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FINAL DETERMINATION
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JRO ✓ Oppenheimer
R ✓ Rabi
J. Chadwick

20 April 1944

Subject: Possible Use of Radioactive Poison in Rocket Propelled, Unmanned Aircraft.

MEMORANDUM to Major General L. R. Groves.

1. During my last visit to Washington on 14 March 1944, I was accompanied by Major Furman to the Pentagon and there shown the present information on rocket installations and additional unknown construction on the sector in France between 100 and 150 miles from London and Bristol. It appeared that fairly definite information is available on the launching stations but very little is available on the seven to ten larger stations, and these are guarded with great energy.

2. At the time I could form no opinion as to the possible nature of the contemplated material except that it must be a very "hot" chemical since the installations were literally under the guns and bombs of the enemy, the opposite place ~~where~~ from that in which a delicate chemical job should be performed.

3. Recently, I have discussed with Rotblat, one of Chadwick's men, the work done by Chadwick's group in England in connection with investigating the possibilities of radioactive poisons evolved from disintegration products of a pile. I understand that such a pile would not be extremely difficult to set up and operate and that it could be "milked" every three days. It would then be necessary to separate the radioactive materials and transport these behind very heavy lead armor to the launching point.

4. The combination of an apparent plan to use unmanned aircraft and the possibility that some form of complicated installation is being built in locations which might serve as feeders to the launching point, suggests the possibility that the "hot chemical" might be radioactive disintegration products which the Germans considered so "hot" that they could not transport them from manufacturing points in Germany by any available transportation. These might be placed in bombs with ordinary explosives to be functioning over the ground to gain maximum distribution of the radioactive products. It is unnecessary to picture the destructive possibilities of such an arrangement.

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5. Essentials in the construction of a scheme such as outlined above would be:

a. Some material for lining a pile. This might be heavy water or blocks of graphite. Other possibilities exist.

b. Uranium for use in the pile. This might be in some liquid solution.

c. Heavy walls surrounding pile. It might be located in the ground.

d. A small chemical plant for separating the radioactive products. This would require heavy lead for protection of personnel.

e. During actual operation or rehearsal operation, blood counts would probably be taken of operating personnel.

f. Final loading and launching positions would probably be done behind heavy lead or very thick concrete protection.

W. S. PARSONS,
Captain, U.S.N.

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