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# NASA TECH BRIEF



## Technique for Evaluating Multiple Probability Occurrences (TEMPO)

The technique described adjusts engineering response information by broadening the application of statistical subjective stimuli theory. The study is specifically concerned with a mathematical evaluation of the expected probability of relative occurrence which can be identified by comparison rating techniques.

The probability of occurrence for any closed set of events is determined by the following procedure: The presentation is implemented in step form utilizing several matrices for organizing the data; engineering ratings are tabulated on preference matrices indicating their comparative evaluation of a set of events. These ratings are then averaged and normalized, and respective deviates are determined using additional matrix formulations. Finally, the deviates are applied to derived equations to interpret the dispersion indices in terms of probability of occurrence values.

A theoretical derivation presented for the described TEMPO procedure enables this analysis to be applied to other theoretical distributions. Typical examples outlined are for using the TEMPO procedure to determine the probabilities of occurrence for specific failure modes of a given item.

A computer program has been written for the TEMPO procedure. The computer inputs contain individual judge ratings, the number of judges, and the necessary constants used in the intermediate functional relationships. The output consists of a tabulation of all of the events and their respective probabilities of occurrence.

**Note:**

Requests for further information may be directed to:

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No patent action is contemplated by NASA.

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