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September 28, 1954

ATOMIC ENERGY COMMISSION

WEATHER AND FALLOUT FORECASTING

Note by the Acting Secretary

The General Manager has requested that the attached exchange of correspondence with Rear Admiral Goldthwaite, USN, Chief of Staff, JTF-7, be circulated for the information of the Commission.

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W.B. McCool
Acting Secretary

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HEADQUARTERS
JOINT TASK FORCE SEVEN
Washington 25, D.C.

20 August 1954

J-3/000.93

SUBJECT: Weather and Fallout Forecasting

TO: Director of Military Application
United States Atomic Energy Commission
1901 Constitution Avenue
Washington 25, D. C.

1. The results of Operation CASTLE have shown that weather and radiological safety have become of increasing importance in testing high yield weapons at the Pacific Proving Ground. It is necessary that new research be conducted upon the meteorology of that area if the weather and fallout forecasting techniques are to be improved. Joint Task Force SEVEN is sponsoring a number of investigations in this field as follows:

a. Dr. C. E. Palmer of Detachment #1, Air Force Cambridge Research Center in Hawaii is continuing research in and the development of tropical weather forecasting techniques. In addition, Dr. Palmer and his staff are evaluating the meteorological advantages and disadvantages of conducting weapons tests during different periods of the year. This group is studying the horizontal and vertical air motions over the Marshall Islands during Operation CASTLE to produce data to be used in the analysis of the immediate fallout of particulate matter following a weapon detonation.

b. The weather observational network in the tropical Pacific area will be augmented to make it a year around observing system. The U.S. Weather Bureau will perform this service, for which Task Force funds will be made available. This program will be initiated before the end of 1954.

c. The use of rocketsondes in the tropics to obtain reliable and rapid wind observations to at least 125,000 feet is being investigated. In this procedure a small rocket is fired to high altitude and a radiosonde is ejected which is tracked as it descends by parachute to the surface, transmitting wind and atmospheric data. Coordination on this project is being effected through the Office of Naval Research and the Bendix-Friez Corporation.

[REDACTED]

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d. The Task Force is sponsoring the development of better aerological sounding balloons in order to get rawinsonde data above 100,000 feet. This technique is being developed by the Chief Signal Officer, U.S. Army. The cold tropical tropopause (approximately -80° C. at 55,000 feet) resists passage of all presently available types of sounding balloons through that layer.

e. Discussions are under way with the Geophysical Research Directorate, Air Force Cambridge Research Center, concerning the future routine use of constant altitude balloons at the Pacific Proving Ground. The practicability of using several balloons at various altitudes during the shot periods is under study.

f. Joint Task Force SEVEN weather personnel are investigating the feasibility of adapting Numerical Weather Prediction (NWP) procedures (using electronic computing machines) to tropical weather problems. The Department of Meteorology, University of Chicago, has been contacted on this project since that agency is already working with the Institute for Advanced Studies, Princeton University on NWP techniques. Preliminary work shows considerable promise for this method.

g. Joint Task Force SEVEN is studying the development of another machine system of forecasting close-in and long-range fallout. The development of this technique was undertaken during Operation CASTLE and is being continued by Dr. Gaalen Felt and Dr. Thomas White of Los Alamos Scientific Laboratories and Major Orin W. Stopinski of Air Weather Service.

FOR THE COMMANDER:

/s/

R. GOLDTHWAITE
RADM, U. S. Navy
Chief of Staff

Copies furnished:
CNO, OP 36
Scientific Director,
JTF SEVEN