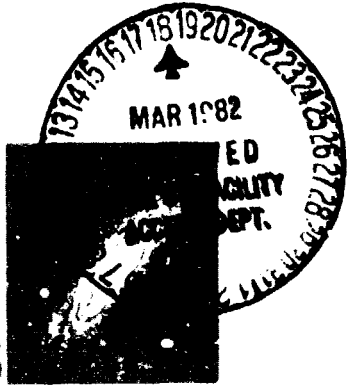


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**Documentation for the
Machine-Readable Version
of the Catalogue of Stars
Within 25 Parsecs of the Sun**

January 1982

DOCUMENTATION FOR THE MACHINE-READABLE VERSION
OF THE CATALOGUE OF STARS WITHIN 25 PARSECS
OF THE SUN

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January 1982

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World Data Center A for Rockets and Satellites (WDC-A-R&S)
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SECTION 1 - INTRODUCTION

The *Catalogue of Stars within twenty-five parsecs of the Sun* (Woolley, Epps, Penston and Pocock 1970) was constructed at the Royal Greenwich Observatory in order to enlarge the *Catalogue of Nearby Stars* compiled by Gliese (1957). The catalogue contains data on stars nearer than 25 pc which are not included in Gliese's catalogue, plus additional information published since 1957 on stars in the Gliese compilation.

The machine-readable version of the *Catalogue of Stars within twenty-five parsecs of the Sun* contains essentially all information given in Table Ia of the published catalogue, plus positional data and all cross references to other catalogue numbers given in Table IIa. Not included from Table Ia are the flags (asterisks appended to catalogue numbers) indicating notes in the published catalogue, nor are the notes in machine-readable form. Omitted from Table IIa are the finding chart identifiers (Lowell G numbers or notes reference) and miscellaneous cross identifications to other names and catalogue identifiers. Tables Ib and I Ib, containing 21 systems originally included in Gliese's (1957) catalogue, but for which revised parallaxes have placed them farther than 25 pc, are not included in the machine-readable version. A useful extension to the present machine-readable catalogue would be the addition of the cross identifiers and the creation of a separate file containing the notes.

This document describes the machine-readable version of the subject catalogue currently available on magnetic tape from the Astronomical Data Center. Although it should enable users to read and process the tape file without difficulty, and to interpret the data to some extent, the additional information given in the data descriptions and the notes in the published catalogue make it advisable to consult the latter when analyzing and/or interpreting the data in the machine version.

SOURCE REFERENCE

Woolley, R., Epps, E. A., Penston, M. J. and Pocock, S. B. 1970, *Catalogue of Stars within twenty-five parsecs of the Sun*, *Roy. Obs. Ann.*, No. 5.

SECTION 2 - TAPE CONTENTS

A byte-to-byte description of the contents of the logical records in the *Catalogue of Stars within twenty-five parsecs of the Sun* is given in Table 1. The suggested format specifications are presented in order to clarify the units and data types, and 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 some data fields contain blanks when data are absent. All tape data are recorded as integers, but real (F) format specifications are suggested when more appropriate and to show decimal point locations. Since data fields are blank for missing data, records should be buffered in or fields tested in some way to distinguish between blanks and zero. Alternate 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 Stars within 25 parsecs of the Sun

Byte(s)	Units	Suggested Format	Description
1- 4	---	I4	Star number. Numbers in Gliese's (1957) catalog retained; newly added stars have numbers starting at 9001 and increasing with α 1950, but since numbering of extension, new parallaxes have removed 9419 and added two new stars: 9849, 9850 (both at α 1950 = 4 ^h 19 ^m), The Sun (first record) has number 0.
5	---	A1	Component identification (A, B, ...) for stars having the same number. Stars with separately published parallaxes have generally been assigned separate numbers. Components are given for extension stars when they are known or suspected to form a physical system.
6- 8	"	F3.3	Parallax (π). The main sources of trigonometric parallaxes are the Yale <i>General Catalogue of Trigonometric Stellar Parallaxes</i> and its supplement (Jenkins 1952, 1963). Some spectroscopic parallaxes are included and indicated by the probable error code following.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
9- 10	"	A2	Probable error of a trigonometric π . The two bytes given are the least significant digits in a number of the form $\pm 0.0XX$ which, for pure numbers, could be read in format F2.3; however, for spectroscopic π , byte 9 is blank and byte 10 contains "S".
11	---	I1 (A1)	"8" if p.e. (π) < 15% "9" if p.e. (π) < 10% blank otherwise
12- 16	s yr ⁻¹	F5.4	Annual proper motion μ_{α} in seconds of time; blank if not present. Note that most data are given to a precision of 0 ^o 0001; however, many values are only quoted to 0 ^o 001. In the latter case, byte 16 is blank, hence precision can be ascertained by reading the field in an A format and testing for a blank in byte 16.
17- 22	" yr ⁻¹	F6.3	Annual proper motion μ_{δ} in arcseconds; blank if not present. See note on precision for μ_{α} above.
23- 27	km s ⁻¹	F5.1	Radial velocity taken from the GCRV (Wilson 1953), unmodified for Wilson codes a and b, revised for codes c and d if additional measures were available. Observed velocities are given for white dwarfs (uncorrected for gravitational redshift). Additional unpublished velocities from various observations are included where needed. Field blank if no datum present; if datum present, sign always in byte 23.
23	---	I1 (A1)	Radial velocity code: 1 if mean value of combined components of binary (symbol J in published catalogue); 3 if velocity variable (symbol V in published catalogue); otherwise blank.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
29- 32	km s ⁻¹	I4	U component of space velocity relative to Sun (blank if no data).
33- 36	km s ⁻¹	I4	V component of space velocity relative to Sun (blank if no data).
37- 40	km s ⁻¹	I4	W component of space velocity relative to Sun (blank if no data).
41- 45	---	F5.4	Box orbit parameter, $\tilde{\omega}$, the distance of the epicenter of the box from the Galactic center (see Woolley and Candy 1968). Note that the quantities $\tilde{\omega}$, e and i are normalized to the solar distance from the Galactic center and the unit of velocity is the Sun's circular velocity, taken to be 250 km s ⁻¹ . The solar motion used is $u_0 = +10$ km s ⁻¹ , $v_0 = +10$ km s ⁻¹ , $w_0 = +7$ km s ⁻¹ , while the Oort's constants adopted are $A = +14.6$ km s ⁻¹ kpc ⁻¹ , $B = -11.5$ km s ⁻¹ kpc ⁻¹ . For multiple systems $\tilde{\omega}$, e and i have been computed for the first component only using available values of u, v, and w. Field blank if no datum.
46- 49	---	F4.4	Box orbit parameter, e, the eccentricity of the orbit; blank if no data.
50- 53	---	F4.4	Box orbit parameter, i, the box angle; blank if no data.
54	---	I1 (A1)	Luminosity class code (MK or Mt. Wilson): 1 - I or c; 2 - II or c; 3 - III or g; 4 - IV or sg; 5 - V or d; 6 - VI or sd; 7 - D or wd. Blank for no data. Note: Intermediate luminosity classes have no codes; e.g., 4 is given for class IV-V.
55- 57	---	A3	Spectral type (MK where available, mostly from Jaschek et al. 1964; preference given to Wilson 1953 for remaining types). Peculiarity indicators (n, e, etc.) given in upper case.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
58	---	I1 (A1)	Spectral-type code: 1 - MK; 2 - combined MK type for multiple system; 4 - combined non-MK; blank - non-MK.
59- 62	mag	F4.2	Magnitude V , m_V or m_{pg} . V preferred, sometimes weighted means. Photoelectric data are given to 0^m01 precision, M_V and M_{pg} to 0^m1 precision (byte 62 blank). Data always present except for Sun (first record).
63	---	I1 (A1)	Magnitude code: 1 - combined light value for multiple system (symbol J in published catalogue); 2 - photographic magnitude (P in published catalogue); 3 - variable magnitude (V in published catalogue); otherwise blank.
64- 67	mag	F4.2	B-V color. Field blank if no data; sign always in byte 64 if value present.
68- 71	mag	F4.2	U-B color. Field blank if no data; sign always in byte 68 if value present.
72- 75	mag	F4.2	Absolute visual magnitude M computed from apparent magnitude and parallax: $M = m + 5 + 5 \log \pi$, reported to 0^m01 if both probable error of $\pi < 10\%$ and V magnitude given to 0^m01 .
76- 77	hours	I2	α_{1900}
78- 80	min	F3.1	α_{1900}
81	---	A1	Sign of δ_{1900}
82- 83	°	I2	δ_{1900}
84- 85	'	I2	δ_{1900}

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
86- 87	hours	I2	α 1950 taken, in order of preference, from the <i>Smithsonian Astrophysical Observatory Star Catalog</i> (SAO 1966), the lists of Giclas et al. (1959-1969) and the <i>General Catalogue</i> (GC, Boss 1937). Positions precessed from those given in parallax references in other cases.
88- 89	min	I2	α 1950
90- 91	sec	I2	α 1950
92	---	A1	Sign of δ 1950
93- 94	.	I2	δ 1950
95- 97	'	F3.1	δ 1950
98-102	---	A4, A1	Number in <i>General Catalogue of Trigonometric Parallaxes</i> (Jenkins 1952, 1963). For GCTP numbers form XXXX.X, the decimal point lies between bytes 101 and 102; i.e., the numbers can be read with format F5.1, but the field is blank when there is no value given.
103-108	---	I6 (A6)	<i>Henry Draper</i> (HD) catalogue number. Blank for no data.
109-110	---	I2 (A2)	DM zone. Signs are present in byte 109 only when $ DMZ < 10^\circ$; in other cases, the sign should be taken from the declination (byte 81 or byte 92). The HD convention of DM assignment is followed: BD north of -23° , CD $-23^\circ > \delta$ zone $> -52^\circ$, CPD south of -52° .
111-115	---	I5 (A5)	DM number. DM field is entirely blank for no data.
116-120	---	I5 (A5)	Number in the GCRV (Wilson 1953). Blank if not present.

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 2 is sufficient to enable a user to read the machine version of the catalogue. Information for the entire catalog is given in the table, but parameters which are 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, and coding (EBCDIC, ASCII, BCD, etc.) are not included. This information should always be supplied if secondary copies of the machine-readable catalogue are transmitted to other users or installations.

Table 2. Tape Characteristics. *Catalogue of Stars within twenty-five parsecs of the Sun.*

NUMBER OF FILES	1
LOGICAL RECORD LENGTH (BYTES)	135
RECORD FORMAT	FB*
TOTAL NUMBER OF LOGICAL RECORDS	2150

*Fixed length blocks (last block may be short)

SECTION 4 - REMARKS, MODIFICATIONS AND REFERENCES

A magnetic tape version of the *Catalogue of Stars within twenty-five parsecs of the Sun* was received from the Centre de Données Stellaires, Strasbourg (CDS catalogue number 5004). As received the logical record length was 160 bytes and the file had been recorded in O26 character code. The file was converted to O29 code (& converted to + signs, etc.) and reformatted to eliminate all unnecessary blank characters, thus resulting in the current 135-byte logical record length. The remarks coding (bytes 134-135) originally included seven codes (2-8), as defined in Table 1; however, one star (9785) in the published catalogue (Table Ia) contains the note "PL NEB", which had not been assigned a remarks code. The code 9 has been assigned to the planetary nebula category and entered into byte 134 of the record for star 9785.

REFERENCES

- Boss, B. 1937, *General Catalogue of 33342 Stars*, Publ. Carnegie Inst., Washington, No. 469.
- Gliese W. 1957, *Mitt. Astron. Rechen-Inst., Ser. A*, No. 8.
- Jaschek, C., Conde, H. and de Sierra, A. C. 1964, *Catalogue of Stellar Spectra Classified in the Morgan-Keenan System*, Publ. La Plata Obs., Ser. Astron. Vol. 28, No. 2.
- Jenkins, L. F. 1952, *General Catalogue of Trigonometric Stellar Parallaxes* (New Haven: Yale University Observatory)
- Jenkins, L. F. 1963, *Supplement to the General Catalogue of Trigonometric Stellar Parallaxes* (New Haven: Yale University Observatory)
- Luyten, W. J. 1957, *Catalogue of 9687 Stars in the Southern Hemisphere with Proper Motions Exceeding 0".2 Annually* (Minneapolis: The Lund Press).
- Luyten, W. J. 1961, *Catalogue of 7127 Stars in the Northern Hemisphere with Proper Motions Exceeding 0".2 Annually* (Minneapolis: The Lund Press).
- Luyten, W. J. 1962, *First Supplement to the LTT Catalogue* (Minneapolis: Univ. Minnesota Observatory).
- Porter, J. G., Yowell, E. I. and Smith, E. 1915, *Publ. Cincinnati Obs.*, No. 18.
- Porter, J. G., Yowell, E. I. and Smith, E. 1930, *Publ. Cincinnati Obs.*, No. 20.
- Smithsonian Astrophysical Observatory. 1966, *Star Catalog*, Smithsonian Publ. 4652.
- Vysotsky, A. N. 1943, *Astrophys. J.* 97, 381.
- Vysotsky, A. N. 1956, *Astrophys. J.* 61, 201.
- Vysotsky, A. N. 1958, *Astrophys. J.* 63, 211.
- Vysotsky, A. N. and Bateer, A. M. 1952, *Astrophys J.* 116, 117.
- Vysotsky, A. M., Janssen, E. M., Miller, W. J. and Walther, M. E. 1946, *Astrophys. J.* 104, 234.
- Wilson, R. E. 1953, *General Catalogue of Stellar Radial Velocities*, Publ. Carnegie Inst., Washington, No. 601.

REFERENCES (continued)

Woolley, R. v.d. R. and Candy, M. P. 1968, *Mon. Not. R. Astron. Soc.* 141, 277.

Woolley, R., Epps, E. A., Penston, M. J. and Pocock, S. B. 1970, *Catalogue of Stars within twenty-five parsecs of the Sun*, *Roy. Obs. Ann.*, No. 5.

SECTION 5 - SAMPLE LISTING

The sample listing presented on the following pages contains logical data records exactly as they are recorded on the tape. The beginning of each record and the bytes within the 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 of the record (bytes 116-135) is printed in the following row.

