PHILLIPS PETROLEUM COMPANY

Idaho Falls, Idaho

727290

September 20, 1962

Radiological Measurements
SNAPTRAN 2/10A-1
McC-117-62A

Mr. J. R. Horan, Director
Health and Safety Division
Idaho Operations Office
U. S. Atomic Energy Commission
Idaho Falls, Idaho

Dear John:

It has become quite apparent that the gathering of air-borne effluent data from the first STEP program (SNAP 2/10A-1) will require a major effort. One of the major objectives is to provide data useful in evaluating "maximum credible accidents." In order to obtain such data, extensive radiological measurements will need to be made during and following the final destructive test. Because the results of those tests immediately preceding the final one are somewhat unpredictable, it will be advisable to be in a position to make at least most of the required measurements several months in advance of the anticipated destruction.

You and I have tentatively agreed to divide the responsibilities between IDO and Phillips at the obstruction fence (about 1½ miles from the IET). Phillips will devote its major effort to the area inside the fence; IDO will concentrate on the area outside. All our efforts will be co-ordinated to avoid unnecessary duplication, to be sure we collect sufficient data to make the test successful, and assure radiation safety to the Site and the affected off-Site areas.

STEP supervision has requested that the following data, as a minimum, be obtained in order to evaluate the radiological hazards of reactor destruction.

A. Within the Obstruction Fence and Sampled at About Three Feet Above Ground Level.

1. Integrated gamma dose during the power transient (up-wind of the test cell).

2. Fission product decay following the transient (up-wind of the test cell).

3. Direct gamma and beta exposure from the cloud as determined by film badges.

4. Total gamma exposure and gamma dose rates from the cloud as determined by dose rate instruments.

5. Total exposure from fallout as determined by dose rate instruments and film badges.

6. Fallout distribution, concentration in curies/m^2, and complete isotopic identification (fallout plates).

7. Particulate activity in the cloud (curies/m^3) and complete isotopic identification.

8. Noble fission gas and iodine concentrations in the cloud (curies/m^3) and their isotopic distributions.

B. Outside the Obstruction Fence and Sampled at About Three Feet Above Ground.

1. Direct gamma and beta exposure from the cloud as determined by film badges at two positions within the cloud path.

2. Total gamma exposure and gamma dose rates from two positions on each arc within the cloud. Vehicles could be used to position recording dose rate instruments and air sampling equipment in the path of the cloud in order to cut down on the number of sampling stations.

3. Total exposure from fallout as determined by dose rate instruments and film badges at two points within the cloud path and a fallout and dose rate profile along the area.

4. Fallout concentration in curies/m^2 and complete isotopic identification of activities (fallout plates) from two positions within the cloud path.

5. Particulate activity at two positions in the cloud (curies/m^3) and complete isotopic identification of the activity.

6. Iodine concentrations at two positions in the cloud (curies/m^3) and iodine isotopic identifications.

All the above data, taken both inside and outside the fence, should be such as to allow maximum correlation.

Any data obtained by IDO on concentrations of radioactivity on soil and vegetation would be quite helpful. We would appreciate knowing of your plans in this area as soon as practical so that the anticipated information may be integrated into the total program.

In addition to all the above, we would be very interested in any method of obtaining data related to the following:

1. Particle size distribution in the cloud in all three dimensions.

2. Deposition velocities with relation to particle size and time (distance).

3. The rate (both with respect to time and distance) at which iodine appears to change its characteristics from vapor to particulate.

4. The effective stack height resulting from the destructive test and a profile of the top of the cloud with distance.

5. Vertical profiles of the moving cloud with respect to any of the data heretofore listed; of major interest would be dose rate and total dose from the cloud, isotopic distribution of particulates, and particle size.

It is of major importance to the program that STEP supervision be informed as soon as possible with regard to what data they can expect to receive from IDO. In some cases we may have to modify our own monitoring plans to conform with or supplement yours.

May we have an outline of your proposed program for these tests as soon as possible so that we may proceed with the necessary acquisition of equipment for fulfillment of our own remaining responsibilities.

Yours very truly,

JWMcCaslin:vo

ORIGINAL SIGNED BY
J. W. McCASLIN

J. W. McCaslin, Manager
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cc: Messrs. J. R. Horan
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