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NASA TECH BRIEF



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Application of Cryptanalytic Techniques to the Analysis of NiCd Space Batteries

A large number of NiCd space batteries have been tested for several years by charging and discharging while taking measurements of voltage during cycling. The data collected as a result of these tests was examined by cryptanalytic techniques to determine patterns from which to hypothesize failure modes and mechanisms. By using Bi-gram and Tri-gram tables, a correlation between various failure modes and mechanisms and specific manufacturers can be made. Study of these tables should enable engineers to design more reliable batteries.

Computer programs have been written to reduce the test data for any desired interval of time or for any selected measurement parameters. The results of these programs provide accurate predictions of cell failure several thousand cycles before actual failure.

Notes:

1. This information may be of interest to designers, manufacturers, and users of NiCd batteries.

2. The following documentation may be obtained from:

The Clearinghouse for Federal Scientific and Technical Information
Springfield, Virginia 22151
Single document price \$3.00
(or microfiche \$0.65)

Reference: NASA CR-89323 (N67-38986),
NiCd Space Battery Test Data Analysis
Project, Phase 2.

Patent status:

No patent action is contemplated by NASA.

Source: John Waite, Sheldon Epstein and
Dr. John Mauchly of
Mauchly Associates, Inc.
under contract to
Goddard Space Flight Center
(GSC-10569)

Category 01

NASA TECH BRIEF



This Tech Brief is one of a series of summaries of research and development work performed by NASA and its contractors. The summaries are prepared by the NASA Technical Reports Program, which is a part of the NASA Research and Development Administration.

Application of X-ray Analytical Techniques to the Analysis of 1/4 Inch Helium

The following is a summary of the work reported in the following document:

1. *Application of X-ray Analytical Techniques to the Analysis of 1/4 Inch Helium*, by J. H. ...

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