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DIGITAL COMPUTER APPLICATIONS OF BOSS GENERAL CATALOGUE OF STARS (1950.0)

BY

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Digital Computer Applications
of
Boss General Catalogue Of Stars
(1950.0)

Advanced Projects Branch
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2

TMX-50,150

SUMMARY

18292

A television camera with an $8.3^{\circ} \times 8.3^{\circ}$ field of view in the OAO (orbiting astronomical observatory) is planned. To help determine the star field that might be presented to a ground observer of the TV screen, the Boss General Catalogue of 33,342 stars has been written on magnetic tape. This report provides a description of the catalogue and its uses when star listings are sorted and printed in easily locatable form. Some applications are discussed.

1. INTRODUCTION

Basic to the operation of an inertially oriented space vehicle such as the OAO, is a knowledge of the positions of many stars. These positions are generally available in the form of large catalogues. The size of these catalogues makes the digital computer a valuable tool in their processing. Some applications are discussed below.

2. GENERAL

The orbit of the OAO is planned to be circular at an altitude of around 500 statute miles above the earth's surface. As such, stars in any portion of the celestial sphere may be referred to for particular applications, such as for use as guide stars for star tracker tracking. Furthermore, only stars of visual (sixth or brighter) magnitude are of concern. The Boss General Catalogue (also referred to as the Albany General Catalogue) for the epoch 1950.0, is well suited to this need. It is used by the U.S. Naval Observatory as a basis for its annual publication of positions of the brighter stars in the American Ephemeris and Nautical Almanac.

At the request of the National Aeronautics and Space Administration, the contents of the Boss Catalogue were made available by the Naval Observatory in the form of 33,342 punched cards. Each card contains 80 characters, as illustrated by Figure 1.

Figure 2 is a plot of the total number of stars as a function of magnitude. The magnitudes range from -1.6 to 6.7.

ALBANY GENERAL CATALOGUE

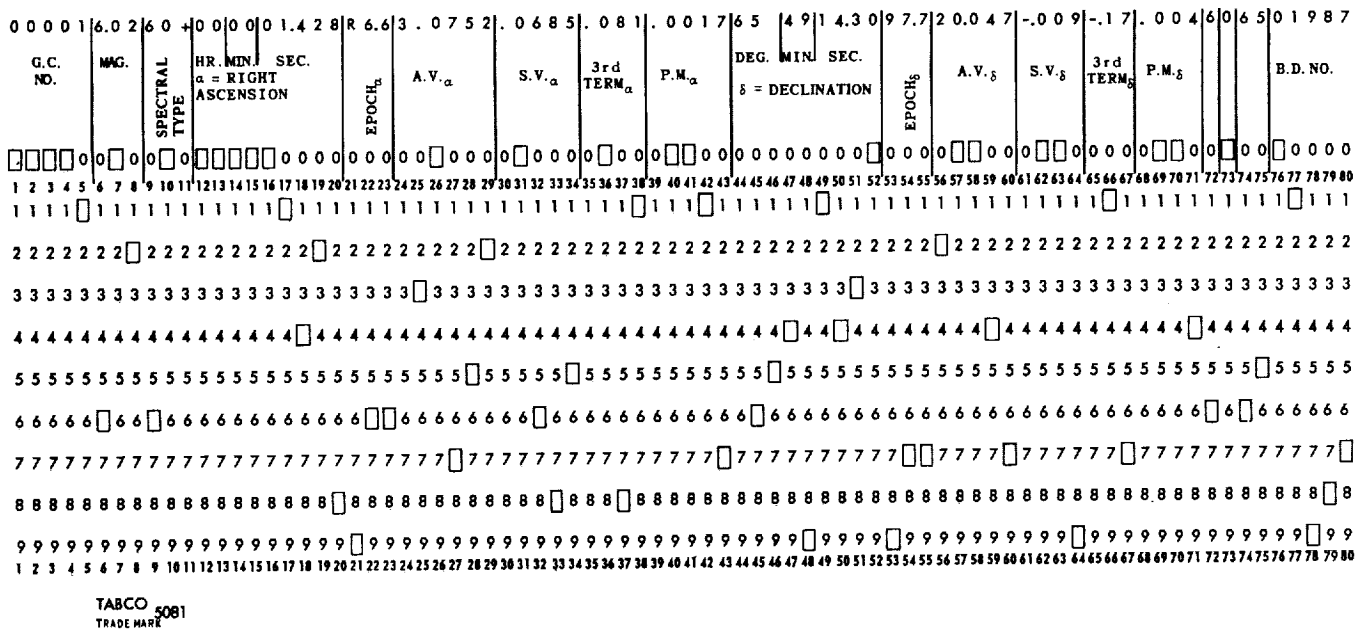
The following information which appears in the Albany General (Boss) Catalogue is NOT punched on the cards:

(1) Draper No.

(2) Variation in proper motion, r. a. and decl.

(3) Probable errors, r. a. and decl.

The cards contain all other printed numerical information, a code to indicate when the volume includes remarks, and the handwritten B. D. No.



5

Figure 1

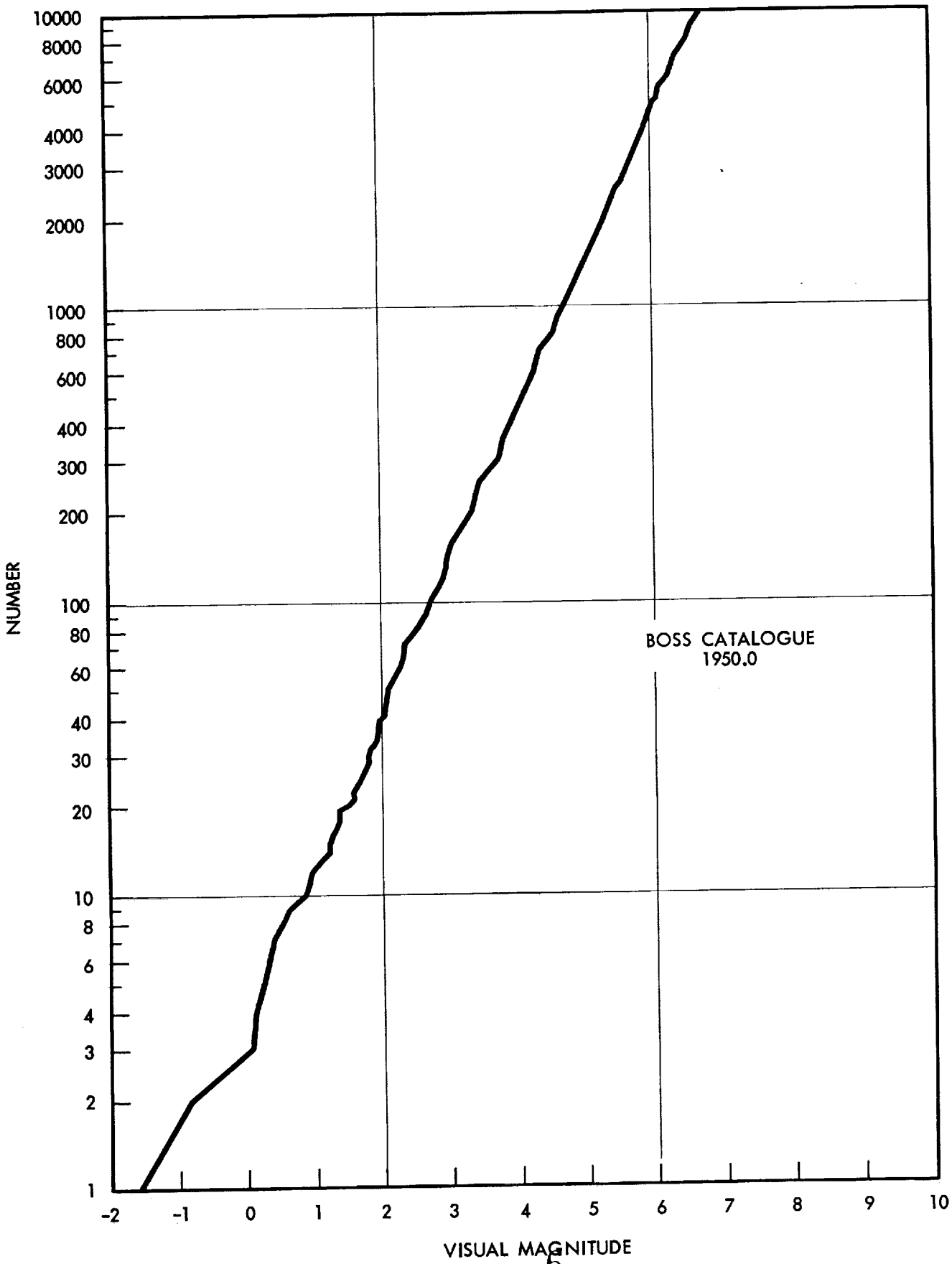

10000
8000
6000
4000
3000
2000
1000
800
600
400
300
200
100
80
60
40
30
20
10
8
6
4
3
2
1
NUMBER
BOSS CATALOGUE
1950.0
-2
-1
0
1
2
3
4
5
6
7
8
9
10
VISUAL MAGNITUDE

Figure 2

3. BOSS GENERAL CARD CATALOGUE

The Naval Observatory provided Table 1, which is the key to the interpretation of the punched cards. For example, looking at the card pictured in Figure 1, it can be seen that this card is for General Catalogue star Number 1 (GC 1) as indicated in columns 1 to 5; that this star has visual magnitude 6.02, as shown in columns 6-8; etc.

4. TAPES

The entire catalogue has been transferred by card-to-tape conversion to two high density binary-coded decimal tapes. As a guide to the specific content of the tapes, the first few records of each tape are listed in Tables 2 and 3 respectively. It will be noted that GC 1 and GC 17001 are the respective first stars written on each tape. Each column of these tables contains the same information shown in the corresponding column of the card as illustrated in Figure 1.

5. EXCERPTS

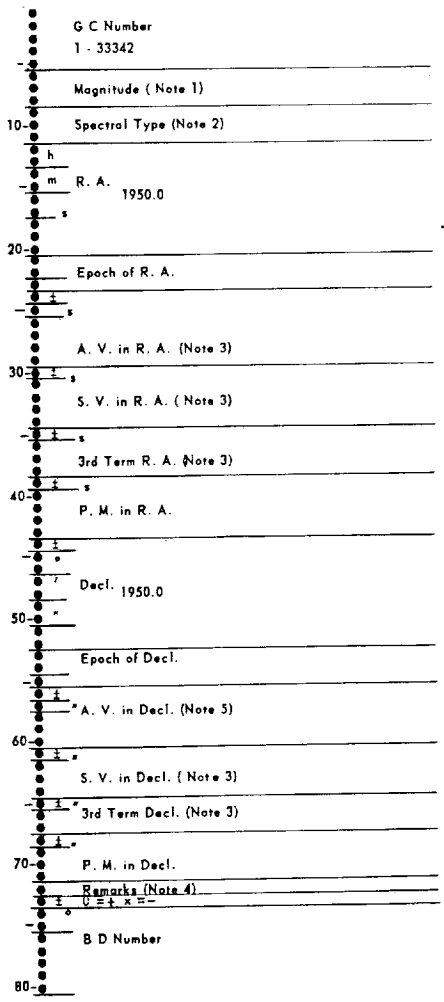
The digital computer lends itself readily to the use of the star catalogues. Table 4 is the listing of the first page of a 477 page extraction arranged in columns with appropriate headings for easier use. It contains the original Naval Observatory coded magnitude and spectral type.

Table 5, consisting of ~~three~~ 2 pages, is the complete listing of the 150 catalogued stars of visual magnitude 3.0 or brighter. The magnitude and spectral type have been converted in the computer to the decoded form from the alphanumeric designations in the original listing as indicated in Table 1.

TABLE 1

Albany General Catalogue

Signs Blank = +
x = -



Note 1. Magnitude generally to 2 decimals
Exceptions: 10th mag = y in col 6
- 0 mag = x in col 6
- 1 mag = x & 1 in col 6
Mag not given = y in col 6,7,8
hundredth not given = y in col 8
Variable = x in col 8 and max. brightness from "Remarks" in Catalogue.

Note 2. Code for Spectral Type

Col 9	Col 10	Col 11
R = 0	0 or a = 0	c = 0
Oe 5 = 1	1 or b = 1	v = 1
0 = 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 = x
Blank = y	Blank = y	Blank = y

Except for Mb, Mc, Nb, and where b = 3, c = 8
A "5" in col 11 has been used to identify the following exceptions
Star 89, type Md punched 8 y 5
7178, type N? punched 9 y 5
14298, type pe punched y y 5

Note 3. When the number of figures to the left of the decimal point exceeds the space on the card (including sign col) the decimal point is shifted to the right on the card, and the number of x punches to the right of the sign col shows the number of columns that the decimal point has been shifted, e.g.

	Col 61	62	63	64
	±	x		
Punched	1	2	3	4

Note 4. Col 72 Remarks
0 = No remark given
1 = Spectrum given
2 = Aitken or Innes number given
3 = Aitken or Innes number given, each component having separate G C numbers
4 = Other information given

5 = 1 + 2
6 = 1 + 3
7 = 1 + 4
8 = 2 + 4
9 = 3 + 4
x = 1 + 2 + 4
y = 1 + 3 + 4

Note 5. Col 56 is sometimes blank instead of zero.

Col 21 x over punched when data has been proof read against Catalogue at the Naval Observatory.

TABLE 2

160260+000001428R66	30752	0685	081	0017	654914309772 0047	-009-17	004606501987
274742+000003749944	30749	0685	081.	0008	654918729542 0033	-009-17	-010306501988
372040+000005130Q51	30690	2344	891	-0083	824141778712 0043	-009-17	000008200748
476952+000009647R59	31002	1743	484	0216	800013719222 0066	-009-17	023807900799
586570+000009982082	30652	-0455	047	-0065	-575443550712 0018	-009-17	-0250-5808126
673240+000011828048	30741	0232	017	0000	353213900322 0038	-009-17	-004203505159
782+70+000020603R82	30782	0893	133	-0010	710449308912 0038	-009-17	-005007001342
862758+000023561943	30801	-0092	012	0076	-201932329172 0117	-009-17	0750-2006703
978870+000027977057	30683	-0518	057	0000	-605813240552 0040	-009-17	-0030-6106792
1083+50+000030042930	30714	0061	010	-0023	075934268551 9988	-010-17	-054000705123
1167242+000033957R85	30798	0293	022	0035	422810619352 0041	-010-17	-002004104925
1265465+000034014966	30744	-0117	013	0026	-242525289362 0044	-010-17	0020-2417960
1380550+000036992998	30750	-0120	013	0034	-245201639722 0043	-010-17	0004-2516766
1466670+000039183992	30790	0112	011	0045	171628759791 9993	-010-17	-050001605034
1596050+000043018023	30706	-0418	041	0034	-554101549742 0051	-010-17	0080-5610210
1675242+000048354067	30810	0995	164	-0076	725346300172 0057	-010-17	015007201136
1762631+000050748J09	30818	0618	068	-0013	632146290972 0104	-010-17	061106202356
1876060+000051770028	30799	0131	012	0048	202321820021 9893	-010-17	-150001905197
1975632-000052609098	30832	0453	040	0026	551620821152 0035	-010-17	-008105403103
2069050+000052771949	30771	-0203	018	0076	-363146249142 0061	-010-17	0184-3616150
2172145+000056642013	30735	0083	010	-0009	120442159732 0035	-010-17	-007001105090
2267642+000107478-07	30790	0354	028	-0016	480931589512 0038	-011-17	-004004704373
2346240+000110743-42	30726	-0076	011	0015	-173651470362 0038	-011-17	-0044-1806417
2466280+000116190R90	30938	0713	086	0035	662602369642 0038	-011-17	-004006501993
2588765+000120590065	30820	-0463	047	0213	-580629429951 9979	-011-16	-0630-5808128
2672650+000121918J30	30823	0095	011	0071	140603091322 0032	-011-17	-011001305201
2772150+000126249960	30762	0082	010	0011	115202948792 0024	-011-17	-018801105092
2878545+000130922999	30420	-1762	538	0226	-804022749712 0056	-012-16	0140-8101050
2974470+000135518969	30825	0372	030	-0017	493531679322 0046	-012-17	003004904322
3060040+000138288060	30906	0588	061	-0007	620034049092 0052	-012-17	010706102586
3170638+000138446990	30670	-0155	015	-0006	-302448239512 0054	-012-17	0120-3019809
3278075+000140217-89	30942	0665	076	0002	645229600782 0093	-012-17	051006401893
3358070+000146062074	30726	-0070	011	0024	-164823830511 9988	-012-17	-0541-1706868
3464842+000146893976	30692	-0149	014	0018	-293249689682 0059	-012-17	0170-2918950
3575740+000149614985	30690	-0150	014	0018	-293935699692 0055	-012-17	0134-3019813
3651672+000156521984	30704	-0037	010	-0007	-104715999482 0037	-012-17	-0057-1106194
3774355+000159872985	30378	-0945	164	0030	-731031959421 9988	-012-16	-0544-7302346
3860342+000202055021	30839	0289	021	0000	414851189762 0021	-012-17	-021304104933
3958470+000205082R77	31174	0740	089	0157	665316480252 0076	-013-17	035106601679
4073070+000205653024	30583	-0357	033	0006	-515142659762 0072	-013-16	0300-5212249
4171570+000205727005	30799	0222	016	-0016	335912899202 0003	-013-17	-039803304827
4256439+000210217081	30415	-0865	140	0065	-714255050592 0017	-013-16	-0241-7202800
4379070+000211663064	30541	-0436	044	0006	-570712019732 0078	-013-16	0360-5710424
4462360+000216094973	31433	0234	016	0610	342248839402 0142	-013-17	100103304828
4565133+000219484901	30965	0510	048	0013	581513278692 0029	-013-17	-013-05702855
4677+55+000220469J13	30990	0657	074	-0029	643011610942 0064	-013-16	0220306302103
4765272+000221280004	30880	0169	013	0079	262214339552 0032	-013-17	-009202505068
4865765+000226508J19	30857	0176	014	0050	272347551222 0036	-013-17	-005002604744
4985775+000227892021	35372	-0272	020	4750	-373611500151 7709	-003-25	K3327-3715492
5076155+000228778994	30796	-0200	018	0169	-361739659372 0109	-013-16	0680-3616162

TABLE 3

1700156038+122542474097	31909	0289	019-0025-38455253072J9939	060	19-0224-3807753	
1700267640+122545410969	30572	0009	010-0038 04402287955J9947	058	16-0312002002631	
1700362270+122549367979	32686	0532	045-0284-56074153918K0149	062	20-2332-5505084	
1700470535+122606372049	33522	0680	066-0019-61354050002J9926	064	23-0142-6103213	
1700564843+122608406916	29959	-0107	013-0015 26301188822J9931	058	16-0190002002138	
1700687443+122611282050	32581	0457	035-0095-51540781050J9939	063	20-0270-5106713	
1700766943+122614814017	29968	-0105	013-0014 26103307954J9938	058	16-0263002002353	
1700871242+122615115-58	28844	-0275	027-0075 49544174059J9910	056	14 0020050001925	
1700978240+122616763033	32526	0433	032-0052-50221823009J9940	063	20-0290-4907123	
1701078260+122619441029	32072	0333	023-0087-42572651029J9903	062	19 0084-4207675	
1701185+65+122620953071	30617	0026	009-0078 01253334075K0035	060	16-1240001002701	
1701253840-122624978-77	29958	-0105	013-0019 26112151057J9935	059	15-0259002002354	
1701372472+122628882010	31833	0252	016 0039-34332748964J9941	062	18-0324-3408188	
1701476+80+122635679046	30776	0045	009-0015-02091125021J9914	060	17-0051-0102674	
1701594972+122639340021	31820	0221	014 0172-30333333996K0217	062	18-3104-3009942	
1701678952+122646358093	33316	0605	054 0010-58483380060J9926	065	21-0200-5804324	
1701775958+122647370024	29536	-0157	016-0106 34584543114J9886	058	15 0200003002343	
1701890+45+122654000019	30164	-0068	011-0012 19352899038J9919	060	16-0140002002727	
1701970952+122655593955	30499	0008	010-0094 05065065903J9859	060	16 0460000002633	
1702054955+122657006973	30000	-0094	012-0022 24230623941J9912	060	16-0087002002464	
1702173742+122657633078	33332	0604	054 0015-58445063038J9942	066	21-0380-5804326	
1702283952+122707672060	32029	0314	021-0082-41073443031J9905	064	19-0030-4007324	
1702357680+122707841111	33071	0544	045-0024-56145596074J9896	065	21 0060-5505097	
1702470265+122708362878	26996	-0498	069 0013 57101213973J9910	055	11-0070006700746	
1702587+65+122709612084	30593	0050	010-0224-03025726080K0485	061	17-5831-0203528	
1702657242+122712589-69	30138	-0076	012 0018 21102166056J9940	060	16-0387002002424	
1702792++++122715401924	31048	0122	011-0146-16143485883K0049	062	17-1483-1503481	
1702871970+122715455930	30277	-0043	010-0033 14553470920J9897	061	16 0040001002469	
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1703059083+122716732089	32136	0319	021 0002-41273421035J9933	064	19-0320-4107219	
1703169543+122717550976	35786	1298	201-0046-72423318961J9938	070	27-0370-7201256	
1703268680+122719000073	32149	0332	022-0048-42391220045J9912	064	19-0120-4207688	
1703397742+122719897077	33026	0534	044-0045-55474024030J9915	066	21-0160-5505098	
1703478070+122724482006	31684	0229	015-0036-31470064990J9927	064	18-0270-3109727	
1703571452+122727656018	30817	0064	010-0076-05444686016J9972	062	17-0740-0503513	
1703664160+122729919948	30933	0104	010-0172-13065908922J9947	062	17-048--1203647	
1703768250+122730702027	33548	0658	062-0038-50424949995J9911	067	22-0134-6004070	
1703854445+122737668-57	28010	-0366	041-0082 58404998024J9812	058	13 0854005001444	
1703958775+122740128-60	31413	0168	012-0016-23251336054J9908	064	18-0111-2203383	
1704062558+122741327811	28374	-0284	029-0312 51484049878J9881	058	13 0167005201631	
1704169870+122741407025	35934	1315	205-0005-72434548966J9919	072	27-0220-7201258	
1704262270+122744269891	28083	-0374	042 0040 59023801936J9925	058	13-0290005001446	
1704376258+122746200014	29288	-0186	018-0113 39312839087K0020	060	15-1240004002542	
1704477270+122749853995	30014	-0081	012-0057 22132853004J9945	061	16-0500002202478	
1704574740+122750204024	36842	1592	288 0014-75072942985J9933	074	28-0380-7400922	
1704652580+122755844099	26277	-0526	082-0116 69284074874J9949	055	11-0557070000700	
1704779+52+122801304953	30480	-0017	010 0035 09593318870J9952	063	16-059-0100243 2	
1704873870+122801372007	30602	0015	010-0022 03470311948J9915	063	16-022-0040262 2	
1704992765+122815975079	33079	0536	044-0072-55472690034J9907	068	21-0170-5505105	
1705070670+122816154000	30794	0054	010-0048-03470555089J9892	064	16-0011-0303309	

TABLE 4

MAG.	SP.	RIGHT ASCENSION H M S	DECLINATION D M S	CAT. NO.	MAG.	SP.	RIGHT ASCENSION H M S	DECLINATION D M S	CAT. NO.
006	603	14 36 11.2	-60 37 49	19728	014	40+	18 35 14.7	38 44 9	25466
021	60+	5 12 59.5	45 56 57	6427	024	70+	14 13 22.8	19 26 30	19242
034	38-	5 12 8.0	-8 15 28	6410	048	55+	7 36 41.1	5 21 16	10277
060	35+	1 35 51.2	-57 29 25	1979	086	31+	14 0 16.5	-60 7 58	18971
089	45+	19 48 20.6	8 44 5	27470	092	80+	5 52 27.8	7 23 57	7451
106	75+	4 33 2.9	16 24 37	5605	121	32+	13 22 33.3	-10 54 3	18144
121	70+	7 42 15.6	28 8 55	10438	122	803	16 26 20.2	-26 19 22	22157
129	43+	22 54 53.5	-29 53 15	32000	133	42-	20 39 43.5	45 6 2	28846
134	38+	10 5 42.7	12 12 44	13926	150	31+	12 44 47.1	-59 24 56	17374
158	31+	12 23 48.0	-62 49 20	16952	158	40+	7 31 24.7	31 59 58	10120
161	83+	12 28 22.7	-56 50 0	17052	163	31+	6 56 39.6	-28 54 10	9188
168	40-	12 51 50.1	56 13 51	17518	170	32+	5 22 26.9	6 18 21	6668
171	32+	17 30 12.6	-37 4 9	23769	174	703	8 21 29.4	-59 20 53	11463
175	30+	5 33 40.5	-1 13 56	6960	178	38+	5 23 7.8	28 34 1	6681
180	40+	9 12 39.7	-69 30 39	12764	188	72+	16 43 21.0	-68 56 20	22558
190	55+	3 20 44.4	49 41 5	4041	191	33+	13 45 34.3	49 33 43	18643
193	40+	6 34 49.4	16 26 37	8633	195	40+	18 20 51.2	-34 24 37	25100
195	70+	11 0 39.6	62 1 16	15185	198	58-	7 6 21.5	-26 18 45	9443
199	31+	6 20 29.8	-17 55 47	8223	201	40+	8 43 19.4	-54 31 28	12069
204	50+	17 33 43.4	-42 58 5	23857	205	30+	5 38 14.1	-1 58 2	7089
207	40-	5 55 51.6	44 56 40	7543	209	31+	12 23 48.7	-62 49 22	16953
20-	0++	15 57 24.5	26 3 38	21491	20-	852	2 16 49.0	-3 12 13	2796
212	33+	20 21 42.2	-56 53 50	28374	212	58+	1 48 48.5	89 1 43	2243
214	33+	18 52 9.9	-26 21 38	25941	214	45+	17 32 36.7	12 35 41	23837
215	40-	0 5 47.8	28 48 52	127	216	35+	22 5 5.4	-47 12 14	30942
216	72+	9 25 7.8	-8 26 27	13044	21-	70+	0 37 39.3	56 15 48	792
220	30+	5 45 23.0	-9 41 9	7264	222	20-	8 7 59.5	-47 11 18	11105
222	75+	9 6 9.3	-43 13 47	12623	223	42+	11 46 30.6	14 51 5	16189
223	72+	2 4 20.9	23 13 36	2538	224	70+	0 41 4.8	-18 15 38	865
224	75+	14 50 49.7	74 21 35	20029	224	83+	22 39 41.4	-47 8 48	31685
225	30-	0 53 40.3	60 26 47	1117	225	50+	9 15 45.1	-59 3 54	12831
226	70+	14 3 43.9	-36 7 29	19033	227	23+	8 1 49.6	-39 51 40	10947
228	70+	2 0 49.2	42 5 26	2477	22-	38+	3 4 54.4	40 45 52	3733
231	40+	15 32 34.2	26 52 54	20947	232	58-	20 20 25.9	40 5 44	28338
236	70+	16 46 55.2	-34 12 15	22640	237	80+	1 6 55.5	35 21 21	1400

TABLE 5

MAG.	SP.	RIGHT ASCENSION H	M	S	DECLINATION D	M	S	CAT. NO.	MAG.	SP.	RIGHT ASCENSION H	M	S	DECLINATION D	M	S	CAT. NO.
2.15	A0P	0	5	47.8	28	48	52.	127	2.42	F5	0	6	29.8	58	52	27.	147
2.87	B2	0	10	39.4	14	54	20.	238	2.90	G0	0	23	9.2	-77	32	9.	503
2.44	K0	0	23	49.0	-42	34	39.	519	2.10	K0	0	37	39.3	55	15	49.	792
2.24	K0	0	41	4.8	-18	15	39.	865	2.25	B0P	0	53	40.3	60	26	47.	1117
2.37	M0	1	6	55.5	35	21	22.	1400	2.80	A5	1	22	31.5	59	58	34.	1715
0.60	B5	1	35	51.2	-57	29	25.	1979	2.12	F8	1	48	48.5	89	1	44.	2243
2.72	A5	1	51	52.3	20	33	52.	2309	2.28	K0	2	0	49.2	42	5	27.	2477
2.23	K2	2	4	20.9	23	13	37.	2538	2.00	M5E	2	16	49.0	-3	12	13.	2796
2.82	M0	2	59	39.8	3	53	41.	3643	2.20	B8	3	4	54.4	40	45	52.	3733
1.90	F5	3	20	44.4	49	41	6.	4041	2.95	B5P	3	44	30.4	23	57	8.	4541
2.91	B1	3	50	59.0	31	44	12.	4688	2.96	B1	3	54	29.5	39	52	2.	4759
1.06	K5	4	33	2.9	16	24	37.	5605	2.90	K2	4	53	44.0	33	5	20.	6029
2.92	A3	5	5	23.4	-5	8	58.	6274	0.34	B8P	5	12	8.0	-3	15	29.	6410
0.21	G0	5	12	59.5	45	56	58.	6427	1.70	B2	5	22	26.9	6	18	22.	6668
1.78	B8	5	23	7.8	28	34	2.	6681	2.96	G0	5	26	6.1	-20	47	53.	6762
2.48	B0	5	29	27.0	-0	20	4.	6847	2.69	F0	5	30	31.4	-17	51	24.	6875
2.87	OE5	5	32	59.2	-5	56	28.	6937	1.75	B0	5	33	40.5	-1	13	56.	6960
3.00	B3P	5	34	39.3	21	6	50.	6985	2.75	B5P	5	37	50.2	-34	5	59.	7078
2.05	B0	5	38	14.1	-1	58	3.	7089	2.20	B0	5	45	23.0	-9	41	9.	7264
0.92	M0	5	52	27.8	7	23	58.	7451	2.07	A0P	5	55	51.6	44	56	41.	7543
2.71	A0P	5	56	18.7	37	12	40.	7557	1.99	B1	6	20	29.8	-17	55	47.	8223
-0.86	F0	6	22	50.5	-52	40	4.	8302	1.93	A0	6	34	49.4	16	26	37.	8633
-1.58	A0	6	42	56.7	-16	38	46.	8833	2.83	K0	6	48	41.7	-50	33	16.	8969
1.63	B1	6	56	39.6	-28	54	10.	9188	1.98	F8P	7	6	21.5	-26	18	45.	9443
2.74	K5	7	15	22.6	-37	0	24.	9706	2.43	B5P	7	22	7.0	-29	12	16.	9886
1.58	A0	7	31	24.7	31	59	58.	10120	0.48	F5	7	35	41.1	5	21	16.	10277
1.21	K0	7	42	15.6	28	8	55.	10438	2.27	O3	8	1	49.6	-39	51	41.	10947
2.88	F5	8	5	24.8	-24	9	32.	11034	2.22	O0P	8	7	59.5	-47	11	18.	11105
1.74	K0*	8	21	29.4	-59	20	53.	11463	2.01	A0	8	43	19.4	-54	31	29.	12069
2.22	K5	9	6	9.3	-43	13	48.	12623	1.80	A0	9	12	39.7	-69	30	40.	12764
2.25	F0	9	15	45.1	-59	3	54.	12831	2.63	B3	9	20	33.9	-54	47	48.	12938
2.16	K2	9	25	7.8	-8	26	27.	13044	1.34	B8	10	5	42.7	12	12	44.	13926
2.61	K0	10	17	13.1	20	5	43.	14177	2.84	G5	10	44	36.8	-49	9	20.	14842
2.44	A0	10	58	50.3	56	39	3.	15145	1.95	K0	11	0	39.6	62	1	17.	15185
2.58	A3	11	11	27.1	20	47	52.	15438	2.23	A2	11	46	30.6	14	51	6.	16189

TABLE 5

MAG.	SP.	RIGHT ASCENSION H M S	DECLINATION D M S	CAT. NO.	MAG.	SP.	RIGHT ASCENSION H M S	DECLINATION D M S	CAT. NO.
2.54	A0	11 51 12.6	53 58 22.	15268	2.88	B3P	12 5 45.4	-50 26 39.	16584
2.78	B8	12 13 13.9	-17 15 52.	15740	1.58	B1	12 23 48.0	-62 49 20.	16952
2.09	B1	12 23 48.7	-62 49 22.	16953	1.61	M3	12 28 22.7	-55 50 1.	17052
2.84	G5	12 31 45.4	-23 7 14.	17133	2.94	B3	12 34 10.8	-68 51 37.	17179
2.38	A0	12 38 44.9	-48 41 8.	17252	2.91	F0	12 39 7.5	-1 10 32.	17270
1.50	B1	12 44 47.1	-59 24 57.	17374	1.68	A0P	12 51 50.1	55 13 51.	17518
2.90	A0P	12 53 41.5	38 35 17.	17557	2.95	K0	12 59 41.2	11 13 39.	17687
2.91	A2	13 17 46.7	-36 26 57.	18039	2.40	A2P	13 21 55.0	55 11 9.	18133
1.21	B2	13 22 33.3	-10 54 4.	18144	2.56	B1	13 35 42.3	-53 12 47.	18458
1.91	B3	13 45 34.3	49 33 44.	18643	2.80	G0	13 52 18.2	18 38 51.	18805
0.86	B1	14 0 16.5	-60 7 58.	18971	2.26	K0	14 3 43.9	-35 7 30.	19033
0.24	K0	14 13 22.8	19 26 31.	19242	3.00	F0	14 30 3.9	38 31 34.	19607
2.65	B3*	14 32 19.3	-41 56 22.	19656	0.06	G0*	14 35 11.2	-60 37 49.	19728
2.89	B2	14 38 35.5	-47 10 30.	19774	2.70	K0	14 42 48.2	27 17 2.	19856
2.90	A3	14 48 6.5	-15 50 7.	19975	2.24	K5	14 50 49.7	74 21 35.	20029
2.81	B2P	14 55 14.8	-42 56 2.	20128	2.74	B8	15 14 18.7	-9 11 59.	20539
2.95	B3	15 31 48.0	-41 0 1.	20926	2.31	A0	15 32 34.2	26 52 54.	20947
2.75	K0	15 41 48.2	6 34 53.	21158	3.00	B2	15 55 49.3	-25 58 13.	21447
2.54	B0	15 57 22.3	-22 28 52.	21489	2.00	R	15 57 24.5	25 3 39.	21491
2.90	B1	16 2 31.5	-19 40 13.	21609	2.89	G5	16 23 18.5	61 37 37.	22101
1.22	M0*	16 26 20.2	-26 19 22.	22157	2.81	K0	16 28 4.1	21 35 50.	22193
2.91	B0	16 32 45.9	-28 6 51.	22303	2.70	B0	16 34 24.1	-10 28 3.	22332
3.00	G0	16 39 24.0	31 41 32.	22464	1.88	K2	16 43 21.0	-68 55 20.	22558
2.36	K0	16 46 55.2	-34 12 16.	22640	2.63	A2	17 7 30.5	-15 39 53.	23158
2.80	K2	17 21 8.2	-55 29 6.	23515	2.80	B3	17 27 21.7	-37 15 29.	23693
2.97	B3P	17 27 58.3	-49 50 20.	23708	2.99	G0	17 29 13.1	52 20 15.	23741
1.71	B2	17 30 12.6	-37 4 10.	23769	2.14	A5	17 32 36.7	12 35 42.	23837
2.04	F0	17 33 43.4	-42 58 5.	23857	2.51	B2	17 39 1.5	-39 0 23.	23988
2.94	K0	17 41 0.0	4 35 11.	24048	2.42	K5	17 55 25.6	51 29 38.	24432
2.84	K0	18 17 47.6	-29 51 5.	25024	1.95	A0	18 20 51.2	-34 24 37.	25100
2.94	K0	18 24 53.0	-25 27 4.	25180	0.14	A0	18 35 14.7	38 44 9.	25465
2.14	B3	18 52 9.9	-26 21 39.	25941	2.71	A2	18 59 25.9	-29 57 13.	26161
2.97	A0	19 43 24.6	45 0 28.	27347	2.80	K2	19 43 52.9	10 29 24.	27354
0.89	A5	19 48 20.6	8 44 5.	27470	2.32	F8P	20 20 25.9	40 5 44.	28338
2.12	B3	20 21 42.2	-56 53 50.	28374	1.33	A2P	20 39 43.5	45 5 3.	28846
2.64	K0	20 44 11.2	33 46 55.	28959	2.60	A5	21 17 23.2	62 22 24.	29348
2.54	K0	21 41 43.7	9 38 41.	30431	2.98	A5	21 44 17.0	-16 21 19.	30491
2.16	B5	22 5 5.4	-47 12 15.	30942	2.91	K2	22 15 5.6	-50 30 35.	31183
2.24	M3	22 39 41.4	-47 8 48.	31685	1.29	A3	22 54 53.5	-29 53 16.	32000
2.61	M0	23 1 20.8	27 48 40.	32135	2.57	A0	23 2 15.1	14 56 9.	32149

Table 6 is the listing of the same third magnitude or brighter stars. It tabulates celestial coordinates, and annular and secular precession variations in these coordinates. These have been extracted from the two basic tapes and converted to the decoded form by means of Table 1.

6. SORTS

By means of a sorting program, individual star listings for the entire Boss Catalogue have been rearranged. Tape and listing for the following sorts have been made:

(a) Spectral type, visual magnitude, right ascension (Table 7 is the first page of the listing)

(b) Visual magnitude, spectral type, right ascension (Table 4 is the first page of the listing)

These sorted tapes are now in use but are available for duplication on request.

7. CELESTIAL SPHERE COVERAGE

A TV camera with an $8.3^{\circ} \times 8.3^{\circ}$ field of view is planned for the OAO stabilization and control sub-system. Its axis will be parallel to the optical axis of the satellite.

The following computer programs using the Boss Catalogue as input are either completed or nearing completion.

(a) Selection of stars in the field of view of the TV camera for a prescribed orientation and roll.

(b) Computer simulation of the TV camera view.

TABLE 6

GC	MAGNITUDE	α H	α M	α S	A.V.α (SEC)	S.V.α (SEC)	δ °	δ '	δ ''	A.V.δ ''	S.V.δ ''
127	2.15	0	5	47.844	3.1021	0.0189	28	48	52.03	19.875	-0.020
147	2.42	0	6	29.760	3.2039	0.0558	58	52	26.67	19.856	-0.022
238	2.87	0	10	39.443	3.0897	0.0105	14	54	20.38	20.012	-0.030
503	2.90	0	23	9.241	3.1500	-0.1378	-77	32	8.53	20.266	-0.054
519	2.44	0	23	49.002	2.9640	-0.0222	-42	34	38.85	19.540	-0.054
792	2.10	0	37	39.311	3.4065	0.0575	56	15	48.55	19.744	-0.090
865	2.24	0	41	4.799	3.0108	-0.0053	-18	15	38.61	19.762	-0.087
1117	2.25	0	53	40.350	3.6236	0.0742	60	26	47.33	19.494	-0.131
1400	2.37	1	6	55.463	3.3607	0.0294	35	21	21.59	19.081	-0.150
1715	2.80	1	22	31.504	3.9276	0.0810	59	58	34.31	18.710	-0.212
1979	0.60	1	35	51.249	2.2331	-0.0124	-57	29	25.11	18.281	-0.141
2309	2.72	1	51	52.349	3.3153	0.0185	20	33	51.90	17.592	-0.235
2477	2.28	2	0	49.183	3.6846	0.0398	42	5	26.82	17.271	-0.278
2538	2.23	2	4	20.933	3.3832	0.0206	23	13	36.95	17.018	-0.263
2796	2.00	2	16	49.049	3.0307	0.0064	-3	12	13.34	16.344	-0.255
3643	2.82	2	59	39.751	3.1368	0.0098	3	53	41.18	14.119	-0.329
3733	2.20	3	4	54.379	3.9055	0.0354	40	45	52.28	13.865	-0.417
4041	1.90	3	20	44.450	4.2855	0.0480	49	41	5.98	12.809	-0.486
4541	2.96	3	44	30.444	3.5678	0.0174	23	57	7.51	11.126	-0.437
4688	2.91	3	50	58.989	3.7729	0.0218	31	44	12.47	10.685	-0.470
4759	2.96	3	54	29.468	4.0280	0.0282	39	52	2.47	10.408	-0.506
5605	1.06	4	33	2.929	3.4436	0.0100	16	24	37.45	7.233	-0.470
6029	2.90	4	53	44.020	3.9084	0.0136	33	5	19.91	5.696	-0.549
6274	2.92	5	5	23.405	2.9501	0.0042	-5	8	58.47	4.652	-0.419
6410	0.34	5	12	8.023	2.8837	0.0038	-8	15	28.57	4.156	-0.413
6427	0.21	5	12	59.493	4.4335	0.0146	45	56	57.94	3.656	-0.636
6668	1.70	5	22	26.866	3.2185	0.0045	6	18	21.66	3.256	-0.464
6681	1.78	5	23	7.751	3.7936	0.0072	28	34	1.76	3.036	-0.548
6762	2.96	5	26	6.136	2.5713	0.0027	-20	47	52.89	2.863	-0.372
6847	2.48	5	29	27.049	3.0656	0.0036	-0	20	4.46	2.663	-0.444
6875	2.69	5	30	31.428	2.6466	0.0028	-17	51	24.00	2.576	-0.384
6937	2.87	5	32	59.160	2.9353	0.0031	-5	56	28.18	2.361	-0.426
6960	1.75	5	33	40.506	3.0447	0.0033	-1	13	56.23	2.297	-0.411
6985	3.00	5	34	39.299	3.5865	0.0047	21	6	49.95	2.190	-0.520
7078	2.75	5	37	50.236	2.1728	0.0026	-34	5	58.71	1.909	-0.316
7089	2.05	5	38	14.078	3.0278	0.0030	-1	58	2.98	1.899	-0.440
7264	2.20	5	45	23.050	2.8460	0.0025	-9	41	9.38	1.275	-0.414
7451	0.92	5	52	27.839	3.2485	0.0024	7	23	57.76	0.666	-0.474
7543	2.07	5	55	51.614	4.4018	0.0025	44	56	40.65	0.358	-0.641
7557	2.71	5	56	18.658	4.0921	0.0021	37	12	40.04	0.239	-0.597
8223	1.99	6	20	29.828	2.6424	0.0015	-17	55	47.18	-1.791	-0.383
8302	-0.86	6	22	50.488	1.3320	0.0009	-52	40	3.70	-1.977	-0.193
8633	1.93	6	34	49.432	3.4664	-0.0020	16	26	37.23	-3.080	-0.499

TABLE 6

GC	MAGNITUDE	α H	α M	α S	A.V. α (SEC)	S.V. α (SEC)	δ °	δ ′	δ ″	A.V. δ ″	S.V. δ ″
8833	-1.58	6	42	56.741	2.6434	-0.0009	-16	38	45.93	-4.940	-0.371
8969	2.83	6	48	41.676	1.4883	-0.0006	-50	33	15.55	-4.301	-0.211
9188	1.63	6	56	39.616	2.3582	0.0012	-28	54	10.40	-4.908	-0.331
9443	1.98	7	6	21.466	2.4397	0.0011	-26	18	45.33	-5.720	-0.338
9706	2.74	7	15	22.599	2.1196	0.0011	-37	0	23.89	-6.469	-0.289
9886	2.43	7	22	7.006	2.3733	0.0011	-29	12	16.02	-7.025	-0.321
10120	1.58	7	31	24.655	3.8296	-0.0141	31	59	58.09	-7.894	-0.509
10277	0.48	7	36	41.134	3.1402	-0.0055	5	21	16.39	-9.239	-0.408
10438	1.21	7	42	15.561	3.6711	-0.0131	28	8	55.11	-8.700	-0.473
10947	2.27	8	1	49.577	2.1088	0.0013	-39	51	40.86	-10.147	-0.260
11034	2.88	8	5	24.842	2.5552	0.0010	-24	9	32.42	-10.382	-0.313
11105	2.22	8	7	59.465	1.8490	0.	-47	11	18.35	-10.616	-0.224
11463	1.74	8	21	29.386	1.2312	-0.0092	-59	20	53.16	-11.591	-0.141
12069	2.01	8	43	19.394	1.6566	-0.0020	-54	31	28.58	-13.188	-0.177
12623	2.22	9	6	9.322	2.2070	0.0046	-43	13	47.94	-14.541	-0.215
12764	1.80	9	12	39.654	0.6588	-0.0369	-69	30	39.95	-14.835	-0.055
12831	2.25	9	15	45.135	1.6063	-0.0023	-59	3	54.10	-15.113	-0.147
12938	2.63	9	20	33.868	1.8581	0.0028	-54	47	47.70	-15.384	-0.167
13044	2.16	9	25	7.817	2.9483	-0.0012	-8	26	27.43	-15.608	-0.262
13926	1.34	10	5	42.673	3.1947	-0.0098	12	12	44.39	-17.601	-0.214
14177	2.61	10	17	13.143	3.3070	-0.0147	20	5	42.72	-18.213	-0.203
14842	2.84	10	44	36.812	2.5805	0.0202	-49	9	20.01	-19.024	-0.114
15145	2.44	10	58	50.270	3.6187	-0.0610	56	39	3.03	-19.304	-0.131
15185	1.95	11	0	39.577	3.7003	-0.0782	62	1	16.78	-19.445	-0.129
15438	2.58	11	11	27.112	3.1904	-0.0128	20	47	52.44	-19.733	-0.090
16189	2.23	11	46	30.625	3.0600	-0.0068	14	51	5.55	-20.130	-0.017
16268	2.54	11	51	12.580	3.1543	-0.0419	53	58	21.81	-20.024	-0.009
16584	2.88	12	5	45.442	3.1100	0.0392	-50	26	38.70	-20.056	0.020
16740	2.78	12	13	13.859	3.0859	0.0120	-17	15	52.10	-19.994	0.034
16952	1.58	12	23	48.024	3.3383	0.0709	-62	49	20.06	-19.962	0.059
16953	2.09	12	23	48.695	3.3379	0.0709	-62	49	22.28	-19.956	0.059
17052	1.61	12	28	22.733	3.3288	0.0564	-56	50	0.63	-20.162	0.068
17133	2.84	12	31	45.361	3.1523	0.0169	-23	7	13.81	-19.910	0.072
17179	2.94	12	34	10.756	3.5808	0.1052	-68	51	37.06	-19.838	0.086
17262	2.38	12	38	44.898	3.3092	0.0426	-48	41	7.62	-19.772	0.089
17270	2.91	12	39	7.463	3.0401	0.0046	-1	10	31.94	-19.746	0.083
17374	1.50	12	44	47.055	3.5069	0.0677	-59	24	56.95	-19.687	0.108
17518	1.68	12	51	50.116	2.6388	-0.0263	56	13	51.02	-19.544	0.095
17557	2.90	12	53	41.496	2.8058	-0.0143	38	35	16.52	-19.447	0.102
17687	2.95	12	59	41.228	2.9863	-0.0003	11	13	38.69	-19.351	0.120
18039	2.91	13	17	46.712	3.3737	0.0308	-36	26	57.09	-18.992	0.170
18133	2.40	13	21	54.953	2.4155	-0.0166	55	11	9.24	-18.804	0.132
18144	1.21	13	22	33.311	3.1612	0.0118	-10	54	3.57	-18.792	0.170

TABLE 6

GC	MAGNITUDE	α H	α M	α S	A.V. α (SEC)	S.V. α	δ °	δ ′	δ ″	A.V. δ ″	S.V. δ ″
18458	2.56	13	36	42.344	3.8025	0.0602	-53	12	46.57	-18.308	0.235
18643	1.91	13	45	34.323	2.3638	-0.0095	49	33	43.90	-17.972	0.160
18805	2.80	13	52	18.188	2.8566	0.	18	38	51.08	-18.049	0.203
18971	0.86	14	0	16.532	4.2363	0.0861	-60	7	58.34	-17.374	0.317
19033	2.26	14	3	43.891	3.5314	0.0321	-36	7	29.63	-17.714	0.269
19242	0.24	14	13	22.776	2.7364	0.0027	19	26	30.60	-18.746	0.220
19607	3.00	14	30	3.860	2.4157	-0.0026	38	31	33.93	-15.751	0.220
19656	2.65	14	32	19.325	3.8105	0.0392	-41	56	21.74	-15.808	0.349
19728	0.06	14	36	11.213	4.0788	0.0740	-60	37	49.06	-14.860	0.347
19774	2.89	14	38	35.539	3.9910	0.0475	-47	10	29.56	-15.458	0.378
19856	2.70	14	42	48.157	2.6201	0.0002	27	17	2.41	-15.180	0.255
19975	2.90	14	48	6.458	3.3195	0.0156	-15	50	6.89	-14.962	0.330
20029	2.24	14	50	49.717	-0.1717	0.0967	74	21	35.34	-14.721	-0.011
20128	2.81	14	55	14.778	3.9297	0.0393	-42	56	2.33	-14.511	0.402
20539	2.74	15	14	18.742	3.2289	0.0118	-9	11	59.20	-13.286	0.358
20926	2.95	15	31	48.003	3.9989	0.0328	-41	0	1.17	-12.109	0.470
20947	2.31	15	32	34.166	2.5402	0.0025	26	52	54.31	-12.120	0.302
21158	2.75	15	41	48.162	2.9552	0.0061	6	34	53.47	-11.327	0.361
21447	3.00	15	55	49.305	3.6300	0.0176	-25	58	18.49	-10.368	0.458
21489	2.54	15	57	22.325	3.5481	0.0156	-22	28	51.81	-10.250	0.449
21491	2.00	15	57	24.516	2.5105	0.0031	26	3	38.67	-10.210	0.319
21609	2.90	16	2	31.514	3.4890	0.0139	-19	40	12.84	-9.855	0.447
22101	2.89	16	23	18.503	0.8131	0.0180	61	37	36.91	-8.150	0.111
22157	1.22	16	26	20.240	3.6792	0.0146	-26	19	22.40	-7.993	0.495
22193	2.81	16	28	4.109	2.5790	0.0036	21	35	49.85	-7.848	0.348
22303	2.91	16	32	45.906	3.7353	0.0146	-28	6	50.87	-7.474	0.508
22332	2.70	16	34	24.147	3.3038	0.0085	-10	28	3.07	-7.293	0.452
22464	3.00	16	39	24.007	2.2620	0.0027	31	41	31.63	-6.519	0.307
22558	1.88	16	43	21.046	6.3551	0.0847	-68	56	20.01	-6.616	0.878
22640	2.36	16	46	55.219	3.8863	0.0156	-34	12	15.62	-6.539	0.534
23158	2.63	17	7	30.460	3.4406	0.0068	-15	39	53.29	-4.461	0.491
23515	2.80	17	21	8.231	4.9871	0.0198	-55	29	6.47	-3.416	0.718
23693	2.80	17	27	21.675	4.0790	0.0085	-37	15	29.00	-2.883	0.590
23708	2.97	17	27	58.333	4.6378	0.0132	-49	50	19.95	-2.869	0.670
23741	2.99	17	29	18.051	1.3557	0.0049	52	20	15.27	-2.669	0.197
23769	1.71	17	30	12.630	4.0741	0.0080	-37	4	9.78	-2.629	0.590
23837	2.14	17	32	36.709	2.7849	0.0032	12	35	41.52	-2.621	0.405
23857	2.04	17	33	43.356	4.3107	0.0086	-42	58	5.42	-2.298	0.625
23988	2.51	17	39	1.538	4.1499	0.0064	-39	0	22.82	-1.860	0.603
24048	2.94	17	41	0.045	2.9636	0.0026	4	35	11.44	-1.506	0.431
24432	2.42	17	55	26.602	1.3930	0.0030	51	29	38.29	-0.422	0.203
25024	2.84	18	17	47.554	3.8406	-0.0014	-29	51	4.98	1.523	0.558
25100	1.95	18	20	51.167	3.9815	-0.0024	-34	24	37.18	1.692	0.577

TABLE 6

GC	MAGNITUDE	α H	α M	α S	A.V. α (SEC)	S.V. α	δ °	δ ′	δ ″	A.V. δ ″	S.V. δ ″
25180	2.94	18	24	53.050	3.7020	-0.0017	-25	27	4.47	1.984	0.535
25466	0.14	18	35	14.673	2.0312	0.0009	38	44	9.47	3.351	0.294
25941	2.14	18	52	9.918	3.7193	-0.0059	-26	21	38.62	4.465	0.526
26161	2.71	18	59	25.880	3.8160	-0.0082	-29	57	13.02	5.134	0.535
27347	2.97	19	43	24.629	1.8747	0.0001	45	0	27.82	8.780	0.243
27354	2.80	19	43	52.904	2.8518	-0.0011	10	29	24.15	8.776	0.370
27470	0.89	19	48	20.587	2.9266	-0.0019	8	44	5.39	9.509	0.381
28338	2.32	20	20	25.939	2.1531	0.0019	40	5	44.35	11.526	0.252
28374	2.12	20	21	42.248	4.7441	-0.0601	-56	53	50.11	11.530	0.559
28846	1.33	20	39	43.531	2.0449	0.0023	45	6	2.89	12.866	0.223
28959	2.64	20	44	11.188	2.4276	0.0029	33	46	54.89	13.486	0.264
29848	2.60	21	17	23.186	1.4312	-0.0070	62	22	23.63	15.256	0.132
30431	2.54	21	41	43.747	2.9461	-0.0003	9	38	41.45	16.507	0.237
30491	2.98	21	44	16.981	3.3102	-0.0124	-16	21	18.53	16.336	0.264
30942	2.16	22	5	5.441	3.7788	-0.0450	-47	12	14.75	17.425	0.258
31183	2.91	22	15	5.619	4.1080	-0.0829	-60	30	34.92	17.941	0.256
31685	2.24	22	39	41.416	3.5807	-0.0427	-47	8	48.28	18.816	0.172
32000	1.29	22	54	53.504	3.3137	-0.0207	-29	53	15.93	19.075	0.128
32135	2.61	23	1	20.773	2.9090	0.0123	27	48	40.22	19.528	0.100
32149	2.57	23	2	16.053	2.9884	0.0061	14	56	8.90	19.369	0.100

TABLE 7

MAG.	SP.	RIGHT ASCENSION H	M	S	DECLINATION D	M	S	CAT. NO.	MAG.	SP.	RIGHT ASCENSION H	M	S	DECLINATION D	M	S	CAT. NO.
704	00+	19	20	24.4	-10	48	1	26733	744	01+	20	10	17.1	38	12	14	28056
726	02+	17	56	6.0	-36	1	6	24463	673	03+	17	0	32.7	-37	46	28	22996
61-	08+	20	18	3.2	47	44	9	28290	760	08+	8	44	31.1	-29	32	38	12117
20-	0++	15	57	24.5	26	3	38	21491	65-	0++	10	54	10.6	-60	11	11	15044
69-	0++	22	34	32.7	58	9	59	31569	++-	0++	-0	33	6.9	-59	25	16	14799
287	1++	5	32	59.2	-5	56	28	6937	366	1++	5	32	22.9	9	54	8	6915
405	1++	3	55	42.9	35	38	56	4779	440	1++	7	16	38.0	-24	51	42	9736
468	1++	6	38	13.5	9	56	37	8720	491	1++	22	37	0.8	38	47	22	31626
506	1++	21	16	35.1	43	44	5	29823	517	1++	22	3	36.2	62	2	10	30907
524	1++	15	12	53.0	-60	46	25	20507	536	1++	5	32	49.0	-5	25	16	6931
550	1++	15	14	46.2	-60	18	51	20549	558	1++	12	52	59.4	-56	33	55	17540
559	1++	16	37	35.1	-48	40	1	22419	564	1++	21	37	24.4	57	15	44	30322
571	1++	17	31	26.3	-32	32	56	23804	586	1++	18	0	48.4	-24	21	48	24574
601	1++	20	54	48.8	44	43	54	29241	620	1++	7	6	58.2	-10	15	55	9459
637	1++	18	14	32.5	-18	28	58	24950	652	1++	14	11	20.1	-61	28	26	19194
662	1++	17	52	59.8	-32	28	6	24371	668	1++	17	38	41.1	-33	28	47	23980
670	1++	3	51	50.4	52	29	43	4708	671	1++	5	17	19.1	37	23	20	6532
673	1++	18	55	12.9	-20	29	30	26034	679	1++	18	2	6.5	-24	24	11	24618
691	1++	17	59	21.3	-23	1	54	24537	692	1++	8	12	12.0	-36	47	58	11213
709	1++	6	24	24.4	14	55	14	8346	712	1++	16	37	33.8	-48	40	3	22418
754	1++	10	46	40.2	-59	57	33	14890	839	1++	10	35	27.4	-58	21	47	14621
857	1++	10	43	9.2	-59	24	17	14801	550	1+-	17	12	2.1	-33	29	33	23263
672	20+	16	50	48.8	-41	44	21	22742	683	20+	20	18	46.7	43	41	42	28303
722	20+	17	15	49.0	-45	35	20	23368	222	20-	8	7	59.5	-47	11	18	11105
564	20-	13	4	52.1	-65	2	21	17788	655	21+	6	52	8.1	-23	51	51	9061
656	22+	16	48	48.4	-41	46	16	22684	775	22+	11	4	18.1	-65	14	21	15280
836	22+	9	53	14.4	-57	29	24	13663	648	22-	10	39	22.6	-59	24	55	14707
671	22-	10	41	56.8	-59	51	18	14764	227	23+	8	1	49.6	-39	51	40	10947
519	23+	22	9	48.6	59	10	2	31066	490	24+	7	16	35.4	-24	27	58	9734
537	24+	16	48	4.2	-41	8	47	22669	629	24+	19	50	7.9	18	32	31	27523
669	24+	20	1	37.3	35	52	58	27822	746	24+	16	42	57.0	-47	0	2	22545
808	24+	16	51	28.9	-44	54	33	22769	871	24+	16	42	51.3	-46	59	28	22542
603	24-	16	51	28.8	-41	4	15	22768	701	2+-	20	4	4.6	35	38	38	27892
175	30+	5	33	40.5	-1	13	56	6960	205	30+	5	38	14.1	-1	58	2	7089
220	30+	5	45	23.0	-9	41	9	7264	248	30+	5	29	27.0	-0	20	4	6847

(c) An arbitrary scheme for choosing a range of possible orientations to cover the celestial sphere. These orientations have been chosen at equally spaced intervals for each declination. The spacing is at intervals slightly less than the TV camera view field. Table 8 gives the values of the selected right ascensions for the individual declinations.

(d) Different mapping, counting, searching and sorting functions. For example, for the 15,000 stars of visual magnitude 6.8 or brighter figure 3 indicates the number of stars within the view of the camera for each of the target points described above. These vary from a minimum of 5 stars to a maximum of 69 stars. The averages per field of view for each declination vary from 16 to 26 stars, corresponding to $1^{\circ}.05$ and $-61^{\circ}.95$ declination respectively.

8. OTHER USES

The cards of the Boss Catalogue lend themselves to many applications. Used jointly with color index data and spectral type information, effective star brightnesses as seen by the OAO star-tracker photomultipliers can be determined. Analogue or digital plotters can be used to simulate star fields. Star catalogue numbers common to other catalogues make possible merging with these catalogues: The BD(Bonn Durchmusterung) and Yale Catalogue of Trigonometric Stellar Parallaxes are illustrations.

TABLE 8

RING	DECLINATION (DEGREES)	AIM POINT INTERVAL (RIGHT ASCENSION, DEGREES)
1	-89.95	24.48
2	-86.45	24.48
3	-82.95	24.48
4	-75.95	24.48
5	-68.95	17.90
6	-61.95	14.25
7	-54.95	11.99
8	-47.95	10.47
9	-40.95	9.42
10	-33.95	8.68
11	-26.95	8.16
12	-19.95	7.80
13	-12.95	7.59
14	-5.95	7.49
15	1.05	7.49
16	8.05	7.51
17	15.05	7.64
18	22.05	7.90
19	29.05	8.29
20	36.05	8.88
21	43.05	9.70
22	50.05	10.87
23	57.05	12.57

TABLE 8

RING	DECLINATION (DEGREES)	AIM POINT INTERVAL (RIGHT ASCENSION, DEGREES)
24	64.05	15.16
25	71.05	19.44
26	78.05	27.60
27	81.55	27.60
28	85.05	27.60
29	87.53	27.60

CELESTIAL SPHERE AIM POINT DATA

VISUAL

NUMBER OF STARS OF MAGNITUDE ≤ 6.8 WIHIN TV FIELD

(From Boss Catalogue, 1950.0)

$8.3° \times 8.3°$

Interval of Declination = 7.0°, Generally

$$\text{Interval of Right Ascension} = 2 \text{ Arctan}\left[\frac{\sin 4.15}{\cos(\text{declination} \pm 4.15°)}\right], \text{ Generally}$$

30 Declination (Degrees):

21 26 21 24 21 17 18 16 13 15 18 21 21 21 25 — 87.525

22 29 23 20 20 22 17 16 11 11 12 20 21 21 27 — 85,050

21 26 17 23 18 18 21 19 16 16 14 20 21 20 26 — 81.550

27 27 19 22 15 19 15 19 17 20 18 20 22 27 29 — 78.050

25 19 29 18 15 13 14 13 20 15 14 16 11 14 19 15 17 14 16 21 21 — 71.050

28 29 22 20 16 24 20 13 17 19 16 18 14 22 13 18 13 18 10 16 24 21 32 30 28 — 64.050

31 39 28 22 26 27 23 26 28 18 26 11 17 19 15 16 17 13 11 21 15 15 23 29 30 27 33 39 31 38

23 26 23 23 31 38 17 16 22 16 23 11 17 14 15 10 10 8 10 21 19 15 15 21 19 21 28 35 36 38 33 31 25 22 28

24 18 35 23 24 27 14 17 28 22 18 20 13 11 13 13 13 14 16 6 11 16 19 13 17 14 17 14 18 27 28 32 53 40 29 33 34 28 19

20 19 17 23 17 24 22 25 22 20 35 23 23 25 20 15 21 20 11 20 12 14 11 18 15 15 15 22 16 13 19 21 17 39 47 47 28 26 17 25 18 23 22

21 14 19 10 21 20 18 18 14 17 33 20 20 23 18 17 26 18 16 15 11 5 25 13 8 12 15 16 21 14 13 19 23 23 32 35 34 27 20 22 20 12 24 18 22

13 11 16 18 24 13 17 38 27 18 25 28 29 22 20 21 25 14 13 20 15 13 6 13 21 14 13 13 16 13 10 13 13 18 29 21 34 39 33 28 8 29 20 13 23 18 10

RING

12 15 10 13 12 12 13 14 23 50 19 34 36 32 25 25 26 21 18 15 10 7 15 14 7 16 16 18 13 16 11 27 14 21 22 20 20 30 31 30 30 25 13 18 16 16 8 11 15

14 14 15 10 7 16 10 14 22 22 17 20 25 38 25 21 15 26 20 15 14 12 6 16 9 13 10 17 13 10 11 9 13 13 14 14 16 22 20 24 29 20 17 16 13 12 15 10 16

15 12 9 14 8 15 15 15 16 13 13 30 52 22 41 23 19 19 19 12 13 11 15 18 15 8 10 8 13 11 14 18 17 14 19 19 22 30 24 21 24 19 19 25 12 9 12 13 15 12 8

17 9 12 18 12 14 21 17 14 22 25 48 32 32 26 21 17 26 14 16 9 11 10 14 10 11 13 13 18 16 11 11 18 15 5 14 15 23 21 14 17 17 18 15 21 17 18 16 16 11

18 15 13 16 15 13 13 11 14 18 28 19 32 33 26 39 17 24 20 15 17 19 14 13 14 18 13 12 18 14 16 19 16 13 14 12 13 19 14 18 19 16 16 16 16 12 14 21 14

19 21 5 14 16 15 15 9 20 13 17 21 32 38 39 36 28 18 15 17 15 14 16 13 18 13 14 11 11 15 20 33 15 19 14 28 38 24 14 14 20 23 14 12 14 13 19 20

16 17 7 10 14 18 19 13 14 11 14 20 22 59 47 21 19 18 21 20 12 12 12 15 10 15 22 18 16 30 28 18 25 29 30 21 19 15 22 16 11 15 20 14 17 16

10 11 7 10 17 13 16 19 22 14 17 34 37 34 50 45 25 18 21 17 18 25 18 11 11 20 15 22 20 21 26 33 42 24 22 15 18 18 13 16 14 14 8 14

7 14 14 17 14 12 14 20 12 20 30 27 51 49 46 33 26 22 19 16 20 27 25 30 34 30 22 45 40 33 37 17 17 20 17 16 14 16 6 15

12 15 13 16 12 14 17 9 18 24 31 44 69 43 30 25 18 26 23 30 31 35 35 24 23 28 26 30 17 14 16 10 16 22 15 14

6 12 13 14 8 8 14 23 30 36 39 54 44 51 25 27 36 31 26 16 29 20 21 14 20 17 11 17 13 17 6 13

16 16 9 19 21 19 18 27 27 32 40 65 52 53 43 32 32 27 23 23 14 15 15 13 22 17 17

5 10 11 20 10 8 16 18 21 25 33 43 33 24 25 26 10 21 19 16 14 9 10

16 13 15 17 13 19 22 27 26 31 18 16 13 18 22 15

22 13 17 16 14 16 26 24 24 22 20 18 19 23 24 21

20 17 16 16 15 15 16 21 25 24 24 24 19 20 18 18

20 18 22 18 21 22 20 18 20 20 18 22 18 21 18 20 — Declination = −89.95°

1 5 10 15 20 25 30 35 40 45 50

Aim Point (zone)

Figure 3

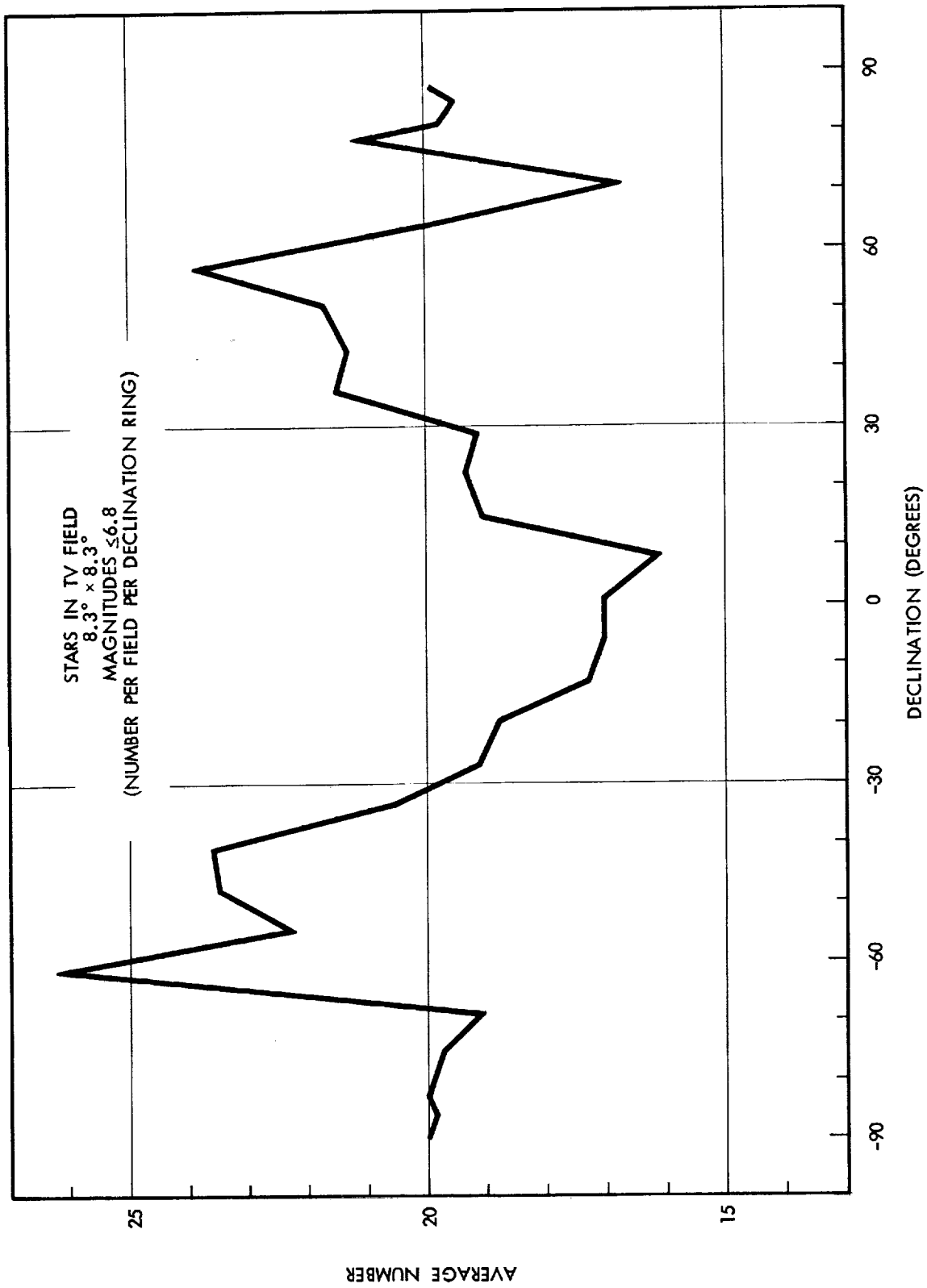
STARS IN TV FIELD
8.3° × 8.3°
MAGNITUDES ≤6.8
(NUMBER PER FIELD PER DECLINATION RING)
AVERAGE NUMBER
25
20
15
DECLINATION (DEGREES)
-90
-60
-30
0
30
60
90

Figure 21

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