

OO 413.6 Met. (Chem. Spray)

Subject: Designation of Liaison Officers, Coordinator and Experimental Groups For Purpose of Developing Chemical Spray For High Altitudes.

To: Director, Signal Corps General Development Laboratory, Fort Monmouth, Red Bank, New Jersey.

1. A copy of a letter from the Adjutant General (file AG 470.71 (4/4/42)OF.) is inclosed which designates a Coordinator, experimental groups, and liaison officers for the High Altitude Chemical Spray project.

By order of the Chief Signal Officer:

(S) J. D. O'CONNELL
Lieut. Colonel, Signal Corps

1 Incl.
Cy le fm Adj. Gen., to Comd. Gen, A.A.F.,
Ch. Chem. Warfare Serv., & CSO, 4/4/42,
file AG 470.71 (4/3/42)OF.

Incl. 1

WAR DEPARTMENT
The Adjutant General's Office
Washington

AG 470.71 (4-3-42)OF.

April 4, 1942.

Subject: Designation of liaison officers, Coordinator and experimental groups for purpose of developing Chemical Spray for High Altitudes.

Auth: T. A. G.

To: Commanding General, Army Air Forces,
Chief of Chemical Warfare Service,
Chief Signal Officer.

Initials: (S) J.E.D.

Date: April 4, 1942.

1. The board of officers appointed by letter, this office, AG 470.71 (3-3-42)OF, March 21, 1942, for the purpose of study and development of Chemical Spray for High Altitudes, is hereby dissolved.

2. Designation of liaison officers.

The following officers are designated as liaison officers for their respective arms and services in connection with the development of chemical spray for high altitudes:

Lieutenant Colonel William F. Centner (O-142967), A. C.,
Lieutenant Colonel Carl E. Otto (O-235939), C. W. S., and
Captain Carroll W. Arford (O-284439), Signal Corps.

3. Designation of experimental groups.

The Commanding General, Army Air Forces, the Chief of Chemical Warfare Service, and the Chief Signal Officer will organize experimental units and designate respective members to constitute an interbranch experimental group for the purpose of the development of subject tests.

4. Designation of Coordinator.

a. Lieutenant Colonel John R. Burns (O-16509), C. W. S., Dugway Proving Grounds, Clover, Utah, is designated coordinator of the experimental group with authority to issue the necessary travel orders for movements of said groups and to make expenditures of the funds allotted for this purpose.

b. Personnel assigned to this duty will be instructed to report by letter to Lieutenant Colonel John R. Burns, C. W. S., Commanding Officer, Dugway Proving Grounds, Clover, Utah, for necessary instructions.

5. Funds--Fiscal Year 1942.

Funds from sources and in amounts indicated below will be made available for use by the experimental group:

- a. Army Air Forces. \$75,000.00 will be sub-allotted to the Chief of the Chemical Warfare Service.
- b. Chemical Warfare Service. \$75,000.00
- c. Signal Corps. Funds in the amount of \$125,000.00 are approved and such part of said funds as the Chief Signal Officer deems necessary shall be allotted to the Chemical Warfare Service for the use of the experimental group.

6. Reports.

The coordinator will furnish periodic progress reports to the Commanding General, Army Air Forces, Chief of Chemical Warfare Service and Chief Signal Officer.

7. Priority.

The project outlined herein is in first priority and will be carried to completion without delay.

By order of the Secretary of War:

(S) J.E. Daly
Adjutant General.

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HEADQUARTERS
DUGWAY PROVING GROUND
Office of the Commanding Officer

/rhc.
Tooele, Utah.
August 1, 1942.

MEMORANDUM TO: Commanding Officer, Dugway Proving Ground, Tooele, Utah.

SUBJECT: Proposed Meteorological Research for High Altitude Chemical Spray.

1. Purpose. The object of the proposed meteorological research is to:

a. Determine the accuracies to which upper air winds to a height of 20,000 feet and extent of cloud cover can be forecast for a given location, using normal "peace-time" data consisting of teletype reports of surface and aerological observations, and

b. Devise techniques for forecasting these quantities when normal "peace-time" data are denied to the forecaster, and determine the accuracies of forecasts resulting therefrom.

2. Phases of Research. The meteorological research proposed in connection with accomplishment of the objectives outlined in Paragraph 1. above can be sub-divided into various phases, as follows:

a. Phase I. Forecasts based on statistical or climatological data. The object of this phase of research is to determine those regions of the globe characterized by little change in pressure distribution, and consequently little change in circulation patterns. It is anticipated that the so-called semi-permanent "centers of action" (i.e., Bermuda High, Pacific High, Aleutian Low, Icelandic Low, etc.) will lend themselves to useful treatment on a statistical basis. Likewise, it is anticipated that the monsoon winds over India and adjacent regions can also be readily analyzed on this basis. It is proposed that the data required for this study be secured from the U. S. Weather Bureau and from the Army Air Corps. It is recommended that this phase of research be pursued exclusively at Fort Monmouth.

b. Phase II. Forecasts based on availability of normal "peace-time" data, (i.e., teletype reports of weather observations furnished by a dense network of stations over the entire country, and teletype reports of aerological data (upper air temperatures, pressures, humidity, wind

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Memo To: C.O., DPG.
8-1-42 (Cont'd)

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directions and velocities) at a considerable number of observing stations uniformly distributed over the entire country.) The forecasts issued to date by Signal Corps Meteorologists have been confined essentially to this phase of the problem. It is proposed that forecasts based on these data be continued, and that the Air Corps forecasting unit assigned to this project also participate in this phase of the problem, forecasting independently of the Signal Corps Meteorologists so as to afford an independent indication of the accuracies that can be attained in this ideal phase. It is further proposed that the forecasting group assigned to the Weather office at Fort Monmouth also participate in this phase for additional independent indications of the accuracies that can be attained.

c. Phase III. Forecasts based on limited "war-time" data, (i.e., normal and uniform coverage of the country denied to the forecaster; only limited aerological data available, these not necessarily simultaneous). In this phase of the forecasting problem the amount of data available to the forecaster may be varied as follows, depending upon the tactical situation:

- (1) Normal and uniform coverage of the country by surface weather reports and aerological data except for a particular region designated as "enemy territory". The specific problem involved in this phase is the forecasting of upper winds and extent of cloud cover for a target well within enemy territory, removed as much as (a) 300 miles, (b) 500 miles, and (c) 1000 miles, from the nearest source of weather observations. It is proposed that this phase of research be pursued at both Dugway Proving Ground and Fort Monmouth.
- (2) Same as (1) above, except that additional information is available over enemy territory in the form of cloud reports, wind direction and velocity at one elevation, and any other information that might be reported on the return of friendly bombers or observation planes from missions over the designated "enemy territory". This phase of research can be pursued at both Dugway Proving Ground and Fort Monmouth.
- (3) Surface weather and aerological data limited to four or five stations, widely scattered and not necessarily simultaneously observed. The specific problem of this phase is the forecasting of upper air winds and extent of cloud cover over the target, utilizing the few available observations to interpret the major features of the current pattern of weather conditions. It is proposed that the research in this phase be initiated by the undersigned at Fort Monmouth, establish and put to preliminary test the techniques there, secure additional personnel for this phase of the project, and thereupon transfer this activity to Dugway Proving Ground.

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Memo To: G.O., DPG.
8-1-42 (Cont'd)

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(4) Weather data limited to one location only. These data to consist of a local radio sonde observation, a time-sequence of pilot balloon observations of upper air winds at the location, and any additional observations of sequence of cloud types, directions of their movement, etc. The specific approach to this phase of the problem is through the utilization of "synoptic meteorological" judgment in extrapolating from the one location the probable meteorological conditions at distances of 300, 500, and 1000 miles, and forecasting the changes in upper air winds and extent of cloud cover at these distant locations. It is proposed that the initial research in this phase be confined to Fort Monmouth, as proposed in (3) above.

(5) A variation of (4) above, wherein the same data are available, but in which the forecaster flies with the bombing crew and periodically modifies his forecast enroute to the target in light of the character of the weather observed during the flight. This phase of research is suggested with particular intent to improve the accuracy of forecasts at the extreme range of 1000 miles. The proposals in connection with the initiation of research in this phase are as follows:

- (a) Research to be initially conducted as outlined in (4) above.
- (b) Qualified weather observers to be stationed along selected "flight routes", reporting to the forecast central by telephone or telegraph in a time-sequence simulating probable speed of plane in flight.
- (c) Technique of this means of forecasting, if results from simulated flights warrant further attempts, to be demonstrated by forecaster flying with bombing crew from Dugway Proving Ground to Suffield, Alberta, Canada, and thence Suffield to Dugway.

3. Requirements. Equipment and Personnel. The additional equipment and personnel required in connection with each of the above phases of meteorological research, and further details of these proposals, will be the subject of a separate memorandum.

Distribution:

- 2 copies Signal Corps Laboratory, FM.
- 2 " Chief, Signal Officer.
- 2 " Chief, Chemical Warfare Service.
- 2 " Chief of the Air Corps.
- 2 " Experimental Station,
Suffield, Alberta, Canada, 3 -
- 2 " DPG File.

GEORGE D. LUKES,
Senior Meteorologist, S.S.L.

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