary equipment were lacking. In Emilyanov's opinion, satisfactory standards have been reached in the GDR and Czechoslovakia and both these countries will be able to handle piles put at their disposal.

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