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DOCUMENTATION FOR THE MACHINE-READABLE VERSION

OF THE

GENERAL CATALOGUE OF 33342 STARS FOR THE EPOCH 1950

(Boss 1937)



DECEMBER 1983

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(BOSS 1937)

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ABSTRACT

A revised and corrected version of the machine-readable catalog has been prepared. Cross identifications of the GC stars to the HD and DM catalogs have been replaced by data from the new *SAO-HD-GC-DM Cross Index* (Roman, Warren and Schofield 1983), including component identifications for multiple SAO entries having identical DM numbers in the SAO Catalog, supplemental *Bonner Durchmusterung* stars (lower case letter designations) and codes for multiple HD stars. Additional individual corrections have been incorporated based upon errors found during analyses of other catalogs.

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SECTION 1 - INTRODUCTION AND SOURCE REFERENCE

The machine-readable version of the *General Catalogue of 33342 Stars for the Epoch 1950* (GC, Boss 1937) includes *Henry Draper Catalogue* (HD, Cannon and Pickering 1918-1924) and *Durchmusterung* (DM) numbers for all stars, although the published version gives only one or the other. The Astronomical Data Center has recently produced a new version of the cross index among *Smithsonian Astrophysical Observatory Catalog* (SAO, Smithsonian Astrophysical Observatory Staff 1966), HD, GC and DM catalog numbers. Since most of the errors of which we are aware in the current version of the GC tape occurred in either the DM or HD number, these entries have been completely replaced on the basis of the revised cross index. The cross index also identifies components of multiple stars, provides small letter designations for supplemental stars in the *Bonner Durchmusterung*, and includes a code to indicate that the spectrum is likely to be blended and, if so, whether the entry is for the brighter or fainter component. A total of 1186 changes was made to 1091 data records.

This document describes the machine-readable version of the corrected and edited GC as it is currently being distributed by the Astronomical Data Center. It is intended to enable users to read and process the data without the common problems and guesswork often associated with such a task. This document should be distributed with any machine-readable version of the catalog.

SOURCE REFERENCE

Boss, B. 1937, *General Catalogue of 33342 Stars for the Epoch 1950*, Carnegie Institution of Washington Pub. 468 (Washington: Carnegie Institution of Washington).

SECTION 2 - TAPE CONTENTS

A byte-by-byte description of the contents of the machine-readable Boss *General Catalogue* is given in Table 1. A suggested FORTRAN format specification for reading each datum is given and can be modified depending upon usage. Caution is advised when substituting format specifications, since some data fields contain character data and others are blank when data are absent. Alternate format specifications are given in parentheses. Additional information and remarks are given in Table 2.

Table 1. Tape Contents. *General Catalogue of 33342 Stars for the Epoch 1950.*

Byte(s)	Units	Suggested Format	Description
1- 5	---	I5	GC number.
6- 10	mag	F5.2	Magnitude ("VAR" given as 9999; see note 1).
11- 13	---	3I1	Spectral type numerical code (see note 2).
14- 19	---	6A1	Spectral type decoded. All byte 12 values translated to the first numerical choice (see note 2).
20- 21	hours	I2	Right ascension, α , equinox 1950.0.
22- 23	min	I2	α
24- 29	sec	F6.3	α
30- 33	years	F4.1	Epoch of α observations (see note 5).
34- 40	"	F7.4	Annual variation in α (see note 4).
41- 46	"	F6.4	Secular variation in α (see note 4).
47- 52	"	F6.3	Third term in α (see note 4).
53- 58	sec	F6.4	Proper motion in α .
59	---	A1	Sign of declination, δ , equinox 1950.0.
60- 61	°	I2	δ
62- 63	'	I2	δ
64- 68	"	F5.2	δ

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
69- 72	years	F4.1	The mean epoch of δ observations (note 5).
73- 79	"	F7.3	Annual variation in δ .
80- 84	"	F5.3	Secular variation δ .
85- 88	"	F4.2	Third term in δ .
89- 94	"	F6.3	Proper motion in δ . The values are based on the Newcomb values of precession.
95	---	A1	Remarks (see note 3).
96- 97	---	2A1	Durchmusterung (DM) identification (BD = <i>Bonner Durchmusterung</i> ; CD = <i>Cordoba Durchmusterung</i> ; CP = <i>Cape Photographic Durchmusterung</i>). All DM fields are blank if no DM identification is present.
98	---	A1	Sign of DM zone
99-100	---	I2 (A2)	DM Zone
101-105	---	I5 (A5)	DM Number
106-107	---	A2	Component identification if two or more SAO stars have the same DM number. For southern stars, components may appear in different catalogs.
108	---	A1	Lower case letters for BD supplemental stars (Warren and Kress 1980).
109-115	°	F7.3	Galactic longitude l^{II} .
116-122	°	F7.3	Galactic latitude b^{II} .
123-128	---	I6	<i>Henry Draper Catalogue</i> number (blank for stars with no HD numbers).
129	---	I1	HD code. (0 for single stars or brighter components of doubles with $\Delta m_v > 0^m3$. For doubles with $\Delta m_v < 0^m3$, 1 designates the brighter component, not necessarily A, and 2 the fainter one. 9 indicates that two successive HD numbers (HD and HD+1) refer to the same SAO star.

Notes to Table 1

1. Magnitude. All magnitudes are given to two decimal places in the magnetic tape version. Magnitudes which are underlined in the published version of the catalog are not indicated on the magnetic tape version.

2. Codes for Spectral Types

<u>Byte 12</u>	<u>Byte 13</u>	<u>Byte 14</u>
R = 0	0 or a = 0	c = 0
<u>Oe5</u> = 1	1 or b = 1	v = 1
O = 2	2 or c = 2	e = 2
B = 3	3 or d = 3	* = 3
A = 4	4 or e = 4	n = 4
F = 5	5 = 5	Note = 5
G = 6	6 = 6	*p = 6
K = 7	7 = 7	ep = 7
M = 8	8 = 8	cp = 8
N = 9	9 = 9	cv = 9
S = x		p = -

Except for Mb, Mc, Nb, where b=3 and c=8.

A value of 5 in byte 14 has been used to identify the following exceptions:

GC # 89 Type Md is punched as 8y5
GC # 7178 Type N? is punched as 9y5
GC #14298 Type Pe is punched as yy5

where x = '-' and y = '+'

3. Remarks

0 = No remark given
1 = Spectrum given
2 = Aitken or Innes number given
3 = Aitken or Innes number given with each component having a separate GC number
4 = Other information given
5 = 1+2
6 = 1+3
7 = 1+4
8 = 2+4
9 = 3+4
- = 1+2+4
+ = 1+3+4

Notes to Table 1 (continued)

4. Annual Variation

The annual variations in right ascension and declination are given to six significant figures of which a minus sign is one. If more than one digit and a minus sign precede the decimal, the corresponding number of digits is dropped at the end of the number.

e.g.: 3.0588, -1.1487, 38.9070, but -26.814, 103.657

The third term is given to five significant figures including minus sign.

5. Epoch

The first two digits of the year are omitted. Thus 98.8 should be read 1898.8 and 05.3 should be read 1905.3.

SECTION 3 - TAPE CHARACTERISTICS

The information in Table 2 is sufficient for a user to describe the indigenous characteristics of the magnetic tape of the present version of the GC to a computer. Not included is 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.). These parameters should always be transmitted if secondary copies of the catalog are supplied to other users or installations.

Table 2. Tape Characteristics. *General Catalogue of 33342 Stars for the Epoch 1950.*

NUMBER OF FILES	1
LOGICAL RECORD LENGTH (BYTES)	129
RECORD FORMAT	FB*
TOTAL NUMBER OF LOGICAL RECORDS	33342

* Fixed block length (last block may be short)

SECTION 4 - REMARKS, MODIFICATIONS AND REFERENCES

The 1983 edition of the tape version of the GC is based on a machine-readable version obtained from the U.S. Naval Observatory and modified by Theresa A. Nagy in 1980. The primary changes to this version are reformatting, to eliminate most of the blank fields, and the substitution of HD numbers, duplicity codes for the HD numbers, and DM numbers from the *SAO-HD-GC-DM Cross Index*. The latter includes both the DM designations and letters to indicate binary components and supplemental stars in the BD. DM designations have also been added for the few stars not included in the SAO. HD numbers in the cross index were compared with those originally in the GC, discrepancies were checked and both catalogs corrected appropriately.

Table 3 lists additional errors which have been corrected. A table of all changes made to produce this version of the catalog is included on the microfiche inside the back cover of this document.

The following quantities were not included (and have not been added) in the machine-readable version of the catalog, but are in the published version:

1. The centennial increment of the proper motion in right ascension.
2. Probable error of:
 - a. Right ascension at epoch
 - b. Centennial proper motion
 - c. Right ascension for 1950.0
3. The centennial increment of the proper motion in declination.
4. Probable error of:
 - a. Declination at epoch
 - b. Centennial proper motion
 - c. Declination for 1950.0
5. Remarks. However, there is a numerical code in byte 95 that indicates the presence of a remark. This code also indicates the type of information contained in the remark if there is one (see Table 1).

The following quantities have been added to the machine-readable version of the catalog but are not contained in the published version:

- a. Galactic longitude (degrees)
- b. Galactic latitude (degrees)
- c. DM numbers

Table 3. Changes Since the Last Edition (other than those from Cross Index)

GC	Item	For	Read	Source of Correction
15001	δ"	28.27	18.27	SAO error analysis
19049	Spectrum	F2	G2	CSI*
19051	Spectrum	blank	F2	SAO error analysis
26879	δ"	34.38	24.38	SAO error analysis
30799	δ"	52.70	49.88	error noted in N30 [†]
30799	Epoch	04.4	31.5	error noted in N30

* Ochsenbein, Bischoff and Egret 1981

† Morgan 1952

REFERENCES

Boss, B. 1937, *General Catalogue of 33342 Stars for the Epoch 1950*, Carnegie Institution of Washington Pub. 468 (Washington: Carnegie Institution of Washington).

Cannon, A. J. and Pickering, E. C. 1918-1924, *The Henry Draper Catalogue*, Ann. Astron. Obs. Harvard College 91-99.

Morgan, H. R. 1952, *Catalog of 5,268 Standard Stars for the Equinox and Epoch 1950.0 Based on the Normal System N30*, Astron. Papers Amer. Ephemeris 13, Part III.

Nagy, T. A. 1980, Documentation for the Machine-Readable Version of the *General Catalogue of 33342 Stars for the Epoch 1950[.0]*, Systems and Applied Sciences Corporation R-SAW-4/80-08.

Ochsenbein, F., Bischoff, M. and Egret, D. 1981, *Astron. Astrophys. Suppl.* 43, 259.

Smithsonian Astrophysical Observatory Staff 1966, *Star Catalog. Positions and Proper Motions of 258,997 Stars for the Epoch and Equinox of 1950.0*, Pub. of the Smithsonian Institution of Washington, D. C. No. 4652 (Washington: Smithsonian Institution).

Warren, W. H. Jr. and Kress, K. 1980, *Astron. Data Center Bull.* 1, 19.

SECTION 5 - SAMPLE LISTING

The sample listing given on the following pages presents logical data records exactly as they are recorded on the tape. Groups of records from the beginning and end of the file are illustrated. The beginning of each record and bytes within the record are indicated by the column heading index across the top of each page (digits read vertically).

L I S T I N G C R E B E L O H O S F A O A P A P E F I L E

T A P E F I L E N A M E : C C V E R S I O N M O C 1 9 8 3

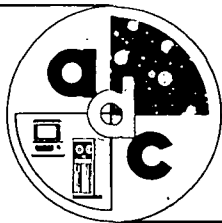
R E C O R D S 3 3 3 2 7 T O 3 3 3 4 2

T A P E F I L E 5

R E C O R D L E N G T H 1 2 9 B Y T E S

I N P U T V O L T S E R W H # 0 3 4

RECORD	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA	ADDRESS	DATA
U L U M N	11111111	22222222	33333333	44444444	55555555	66666666	77777777	88888888
E A D I N G	1.34567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
END EX	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890	1234567890
RECORD	33327	51538	UB	235915.60292.9	3.0742	.0001	.010	.0007-
				31820.8490.5	20.038-	.007-	.17-	.0.0044BD-0J
								5749
								94.592
RECORD	33328	70370	KU	235921.64907.5	3.0725-	.0211	.018-	.0036-373027.9805.2
								20.000-.007-
								.17-.0.0424CD-3715469
								345.810
RECORD	33329	78252	F2	235922.32199.8	3.0839-	.0252	.022	.0074-415331.9895.9
								20.008-.007-
								.17-.0.0348CD-4216567
								334.771
RECORD	33330	46083	MJ	235923.70802.8	3.0768-	.0015	.010	.0032-
								61730.8001.6
								20.009-.007-
								.17-.0.0337BD-06
								0345
RECORD	33331	73039	BY	235924.37102.4	3.0632	.0690	.08J-	.0022
								66
								935.2102.6
								20.048-.007-
								.17
								.0.0050BD*65
								118.009
RECORD	33332	70470	KU	235926.00098.8	3.0850-	.0218	.019	.0091-381047.9797.8
								20.003-.007-
								.17-.0.0400CD-3815713
								343.794
RECORD	33333	68543	AJ	235928.67895.0	3.0751	.0002	.010	.0016-
								3
								24.06892.8
								20.038-.007-
								.17-.0.0050BD-0J
								5750
RECORD	33334	58560	GU	235933.18088.6	3.1344	.0175	.013	.0025
								2649
								2.7889.2
								19.055-.000-
								.17-.0.088-BD*26
								4734
RECORD	33335	70358	FU	235942.14198.0	3.0926-	.0055	.010	.0189-134110.7794.0
								20.086-.008-
								.17
								.0.0430BD-14
								660J
RECORD	33336	70480	HU	235943.46001.2	3.0685	.0543	.054-	.0019
								602529.9193.8
								20.033-.008-
								.17-.0.0100BD*59
								2816
RECORD	33337	49935	BS	235946.26001.8	3.0748-	.0154	.015	.0008-
								295957.0799.9
								20.047-.000-
								.17
								.0.004-CD-3013790
								16.549
RECORD	33338	83258	FB	235947.77904.9	3.0668	.0074	.010-	.0062
								103031.3104.3
								19.935-.008-
								.17-.0.1070BD*09
								5313
RECORD	33339	73740	AU	235947.81304.0	3.0697	.0376	.033-	.0022
								501317.2798.0
								20.044-.000-
								.17
								.0.0020BD*49
								4314
RECORD	33340	63445	AS	235950.37497.0	3.0730	.0064	.010-	.0001
								84042.5492.2
								20.043-.000-
								.17
								.0.0017BD*08
								5164
RECORD	33341	57650	FU	235950.17905.2	3.0604	.0062	.010-	.0008
								81227.7204.8
								19.997-.000-
								.17-.0.0467BD*07
								5121
RECORD	33342	71940	AS	235956.40499.0	3.0702	.0134	.011-	.0031
								155841.5797.5
								20.057-.000-
								.17
								.0.0150BD*15
								4925
								106.218



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