

Image Cover Sheet

CLASSIFICATION

UNCLASSIFIED

SYSTEM NUMBER

140017



TITLE

LARGE SCALE TRIAL WITH H - THERMAL GENERATORS

System Number:

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Notes:

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COPY NO 41
4 th., Aug. 43

EXPERIMENTAL STATION

SUFFIELD ALBERTA

FIELD EXPERIMENT NO. 145

Large Scale Trial with H - Thermal Generators

REFERENCE:

Request from U.K. W10619

Classification / Designation _____
Changed to / Remplacée par u/u
By Authority of C. Laforce
Date 26 Feb 48 Signature D. Kuseler
Appointment _____
Expiration _____

OBJECTS:

1. To assess the value of a ~~cloud~~ attack with H - Thermal Generators against troops protected with respirators and exposed :
 - (a) In the open.
 - (b) In slit trenches.
2. To try to determine the minimum dosage from the H - Thermal Generator cloud which will cause casualties from skin burning in warm weather.
3. To try to determine the chemical constitution of the cloud from H - Thermal Generators after a long time of travel.

METEOROLOGICAL CONDITIONS

4. Wind Speed - 8 to 15 mi/hr.
Wind Direction - any.
Steady direction essential ($\pm 30^\circ$)
Cloudy sky.
Air Temperature - above 60°F.
No precipitation.

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SITE OF TRIAL

5. Area A-2 or A-4.

NOTE: The area on which the generators are to be placed must be burnt off before the trial as there is a high risk of inflaming of some of the generators. (An area 250 yards square should be prepared.)

MATERIALS

6. 3012 H - Thermal Generators (3 lb.) - includes 502 spare generators.
200 Portfires.
25 observers all wearing B.D. (non-impregnated), issue shirts, short-limbed undershirts, impregnated trunks, and G.S. respirators. Drill order. Clothes to be worn for 3 days prior to the trial. 8 with rifles.

Field Experiment No. 145 (continued)

PROCEDURE

7. An emission line XY, 250 yards long will be marked out perpendicular to the forecast wind direction. The generators will be spaced along this line at one yard intervals in groups of 12 generators. (Zero - 2 hours.)

8. There will be three lines of sampling apparatus; each line parallel to the line of generators. Observers will be positioned on two of these lines. (See Appendix)

NOTE: The layout will take 3 hours to put down.

LINE AB

175 yards downwind 400 yards long. Sampling points (3 ft.) every 25 yards (17 samples numbered 1 - 17). Foxholes, 7 ft. by 2 feet by 2 feet deep and labelled a to h, every 25 yards at intermediate positions between points 5 to 13. Sampling points in each foxhole (8 points). One observer in each foxhole and one at each of the sampling points 5 to 13 inclusive. (17 observers.)

NOTE: Foxholes will be dug with their major axis at right angles to the sampling line.

LINE CD

250 yards downwind, 550 yards long. Sampling points (3 ft.) every 50 yards (12 samples numbered 1 to 12). Seven observers plus one N.C.O., all with portable sampling apparatus.

LINE EF

1000 yards downwind, 1500 yards long. Chemical sampling (3 ft.) at 25 yards = 61 samples.

NOTE: All samples to be analysed by iodoplatinate method.

9. The observers on line AB are to be exposed to a CT of 350-400 for temperatures between 60 - 70°F and to a CT of 300 if the temperature is above 70°F.

NOTE: Each pair of generators will emit a total of 0.62 lbs. mustard as vapour.

10. At zero minus 10 minutes the observers will be taken for a five minute run and the injectors will be turned on. The observers will return to their positions by zero.

11. At zero two generators at each of the 251 points will be lit. At zero plus 130 seconds a further two generators will be lit at each point. This will be repeated at intervals of 130 seconds until a number of generators, specified by P&M.S. prior to trial, have been functioned.

12. During the passage of the cloud the observers at points 5 to 13 on line AB will dig a trench round the downwind side of their sampling apparatus, keeping as near to it as possible. The observers in the foxholes will be equipped with rifles and will position themselves as if expecting an attack from the direction of the line of generators.

Field Experiment No. 145 (continued)

13. The observers on line CD are to keep themselves in the cloud during the whole of its passage over them. The N.C.O. will ensure that this instruction is carried out.

14. All sampling apparatus will be turned off as soon as possible after the passage of the cloud.

NOTE: Men turning off sampling apparatus on the first two lines should wear A.V. clothing.

15. After exposure the observers will continue to wear their clothes for 4 hours.

ADDITIONAL SAMPLING LINES

16. At 35 and 75 yards from the line of generators a line of three cascade impactors with dye droplet detector plates will be set up parallel to the line of generators. The centre impactor will be on the centre line of the generators. (P & M. S.)

17. At 100 yards dishes of water and of vaseline will be exposed and a clothes line erected on which will be hung 10 sets of battle dress (M.E.O.). Chem. S. will provide dishes of water and vaseline. M.E.O. will return them and the clothes to Chem. S. after the trial.

18. At the centre of lines AB and CD 6 extra pairs of bubblers will be set up. These will be used to estimate H by the β naphthol and pyridine method. (Chem. S.)

19. Still pictures of the complete cloud will be taken at one minute intervals from a flank.

ADMINISTRATION

In charge of trial - M.E.O.
Responsible for final report - P.R.S.

C.E.O.

Decision as to time of trial. Provision of transport.
Departmental warnings and collection of reports.

M.E.O.

Conduct of trial. Provision, setting out and delivery to Chem. S. of materials under para. 17. Provision of men to light generators.

CHEM. S.

Sampling. Provision of materials as in para. 17. Estimation of mustard adsorption on clothes. Special sampling under para. 18.

Field Experiment No. 145. (cont.)

ADMINISTRATION (cont.)

P & M. S.

Forecast of wind direction and any change in the position of lines AB and CD three hours before trial. Estimation of the number of generators to be functioned. Meteor observations. Inform M.E.O. in field when generators should be lit. Provision of impactors (para. 16).

PHOTO. S.

Photographs as indicated.

O. M. & E.

Provision of generators. Supervision of lighting. Report on functioning.

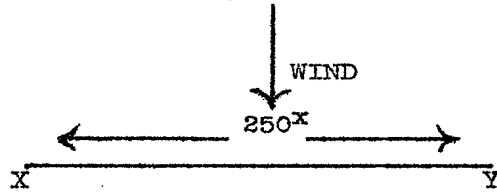
PHYS. S.

Provision and supervision of observers.

HJF/REA

H.J. Fish.
(H.J. Fish)
P.R.S.
Experimental Station

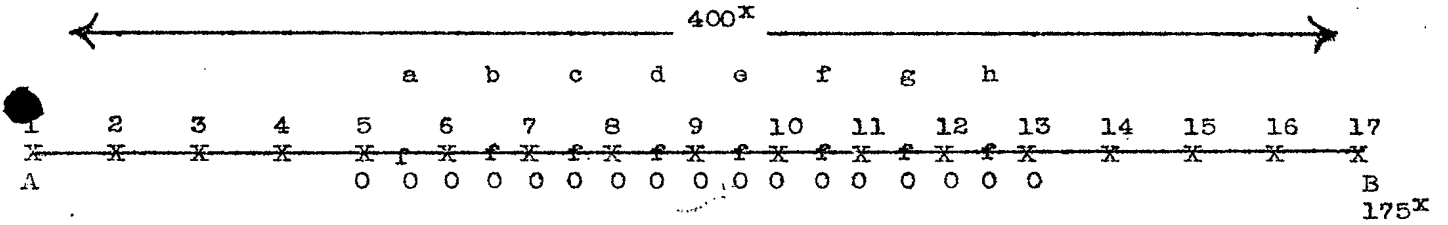
Birchall S/Ldr.
(K. Birchall) S/Ldr.
C.E.O.
Experimental Station



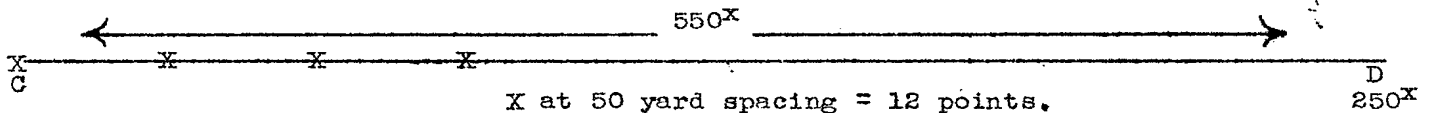
3012 generators
12 at each of 251 points.

f = foxholes 8' x 2' x 2' deep containing one sampling point. ----- Impactors } see para 16 35^x
 X = sampling points at 3 ft. ----- Impactors } 75^x

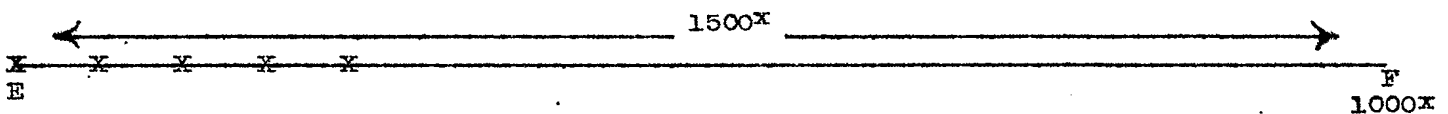
O = observers ----- Dishes of water, etc. see para 17. 100^x



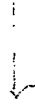
X at 25 yard spacing = 17 points.
 f at 25 yard spacing = 8 points only.
 17 observers (9 on surface
 8 in foxholes).
6 additional pairs of bubblers
 (see para. 18)



X at 50 yard spacing = 12 points.
 8 observers (7 men and 1 N.C.O.)
 carrying sampling apparatus.
6 additional pairs of bubblers
 (see para. 18)



X at 25 yard spacing = 61 points.



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