[redacted]

CENTRAL INTELLIGENCE GROUP
2430 E Street NW
Washington 25, D. C.

30 June 1947

MEMORANDUM FOR THE SECRETARY OF WAR

Subject: Long Range Detection of Atomic Explosions

1. The Committee on Long Range Detection of Atomic Explosions, which was appointed pursuant to letter of this Group, dated 14 March 1947, and your reply of 7 April 1947, submits the following conclusions and recommendations.

2. Although this subject was initiated by the Central Intelligence Group with the objective of locating and detecting foreign atomic bomb explosions, there is no doubt that some elements of the system involved in the detection program can be used for other tasks of comparable importance. Among these are, for example, the locating and tracing of radioactive clouds, and the determining of the settling characteristics of atomic dusts resulting from future U. S. bomb tests, which must be made from time to time in order to acquire technical data, train personnel, and evolve defensive measures vital to the national security. This Committee, however, has confined its attention solely to the intelligence aspects and capabilities of such a detection system.

3. From the standpoint of intelligence, there are two objectives: First, to determine the time and the place of all large explosions which may occur anywhere on earth; and, second, to establish beyond all doubt whether or not any of them are atomic in origin.

4. To accomplish these objectives, the following program is considered necessary:

a. Locate large explosions by the combination of sonic, subsonic, and seismographic methods.

b. Obtain samples of the explosion products by water or air sampling, or both, from locations as near the scene of the explosion as practical.

c. Establish the nature of the explosion by chemical and radiological analyses of the collected samples.

5. The instruments and methods required to perform the tasks involved are available, actually or potentially, and appear to have adequate sensitivities.

[redacted]

6. In broad outline, implementation of the program consists in doing the following:

a. Select locations, for subsonic stations, approximately equally spaced in longitude, where the subsonic background noise is low; set up and operate stations at these points long enough to determine the local background, and provide communication whereby these stations may quickly report their observations to a Control Central.

b. Select from existing seismographic stations those most suitable for the purpose, and provide them with communication to the Control Central, arranging for them to report significant detail of all earth movements detected.

c. Supplement the seismometric system of stations, insofar as found necessary, by the extension of the presently contemplated SO-FAR detection net to all deep seas, arranging for them to report to the Control Central.

d. Equip vessels and airplanes, stationed at suitably selected points throughout the world, with containers and filters for collecting water and air samples; and arrange for existing laboratories to analyze the samples, providing means for reporting the results to the Control Central.

e. Utilize existing communications net, wherever possible, and set up a Control Central capable of analyzing the results and directing operations.

7. A rough estimate indicates that approximately two years will be required to locate, install and operate the complete network of stations and facilities, capable of feeding data into the Control Central.

8. a. In the meantime, an immediate requirement of paramount importance is the collection of background data relating to radioactivity and to meteorology. In particular, the decisiveness of the answer as to whether or not an explosion is atomic in origin will depend entirely upon the differentiation of the normal radioactivity constituents of the atmosphere from contaminants caused by nuclear processes. Furthermore, because of the uncertainty as to the extent to which the radioactivity content of the atmosphere may be changed as a result of future bomb tests by the United States or by other powers, it is imperative that the collection and analyses of airborne radioactivity be started without delay.

b. The air-sample collections do not depend upon the completion of an integrated network of stations and facilities, but can be started immediately and can be accomplished through flights of suitably equipped planes.

c. The air sampling, initially started for the collection of radioactive background data and ultimately designed to perform but one element of the integrated detection system, according to paragraph 4 c, may possibly yield information indicative of an atomic explosion if any should have occurred during the early, routine air-sampling operation.

9. a. For the effective implementation, upon which the success of the program depends, the overall responsibility must rest in a single authority or organization. This agency, or authority, assisted by a technical and scientific advisory group, shall deal with specifications regarding the number and kinds of instruments, construction, location, crews, contractual relationships, etc.; and must have complete control relating to construction, maintenance, and operation of the network of stations.

b. The committee considered the fact that the responsibility may be invested in an existing civilian organization, such as the National Academy of Sciences, or a military service group. After a discussion of the numerous factors involved in the choice, such as those relating to security, policies regarding the collection and subsequent dissemination of collected data, etc., it was decided that the single authority best suited for the purpose is a military organization.

c. With respect to the data, responsibility should be divided into three phases: (1) Collection of data, including samples; (2) Analysis of data, and (3) Evaluation.

d. In selecting the service to carry out the program, the advantages and disadvantages of agencies in both the Navy and War Depts available for the assignment, were discussed. The committee concluded that the Army Air Forces should be assigned the over-all titular responsibility, provided that in the analyses and evaluation phases of the program, representatives of the Armed Forces Special Weapons Project, Atomic Energy Commission, and any other appropriate agency are included.

10. While there was general agreement by all members of the Committee, as indicated above, there were two cases in which divergent or conflicting points of view arose; namely,

a. With regard to paragraph 9 b, there was an expression of opionion that a civilian responsible agency would be more suitable.

b. With respect to 9 d, there might be some conflict with the present operational directive for the Armed Forces Special Weapons Project.

11. It is my recommendation as Director of Central Intelligence that the conclusions of the Committee be accepted and implemented forthwith by appropriate directive to the Army Air Forces for over-all responsibility, supported by requests to other interested agencies for necessary cooperation and assistance to carry out the program.

12. Your comments or concurrence with the conclusions and recommendations of the Committee is requested.

S/ R. H. Hillenkoetter
R. H. HILLENKOETTER
Rear Admiral, U.S.N.
Director