NASA TECH BRIEF

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Application of a Truncated Normal Failure Distribution in Reliability Testing

The statistical truncated normal distribution function has been applied as a time-to-failure distribution function in equipment reliability estimations. Application of this distribution function is primarily for equipment items which have been aged prior to the principal observation period, provided the aging is known to have, or can be assumed to have, an effect on the items during the actual service period.

The age-dependent characteristics of the truncated normal distribution function have provided a basis for formulating a system of high-reliability testing that effectively merges statistical, engineering, and cost considerations. Compared to other systems of statistical analysis, this system requires a smaller number of samples and shorter test times to establish nominal confidence in reliability estimates exceeding 99.9 percent.

Note:

A complete description of this statistical method and data tables for its implementation may be obtained from:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B68-10179

Patent status:

No patent action is contemplated by NASA.

Source: C. Groves, Jr.
of North American Rockwell Corporation
under contract to
Marshall Space Flight Center

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