

DATA SET CATALOG #93

EXPLORER 12  
MERGED MAGNETOMETER & EPHEMERIS

61-020A-02C

THIS CATALOG CANNOT BE FOUND

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## **1. INTRODUCTION:**

The documentation for this data set was originally on paper, kept in NSSDC's Data Set Catalogs (DSCs). The paper documentation in the Data Set Catalogs have been made into digital images, and then collected into a single PDF file for each Data Set Catalog. The inventory information in these DSCs is current as of July 1, 2004. This inventory information is now no longer maintained in the DSCs, but is now managed in the inventory part of the NSSDC information system. The information existing in the DSCs is now not needed for locating the data files, but we did not remove that inventory information.

The offline tape datasets have now been migrated from the original magnetic tape to Archival Information Packages (AIP's).

A prior restoration may have been done on data sets, if a requestor of this data set has questions; they should send an inquiry to the request office to see if additional information exists.

## 2. ERRATA/CHANGE LOG:

NOTE: Changes are made in a text box, and will show up that way when displayed on screen with a PDF reader.

***When printing, special settings may be required to make the text box appear on the printed output.***

| Version | Date | Person | Page | Description of Change |
|---------|------|--------|------|-----------------------|
| 01      |      |        |      |                       |
| 02      |      |        |      |                       |

3 LINKS TO RELEVANT INFORMATION IN THE ONLINE NSSDC  
INFORMATION SYSTEM:

<http://nssdc.gsfc.nasa.gov/nmc/>

[NOTE: This link will take you to the main page of the NSSDC Master Catalog. There you will be able to perform searches to find additional information]

4. CATALOG MATERIALS:

- a. Associated Documents      To find associated documents you will need to know the document ID number and then click here.  
<http://nssdcftp.gsfc.nasa.gov/miscellaneous/documents/>

- b. Core Catalog Materials

# EXPLORER 12

10 SECOND AVERAGED MAGNETIC FIELD COMPS.

10 SECOND AVERAGED B-FIELD COMPS. & EPHEM.

51-020A-02A

SPMS 00556

51-020A-02C

SPMS 00648

THESE DATA SETS HAVE BEEN RESTORED. ORIGINALLY IT CONTAINED FOUR 7-TRACK, 556 BPI TAPES WRITTEN IN BCD. THERE IS ONE RESTORED TAPE WRITTEN IN EBCDIC. THE DR AND DS TAPE IS 9-TRACK, 6250 BPI. THE ORIGINAL TAPES WERE CREATED ON A 7094 COMPUTER. THE DR AND DS NUMBERS ALONG WITH THE CORRESPONDING D NUMBERS AND THE TIME SPANS ARE AS FOLLOWS:

| DR#     | DS#     | D#     | FILES   | TIME SPAN           | ID  |
|---------|---------|--------|---------|---------------------|-----|
| DR0175B | DS0175B | D00243 | 1-73    | 08/16/61 - 09/16/61 | 02A |
|         |         | D04698 | 74-219  | 09/16/61 - 10/28/61 | 02A |
|         |         | D00245 | 220-298 | 10/28/61 - 12/05/61 | 02A |
|         |         | D04941 | 299     | 08/16/61 - 12/05/61 | 02C |

DRAFT  
6/24/70  
L. Katz

61-020A-02C

This data set, which was generated at the NSSDC <sup>by merging</sup> ~~from~~ the data in <sup>with ephemeris data in 61-020A-00A,</sup> 61-020A-02A, consists of one unblocked 7-track BCD tape written at 556 bpi on an IBM 7094. The tape contains one file and covers the period August 16, 1961 to December 5, 1961. The data are in time order and have been merged with ephemeris information as well as certain elements of the 1962 Jensen and Cain Geomagnetic field model. These data have been corrected for substantial errors such as zero field drift and magnetometer sensitivity changes. The data coverage is approximately 80%. Many of the data gaps are due to perigee passing (magnitude of the magnetic field greater than 1000 $\gamma$ ). These gaps occur with an approximate period of 26.6 hours.

Each record contains <sup>as shown on the attached format description.</sup> ~~24~~ items. <sup>The first two items refer back to the</sup> ~~The first four~~ <sup>contains the time of the observation.</sup> ~~tapes in data set 61-020A-02A.~~ The next <sup>six</sup> ~~four~~ items, <sup>5 through 10,</sup> ~~7 through 12~~ contain the measured magnetic field data and include:

1. field strength
2. standard deviation of the field strength
3. polar angle of the field vector measured relative to the satellite spin axis
4. standard deviation of the polar angle
5. azimuthal angle of the field vector measured relative to the satellite meridian plane passing through the sun
6. standard deviation of the azimuthal angle

These six items were computed from the x, y, and z measurements. Each is a ten-second average (32 points) presented every 5 minutes. On the first few orbits 10-second averages every 10 minutes are presented. Each of the standard deviations is computed from the same 32 points. <sup>The time of the observation refers to the midpoint time of the 10-second average.</sup>

The field magnitude F was computed as follows:

$$F = (x^2 + y^2 + z^2)^{\frac{1}{2}}$$

The polar angle alpha was computed as follows:

$$\alpha = \arctan \left( \frac{x^2 + y^2}{z^2} \right)^{\frac{1}{2}}$$

The azimuthal angle psi was computed as follows:

$$\psi = \psi_{\text{sub zero}} + Wt + \arctan \left( \frac{Y}{X} \right)$$

where W is the satellite spin angular velocity

t is the time between the measurement and the "see-sun" time

psi sub zero is the azimuthal angle between

The ~~thirteenth~~<sup>eleventh</sup> item contains information about the orbit number. The information is for half-orbits. Whole numbers refer to that part of the orbit from perigee to apogee. Thus an orbit number of 8.5 would indicate the eighth orbit toward perigee.

Items ~~14~~<sup>12</sup> through ~~17~~<sup>15</sup> list the spacecraft's position. Given are the satellites longitude, latitude, radial distance (geocentric) and right ascension.

Items ~~18~~<sup>16</sup> through ~~23~~<sup>21</sup> are the field values from the 1962 Jensen and Cain geomagnetic field mode 1. The items given are the McIlwain L-parameter, field magnitude, field right ascension and declination and mode 1 field alpha and psi angles. The remaining ~~two~~<sup>three</sup> items present the right ascension and declination of the sun <sup>and a field of 5 blocks.</sup>

Also included in this package is a format sheet describing the above <sup>The orientation of the spacecraft spin axis was not precisely known. In the calculation of the model field alpha and psi angles, it was assumed that the right ascension and declination of the spin axis was 47° and +27.5° respectively.</sup> and a list of data gaps in excess of 60 minutes (derived by visually checking the data in 61-020A-02B).  
 mentioned ~~23~~<sup>24</sup> items. This data set is to be preferred to 61-020A-02A since ephemeris information has been merged without any loss of information. Furthermore, since this data set was written on an IBM 7094 rather than an IBM 1620, it will be easier to process.