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CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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50X1-HUM

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THE SOURCE EVALUATIONS IN THIS REPORT ARE DEFINITIVE.
THE APPRAISAL OF CONTENT IS TENTATIVE.
(FOR KEY SEE REVERSE)

1. The Boris Kidric Nuclear Physics Institute at Vinca is situated 14 kilometers from Belgrade south of the road to Smederevo. It was built and equipped under the direction of Professor Pavle Savic, of Belgrade University, in 1948-1950 and started operation in January 1952; the initiative for this project as well as the finance came entirely from the Yugoslav Government. Prior to its construction no research work in nuclear physics was conducted in Yugoslavia, except to search for uranium deposits on orders from Moscow.

2. There were no experts in the country except Professor Savic, who gained his experience as one of Mme. Curie's assistants. Savic was called to Moscow three times prior to 1948 for consultation on nuclear physics experiments; he knows the Soviet system of working and the atomic experts involved.

3. Staff

   a. The institute is staffed by the following experts:

      Pavle Savic (Director)1
      Stefan Dedijer (Political Director)
      Professor Alexander Milojevic (Assistant Director)
      Dr. Robert Wallin, Dutch expert on construction
      Engineer Milorad Ristic, head of reaction group and also head Party man in the institute
      Professor Wintersteiger (Head of the Technological Group)

   b. In addition there are 100 young research workers drawn from the universities, 80 assistants and about 20 engineer consultants who are collectively known as the "Atomic Battalion". Most of these research workers have attended courses at one of the atomic research institutes

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abroad

c. There are 15 research workers studying abroad at the present time

4. The institute consists of six departments:

Physics Department
Physics-Chemistry Department
Technology Department
Biology Department
Laboratory for applied mathematics
Library

5. The "Atomic Battalion" works in two groups:

a. Reactor group, led by Engineer Milorad Ristic

(1) This group is engaged in the construction of an atomic pile and the practical application of atomic energy to industry, etc.

(2) The construction of the uranium pile presents great difficulties. Eighty percent of the equipment and material has to be imported and there are insufficient funds at the institute's disposal for their purchase. Attempts are therefore being made to manufacture the required parts in Yugoslavia, but so far with little success.

(3) A constant search for fissionable material is being carried out by this group in Yugoslavia. Several types of suitable ore have been found at Knezevo, Macedonia, and Kopaonik and Majdan Pek in Serbia. They have given satisfactory results under local tests and samples have been sent for detailed analysis in France and Sweden.

b. Technological Group, led by Professor Wintersteiger

(1) This group has constructed several types of Geiger-Mueller counters and fluorometers for use in the search for fissionable material in Yugoslavia. It has also obtained by purchase various spectographs and specto photometers.

(2) The group also operates the V-15 accelerator which is used for bombarding atoms with radium ions obtained from 410 grams of beryllium in the machine. This machine stands about 10 meters high and is constructed of porcelain and metal. It is situated in a special square building built to house it and uses power at a million and a half volts. It was erected at Vinca in 1951 by Swiss engineers and has been in constant use until January 1954 when it was dismantled and cleaned. After cleaning, a new power source of 6 kilograms of beryllium was put into the machine instead of the original 410 grams.

6. In January 1954 Engineer Ristic submitted a long report to the Central Committee of the Federation of Communists of Yugoslavia (FCY) outlining the work of the institute and the possibilities of exploiting its work for the good of the State. In his report he made the following points:

a. The appearance of new procedural methods and breeder-reactors made it possible to make 5 times more use of the country's available uranium resources;

b. The reactor pile now under construction was of great political and economic significance. Its installation costs would be enormous but unavoidable, but once working it would be a very profitable concern. It was, of course, an experimental reactor and the results of the experiments conducted would be coordinated with similar experiments now going on in France, Norway and Sweden with which countries there was close cooperation in this field;

c. The process of converting industrial plants to use atomic energy had already begun in Europe and must be started in Yugoslavia if the country was not to be left behind by other countries whose industrial technique was developing on these lines. It would have to be done in the following way:

(1) Obtaining fissionable material such as uranium and thorium. This could be done by using locally produced ores, but would not be economical because the deposits so far located contain impurities which must be eradicated;

(2) Purchasing pure nuclear material, i.e., U 235 Pu 239 and later U 233 and Pu 241. Up to now Yugoslavia has only U 238;

(3) Producing material required in the technique of nuclear fission i.e., moderators such as heavy water products, graphite, beryllium and coolers such as sodium, calcium, alloys, helium, etc.;

(4) Producing construction material, i.e., zirconium, aluminum, special steel, special alloys, metallic ceramics from refractory oxides and carbides;

(5) Constructing nuclear instruments such as numerous kinds of radioactive indicators;

(6) Constructing accelerators;

(7) Producing isotopes.

d. There was no secret about the method of producing atomic bombs and artillery missiles so far as Yugoslavia was concerned, since they had a copy of the "Smyth report" and therefore know in detail the technique of separating U 235. However, in order to produce 10 atom bombs a year it would be necessary to purchase a huge quantity of uranium and invest about 90 billion dinars in the requisite machinery for separating it. Moreover, the electric current required for cooling the reactor producing platonium would be about 2,000 kilowatt hours equivalent to the present total production in Yugoslavia. Under specially ideal conditions, therefore, the production of 10 atom bombs a year would cost 25 percent of the national yearly income or about the same as the total defense budget. It was therefore clearly not worth while.

50X1-HUM

e. In conclusion, Yugoslavia could best use atomic energy in providing power for industry and transport, in particular for ships. 50X1-HUM

As regards industrial use of atomic energy, an atomic powered electric power station was far cheaper to run than a thermo-station and 18 percent cheaper to install than a hydro-electric station.

50X1-HUM