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4330/STRUCTURAL SYSTEMS BRANCH

NASA
Lewis Research Center

Pyrotechnically Actuated Systems
Database and Applications Catalog

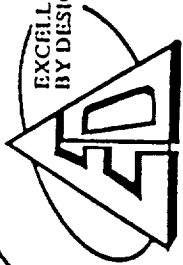
June 9, 1992

NASA Lewis Research Center
Cleveland, Ohio

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BY DESIGN

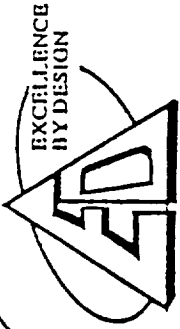


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PRESENTATION AGENDA

- Purpose of Database and Catalog
- Implementation Ground Rules
- Database Menu Format
- Deliverables



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PURPOSE OF DATABASE AND CATALOG

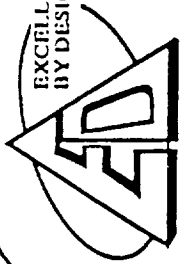
Pyrotechnically Actuated Systems Database

The purpose of the Database is to store all pertinent design, test and certification data for all existing aerospace pyro devices into a standardized database accessible to all NASA/DOD/DOE agencies. The Database is intended to identify all information necessary to support conceptual design activity for pyrotechnically actuated systems.

Applications Catalog

The purpose of the Applications Catalog is to identify the pyrotechnic devices available, including basic performance and environmental parameters. The Catalog is intended to be a quick reference for users during selection of potential pyrotechnic devices and will consist of select information and sketches extracted from the database.

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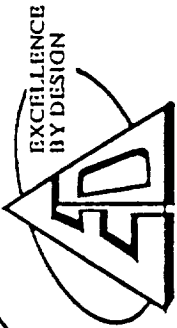
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IMPLEMENTATION GROUND RULES

- The Database will be developed and operate on the Macintosh computer system.
- The Database & Catalog will include current and non-obsolete past pyro devices used on launch vehicles, spacecraft, and support systems.
- The Database and Catalog will compile information from all NASA/DOD/DOE Centers. Each center will be contacted for an inventory of pyrotechnics units. As necessary, LeRC personnel will arrange for visiting centers to assist in compiling such listings.
- The format for the Database and Catalog will include pertinent design and specification data.
- Suitable drawings and graphics will be requested for forming the figures of each device and system.



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IMPLEMENTATION GROUND RULES (cont.)

- Tabulations of each center's devices will be recorded and an integral index will be formed from the individual lists.
- Cross reference indices by alphabetical listing and by type of device will be included in the Catalog.
- User instructions will be developed and provided for the Database.
- The Database and Catalog will be updated as required.

Search by:

Agency/Center....

Reference Number

Usage....

System Type....

Device Type....

Characteristics....

Keyword

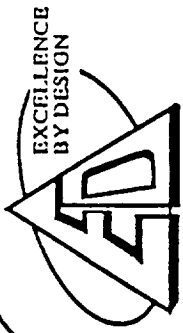
All

Help

Cancel

Find

Items selected:



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Pyrotechnic Database Format

Title Block

1. Title
2. Specification
3. NASA/DOD/DOE part number
4. Principal agency
5. Vendor/Contractor Name
6. Vendor/Contractor part number

Purpose

Describes the purpose of the device or system.

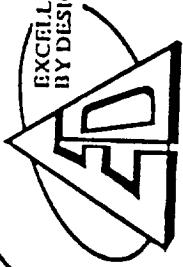
Describes the function of the device and it's usage.

Application

Briefly describes the applications of the device - including what systems it is used in and vehicle and spacecraft applications.

Physical Data (illus.)

Figure describing weight, material, and dimensions of part.



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Performance Data (illus.)

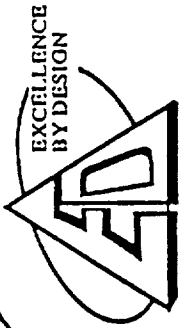
Figure describing performance characteristics - includes plot of pressure versus time.

Pyrotechnic Data

1. Type of initiation
2. Booster charge material
3. Main charge material

Environmental Capabilities

1. Operating temperature range
2. Non-operating temperature range
3. Temperature cycle
4. Storage temperature
5. Shelf life
6. Autoignition temperature
7. Humidity
8. Sun/solar radiation
9. Altitude
10. Fungus
11. Salt fog
12. Rain
13. Leakage
14. Sand dust
15. Drop (8 ft.)
16. Shock
17. Acceleration
18. Vibration - transient, random
19. Acoustic noise
20. Pressure cycling
21. Pressure - proof, burst



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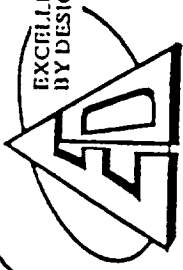
Electrical Characteristics

1. All-fire current
2. All-fire power
3. Bridgewire resistance
4. Checkout current
5. Electrostatic sensitivity
6. Leakage current
7. Electrical connector

Additional Data

1. Qualification report
2. Flight certification status
3. DOD Classifications
4. Applications
5. Demonstrated reliability
6. Functional margin demonstration
7. References and publications
8. Additional remarks

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DELIVERABLES

After editing and finalization of the Database and Applications Catalog, the following items will be delivered to the Pyrotechnic Steering Committee in quantities as requested:

- Database printed hard copy
- Database computer software discs, tapes, cartridges, or network transfer
- Database User's Guide handbook
- Applications Catalog