National Space Science Data Center/
World Data Center A For Rockets and Satellites

82-26

Documentation for the Machine-Readable Version

of the

Catalogue of Nearby Stars, Edition 1969

October 1982

NATIONAL SPACE SCIENCE DATA CENTER

Operated for NASA by Sigma Data Services Corporation, a M/A-COM Company

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23 May 1983

TO: Recipients of *Catalogue of Nearby Stars, Edition 1969* *

FROM: Astronomical Data Center / NASA - GSFC

SUBJECT: Correction of Error in Machine-Readable Version and Document

An error in the declination of star number 1 (the first record on the tape and in the document sample listing) has been discovered and fixed. The value of δ^{o} should be -37 instead of -10. A replacement page is enclosed for your copy of the document. You may either correct the error in your tape version of the catalogue or send a blank magnetic tape for replacement of the entire catalogue.

Wayne H. Warren Jr.

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Astronomical Data Center

Enclosure:

Document Page (5-1, 5-2) for Document NSSDC/WDC-A-R&S 82-26

* The STIF accession number for this document is N83-16264.

NSSDC/WDC-A-R&S 82-26

DOCUMENTATION FOR THE MACHINE-READABLE VERSION

OF THE

CATALOGUE OF NEARBY STARS, EDITION 1969

Wayne H. Warren Jr.

October 1982

National Space Science Data Center (NSSDC)/
World Data Center A for Rockets and Satellites (WDC-A-R&S)
National Aeronautics and Space Administration
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Greenbelt, Maryland 20771

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SECTION 1 - INTRODUCTION AND SOURCE REFERENCE

The *Catalogue of Nearby Stars, Edition 1969* (Gliese 1969) is an update of Gliese's (1957) first edition *Katalog der Sterne näher als 20 Parsek für 1950.0*. The 1969 edition contains a number of modifications and additions to the 1957 catalogue; these are described in the introduction to the printed version and need not be repeated here. It should be mentioned here that the 1969 edition lists: (1) All 915 stars of the first edition, even though newer parallaxes place some of the stars below the catalogue limit; (2) Almost all known stars having trigonometric parallaxes > 0".045, although in some cases the mean values of trigonometric and spectral or photometric parallaxes are < 0".045. Pleiades stars and the carbon star X Cnc have been omitted; (3) All stars with mean (resulting) parallaxes > 0".045.

The resulting catalogue contains 1529 single stars and systems with a total of 1890 components (not including spectroscopic and astrometric companions). Of these 1529 systems, 1328 objects have resulting parallaxes > 0".045. The number of stars nearer than 20 pc (π_{res} > 0".050) has increased from 915 (1957) to 1049 (1969) as a result of several factors.

This document describes the machine-readable version of the catalogue as it is currently being distributed by the Astronomical Data Center. It is intended to enable users to read and process the data without problems or guesswork. The source reference should be consulted for more detailed information, but a copy of this document should be supplied with any machine-readable copy of the catalogue.

SOURCE REFERENCE

Gliese, W. 1969, *Catalogue of Nearby Stars, Edition 1969, Veröffentl. Astron. Rechen-Institut* Heidelberg, No. 22)

SECTION 2 - TAPE CONTENTS

A byte-by-byte description of the contents of the logical records in the *Catalogue of Nearby Stars, Edition 1969* is given in Table 1. The suggested format specifications are for FORTRAN formatted reads, and are presented in order to clarify the units and data types. They can be modified depending upon usage; however, care must be exercised when using integer and real format specifications in place of character (A) formats because many data fields contain blanks when data are absent. Data fields containing valid zero values should be tested in some way to distinguish between blanks and zero. Alternate format specifications are given in parentheses. For complete data descriptions, the user should consult the published catalogue referenced on page 1-1.

Table 1. Tape Contents. *Catalogue of Nearby Stars, Edition 1969.*

Byte(s)	Units	Suggested Format	Description
1- 3	---	I3	Sequential number (1-915) from the Near Star Cat (Gliese 1957). The stars are listed in order of 1950.0 right ascension, except for double-star components, where A always precedes B, C,....
4	---	I1	Zero for stars of the 1957 catalogue; 1, 2,... for additional stars added to the 1969 catalogue in order of right ascension.
5	---	A1	Component designations A, B,... for multiple systems.
6	---	A1	Asterisk (*) if star is probably not nearer than 22 pc; blank otherwise.
7- 18	---	12A1 (3A4)	Name of star. Bayer and/or Flamsteed designations are given for bright stars, while for fainter stars DM designations (BD north of -23°, CD south, except for one case where CPD is given), AC (Astrographic Catalogue) numbers, or miscellaneous designations, e.g. Giclas (G), Luyten (L), Ross, Van Biesbroeck (VB), Wolf are given. Variable-star or miscellaneous names are sometimes reported.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
19- 24	---	A6 (I6)	Number in the *Henry Draper Catalogue* (*HD*); blank if not present.
25- 26	hours	I2	Right ascension (α) for equinox and epoch 1950.0.
27- 28	min	I2	α
29- 30	sec	I2	α
31	---	A1	Sign of δ_{1950}
32- 33	°	I2	δ
34	---	1X	Blank
35- 37	'	F3.1	δ
38	---	1X	Blank
39- 43	s yr^{-1}	F5.3	Annual proper motion μ_α, in seconds of time. The proper motions are of varying accuracy and are recorded to appropriate precision in the published catalogue. Unfortunately, the data have been punched with trailing zeroes or, more probably, rewritten with a numerical format specification, thus destroying precision information. To restore this information, the proper motions would need to be examined individually and trailing zeroes converted to blanks where necessary.
44- 48	" yr^{-1}	F5.3	Annual proper motion, μ_δ, in seconds of arc. See note concerning accuracy and precision for μ_α.
49- 52	km s^{-1}	I4	Radial velocity; the *GCRV* (Wilson 1953) is the most frequent source and quality classes given there are retained (they are also assigned to new observations in this catalogue). The zero values reported for radial velocity cannot be distinguished from missing data because the field was obviously written improperly with a numerical format at some point.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
53	---	A1	An asterisk (*) is present if the star is a white dwarf having an uncertain radial velocity given without a quality class; otherwise blank.
54	---	A1	Quality of radial velocity according to the system of the *GCRV* (scale A) [highest quality] to E [very uncertain]).
55	---	A1	Code for luminosity class if given in the Mount Wilson system, for white dwarfs, or if a color estimate only is given: 3 = g, 4 = sg, 5 = d, 6 = sd, 7 = D (white dwarf), C = color estimate by Luyten (L) or Giclas (G).
56- 58	---	A3	The temperature class and subclass of the spectral type, except in certain circumstances: (a) if byte 55 contains a "C", byte 57 may contain a temperature class estimated by color; or bytes 57-58 may contain a coded color estimate (e.g. -1, +4) [normally, the temperature class is given in byte 56 and the subclass in bytes 57-58, a decimal point being assumed between 57 and 58 if needed].
59	---	A1	Coded luminosity class for MK types (1 = I or II; 2 = III; 3 = III-IV; 4 = IV; 5 = IV-V; 6 = IV, V; 7 = V; 8 = V-VI; 9 = VI). The field is normally blank if the spectral type is not on the MK system; however, because of the nonuniformity of the data fields, there may be another character in byte 59, e.g. for star 865.0, the M of the K-M type is in byte 59.
60	---	A1 (I1)	Code for spectral peculiarities [1 = p, 2 = e, 3 = m, (metallic lines), 4 = n (broad lines), 5 = s (sharp lines), 6 = ss (very sharp lines?), 7 = ep or pe, 9 = wk (weak lines)].
61	---	A1	The letter "J" if the spectrum is composite. If a magnitude difference between the components is large enough so as not to expect contamination, no "J" is given.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
62	---	A1	Source of the spectral type for non MK classifications: [C - Cape Obs; E - Eggen (white dwarfs); G - Giclas (Lowell proper-motion catalogues); O - objective-prism spectra; H - *Henry Draper Catalogue* (*HD*); K - Kuiper; L - Luyten; M - McCormick; W - Mount Wilson (*GCRV*).
63	---	1X	Blank
64- 67	mag	F4.2	Apparent magnitude on the system indicated by the flag in byte 68. As with previous data fields, it appears that these data have been rewritten with a numerical format specification, thus producing trailing zeroes on all data and destroying the accuracy information once preserved by recording the numbers to an appropriate precision of one or two places beyond the decimal point (tenths or hundredths of a magnitude, respectively).
68	---	A1	If the apparent magnitude reported in bytes 64-67 is not photoelectric, a code is present here (* - the observed magnitude has been reduced to *IPv*; P - photographic magnitude). This byte is blank when the apparent magnitude is a *V* magnitude on the *UBV* system.
69- 72	mag	F4.3	*B-V* color. Blank for no data.
73	---	A1	The letter "J" if the *B-V* color is a joint measure for more than one member of a multiple system. Otherwise blank.
74- 77	mag	F4.3	*U-B* color. Blank for no data. The published catalogue, in addition to *U-B* data, contains $(U-B)_C$ data from the Cape Observatory refractor system. $(U-B)_C$ values are indicated by the symbol "#" before the color; however, this symbol does not appear in byte 74 of the machine-readable version, and if it did, it would not be compatible with several minus signs that occur there, e.g. for white dwarfs. Therefore, there is no

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
			discriminant to isolate $(U-B)_C$ data in the computerized catalogue.
78	---	A1	The letter "J" if the $U-B$ color is a joint measure for more than one member of a multiple system. Otherwise blank.
79- 82	mag	F4.3	$R-I$ color. Blank for no data. Most R-I data are on the system of Kron, Gascoigne and White (1957). Data transformed from the Johnson $R-I$ system to the Kron system are indicated in the published catalogue by the symbol "#" before the color; as with the $U-B$ data, the machine-readable version described here does not include the symbol. $(R-I)_J$ data are only transformed to $(R-I)_K$ if the former are > +0.27, but there is at present no discriminant in the computerized catalogue.
83	---	A1	The letter "J" if the $R-I$ color is a joint measure for more than one member of a multiple system. Otherwise blank.
84- 87	"	F4.3	The trigonometric parallax, π_t. Blank if no data.
88- 90	"	F3.3	The probable error of π_t, calculated when combining data from different observatories. Blank if not present.
91- 94	mag	F4.1	Absolute magnitude determined from the trigonometric parallax by the relation $M_t = m + 5 + 5 \log \pi_t$. Blank if no value present.
95	---	A1	Quality class between A and F corresponding to the probable error of M_t (as derived from the errors of the parallax and apparent magnitude):

A	p.e. $\leq \pm 0^m.08$
B	$\pm 0^m.09$ to 0.15
C	0.16 0.25
D	0.26 0.35
E	0.36 0.50.
F	$> \pm 0^m.5$

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
			Photographic absolute magnitudes are indicated by a "P" in the published catalog, but the flag has not been retained in this computerized version; hence, the apparent magnitude should be examined via its code (byte 68).
96- 99	"	F4.3	The spectroscopic parallax, π_s, computed from a spectroscopic distance modulus $m-M_s$. Blank if no value present. Note that some π_s data are reported to lower precision in the published catalogue; however, these numbers are filled with trailing zeroes in the machine-readable version.
100	---	A1	"U" if the value in bytes 96-99 is exceptionally uncertain.
101-104	"	F4.3	The photometric parallax, π_p, computed from a photometric distance modulus $m-M_p$. Blank if no value present. See note on trailing zeroes for bytes 96-99.
105	---	A1	"U" if the value in bytes 101-104 is exceptionally uncertain.
106-109	"	F4.3	The most reliable parallax value as judged by the available data. If only one determination is known, then the value given earlier is repeated here and supplemented by its probable error. In other cases, weighted means are used or trigonometric values are adopted. The published catalogue should be consulted for detailed information. Blank if no value present. See note on trailing zeroes for bytes 96-99.
110-112	"	F3.3	The probable error of the resulting parallax. For extremely uncertain parallax estimates, no probable error is determinable. In these cases, there is no error reported and the field is blank.
113	---	1X	Blank

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
114-117	mag	F4.2	The absolute magnitude corresponding to the most reliable parallax value given in bytes 106-109. In the published catalogue, a value is reported to $0^{m}.01$ if the probable error of a trigonometrically determined M is $< \pm 0^{m}.20$; otherwise, absolute magnitudes are given to a tenth of a magnitude only. Unfortunately again, the machine-readable version has trailing zeroes on all data, so there is no way to discriminate between $0^{m}.1$ and $0^{m}.01$ precision in the original catalogue unless there is a non-zero digit in the hundredths place.
118	---	A1	A "P" if the absolute magnitude in bytes 114-117 is photographic.
119	---	A1	Quality class between A and F, defined by the probable errors of the trigonometrically determined absolute magnitudes (see byte 95).
120-123	km s^{-1}	I4	U component of the space velocity relative to the Sun. Blank if no data.
124-127	km s^{-1}	I4	V component of the space velocity relative to the Sun. Blank if no data.
128-131	km s^{-1}	I4	W component of the space velocity relative to the Sun. Blank if no data.

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 2 is sufficient for a user to describe the indigenous characteristics of the machine-readable *Catalogue of Nearby Stars, Edition 1969* to a computer. Information easily varied from installation to installation, such as block size (physical record length), blocking factor (number of logical records per physical record), total number of blocks, tape density, number of tracks, and internal coding (EBCDIC, ASCII, etc.) is not included. This information should always be supplied if secondary copies are transmitted to other users or installations.

Table 2. Tape Characteristics. *Catalogue of Nearby Stars, Edition 1969.*

NUMBER OF FILES	1
LOGICAL RECORD LENGTH (BYTES)	131
RECORD FORMAT	FB*
TOTAL NUMBER OF LOGICAL RECORDS	1889

* Fixed block length (last block may be short)

SECTION 4 - REMARKS, MODIFICATIONS AND REFERENCES

The *Catalogue of Nearby Stars, Edition 1969* was received on magnetic tape from the Centre de Données Stellaires. The following modifications were made to the data file in order to make the data easier to process, less ambiguous in certain cases, and more uniform with respect to other machine-readable catalogues:

1. Many data fields which had zeroes for missing data were changed to blanks. These data included HD, *B-V*, *U-B*, *R-I*. π_t, pe π_t, M_t, π_s, π_p, π_r, pe π_r, M_r, and *U*, *V*, *W*. Fields having valid and correct values of zero were not blanked out.

2. Southern stars, in addition to having negative declinations in degrees, had negative minute values too. The negative minute values were converted to positive. Negative signs in the declination degrees field were moved so as always to occur in byte 31 and plus signs were added to positive declinations.

3. Errors in the spectral types of stars 345.0 (8F to 6F-G) and 878.1B (9A to 7A, F) were corrected.

4. Errata in the list of W. Gliese (1971) have been incorporated. One correction is the deletion of star 297.0, whose record has been removed from the machine-readable version, thus decreasing the record count to 1889. The color indices for star 799.0 were stated in the errata to be dubious. The indices *B-V* and *U-B* were found in the catalogue of Nicolet (1978) and inserted.

5. Additional and improved data from the paper of Gliese and Jahreiss (1979) have not been inserted, since they will be incorporated in a forthcoming new edition of the catalogue (Gliese, personal communication).

REFERENCES

Gliese, W. 1957, *Mitt. Astron. Rechen-Institut*, Heidelberg, Ser. A, No. 8.

Gliese, W. 1969, *Veröffentl. Astron. Rechen-Institut*, Heidelberg, No. 22.

Gliese, W. and Jahreiss, H. 1979, *Astron. Astrophys. Suppl.* 38, 423.

Nicolet, B. 1978, *Astron. Astrophys. Suppl.* 34, 1.

Wilson, R. E. 1953, *General Catalogue of Stellar Radial Velocities*, Carnegie Inst. of Washington Publ 601.

SECTION 5 - SAMPLE LISTING

The sample listing given on the following pages contains logical records exactly as they are recorded on the tape. Sample records for stars at the beginning and end of the data file are listed. The beginning of each record and bytes within that record are indicated by the column heading index across the top of each page (digits read vertically) Since each logical record is longer than 115 bytes, the remainder (bytes 116-131) is printed in the following row.

```
L I S T I N G   O F   R E C O R D S   F R O M   T A P E   F I L E

             TAPE FILE NAME: NEARBY STARS, ED. 1969
                   RECORDS        1 TO      15
                 - TAPE FILE      10
              RECORD LENGTH     131 BYTES
               INPUT VOLSER    ADC005

C O L U M N                                                                                                                 111111111111111111111111111111111111
H E A D I N G         111111111122222222223333333333444444444455555555556666666666777777777788888888889999999999000000000011111111112222222222333333
I N D E X    123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345

RECORD     1   10  DM-37 15492 225213 0 228-37 362  4753-2329  23 A M4 7     863  145   92   52  225  8                      225  8 10
             39 A -77 -99 -35
RECORD     2   20  DM+44 4548         0 232+45 306   820 -140  -1 C5M2  2 W  989  150  118        94  4                       94  4  5
             76 B -35 -22 -14
RECORD     3   30  DM-68 2378     55  0 248-68  62  -270 -540  41 B K5 7     845  106  103   42   77 12  79D  62    52       61  6  7
             40 C  38 -46  -2
RECORD     4   40A DM+45 4408     36 0 3 2+45 322   835 -127    3 B5K6  2 W  893  144  121  71J   94  4                       94  4  8
             80 B -38 -19 -15
RECORD     5   40B                    0 3 2+45 321   835 -189   2 B5M0  2 W  897  145  120        94  4                       94  4  8
             84 B -37 -20 -17
RECORD     6   41A DM+57 2865    123 0 338+58  95   331   36 -12 B5G4    W  643   64   11        45  8  47E  51    50       48  5  4
             80 C -18 -23   0
RECORD     7   41B                    0 338+58  95   331   36 -16 C5G8    W  720   78   33        45  8  55E                 48  5  5
             61 D -16 -26   0
RECORD     8   42A DM-49 14337   142 0 344-49 212   578  -32    2 B G1 4     569   52  165        49  7  41D  400            45  7  3
             90 D -50 -31 -11
RECORD     9   42B                    0 344-49 212   578  -32    0          1150*                  49  7 100F                 45  7  9
             80 F
RECORD    10   50  DM+28 4704    166 0 4 1+28 447   289 -177   -8 B K0 72    614   75   33        69  7  53C  85    72       73  6  5
             46 C -15 -22  -9
RECORD    11   60 *DM+35 8       400 0 6 6+36 210   -84 -141  -14 A5P5    W  621   47  -11        47  6  46D  36    31       40  6  4
             20 D  21 -11  -7
RECORD    12   70  DM-27 16           0 629-27 241   490  130    0  C M     L 1230P                  56 17                      56 17 11
             00PF
RECORD    13   80  BET CAS       432 0 630+58 524   679 -177   12 A F2 4     227   34   11        66  5                       66  5  1
             37 C -36  -7 -19
RECORD    14   90A*DM-54 20      469 0 631-54 168    60   22    0   G4 4     662  74J  181J                       27          27  5  3
             80 E
RECORD    15   90B*                   0 631-54 168    60   22    0           860*                                             27  5  5
             80 F
```

L I S T I N G O F R E C O R D S F R O M T A P E F I L E

TAPE FILE NAME: NEARBY STARS, ED. 1969
RECORDS 1875 TO 1889
TAPE FILE 9
RECORD LENGTH 131 BYTES
INPUT VOLSER ADC005

```
COLUMN INDEX
          1111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111
1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345
RECORD  1875  9070  ROSS 249          234531+48 442  650   30   0   M1    K 1210*                77 12                77 12 11
              50 E
RECORD  1876  9071  DM-13 6464       234550-13 159  140   50  -4 C5E0  2 M  966          62                42  56   51  5  8
              20 C -19  -5   0
RECORD  1877  9080  DM+01 4774       234636+ 2  82  656 -962 -65 B B2 72    898  148  109   87  175  7           175  7 10
              19 B  -9 -66  35
RECORD  1878  9081  DM+29 5007       234755+30  45  199    0  -5 B5E0    M  934  126  119   49                49  49   49  5  7
              80 C -21 -15  -3
RECORD  1879  9082                  234822+19 400  620 -140   0   B5      1700P                50 12                50 12 15
              50PF
RECORD  1880  9090A DM+74 1047 223778234957+75 159  824   56   1 A K3 7     641   98J  71J  38J  93  4           93  4  6
              25 B -15  -7  -1
RECORD  1881  9090B                 234957+75 159  824   56   0   B2    K 1170*                93  4           93  4 11
              50 C
RECORD  1882  9091  DM-06 6308 2237822350 5- 6 163  290  -30   0   E0    M  990*                45 10           45 10  8
              20 F
RECORD  1883  9100  DM+28 4660       235036+28 444 -110   50   0 C5E0  2 M  978  139  125   59   60 11  86E  52  53   55  6  8
              40 C   9   7   6
RECORD  1884  9110  DM-22 6219       235212-22  33  -40  160  48 B5E0    M 1060*                     66              66 16  9
              70 E   1  15 -15
RECORD  1885  9120  DM-06 6318       2353 7- 6 249 -320 -370   0   C E    L 1118  146                63 13           63 13 10
              10 E
RECORD  1886  9130  DM+45 4378       2356 7+46 270  548  -27   4 B5E0    M  962  144  119   74   60  7  85D  55  80   63  6  8
              60 C -38 -16 -12
RECORD  1887  9140A DM+26 4734 224930235933+26 490  628 -985 -37 A G3 7     576   67    5   30   84  4           84  4  5
              38 B  -9 -75 -33
RECORD  1888  9140B                 235933+26 490  628 -985   0           1100*                84  4           84  4 10
              60 F
RECORD  1889  9150  L 362-81         235934-43 261  550 -670   0   7A   5  1305    7  -87       122  8          122  8 13
              48 B
```