LOS ALAMOS SCIENTIFIC LABORATORY
UNIVERSITY OF CALIFORNIA
LOS ALAMOS, NEW MEXICO

OFFICE MEMORANDUM

TO : Gaelen Felt, J-15

DATE: June 21, 1955

FROM : Tom White, H-6

SUBJECT: SOME NOTES ON AN OPTICAL FALLOUT ANALOGUE

SYMBOL : H-6

This refers to some points in your 17 June memo on the above subject.

As noted in our conversation this morning, the discrepancy between differentials was overlooked in quoting our fallrate function to you. Your equation on page 9 should be

$$F(\alpha,f)\,df = \frac{1}{\sigma(\alpha)\sqrt{2\pi}} \exp -\frac{1}{2}\left(\frac{\ln f - \ln f_m(\alpha)}{\sigma(\alpha)}\right)^2 d(\ln f)$$

so that some of your subsequent numerical calculations should be reduced by a factor f.

With regard to the values of f and σ used during most of TEAPOT, the following should be noted. We took the Weather Bureau composite model, and fitted the activity vs particle size data for each cloud layer to a log normal distribution. The fit turned out to be surprisingly good. Within reasonable error, the mean log particle diameter was a linear function of height, and the standard deviation was independent of height.

In an effort to make our machine calculation reproduce these features of the Weather Bureau model, we then used the aerodynamic theory for spherical particles to convert to effective values of f_m and σ that would put approximately the same distribution on the ground from a 40,000 foot cloud.

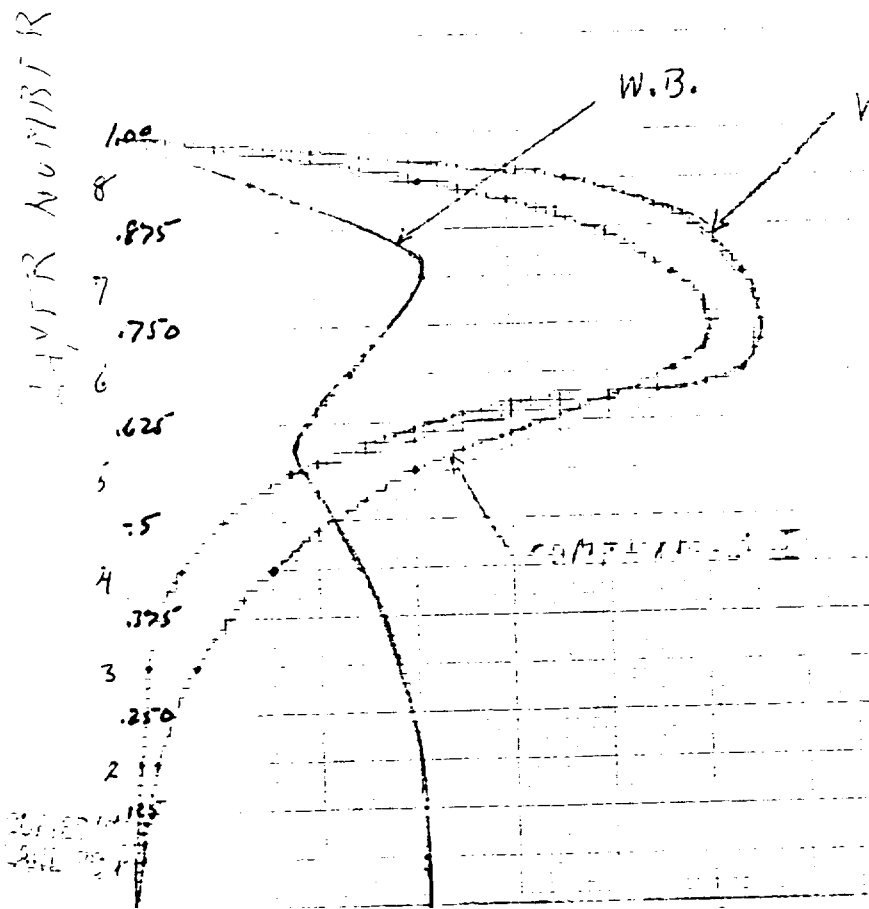
If one assumes that in a higher cloud, the same activity vs diameter would exist at the same fractional height, then the effective f and σ values would come out differently. It seems to me that if we want to use the Weather Bureau data, this is the only reasonable assumption that we can make. We may then want to have two sets of f and σ values; one for KT and one for MT clouds. I hope soon to have some calculations that will tell how much difference it might make.

Tom White.

Thomas N. White

TNW:bg

Distribution:
Si Shlaer, H-6
B. Watt, J-16
H. Hoerlin, J-10
L. Gardner, GA
A. Bond, J-7
W. Ogle, J-DO
G. Felt, J-15
T. White, H-6



HYPOTHETICAL
CLOUD MODELS

(SUM OF FRACTIONS = UNITY)

SUMMARY BY TNW
6/21/55