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R. Christensen
P-10, 100 B Area300 AREA
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Page No. 1 of
Copies, Series 1Statistical Analysis of P-10 Yield Data by Exposure Levels

COPY 1 OF 1, SERIES MA

The data analyzed ranged in exposures from four to seventeen EI/Slug, and from 15.0 to 19.5 cc/Slug yield.

The variability of the data, i.e., failure to follow any apparent pattern, makes it difficult to make any definite statements about the relationship between yield and exposure. However, the following information has been derived statistically.

1. The relationship is approximately linear, and the equation of the best fitting straight line is

$$YI = -0.1767 \text{ EI/Slug} + 18.5238.$$

The standard error of estimate using this equation is 0.8462 cc/Slug, which indicates that, under similar conditions to those in effect when the above data were obtained, and in the same exposure range, 99 % of all future measurements might be expected to fall within plus or minus 2.56 standard errors (2.1796 cc/Slug) of the value calculated from the above equation. Thus if the value of EI/Slug is 8.0, the expected value of YI is 17.0942 ± 2.1796 cc/Slug.

2. If the true relationship between yield and exposure is linear, as stated above, then it can be said that there is less than one chance in one hundred that the slope of the best fitting line is zero or that the yield is constant and independent of exposure.

In addition to these data, further analysis was made of data from carefully controlled experiments. These data appear to follow some higher order polynomial but no satisfactory approximation could be found. A straight line through these points has a slope significantly different from zero. No direct comparison of these data with the data first analyzed is possible, their abscissas being in different units.

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