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# Office Memorandum

TO: Mr. Tolson  
FROM: Mr. [Name obscured]  
SUBJECT: Review of the French Atomic Energy Development

1. At this time it is deemed desirable to present the picture of French atomic energy development as it appears from the records available in this office. As this picture appears incomplete in several ways, a set of questions have been added to which answers are desirable. Presumably, future information should answer these questions. In paragraph 2, below, numbers (1) through (10) are reference numbers to papers of original information in our possession. These papers are listed by reference number in paragraph 4.

## 2. The French Picture

In 1939 or 1940 Frederick Joliot-Curie and his daughter Irène Joliot-Curie (A26) with the British and American governments (whose agreements are presently being negotiated in England), the United States and United Kingdom countries throughout the world. Pierre Auger, Irène Joliot-Curie, and Hans von Halban, and Bertrand Goldschmidt worked on the atomic energy project in France. All of these men have returned to France.

On 18 October 1945 (A25) the Provisional French Government created by ordinance a High Commission for Atomic Energy with complete powers of research, development and exploitation. The High Commission was to be carried out by an Administrative Committee for a period of five years. A grant of 19,000,000 (Fr) had been given the Commission. The first committee consisted of (A25, A29).

High Commissioner: Frederick Joliot-Curie  
General Administrative Director: René Duguay  
Secretary of Members: Irène Joliot-Curie  
Members: Charles Fauriol, Jean Berthoin, Jean Guichard, Pierre Auger, Hans von Halban, Bertrand Goldschmidt, Irène Joliot-Curie, Frédéric Joliot-Curie, and Jean Guichard.

The Commission is to be composed of the following: Irène Joliot-Curie, Frédéric Joliot-Curie, Charles Fauriol, Jean Berthoin, Jean Guichard, Pierre Auger, Hans von Halban, Bertrand Goldschmidt, Irène Joliot-Curie, Frédéric Joliot-Curie, and Jean Guichard.

The Commission is to be composed of the following: Irène Joliot-Curie, Frédéric Joliot-Curie, Charles Fauriol, Jean Berthoin, Jean Guichard, Pierre Auger, Hans von Halban, Bertrand Goldschmidt, Irène Joliot-Curie, Frédéric Joliot-Curie, and Jean Guichard.

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of the Institute du Radium under Mme. Joliot-Curie; the College de France, under Frederic Joliot-Curie; the Laboratoire de Synthese Atomique, Ivry, under Joliot-Curie; and the Ecole Normale Superieure under Pierre Auger (A23) are being used for research.

e. It is known that Joliot-Curie has a cyclotron at the College de France in Paris and that a small, 30 cm. one was built in Marseilles either during the war (A2, A3, A21) or before the war. The French also confiscated at least one German high voltage generator.

f. The French Government has expropriated all uranium, thorium, and beryllium ores in metropolitan France and throughout the French empire (A7, A8). Twenty geologists are said to be engaged in hunting uranium throughout the Empire (A23). In any event the French are reported to be energetically searching for ore sources (A15).

g. France has no known large sources of uranium or thorium. The autunite deposits in central France are considered unworkable, although the adjacent oil shales may contain recoverable uranium. (No one has yet learned to separate uranium from uraniumiferous oil shales.) The uranium production of Madagascar could possibly be 20 tons per year (UM Report). There is a theoretical possibility of small lode deposits in the cobalt area of central Algeria. Traces of uranium have been reported from northern French Indo-China. The consensus of geological opinion as expressed in the "World Resources Report," is that France does not, herself, have sufficient medium to high grade uranium resources to carry out an atomic energy program in the near future. There are probably workable monazite in Senegal (A10) and Madagascar (World Resources Report). There may be monazite deposits in the French Congo (A23). Monazite is almost certainly associated with the tin and tungsten alluvials of French Indo-China, but these ores must also be low grade.

h. The French are known to have hidden 40 tons of  $U_3O_8$  from the Germans during the war (A24). Joliot-Curie has publicly stated that he saved 200 tons from the Germans (A1, A4).

i. The French have been exerting great pressure to obtain monazite and thorium (A27) from Brazil and from the United States (A16). They have obtained 240 tons of Indian monazite and 1500 kg. of thorium nitrate from the British Thorium Limited (A32) since the end of the war. These supplies are for Le Societe des Terres Rares, 6 rue de Prony, which was bombed out during the war, and for La Societe Miniere Industrielle Franco Bressillienne, 20 rue Faubourg, Montmartre, who is still in partial production (A10). These firms claim their interest in thorium is for the cigarette lighters and gas mantels industries. Before the war they imported an average of somewhat more than 1400 tons of monazite per year for this purpose (A17). Thus their imports are not yet sufficient to sustain normal production. There is no evidence to suggest that the French intend to use these imports to build a thorium pile.

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However, one informant has stated (A22) that the Societe Miniere Industrielle Franco Bressillienne is interested in the development of atomic energy power sources. This source added that there is no known direct connection between this firm and the French Government.

j. In April the French Government entered into a contract with Norsk-Hydro, Rjukan, Norway, for the first five tons of heavy water produced. At the anticipated rate this contract would be completed by January 1948 (A18). Norsk-Hydro is building a new plant under a mountainside at a cost of \$18,000,000 to be completed in 1948 (A20, report unreliable). It would appear that this possible construction will not interfere with the fulfillment of the French order.

k. There have been reports that the French have three carbon piles in operation (A2c, A19). Mme. Joliot-Curie told reporters (A1) it would take until 1947 or 1948 for France to finish building two uranium piles now under construction, one a heavy water model, and the other a graphite model. This is in marked contrast to the British estimate of French progress (A16). The evidence seems weighted in favor of their pile or piles being larger than the zero energy pile mentioned in A16, although they certainly do not have enough uranium or financial resources to build a large pile and keep it in operation.

l. It is reported (A12) that the French are opposed to using German scientists for atomic energy development in France (A12) because the French are ashamed of the poverty of their laboratories. Nevertheless, it is known that Joliot-Curie has visited the German nuclear physicists in French-occupied Germany several times, and that the French recently obtained the services of Dr. Gentner (A28). It is possible, as we do not know in detail precisely which German scientists are working for the French and what they are doing, that the French are using, or intend to use, them in atomic energy development. A few are known to be concerned with guided missile development.

m. There is a report that Joliot-Curie attempted to establish a European scientific bloc. Our information (A13) is that he did not receive a sympathetic ear from Prof. Scherrer in Switzerland, and the plan, temporarily, at least, was dropped.

n. It is known that, of the officials on the French Atomic Committee, all except Raoul Dautry are communists or communist sympathizers (A9, A23c), and that lower echelon personnel are carefully screened for political leanings to the far left. Nevertheless, there is no direct evidence (A14) that any member of the Committee or its employees are furnishing important information to the Russians. There is even a shade of evidence that Joliot-Curie is becoming quite disgusted with the Russians, but this certainly has not yet had great effect on the political leanings of the Commissariat as a whole.

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3. The French picture as presented in paragraph 2, above, is incomplete in many ways, and raises the following questions:

- a. Does Joliot-Curie have 40 or 200 tons of  $U_3O_8$ ?
- b. Are the French actually constructing two or three piles? How far have they gotten?
- c. Who are the 20 geologists prospecting for uranium, and where are they working?
- d. Is France planning any heavy water facilities?
- e. What firm is, or is going, to handle the manufacture of uranium metal? Are any capable of doing it?
- f. Who are the lower echelon experienced scientists working on the project?
- g. Was any nuclear physics done at Marseilles during the war?
- h. Who are the German atomic scientists working for the French, and what are they doing?
- i. Did the French scientists in Canada smuggle back to France pertinent technical papers?
- j. Are any Frenchmen sending atomic energy technical papers to Russia?
- k. What equipment have the French laboratories, what personnel available, and what equipment did they take from the Germans?
- l. What problems are being pursued in French laboratories at the present time?
- m. Does French pressure to obtain thorium indicate they are interested in running a thorium pile as in Canada?
- n. Has there been any concerted attempt to obtain Swedish or Belgian Congo uranium?
- o. What firm is going to make the carbon blocks, and how?

4. Appendix of "A" References:

- (1) Washington Post, 22 July 1946.

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- (2) G. W. Bain, after recent trip to Europe in May.
- (3) "World Reaction to the Atomic Bomb," Supplement No. 2, March-May 1946, British Foreign Office.
- (4) French Press, September 1945.
- (5) Memorandum, Britt to Groves, 8 November 1945.
- (6) Paris in French Morse to South America, 13 June 1946.
- (7) Brazzeville in French to Africa, 24 April 1946.
- (8) Report No. 223, American Embassy, France, 11 April 1946.
- (9) SSU, TI-4468, April 1946.
- (10) American Embassy, Paris, 5 February 1946.
- (11) Letter, Warner to Shuler, 5 April 1946.
- (12) SSU, F-6431, 12 March 1946.
- (13) W.I.S., 28 February 1946.
- (14) W.I.S., 8 March 1946.
- (15) W.I.S., 15 March 1946.
- (16) W.I.S., 22 March 1946.
- (17) W.I.S., 12 April 1946.
- (18) W.I.S., 19 April 1946.
- (19) W.I.S., 31 May 1946.
- (20) W.I.S., 28 June 1946.
- (21) W.I.S., 19 July 1946.
- (22) Letter, Hoover to Shuler, 1 July 1946.
- (23) Letter, Speer to Lt. Cdr. Brine, 20 June 1946.
- (24) Report by Col. Dean about April.
- (25) Not listed.

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- (26) Patents filed both in England and U. S. Patent Offices. Recent communications between British and Groves.
- (27) C.I.G., 15 April 1946.
- (28) Letter, Dean to Free, 15 July 1946, subject: Gentner.

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