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THE FOURTH *UHURU* CATALOG OF X-RAY SOURCES

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ABSTRACT

Positions and intensities are presented for 339 X-ray sources observed by the *Uhuru* (*SAS A*) X-ray satellite observatory. We find good agreement between the sources in this catalog and those in the 3U and 2A catalogs. Optical and radio counterparts are suggested based on positional coincidence. The major classes of identified objects include binary stellar systems, supernova remnants, Seyfert galaxies, clusters of galaxies, and possibly the new class of superclusters of galaxies.

Subject heading: X-rays: sources

I. INTRODUCTION

This paper presents a new and final catalog of the 339 X-ray sources observed with the *Uhuru* (*SAS A*) X-ray observatory. The catalog contains positional information in the form of 90% confidence level error boxes, 2–6 keV intensities, possible optical and radio counterparts, and alternate names for sources observed in earlier compilations.

This new catalog does not substantially change our view of the X-ray sky. As indicated by new identifications, Seyfert galaxies represent a substantial fraction of the extragalactic sources as suggested in the *Ariel 5* catalog (Cooke *et al.* 1978). Clusters of galaxies continue to be the single largest class of identified sources. We also suggest that X-ray emission may be associated with superclusters—groups of clusters of galaxies.

II. OBSERVATIONS

The observations employed in producing this catalog were obtained between 1970 December 12 and 1973 March 18. A time line is shown in Figure 1 which marks the main events in the history of the *Uhuru* satellite. This figure shows graphically the large increase in exposure between the third (Giacconi *et al.* 1974) and fourth *Uhuru* catalogs which primarily accounts for the greater number of observed X-ray sources. The third *Uhuru* catalog contained data from 125 days of observations while the present catalog contains data from 429 days. The ultimate positional precision of the observations in the two catalogs differs because of the degradation of the star sensors between 1972 July and December when the transmitter was operating improperly. The star aspect information which provided positional information to about 1′ during satellite night and which was used exclusively to analyze the observations for the third *Uhuru* catalog was no longer available after 1972 December. Therefore, we developed a new aspect system which provided less precise positional information but had the advantage of working equally well during satellite day and night. This resulted in a large increase in sensitivity for an individual day of observations, sometimes by as much as a factor of 10 over what had been available using the star aspect system. While we were

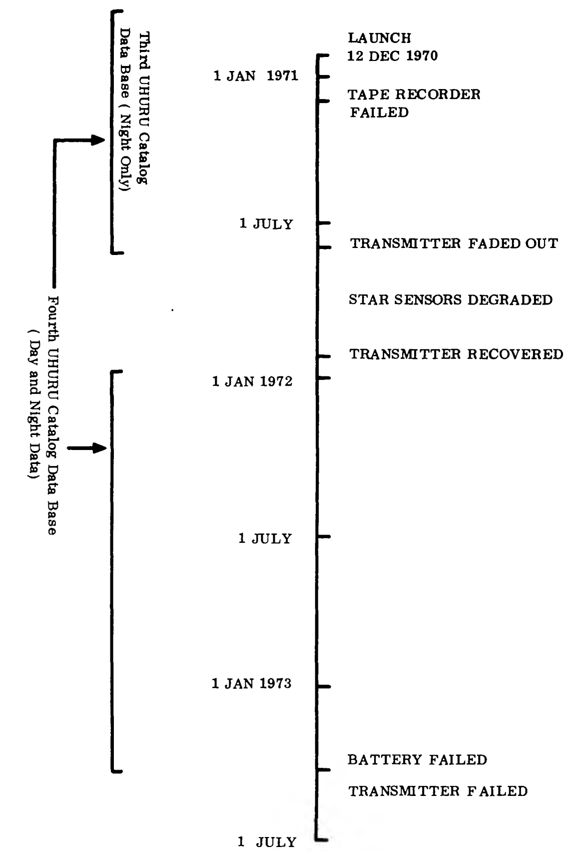

FIG. 1.—A time line shows the major events in the life of the *Uhuru* satellite. The time spans of the observations used in the Third and Fourth *Uhuru* Catalogs are indicated.

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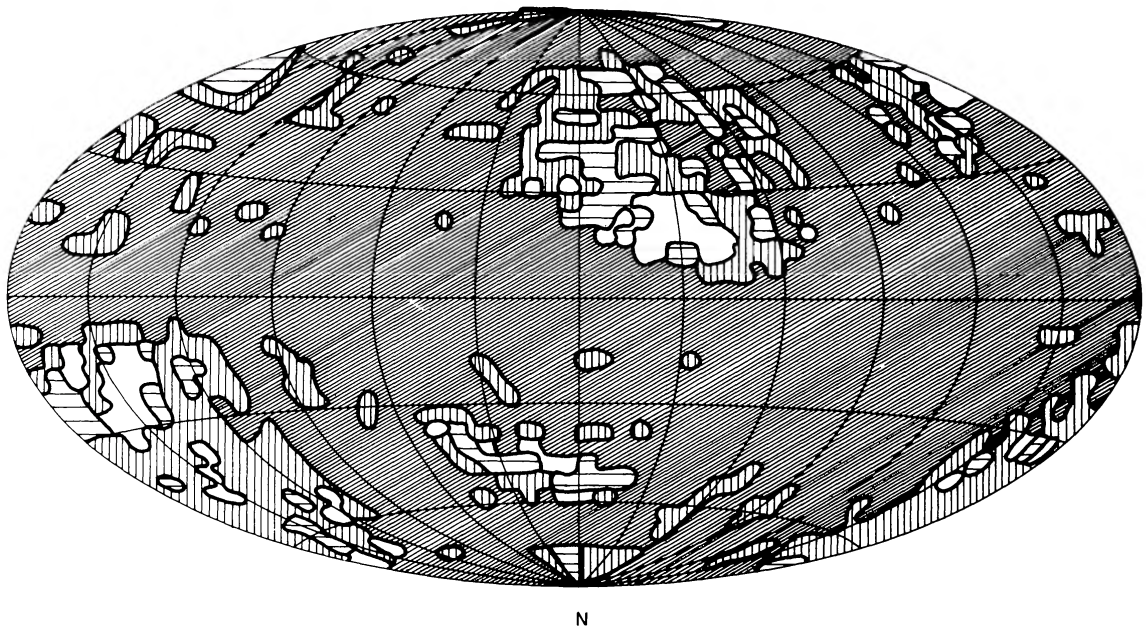

FIG. 2.—The regions of the sky scanned to sensitivities of 5–10 counts s^{-1} (*horizontal shading*), 2–5 counts s^{-1} (*vertical*), and less than 2 counts s^{-1} (*diagonal*). Blank regions were not scanned.

unable to further improve the positions of the best-located sources in the third *Uhuru* catalog, this added sensitivity has enabled us to detect weaker sources and to improve locations for sources whose positions were not of the highest quality. We show in Figure 2 the actual minimum detectable source intensities over the sky. In the galactic plane and the band defined by Hercules X-1 and Cygnus X-1 our exposure was substantially higher, which explains the concentration of weak sources in these two bands of the sky.

III. ANALYSIS

The *Uhuru* satellite is a scanning X-ray experiment with a narrow (1° × 10° FWFM) and a wide (10° × 10° FWFM) collimator (see Giacconi *et al.* 1971*b* for more details). Typically, the scan rate is 0°.5 s^{-1} with the spin axis in one position for roughly 1 day. During the interval for which the spin axis is fixed, repeated scans are made of the same 10° × 360° band of the sky. For this catalog the individual scans were superposed using aspect data from an orthogonally mounted triad of magnetometers and a Sun sensor aboard the spacecraft, supplemented by observations of well-located X-ray sources (see Forman, Jones, and Tananbaum 1976*a* for additional information). Figure 3 shows a section of the galactic plane as observed by *Uhuru* and demonstrates the requirement for superposing the observations to achieve the greatest possible sensitivity. In the upper portion of the figure, Circinus X-1, at an effective counting rate of ~20 counts s^{-1}, is just detectable, while in the superposition, possible sources at ~1 count s^{-1} are selected.

The superposed observations are computer scanned for significant excesses above background which are fitted to the triangular collimator response. This fit produces an azimuth and uncertainty which define a line of position (perpendicular to the scan direction) on the sky. These lines of position are the basic building blocks of the catalog. Sources are defined by intersecting and/or overlapping lines of position, and criteria for source existence are discussed in detail in the next section.

The actual source locations are obtained as in the third *Uhuru* catalog, from the lines of position using their estimated location in one direction and the corresponding standard deviation. Assuming that each determined location is a random variable with a normal distribution, we can calculate, for any point in space near the estimated location, the differential probability that it is the correct location. Each line of position is an independent measurement of the source location, and therefore the product of the one-dimensional probability density distributions gives the joint probability density distribution for the source location. The point with the maximum probability density is then the most likely source location, and by integrating the joint distribution over regions bound by isoprobability density contours a 90% confidence error box can be determined. In this catalog the error boxes are approximated by quadrilaterals on a Cartesian projection of the sky near the source location. In some instances the joint probability density distribution is highly asymmetric because a source is near the edge of the field of view of a detector. For these sources the location of the maximum probability density will not be in the center of the error box.

IV. CRITERIA FOR SOURCE EXISTENCE

We wish to ensure that the sources listed in this catalog meet certain criteria for existence. We have

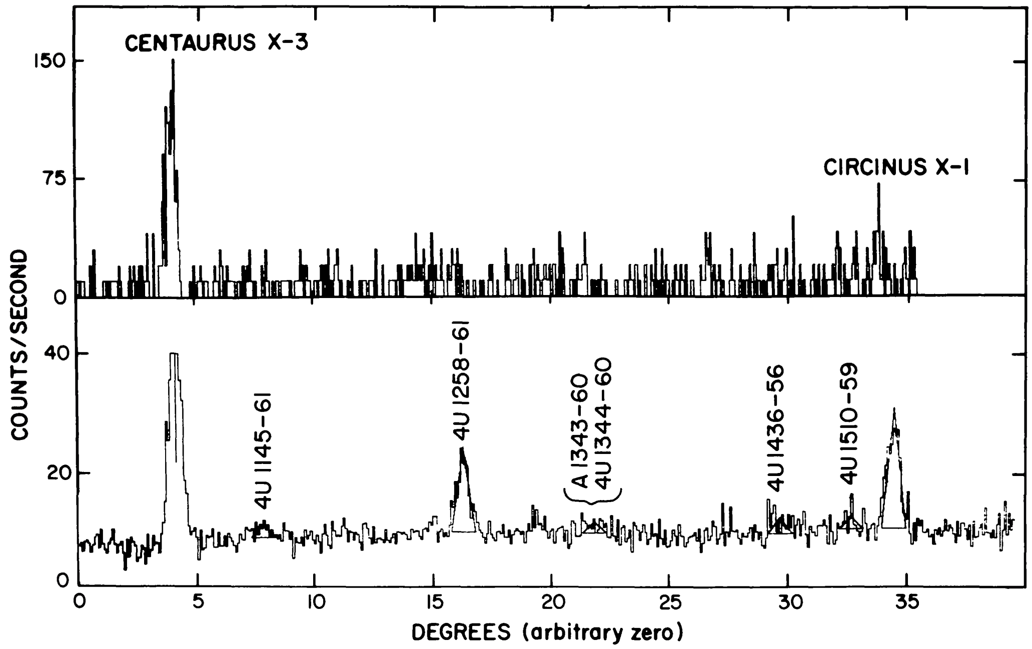

FIG. 3.—The upper portion of the figure shows a single scan of the galactic plane between Centaurus X-3 and Circinus X-1. The latter is just barely detectable at a rate of 25 counts s^{-1}. The lower portion of the figure shows the same region of the plane using the superposed data which are composed of many scans. Circinus X-1 is easily detectable, as is 4U 1258−61. Also seen are 4U 1145−61, 4U 1344−60 = A1342−60, 4U 1510−59, and 4U 1446−55. The superposed data are computer-scanned for significant peaks and are fitted to the triangular collimator response.

chosen the single requirement that no more than 1% of the sources be spurious to be the guiding principle. Thus we expect about three spurious sources. This principle requires the application of somewhat different criteria in different regions of the sky because of the lack of uniformity in our sky coverage. For example, almost 50% of the available observations are concentrated in two bands of the sky—the galactic plane and a band crossing Hercules X-1 and Cygnus X-1.

The probability that a source composed of n intersecting (or overlapping) lines is due to random coincidence is given by the product of several independent probabilities which include the probability of obtaining a spurious n-way intersection, along with the probability that each line composing the candidate source is spurious. Therefore, we have

$$P_{\rm spurious} = P(n\text{-way}) \times P(\sigma_1) \times P(\sigma_2) \times \cdots \times P(\sigma_n)\,, \tag{1}$$

where $P(\sigma_i)$ is the probability that a line with significance σ_i is spurious. The probability of an n-way coincidence, $P(n\text{-way})$, is a function of the density of lines in the local region. We computed the number of 2, 3, 4,...-way intersections expected for regions of different line densities. We verified this calculation by distributing a number of lines corresponding to a particular density, randomly over a region and counting the number of intersections.

With the expected number of random n-way intersections, one need only count the observed number in a region of interest to find the probability that a given n-way intersection is due to random coincidence. This probability is

$$P(n\text{-way}) = \frac{n\text{-way expected}}{n\text{-way observed}}\,. \tag{2}$$

The second step is to compute the probability that a given line of significance σ is due to random background fluctuations. This was done by simulating and analyzing random sets of superposed data with no X-ray sources—i.e., defined by constant background. Then the number of observed fluctuations with σ between σ_1 and σ_2, $N(\sigma_1, \sigma_2)$, in the random data and the number of such fluctuations actually observed in the real data, $N_{\rm obs}(\sigma_1, \sigma_2)$, can be used to determine the probability that a line of significance σ drawn from the sample is spurious:

$$P(\sigma_1 \leq \sigma < \sigma_2) = \frac{N(\sigma_1, \sigma_2)}{N_{\rm obs}(\sigma_1, \sigma_2)}\,. \tag{3}$$

These probabilities are a function of σ and represent the $P(\sigma_i)$ in equation (1). This simulation step is required because the computer program for detecting sources has a complicated efficiency which depends on a number of variables, and the σ's of the intensities of the individual lines do not follow a simple normal distribution.

Using the probabilities defined and computed as described above, we find that the sources in the catalog display a distribution in $P_{\rm spurious}$ (as defined in eq. [1]). For most sources the chance that they are

TABLE 1
Fourth *Uhuru* Catalog

Source Name (1)	Location of Probability Alpha(1950) Delta(1950) (2A)	Maximum Density L B (2B)	Error Region for 90 Percent Confidence 1 Alpha Delta (3A)	2 Alpha Delta (3B)	3 Alpha Delta (3C)	4 Alpha Delta (3D)	Area Sq. Deg (3E)	Intensity Average or Maximum (4A)	Max.Obs. Min.Obs. (4B)	Comments General Remarks Counterparts (5A)	Previous X-Ray (5B)	Source Name (6)
4U0000+72	0 0 0 +72 36 36 0.000 72.610	119.30 10.36	0 3 31 +72 37 12 0.88 72.62	0 1 50 +72 54 36 0.46 72.91	23 56 17 +72 35 24 359.07 72.59	23 58 7 +72 18 36 359.53 72.31	0.1582	1.65	.4			4U0000+72 X
4U0005+20	0 5 48 +20 3 0 1.450 20.050	109.43 -41.41	0 7 7 +20 27 36 1.780 20.460	0 3 48 +19 57 0 0.950 19.950	0 4 32 +19 39 0 1.135 19.650	0 7 50 +20 9 36 1.960 20.160	0.3206	2.52	.5	SEYFERT: MKN 335		4U0005+20 C
4U0009-33	0 9 12 -33 54 0 2.300 -33.900	353.33 -79.26	0 24 26 -33 18 36 6.11 -33.31	23 49 31 -33 55 12 357.38 -33.92	23 50 0 -34 30 0 357.50 -34.50	0 24 26 -33 54 0 6.11 -33.90	4.2079	2.15	.3	NGC 10 ?	3U0001-31	4U0009-33
4U0010+39	0 10 48 +39 36 0 2.700 39.600	115.05 -22.41	0 17 5 +42 45 0 4.27 42.75	0 15 24 +43 1 48 3.85 43.03	0 5 46 +36 52 12 1.44 36.87	0 7 19 +36 36 0 1.83 36.60	2.4164	2.93	.8	FLARE STAR: BD+43 44 ?		4U0010+39 X
4U0015+02	0 15 19 + 2 51 36 3.830 2.860	106.66 -58.67	0 22 58 + 5 12 36 5.74 5.21	0 22 41 + 5 22 12 5.67 5.37	0 7 17 + 0 35 24 1.82 0.59	0 8 17 + 0 15 0 2.07 0.25	1.7139	2.45	.4			4U0015+02 X
4U0022+63	0 22 24 +63 52 48 5.600 63.880	120.08 1.43	0 22 34 +63 54 43 5.643 63.912	0 22 15 +63 54 43 5.562 63.912	0 22 15 +63 50 56 5.562 63.849	0 22 34 +63 50 56 5.643 63.849	0.0022	8.89	.2	SNR: TYCHO=3C10 RA = 0H 22M 28.2S DEC = 63D 51M 54S	CEPH XR-1 (1) TYCHO (2) CEP 1 (3) 3U0022+63	4U0022+63
4U0026-73	0 26 24 -73 1 12 6.600 -73.020	305.30 -44.28	0 30 2 -72 49 12 7.510 -72.820	0 22 41 -72 49 48 5.670 -72.830	0 22 41 -73 13 55 5.670 -73.232	0 30 2 -73 13 41 7.510 -73.228	0.2175	2.76	.5			4U0026-73
4U0026-29	0 26 53 -29 9 0 6.720 -29.150	11.94 -84.83	0 34 12 -28 47 24 8.55 -28.79	0 19 2 -29 11 24 4.76 -29.19	0 19 29 -29 26 24 4.87 -29.44	0 34 46 -29 10 12 8.69 -29.17	1.0829	3.12	.9			4U0026-29

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0027+59	0 27 48 +59 42 0 6.950 59.700	120.33 -2.79	0 30 19 +60 11 24 7.58 60.19	0 28 19 +60 27 0 7.08 60.45	0 25 12 +59 12 36 6.30 59.21	0 27 29 +58 57 36 6.87 58.96	0.4296	3.30 .6			A0026+59 (30)	4U0027+59 C X
4U0028+22	0 28 53 +22 4 48 7.220 22.080	116.89 -40.28	0 32 14 +22 21 36 8.06 22.36	0 31 5 +22 45 36 7.77 22.76	0 25 29 +21 46 48 6.37 21.78	0 26 46 +21 22 48 6.69 21.38	0.7904	3.30 1.1			3U0032+24	4U0028+22
4U0033+58	0 33 12 +58 51 0 8.300 58.850	120.95 -3.69	0 34 48 +59 9 36 8.70 59.16	0 33 7 +59 19 48 8.28 59.33	0 31 34 +58 32 24 7.89 58.54	0 33 12 +58 21 36 8.30 58.36	0.2064	4.33 .9		3C14.1 ?		4U0033+58 C
4U0037+39	0 37 5 +39 52 30 9.270 39.875	120.52 -22.67	0 43 5 +42 38 24 10.77 42.64	0 42 5 +43 7 48 10.52 43.13	0 31 48 +37 18 36 7.95 37.31	0 32 46 +37 2 24 8.19 37.04	1.8242	2.40 .5		M31	2A0039+411 (5) 3U0021+42	4U0037+39
4U0037-10	0 37 24 -10 7 30 9.350 -10.125	113.46 -72.51	0 39 48 -10 1 12 9.95 -10.02	0 39 17 - 9 45 0 9.82 -9.75	0 35 7 -10 13 12 8.78 -10.22	0 35 43 -10 28 48 8.93 -10.48	0.3327	2.90 .3		CLUSTER: ABELL 85 (4,1)	2A0039-096 (5) 3U0026-09	4U0037-10
4U0041+36	0 41 55 +36 49 48 10.480 36.830	121.43 -25.75	0 44 48 +38 15 36 11.20 38.26	0 44 14 +38 23 24 11.06 38.39	0 38 38 +35 25 48 9.66 35.43	0 40 0 +35 14 24 10.00 35.24	0.7449	3.15 .7				4U0041+36
4U0042+32	0 42 0 +32 46 30 10.500 32.775	121.30 -29.80	0 42 20 +33 0 22 10.583 33.006	0 41 11 +32 42 54 10.295 32.715	0 41 49 +32 34 5 10.455 32.568	0 42 56 +32 51 14 10.735 32.854	0.0735	30	5		2A0042+323 (5) 3U0042+32	4U0042+32
4U0050-01	0 50 31 - 1 59 24 12.630 -1.990	123.88 -64.59	0 57 41 + 0 1 12 14.42 0.02	0 56 26 + 0 15 0 14.11 0.25	0 43 31 - 4 1 12 10.88 -4.02	0 44 26 - 4 12 36 11.11 -4.21	1.8297	3.39 .6		CLUSTER: ABELL 119 (3,1) ? QSO: PHL 923 ?	2A0054-015 (5)	4U0050-01

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0052-68	0 52 0 -68 45 0 13.000 -68.750	302.59 -48.65	1 15 2 -68 17 24 18.76 -68.29	1 12 29 -67 59 24 18.12 -67.99	0 14 53 -69 27 36 3.72 -69.46	0 37 17 -69 24 0 9.32 -69.40	1.5610	2.82 .6				4U0052-68
4U0054+60	0 54 18 +60 55 30 13.575 60.925	123.64 -1.67	0 54 56 +61 21 0 13.733 61.350	0 54 18 +61 22 5 13.575 61.368	0 53 31 +60 25 23 13.380 60.423	0 54 13 +60 23 42 13.553 60.395	0.0786	4.24 .3		STAR: γ CAS AT RA = 0H 53M 40.35S DEC = 60D 26M 47.33S	MX0053+60 (8)	4U0054+60
4U0103-21	1 3 54 -21 52 30 15.975 -21.875	155.30 -83.52	1 7 12 -21 46 48 16.80 -21.78	1 6 34 -21 22 12 16.64 -21.37	1 0 38 -21 57 0 15.16 -21.95	1 1 17 -22 22 48 15.32 -22.38	0.6644	2.74 .6		CLUSTER: ABELL 133 (4.0)	2A0102-222 (5) 3U0057-23	4U0103-21 X
4U0106-59	1 6 5 -59 46 12 16.520 -59.770	299.00 -57.50	1 28 0 -59 22 48 22.0 -59.38	1 27 31 -58 54 0 21.88 -58.90	0 43 48 -60 3 0 10.95 -60.05	0 45 0 -60 43 48 11.25 -60.73	3.2679	3.04 .5			2A0120-591 (5)	4U0106-59
4U0115+63	1 15 14 +63 28 37 18.807 63.477	125.92 1.03	1 15 27 +63 30 54 18.862 63.515	1 15 0 +63 30 54 18.749 63.515	1 15 0 +63 26 17 18.749 63.438	1 15 27 +63 26 17 18.862 63.438	0.0039	70	> 10	TRANSIENT	 3U0115+63	4U0115+63 *
4U0115-73	1 15 19 -73 41 42 18.830 -73.695	300.45 -43.58	1 15 31 -73 40 48 18.88 -73.680	1 14 24 -73 41 6 18.60 -73.685	1 15 14 -73 43 12 18.81 -73.720	1 16 29 -73 43 12 19.12 -73.720	0.0033	36	> 10	STAR: SANDULEAK 160 AT RA= 1H 15M 44.3S DEC= -73D 42M 53.6S PERIODS:.72 SEC;3.9 DAY	2A0116-737 (5) SMC X-1 3U0115-73	4U0115-73 *
4U0115-36	1 15 48 -36 33 0 18.950 -36.550	272.88 -79.24	1 23 19 -35 12 36 20.83 -35.21	1 19 36 -35 5 24 19.90 -35.09	1 8 31 -37 53 24 17.13 -37.89	1 12 12 -38 0 36 18.05 -38.01	2.3457	1.91 .4			2A0120-353 (5)	4U0115-36
4U0129-09	1 29 36 - 9 59 24 22.400 -9.990	153.72 -70.14	1 32 29 - 9 17 38 23.120 -9.294	1 31 29 - 9 6 7 22.872 -9.102	1 22 34 -12 6 36 20.640 -12.110	1 23 24 -12 15 58 20.848 -12.266	1.0542	1.95 .4				4U0129-09

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0134-11	1 34 34 -11 32 24 23.640 -11.540	159.20 -70.87	1 39 36 -10 9 0 24.90 -10.15	1 38 48 -10 0 0 24.70 -10.00	1 29 10 -12 53 24 22.29 -12.89	1 30 43 -13 7 12 22.68 -13.12	1.2748	2.70	.6	SUPERCLUSTER ?		4U0134-11
4U0138+48	1 38 30 +48 3 0 24.625 48.050	131.48 -13.74	1 40 43 +48 10 48 25.18 48.18	1 36 31 +48 18 0 24.13 48.30	1 36 19 +47 54 36 24.08 47.91	1 40 34 +47 47 24 25.14 47.79	0.2787	3.55	1.0			4U0138+48 X
4U0142+61	1 42 46 +61 13 48 25.690 61.230	129.42 -0.70	1 43 22 +61 21 40 25.840 61.361	1 43 1 +61 25 55 25.754 61.432	1 42 10 +61 5 53 25.541 61.098	1 42 31 +61 2 6 25.631 61.035	0.0208	4.99	.2		3U0143+61	4U0142+61
4U0148+36	1 48 38 +36 2 24 27.160 36.040	136.27 -25.02	1 51 10 +36 28 48 27.79 36.48	1 49 50 +36 44 24 27.46 36.74	1 46 5 +35 32 24 26.52 35.54	1 47 17 +35 17 24 26.82 35.29	0.5013	2.44	.2	CLUSTER: ABELL 262 (1,0)	3U0151+36	4U0148+36
4U0223+31	2 23 48 +31 16 30 35.950 31.275	145.70 -27.12	2 26 50 +31 51 36 36.71 31.86	2 26 0 +32 3 36 36.50 32.06	2 20 43 +30 40 48 35.18 30.68	2 21 36 +30 28 48 35.40 30.48	0.4784	3.11	.7	NGC 931?. Sy 1		4U0223+31
4U0228-13	2 28 31 -13 3 36 37.130 -13.060	186.31 -62.69	2 32 22 -12 9 0 38.09 -12.15	2 30 55 -11 55 48 37.73 -11.93	2 25 0 -14 1 48 36.25 -14.03	2 25 48 -14 8 24 36.45 -14.14	0.8088	5.27	.9	CLUSTER: ABELL 358 (3,0)		4U0228-13
4U0241+61	2 41 14 +61 52 48 40.310 61.880	135.82 2.10	2 45 0 +62 36 0 41.25 62.60	2 43 58 +62 49 12 40.99 62.82	2 37 43 +61 15 36 39.43 61.26	2 38 46 +61 1 12 39.69 61.02	0.3607	3.25	.5		3U0258+60	4U0241+61
4U0248-85	2 48 24 -85 21 0 42.100 -85.350	300.29 -31.41	2 55 22 -85 6 0 43.84 -85.10	2 36 24 -85 5 24 39.10 -85.09	2 40 58 -85 35 24 40.24 -85.59	2 59 48 -85 36 0 44.95 -85.60	0.1906	2.11	.4			4U0248-85

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0253+41	2 53 5 +41 42 36 43.270 41.710	146.49 -15.18	2 54 14 +41 48 0 43.56 41.80	2 53 58 +41 55 12 43.49 41.92	2 51 58 +41 37 48 42.99 41.63	2 52 14 +41 30 0 43.06 41.50	0.0621	4.89 .6			MX0255+41 (12) 2A0251+413 (5) 3U0227+43	4U0253+41
4U0254+13	2 54 36 +13 15 0 43.650 13.250	163.88 -39.21	2 55 31 +13 28 48 43.880 13.480	2 52 36 +13 16 48 43.150 13.280	2 53 31 +13 2 24 43.380 13.040	2 56 34 +13 15 0 44.140 13.250	0.2193	3.40 .3		CLUSTER: ABELL 401 (3.2)	2A0255+132 (5) 3U0254+13	4U0254+13
4U0302-22	3 2 55 -22 18 0 45.730 -22.300	210.95 -59.29	3 8 55 -20 23 2 47.228 -20.384	3 6 35 -20 6 7 46.646 -20.102	2 57 9 -24 12 43 44.288 -24.212	2 58 59 -24 30 0 44.746 -24.500	2.6171	2.71 .9				4U0302-22
4U0310+46	3 10 12 +46 33 0 47.550 46.550	146.76 -9.45	3 12 36 +46 58 48 48.15 46.98	3 7 46 +46 25 48 46.94 46.43	3 8 19 +46 10 48 47.08 46.18	3 13 5 +46 42 0 48.27 46.70	0.2665	3.71 .7				4U0310+46 X
4U0311+53	3 11 50 +53 3 0 47.960 53.050	143.59 -3.76	3 19 30 +54 39 18 49.874 54.655	3 18 44 +54 53 10 49.685 54.886	3 5 47 +51 48 7 46.445 51.802	3 6 32 +51 34 48 46.634 51.580	0.7872	2.88 .7			3U0318+55	4U0311+53
4U0316+41	3 16 35 +41 21 11 49.145 41.353	150.58 -13.23	3 17 0 +41 25 59 49.252 41.433	3 16 3 +41 19 12 49.011 41.320	3 16 8 +41 15 54 49.035 41.265	3 17 6 +41 22 30 49.277 41.375	0.0123	47.4 0.6		CLUSTER: PERSEUS =ABELL 426 (0.2)	PER X1 (6) 2A0316+413(5) 3U0316+41	4U0316+41 *
4U0321-45	3 21 0 -45 1 30 50.250 -45.025	253.51 -55.09	3 23 31 -44 30 0 50.88 -44.50	3 17 50 -44 59 24 49.46 -44.99	3 18 36 -45 32 24 49.65 -45.54	3 24 19 -45 3 0 51.08 -45.05	0.6215	2.16 .6			2A0316-443?(5) 3U0302-47	4U0321-45 X
4U0322+59	3 22 36 +59 33 0 50.650 59.550	141.37 2.53	3 25 25 +59 49 48 51.355 59.830	3 24 22 +60 0 36 51.093 60.010	3 19 29 +59 13 48 49.870 59.230	3 20 39 +59 3 54 50.163 59.065	0.2144	2.93 .3				4U0322+59

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0334-30	3 34 12 -30 12 0 53.550 -30.200	227.52 -53.90	3 37 34 -29 21 36 54.39 -29.36	3 36 5 -29 6 36 54.02 -29.11	3 31 10 -30 57 36 52.79 -30.96	3 32 38 -31 13 48 53.16 -31.23	0.8713	2.88	.6			4U0334-30
4U0336+01	3 36 12 + 1 1 12 54.050 1.020	184.70 -40.81	3 46 12 + 2 3 0 56.55 2.05	3 45 0 + 2 24 0 56.25 2.40	3 26 36 - 0 7 48 51.65 -0.13	3 27 0 - 0 15 0 51.75 -0.25	1.5844	100	> 10	TRANSIENT		4U0336+01 *
4U0339-54	3 39 24 -54 30 0 54.850 -54.500	266.23 -48.95	3 42 0 -54 6 0 55.50 -54.10	3 41 26 -53 44 24 55.36 -53.74	3 36 43 -54 55 48 54.18 -54.93	3 37 12 -55 17 24 54.30 -55.29	0.3386	1.90	.2	CLUSTER: CA0340-538 (3,2)?	2A0343-536 (5) 3U0328-52	4U0339-54
4U0344+11	3 44 59 +11 9 0 56.244 11.150	176.92 -32.52	4 2 18 +13 6 0 60.575 13.100	3 57 12 +14 45 0 59.300 14.75	3 27 30 + 9 16 30 51.875 9.275	3 32 54 + 7 28 30 53.225 7.475	19.5460	1.80	.4		2A0335+096(5)	4U0344+11
4U0352+30	3 52 22 +30 54 36 58.090 30.910	163.09 -17.11	3 52 48 +30 57 36 58.200 30.960	3 51 55 +30 53 24 57.980 30.890	3 51 53 +30 51 36 57.970 30.860	3 52 58 +30 56 24 58.240 30.940	0.0062	30	3	STAR: X PER AT RA= 3H 52M 15.2S DEC= 30D 54M 01S PERIOD:13.9 MIN OPTICAL PERIOD: 580.7 DAY	2A0352+309 (5) 3U0352+30	4U0352+30 *
4U0357-74	3 57 36 -74 19 30 59.400 -74.325	288.58 -37.32	4 3 7 -74 19 12 60.78 -74.32	3 54 0 -74 4 12 58.50 -74.07	3 52 5 -74 19 12 58.02 -74.32	4 1 12 -74 34 48 60.30 -74.58	0.1902	1.76	.3			4U0357-74
4U0404+47	4 4 0 +47 40 30 61.000 47.675	153.46 -3.09	4 5 36 +48 0 0 61.40 48.00	4 1 43 +47 34 48 60.43 47.58	4 2 22 +47 20 24 60.59 47.34	4 6 14 +47 45 36 61.56 47.76	0.2020	3.67	.8	STAR: 48 PER ?		4U0404+47
4U0406-30	4 6 24 -30 52 30 61.600 -30.875	229.94 -47.10	4 15 48 -26 41 24 63.95 -26.69	4 14 36 -26 26 24 63.65 -26.44	3 56 58 -34 57 36 59.24 -34.96	3 58 29 -35 15 0 59.62 -35.25	3.4719	1.72	.5			4U0406-30 X

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0407+37	4 7 24 +37 55 30 61.850 37.925	160.57 -9.85	4 10 36 +38 10 12 62.65 38.17	4 9 12 +38 19 48 62.30 38.33	4 4 19 +37 41 24 61.08 37.69	4 5 48 +37 31 48 61.45 37.53	0.3345	2.62	.5			4U0407+37
4U0410+10	4 10 53 +10 33 0 62.720 10.550	182.28 -28.12	4 12 14 +10 36 54 63.060 10.615	4 11 31 +10 46 30 62.880 10.775	4 9 28 +10 28 23 62.368 10.473	4 10 16 +10 18 54 62.568 10.315	0.1347	3.06	.4	CLUSTER: ABELL 478 (6,2)	2A0411+103 (5) 3U0405+10	4U0410+10 *
4U0421+34	4 21 30 +34 43 30 65.375 34.725	164.90 -10.12	4 23 2 +35 0 0 65.76 35.00	4 19 24 +34 45 0 64.85 34.75	4 19 46 +34 25 48 64.94 34.43	4 23 24 +34 39 36 65.85 34.66	0.2646	3.74	.7		3U0430+37	4U0421+34
4U0423-53	4 23 24 -53 9 0 65.850 -53.150	261.55 -43.17	4 25 19 -52 53 24 66.33 -52.89	4 22 58 -52 48 0 65.74 -52.80	4 21 31 -53 25 12 65.38 -53.42	4 23 48 -53 30 0 65.95 -53.50	0.2328	3.30	.9	CLUSTER: SC0417-558 (0,0) = NGC 1566(=PKS0411-56?)	3U0400-59	4U0423-53 X
4U0427-07	4 27 36 - 7 42 0 66.900 -7.700	202.84 -34.80	4 33 31 - 6 52 48 68.38 -6.88	4 32 0 - 6 29 24 68.00 -6.49	4 21 36 - 8 31 48 65.40 -8.53	4 23 10 - 8 57 0 65.79 -8.95	1.8242	3.46	.5	CLUSTER: ABELL 494 (6,2) ?		4U0427-07
4U0427-61	4 27 46 -61 33 0 66.940 -61.550	272.27 -40.47	4 30 29 -61 33 0 67.620 -61.550	4 24 52 -61 22 30 66.216 -61.375	4 24 41 -61 32 24 66.172 -61.540	4 30 23 -61 41 53 67.596 -61.698	0.1082	2.31	.3	CLUSTER: SC0430-616 (3,3) = PKS0429-61	2A0430-615 (5) 3U0426-63	4U0427-61
4U0429-31	4 29 22 -31 0 0 67.340 -31.000	231.23 -42.26	4 33 41 -29 4 48 68.42 -29.08	4 31 48 -28 51 36 67.95 -28.86	4 18 48 -36 52 48 64.70 -36.88	4 20 31 -36 54 0 65.13 -36.90	3.2957	3.82	.8			4U0429-31
4U0431-12	4 31 24 -12 57 0 67.850 -12.950	209.13 -36.30	4 36 38 -12 36 36 69.16 -12.610	4 35 0 -12 13 30 68.750 -12.225	4 26 26 -13 17 24 66.61 -13.290	4 28 6 -13 40 30 67.025 -13.675	1.2296	2.54	.4	CLUSTER: ABELL 496 (3,1)	2A0431-136 (5)	4U0431-12

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0432+05	4 32 24 + 5 36 0 68.100 5.600	190.35 -26.81	4 34 31 + 5 47 24 68.63 5.79	4 33 29 + 5 54 0 68.37 5.90	4 30 17 + 5 24 0 67.57 5.40	4 31 24 + 5 18 0 67.85 5.30	0.2156	2.76 .4		SEYFERT: 3C120	3U0440+06	4U0432+05 *
4U0443-09	4 43 12 - 9 30 0 70.800 -9.500	206.88 -32.20	4 47 0 - 8 58 48 71.75 -8.98	4 45 31 - 8 33 36 71.38 -8.56	4 39 19 -10 1 12 69.83 -10.02	4 40 50 -10 24 36 70.21 -10.41	1.1512	1.77 .3		SUPERCLUSTER ?	3U0431-10	4U0443-09 X
4U0446+44	4 46 7 +44 57 36 71.530 44.960	160.47 0.24	4 46 53 +45 5 13 71.720 45.087	4 45 25 +44 52 5 71.355 44.868	4 45 29 +44 50 42 71.370 44.845	4 46 56 +45 4 8 71.732 45.069	0.0074	4.99 .3		CLUSTER: 3C129	3U0446+44	4U0446+44
4U0457-35	4 57 24 -35 42 0 74.350 -35.700	238.56 -37.29	5 2 53 -33 3 0 75.72 -33.05	5 1 31 -32 45 36 75.38 -32.76	4 52 0 -38 15 0 73.00 -38.25	4 53 26 -38 31 12 73.36 -38.52	2.0903	2.53 .5		KLEMOLA 9 (COMPACT GROUP OF GALAXIES) ?		4U0457-35 X
4U0504-84	5 4 48 -84 22 30 76.200 -84.375	297.18 -29.75	5 17 36 -84 5 42 79.400 -84.095	4 52 10 -84 8 24 73.040 -84.140	4 52 53 -84 38 42 73.220 -84.645	5 18 19 -84 36 11 79.580 -84.603	0.3161	2.00 .5				4U0504-84
4U0505-21	5 5 0 -21 21 0 76.250 -21.350	222.18 -32.01	5 21 38 -21 47 24 80.41 -21.79	4 44 14 -20 29 24 71.06 -20.49	4 44 19 -20 42 36 71.08 -20.71	5 21 24 -22 1 12 80.35 -22.02	1.9583	3.65 .6		CLUSTER: ABELL 514 (3,1)		4U0505-21
4U0506-03	5 6 30 - 3 25 30 76.625 -3.425	203.81 -24.25	5 8 12 - 3 28 12 77.05 -3.47	5 7 38 - 3 9 0 76.91 -3.15	5 5 0 - 3 21 0 76.25 -3.35	5 5 26 - 3 41 24 76.36 -3.69	0.2486	1.92 .5				4U0506-03 X
4U0509+01	5 9 36 + 1 57 0 77.400 1.950	199.16 -20.93	5 26 41 + 1 10 48 81.67 1.18	5 27 19 + 1 33 0 81.83 1.55	5 4 43 + 2 18 36 76.18 2.31	5 4 41 + 1 55 12 76.17 1.92	2.1783	2.16 .3				4U0509+01

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0513-40	5 13 2 -40 3 0 78.260 -40.050	244.47 -34.92	5 13 48 -40 7 44 78.450 -40.129	5 13 48 -39 58 1 78.450 -39.967	5 12 13 -39 58 1 78.054 -39.967	5 12 13 -40 7 44 78.054 -40.129	0.0491	18.	3	GLOBULAR CLUSTER: NGC 1851 X-RAY BURST SOURCE?	MX0513-40 (27) 2A0512-399 (5) 3U0510-44 3U0530-37	4U0513-40 *
4U0515+38	5 15 2 +38 24 0 78.760 38.400	168.95 0.49	5 19 42 +39 0 0 79.925 39.000	5 19 16 +39 12 36 79.815 39.210	5 9 43 +37 46 12 77.430 37.770	5 10 6 +37 37 30 77.525 37.625	0.4461	3.19 .7				4U0515+38
4U0517+17	5 17 34 +17 34 12 79.390 17.570	186.48 -10.95	5 24 49 +18 31 30 81.203 18.525	5 24 14 +18 37 12 81.060 18.620	5 10 5 +16 42 0 77.52 16.70	5 11 2 +16 26 24 77.76 16.44	0.9559	3.10 .7		3C138 ?		4U0517+17
4U0518-26	5 18 34 -26 12 0 79.640 -26.200	228.73 -30.63	5 20 26 -25 52 55 80.110 -25.882	5 16 7 -26 9 7 79.030 -26.152	5 16 27 -26 31 12 79.112 -26.520	5 20 49 -26 15 22 80.206 -26.256	0.3831	2.31 .6				4U0518-26
4U0519+06	5 19 48 + 6 32 24 79.950 6.540	196.37 -16.40	5 36 38 + 6 15 36 84.16 6.26	5 2 58 + 7 6 36 75.74 7.11	5 2 58 + 6 50 24 75.74 6.84	5 36 38 + 5 57 36 84.16 5.96	2.3753	2.01 .5		CLUSTER: ABELL 539 (2,1)		4U0519+06 X
4U0520-72	5 20 42 -72 1 55 80.175 -72.032	283.13 -32.73	5 22 22 -71 59 10 80.593 -71.986	5 19 13 -71 59 6 79.803 -71.985	5 18 58 -72 4 44 79.740 -72.079	5 22 25 -72 4 44 80.603 -72.079	0.0239	16	2	IN LMC	LMC X-2 (4) 2A0521-720 (5) 3U0521-72	4U0520-72 *
4U0531+21	5 31 30 +21 58 52 82.877 21.981	184.56 -5.79	5 31 35 +21 59 10 82.895 21.986	5 31 32 +21 59 28 82.885 21.991	5 31 26 +21 58 41 82.859 21.978	5 31 29 +21 58 23 82.869 21.973	0.0002	947 21		CRAB NEBULA PULSAR: NP0531 AT RA= 5H 31M 31S DEC= 21D 58M 55S PERIOD:.033 SEC	TAU X-1 (1) CRAB (2) TAU 1 (3) 3U0531+21	4U0531+21 *
4U0531-05	5 31 50 - 5 18 0 82.960 -5.300	208.78 -19.54	5 33 13 - 5 11 2 83.304 -5.184	5 30 25 - 5 11 2 82.604 -5.184	5 30 25 - 5 23 24 82.604 -5.390	5 33 13 - 5 23 24 83.304 -5.390	0.1436	4.74 .2		ORION	2A0532-056 (5) 3U0527-05	4U0531-05

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0532-66	5 32 19 -66 37 12 83.080 -66.620	276.60 -32.55	5 34 48 -66 16 12 83.70 -66.27	5 32 0 -66 14 24 83.00 -66.24	5 30 24 -66 57 0 82.60 -66.95	5 32 48 -66 59 24 83.20 -66.99	0.1909	3.92 .8		IN LMC	LMC X-4 (4) 2A0532-664 (5) 3U0532-66	4U0532-66 *
4U0538+26	5 38 12 +26 24 0 84.550 26.400	181.64 -2.13	5 39 55 +26 30 0 84.978 26.500	5 39 33 +26 41 17 84.888 26.688	5 36 32 +26 17 35 84.135 26.293	5 36 53 +26 7 41 84.220 26.128	0.1495	2.36 .4			A0535+26? (11)	4U0538+26
4U0538-64	5 38 58 -64 8 24 84.740 -64.140	273.61 -32.05	5 39 30 -64 6 7 84.875 -64.102	5 38 26 -64 6 0 84.608 -64.100	5 38 26 -64 10 23 84.608 -64.173	5 39 30 -64 10 30 84.875 -64.175	0.0085	25	3	IN LMC	LMC X-3 (4) 2A0539-642 (5) 3U0539-64	4U0538-64 *
4U0540-69	5 40 19 -69 46 12 85.080 -69.770	280.20 -31.50	5 41 12 -69 44 2 85.300 -69.734	5 39 29 -69 44 2 84.872 -69.734	5 39 29 -69 48 7 84.872 -69.802	5 41 12 -69 48 7 85.300 -69.802	0.0101	20	1.5	IN LMC	LMC X-1 (4) 2A0540-698 (5) 3U0540-69	4U0540-69 *
4U0541+60	5 41 48 +60 51 0 85.450 60.850	152.03 16.08	5 44 55 +61 3 0 86.230 61.050	5 38 38 +61 3 0 84.660 61.050	5 38 38 +60 34 5 84.660 60.568	5 44 55 +60 34 5 86.230 60.568	0.3690	2.65 .6				4U0541+60
4U0543-31	5 43 48 -31 39 0 85.950 -31.650	236.54 -26.97	5 46 7 -31 19 59 86.530 -31.333	5 41 10 -31 37 23 85.293 -31.623	5 41 30 -31 57 36 85.375 -31.960	5 46 31 -31 40 12 86.628 -31.670	0.3794	3.66 .6			3U0545-32	4U0543-31
4U0546-88	5 46 24 -88 13 30 86.600 -88.225	301.07 -27.87	6 26 24 -88 11 35 96.60 -88.193	5 51 41 -87 55 48 87.92 -87.930	5 6 24 -88 17 17 76.60 -88.288	5 41 55 -88 33 0 85.48 -88.550	0.1858	3.55 .9				4U0546-88 X
4U0548+29	5 48 0 +29 0 0 87.000 29.000	180.56 1.08	6 7 7 +31 3 0 91.78 31.05	6 6 0 +31 17 24 91.50 31.29	5 28 43 +26 55 12 82.18 26.92	5 30 12 +26 41 24 82.55 26.69	3.1461	4.45 1.0				4U0548+29 X

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0553-48	5 53 53 -48 40 30 88.470 -48.675	255.82 -29.03	5 56 26 -48 27 0 89.11 -48.45	5 54 29 -48 15 0 88.62 -48.25	5 51 24 -48 49 12 87.85 -48.82	5 53 14 -49 5 24 88.31 -49.09	0.3119	3.00	.8			4U0553-48 X
4U0557-38	5 57 0 -38 6 0 89.250 -38.100	244.31 -26.18	5 59 38 -34 57 36 89.910 -34.960	5 58 36 -34 49 12 89.650 -34.820	5 55 11 -39 34 48 88.795 -39.580	5 56 52 -39 34 48 89.215 -39.580	1.2994	2.43	.3			4U0557-38
4U0558+46	5 58 0 +46 18 0 89.500 46.300	166.42 11.38	6 7 11 +46 3 18 91.795 46.055	5 42 10 +46 55 30 85.540 46.925	5 41 37 +46 48 0 85.405 46.800	6 6 31 +45 53 24 91.630 45.890	0.7155	2.86	.4	SEYFERT: MCG 8-11-11	MX0600+46 (28) 2A0551+466 (5)	4U0558+46
4U0559-57	5 59 48 -57 10 30 89.950 -57.175	265.61 -29.29	6 2 58 -57 0 18 90.740 -57.005	5 56 22 -57 0 18 89.090 -57.005	5 56 22 -57 21 29 89.090 -57.358	6 2 58 -57 21 29 90.740 -57.358	0.3156	3.03	.8			4U0559-57
4U0608-49	6 8 24 -49 9 0 92.100 -49.150	256.85 -26.77	6 10 38 -48 45 11 92.660 -48.753	6 8 9 -48 27 54 92.038 -48.465	6 6 13 -49 33 18 91.553 -49.555	6 8 46 -49 49 48 92.190 -49.830	0.5339	3.08	.9			4U0608-49
4U0614+09	6 14 30 + 9 9 54 93.627 9.165	200.88 -3.33	6 14 44 + 9 11 24 93.685 9.190	6 14 43 + 9 12 11 93.678 9.203	6 14 17 + 9 8 38 93.572 9.144	6 14 19 + 9 7 52 93.580 9.131	0.0018	120	5	STAR: RA = 6H 14M 21.3S DEC = 9D 08M 32S	3U0614+09	4U0614+09 *
4U0614+15	6 14 48 +15 18 0 93.700 15.300	195.53 -0.34	6 26 14 +17 0 0 96.56 17.0	6 2 19 +13 44 24 90.58 13.74	6 2 58 +13 30 0 90.74 13.50	6 26 55 +16 45 0 96.73 16.75	1.9277	3.41	.7			4U0614+15
4U0617+23	6 17 41 +23 15 36 94.420 23.260	188.84 4.05	6 20 23 +23 27 14 95.096 23.454	6 16 23 +23 27 14 94.096 23.454	6 15 11 +23 5 46 93.796 23.096	6 18 57 +23 5 46 94.736 23.096	0.3190	3.44	.2	SNR: IC443=3C157 ?	3U0620+23	4U0617+23

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0621+11	6 21 38 +11 46 48 95.410 11.780	199.41 -0.55	6 36 29 +13 55 41 99.12 13.928	6 5 2 + 9 52 5 91.26 9.868	6 6 58 + 9 36 58 91.74 9.616	6 38 7 +13 42 43 99.53 13.712	3.5559	2.07	.7			4U0621+11 X
4U0627+67	6 27 14 +67 34 12 96.810 67.570	147.40 23.16	6 59 41 +66 43 41 104.92 66.728	5 56 29 +68 49 55 89.12 68.832	5 54 53 +68 24 58 88.72 68.416	6 57 55 +66 17 17 104.48 66.288	2.8858	2.63	.7	SUPERCLUSTER ?		4U0627+67 X
4U0627-38	6 27 18 -38 6 0 96.825 -38.100	246.25 -20.49	6 28 5 -37 42 0 97.02 -37.70	6 26 36 -37 42 0 96.65 -37.70	6 26 36 -38 29 24 96.65 -38.49	6 28 5 -38 29 24 97.02 -38.49	0.2300	3.61	.7			4U0627-38
4U0627-54	6 27 46 -54 1 30 96.940 -54.025	262.85 -24.88	6 30 10 -53 54 0 97.54 -53.90	6 29 17 -53 42 36 97.32 -53.71	6 25 14 -54 9 36 96.31 -54.16	6 26 10 -54 21 0 96.54 -54.35	0.1716	3.30	.2	CLUSTER: SC0627-544 (3,3) = PKS0625-54	2A0626-541 (5) 3U0624-55	4U0627-54
4U0628-28	6 28 48 -28 24 0 97.200 -28.400	236.81 -16.72	6 39 24 -25 33 0 99.85 -25.55	6 38 12 -25 19 12 99.55 -25.32	6 23 12 -29 35 24 95.80 -29.59	6 24 48 -30 0 0 96.20 -30.00	2.3964	4.56	1.4	PSR: 0628-28 ?		4U0628-28 X
4U0630+02	6 30 0 + 2 24 0 97.500 2.400	208.68 -3.11	6 39 46 + 3 36 0 99.94 3.600	6 39 12 + 3 48 0 99.80 3.800	6 19 29 + 1 5 24 94.87 1.090	6 20 2 + 0 53 24 95.01 0.890	1.3618	5.92	1.5			4U0630+02 X
4U0635-03	6 35 0 - 3 19 30 98.750 -3.325	214.35 -4.63	6 41 19 - 2 14 24 100.33 -2.24	6 18 58 - 5 6 0 94.74 -5.1	6 20 0 - 5 32 24 95.0 -5.54	6 42 31 - 2 39 0 100.63 -2.65	3.1755	4.22	.5			4U0635-03
4U0638+74	6 38 24 +74 12 0 99.600 74.200	140.55 25.57	7 4 34 +74 9 0 106.14 74.15	5 51 50 +76 0 36 87.96 76.01	5 48 0 +74 54 0 87.00 74.90	6 52 34 +73 7 48 103.14 73.13	5.9561	2.31	.3	SEYFERT: MKN 6 ? CLUSTER: ABELL 55A (5,2) ?		4U0638+74

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0656-03	6 56 0 - 3 7 12 104.000 -3.120	216.57 0.12	7 3 46 - 1 57 0 105.94 -1.950	6 38 55 - 5 13 12 99.73 -5.220	6 39 53 - 5 22 34 99.97 -5.376	7 4 53 - 2 7 59 106.22 -2.133	1.8935	2.64	.6			4U0656-03
4U0708-16	7 8 22 -16 49 12 107.090 -16.820	230.14 -3.52	7 13 26 -16 21 36 108.36 -16.36	7 11 50 -16 9 36 107.96 -16.16	7 3 17 -17 16 48 105.82 -17.28	7 4 50 -17 28 12 106.21 -17.47	0.8217	3.06	.6			4U0708-16
4U0708-49	7 8 24 -49 15 0 107.100 -49.250	260.02 -17.44	7 10 29 -49 10 12 107.62 -49.17	7 8 38 -48 45 0 107.16 -48.75	7 6 17 -49 20 24 106.57 -49.34	7 8 0 -49 45 0 107.00 -49.75	0.3338	4.07	.8			4U0708-49
4U0711-38	7 11 18 -38 24 0 107.825 -38.400	249.94 -12.61	7 11 10 -36 55 12 107.79 -36.92	7 10 12 -37 22 12 107.55 -37.37	7 11 31 -40 6 0 107.88 -40.10	7 12 31 -39 37 12 108.13 -39.62	0.6419	2.61	.4			4U0711-38
4U0718-54	7 18 22 -54 36 0 109.590 -54.600	265.83 -18.02	7 23 46 -53 58 48 110.94 -53.98	7 19 17 -53 36 0 109.82 -53.60	7 13 55 -55 19 12 108.48 -55.32	7 16 29 -55 28 48 109.12 -55.48	1.0707	13.4	3.0	PKS0719-55 ?	3U0705-55	4U0718-54
4U0720+55	7 20 12 +55 52 48 110.050 55.880	161.45 26.65	7 39 36 +55 30 0 114.90 55.50	7 4 10 +57 24 0 106.04 57.40	7 0 0 +55 57 0 105.00 55.95	7 36 58 +54 39 0 114.24 54.65	6.5705	2.77	.4	CLUSTER: ABELL 576 (2,1)		4U0720+55
4U0728-25	7 28 18 -25 49 30 112.075 -25.825	240.28 -3.68	7 31 10 -25 33 54 112.790 -25.565	7 30 46 -25 21 47 112.693 -25.363	7 25 22 -26 6 54 111.340 -26.115	7 25 45 -26 18 0 111.438 -26.300	0.3007	3.70	.2			4U0728-25
4U0729-37	7 29 0 -37 54 0 112.250 -37.900	251.06 -9.27	7 28 17 -34 28 48 112.07 -34.48	7 26 41 -34 31 48 111.67 -34.53	7 30 31 -42 43 48 112.63 -42.73	7 32 0 -42 42 0 113.00 -42.70	2.4896	2.26	.5			4U0729-37

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0733-18	7 33 22 -18 36 0 113.340 -18.600	234.54 0.86	7 41 10 -17 41 24 115.29 -17.690	7 40 5 -17 25 41 115.02 -17.428	7 25 50 -19 34 23 111.46 -19.573	7 26 24 -19 42 54 111.60 -19.715	1.0996	2.17 .7				4U0733-18 X
4U0737-10	7 37 19 -10 48 36 114.330 -10.810	228.21 5.52	7 43 55 -10 1 12 115.98 -10.02	7 42 38 - 9 33 36 115.66 -9.56	7 31 0 -11 45 0 112.75 -11.75	7 31 41 -11 54 0 112.92 -11.90	1.3829	3.06 .6				4U0737-10
4U0739-19	7 39 0 -19 54 0 114.750 -19.900	236.33 1.38	7 44 29 -19 16 12 116.12 -19.27	7 43 26 -19 4 48 115.86 -19.08	7 28 2 -21 21 36 112.01 -21.36	7 28 31 -21 28 12 112.13 -21.47	0.9524	3.84 .5		PKS0745-19 ?		4U0739-19
4U0742-28	7 42 55 -28 39 36 115.730 -28.660	244.35 -2.24	7 51 43 -27 49 12 117.93 -27.82	7 50 26 -27 30 0 117.61 -27.50	7 34 19 -29 34 12 113.58 -29.57	7 35 14 -29 43 48 113.81 -29.73	1.3373	3.37 .7			3U0757-26	4U0742-28
4U0750-49	7 50 30 -49 24 0 117.625 -49.400	263.21 -11.32	7 56 8 -48 27 0 119.035 -48.450	7 43 49 -50 11 6 115.953 -50.185	7 44 43 -50 21 54 116.178 -50.365	7 56 57 -48 39 36 119.238 -48.660	0.6277	5.38 1.2			3U0750-49	4U0750-49
4U0813-38	8 13 24 -38 33 0 123.350 -38.550	256.10 -2.11	8 14 14 -38 18 0 123.56 -38.30	8 12 41 -38 18 0 123.17 -38.30	8 12 41 -38 49 12 123.17 -38.82	8 14 14 -38 49 12 123.56 -38.82	0.1586	2.80 .5				4U0813-38
4U0814-56	8 14 12 -56 45 0 123.550 -56.750	271.52 -12.01	8 15 34 -56 18 36 123.89 -56.31	8 12 7 -56 42 0 123.03 -56.70	8 12 53 -57 9 0 123.22 -57.15	8 16 24 -56 46 48 124.10 -56.78	0.2612	2.76 .8			A0813-57 (13)	4U0814-56 X
4U0821-42	8 21 35 -42 44 42 125.395 -42.745	260.44 -3.21	8 21 56 -42 43 8 125.485 -42.719	8 21 42 -42 39 18 125.423 -42.655	8 21 14 -42 46 16 125.307 -42.771	8 21 28 -42 50 17 125.366 -42.838	0.0109	7.5 .6		SNR: PUP A AT RA = 8H 21M 18S DEC = -42D 52M 00S	VEL XR-2 (1) ? PUP A (2) 3U0821-42	4U0821-42

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0833-45	8 33 36 -45 3 0 128.400 -45.050	263.58 -2.82	8 34 2 -44 51 36 128.51 -44.86	8 32 31 -45 11 24 128.13 -45.19	8 33 14 -45 14 24 128.31 -45.24	8 34 41 -44 54 0 128.67 -44.90	0.0520	9.1 1.0		VELA X PULSAR: PSR0833-45 AT RA= 8H 33M 39S DEC= -45D 0M 19S	VEL XR-1 (1) ? VEL XR-2 (1) ? VELA X (2) 3U0833-45	4U0833-45 *
4U0836-42	8 36 12 -42 36 54 129.050 -42.615	261.93 -0.97	8 36 57 -42 30 43 129.236 -42.512	8 36 50 -42 28 59 129.208 -42.483	8 35 31 -42 42 18 128.878 -42.705	8 35 39 -42 44 6 128.911 -42.735	0.0121	47	> 10	TRANSIENT	MX0836-42 (28)	4U0836-42 *
4U0842-47	8 42 24 -47 48 0 130.600 -47.800	266.69 -3.31	8 57 29 -45 27 36 134.37 -45.46	8 56 31 -45 17 24 134.13 -45.29	8 36 7 -48 31 48 129.03 -48.53	8 37 36 -48 48 0 129.40 -48.80	1.4327	2.95 .8			A0835-48 (13)	4U0842-47 X
4U0842-34	8 42 58 -34 55 12 130.740 -34.920	256.68 4.81	8 39 43 -32 43 12 129.93 -32.72	8 39 0 -32 57 0 129.75 -32.95	8 45 38 -37 6 0 131.41 -37.10	8 47 31 -36 54 0 131.88 -36.90	1.4113	2.57 .5				4U0842-34 X
4U0845-29	8 45 0 -29 40 30 131.250 -29.675	252.81 8.40	8 50 38 -32 27 0 132.658 -32.450	8 43 10 -28 17 42 130.790 -28.295	8 42 0 -28 23 6 130.502 -28.385	8 49 48 -32 36 0 132.450 -32.600	1.0952	3.14 .6				4U0845-29 X
4U0854-44	8 54 12 -44 30 0 133.550 -44.500	265.45 0.37	8 58 50 -43 48 36 134.710 -43.810	8 57 58 -43 42 18 134.490 -43.705	8 49 35 -45 11 46 132.395 -45.196	8 50 24 -45 18 47 132.600 -45.313	0.3935	3.96 .6			A0854-46 (13)	4U0854-44
4U0900-40	9 0 15 -40 21 36 135.064 -40.360	263.07 3.93	9 0 20 -40 20 46 135.082 -40.346	9 0 10 -40 20 46 135.043 -40.346	9 0 10 -40 22 34 135.043 -40.376	9 0 20 -40 22 34 135.082 -40.376	0.0009	250	> 10	STAR: HD77581 AT RA= 9H 0M 13.2S DEC= -40D 21M 25.2S PERIODS: 283 SEC;8.96 DAY	GX263+3 (2) VEL XR-1 (1) ? VEL 1 (3) 3U0900-40	4U0900-40 *
4U0900-09	9 0 24 - 9 24 0 135.100 -9.400	238.27 23.58	9 5 17 - 9 12 36 136.32 -9.210	8 55 31 - 9 12 36 133.88 -9.210	8 55 31 - 9 34 30 133.88 -9.575	9 5 17 - 9 34 30 136.32 -9.575	0.8784	5.18 .5		CLUSTER: ABELL 754 (3,2)	2A0906-095 (5) 3U0901-09	4U0900-09

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U0908-66	9 8 24 -66 55 30 137.100 -66.925	283.73 -12.98	9 12 34 -66 10 12 138.14 -66.17	9 10 53 -65 45 36 137.72 -65.76	9 4 46 -67 34 12 136.19 -67.57	9 7 29 -67 39 0 136.87 -67.65	0.4854	12.0 1.0				4U0908-66
4U0913-46	9 13 12 -46 9 0 138.300 -46.150	268.92 1.72	9 17 14 -45 6 0 139.31 -45.10	8 59 10 -48 36 36 134.79 -48.61	9 0 26 -48 55 48 135.11 -48.93	9 18 43 -45 24 0 139.68 -45.40	1.7902	3.96 1.1				4U0913-46
4U0919-54	9 19 6 -54 57 0 139.775 -54.950	275.84 -3.79	9 19 42 -54 54 0 139.925 -54.900	9 19 24 -54 51 11 139.850 -54.853	9 18 42 -55 0 25 139.675 -55.007	9 18 48 -55 3 29 139.700 -55.058	0.0101	5.44 .3			3U0918-55	4U0919-54
4U0923-31	9 23 20 -31 29 6 140.835 -31.485	259.74 13.41	9 24 1 -31 31 55 141.005 -31.532	9 23 14 -31 18 7 140.807 -31.302	9 22 37 -31 25 37 140.655 -31.427	9 23 27 -31 39 43 140.861 -31.662	0.0513	4.84 .2			2A0922-317(5)	4U0923-31
4U0937-12	9 37 55 -12 51 0 144.478 -12.850	247.65 28.65	9 23 12 - 9 0 36 140.80 -9.01	9 21 55 - 9 20 24 140.48 -9.34	9 52 36 -16 41 24 148.15 -16.69	9 53 55 -16 21 36 148.48 -16.36	4.7636	3.3 .8			2A0943-140 (5)	4U0937-12
4U0945-30	9 45 54 -30 40 30 146.475 -30.675	262.79 17.33	9 46 51 -30 45 0 146.713 -30.750	9 45 42 -30 25 30 146.425 -30.425	9 45 0 -30 34 30 146.250 -30.575	9 46 12 -30 54 47 146.550 -30.913	0.0878	3.39 .3			2A0946-310(5) 3U0946-30	4U0945-30
4U0954+70	9 54 31 +70 12 0 148.630 70.200	140.92 40.59	10 9 22 +70 51 36 152.34 70.86	10 3 34 +71 22 12 150.89 71.37	9 40 34 +69 31 12 145.14 69.52	9 42 2 +69 6 36 145.51 69.11	1.5031	2.63 .4		M82	2A0954+700 (5) 3U0943+71	4U0954+70
4U0955-28	9 55 31 -28 24 36 148.880 -28.410	262.88 20.41	10 0 38 -30 11 53 150.16 -30.198	9 51 32 -26 24 11 147.885 -26.403	9 50 42 -26 35 24 147.675 -26.590	9 59 14 -30 26 42 149.810 -30.445	1.3568	4.83 1.1				4U0955-28 X

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1015-25	10 15 6 -25 24 0 153.775 -25.400	264.49 25.50	10 24 20 -28 49 12 156.085 -28.820	10 10 18 -23 0 0 152.575 -23.000	10 9 30 -23 31 30 152.373 -23.525	10 23 39 -29 12 36 155.913 -29.210	2.4047	3.54 .7		CLUSTER: ABELL 955 (6,1) ? ABELL 966 (6,1) ?		4U1015-25 X
4U1022-40	10 22 2 -40 51 0 155.510 -40.850	275.24 13.72	10 22 55 -40 25 48 155.73 -40.43	10 21 10 -40 9 0 155.29 -40.15	10 21 10 -41 16 48 155.29 -41.28	10 22 55 -41 32 24 155.73 -41.54	0.3727	4.61 1.1		PKS1002-21 ?		4U1022-40
4U1033-26	10 33 17 -26 51 0 158.320 -26.850	269.12 26.70	10 35 52 -27 45 18 158.966 -27.755	10 27 26 -24 13 12 156.860 -24.220	10 26 30 -24 21 16 156.624 -24.355	10 35 13 -27 54 54 158.803 -27.915	0.9212	1.99 .4		CLUSTER: ABELL 1060 (0,1)	2A1033-270 (5) 3U1044-30	4U1033-26
4U1036-56	10 36 10 -56 33 0 159.040 -56.550	285.42 1.46	10 37 4 -56 33 0 159.268 -56.550	10 35 27 -56 25 12 158.864 -56.420	10 35 4 -56 32 35 158.768 -56.543	10 36 42 -56 40 12 159.176 -56.670	0.0339	4.36 .5			A1034-56 (13) 3U1022-55	4U1036-56
4U1037-60	10 37 0 -60 54 0 159.250 -60.900	287.63 -2.29	10 43 24 -59 31 12 160.85 -59.52	10 42 58 -59 16 12 160.74 -59.27	10 30 0 -62 13 48 157.50 -62.23	10 31 0 -62 30 0 157.75 -62.50	0.6555	2.66 .5		η CARINAE RA = 10H 43M 6.89S DEC = -59D 25M 16.22S	A1044-59 (13)	4U1037-60
4U1041-21	10 41 36 -21 48 0 160.400 -21.800	267.73 31.96	10 45 36 -22 40 30 161.400 -22.675	10 39 10 -20 39 11 159.793 -20.653	10 37 40 -20 57 7 159.415 -20.952	10 44 6 -22 57 36 161.025 -22.960	1.1399	3.28 .9				4U1041-21 X
4U1057-21	10 57 7 -21 48 0 164.280 -21.800	271.37 33.86	11 1 24 -23 0 0 165.35 -23.00	10 53 48 -20 24 0 163.45 -20.40	10 52 58 -20 36 0 163.24 -20.60	11 0 19 -23 10 48 165.08 -23.18	0.9054	2.91 .5		CLUSTER: ABELL 1146(5,4)?	2A1058-226 (5)	4U1057-21
4U1110-58	11 10 12 -58 0 0 167.550 -58.000	290.20 2.13	11 11 36 -57 48 0 167.90 -57.80	11 8 48 -57 48 0 167.20 -57.80	11 8 48 -58 10 48 167.20 -58.18	11 11 36 -58 10 48 167.90 -58.18	0.1410	3.63 .7				4U1110-58

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1118-60	11 18 55 -60 19 5 169.730 -60.318	292.07 0.36	11 18 53 -60 17 35 169.722 -60.293	11 18 47 -60 18 32 169.697 -60.309	11 18 58 -60 20 35 169.740 -60.343	11 19 3 -60 19 41 169.764 -60.328	0.0007	200	>10	STAR: KRZEMINSKI AT RA = 11H 19M 03S DEC = -60D 20M 54S PERIODS: 4.8 SEC;2.09 DAY	CEN XR-3 (1,2) CEN X-3 (7) CEN 3 (3) 3U1118-60	4U1118-60 *
4U1119-77	11 19 36 -77 48 0 169.900 -77.800	298.20 -16.04	11 23 17 -77 33 29 170.82 -77.558	11 16 0 -77 33 29 169.00 -77.558	11 16 0 -78 4 12 169.00 -78.070	11 23 17 -78 4 12 170.82 -78.070	0.1967	2.40	.4			4U1119-77
4U1120-43	11 20 36 -43 10 30 170.150 -43.175	286.37 16.56	11 27 0 -43 17 24 171.75 -43.29	11 14 48 -42 48 36 168.70 -42.81	11 14 12 -43 3 36 168.55 -43.06	11 26 7 -43 33 36 171.53 -43.56	0.6365	1.74	.4			4U1120-43 X
4U1130-14	11 30 24 -14 37 30 172.600 -14.625	276.18 43.85	11 39 14 -17 18 36 174.81 -17.31	11 23 41 -12 0 36 170.92 -12.01	11 22 43 -12 18 36 170.68 -12.31	11 38 19 -17 34 12 174.58 -17.57	2.2475	2.74	.6	CLUSTER: ABELL 1285 (5,1) ? = PKS1127-14		4U1130-14 X
4U1136-37	11 36 54 -37 21 0 174.225 -37.350	287.49 23.07	11 38 36 -37 24 0 174.65 -37.40	11 36 22 -36 58 48 174.09 -36.98	11 35 12 -37 16 48 173.80 -37.28	11 37 31 -37 45 0 174.38 -37.75	0.2464	2.72	.5	SEYFERT: NGC 3783	2A1135-373 (5)	4U1136-37
4U1137-65	11 37 18 -65 6 0 174.325 -65.100	295.54 -3.54	11 38 23 -65 4 12 174.595 -65.070	11 36 25 -65 0 0 174.103 -65.000	11 36 19 -65 9 0 174.080 -65.150	11 38 18 -65 12 47 174.575 -65.213	0.0310	9.59	.5		3U1134-61	4U1137-65
4U1143+19	11 43 30 +19 48 0 175.875 19.800	236.38 73.20	11 44 54 +19 46 59 176.225 19.783	11 42 21 +20 9 0 175.588 20.150	11 41 58 +19 50 17 175.493 19.838	11 44 29 +19 33 0 176.120 19.550	0.1928	3.01	.2	CLUSTER: ABELL 1367 (1,2)= 3C264 = NGC 3862	2A1141+199 (5) 3U1144+19	4U1143+19
4U1144+84	11 44 0 +84 0 0 176.000 84.000	125.00 33.15	12 5 17 +86 16 48 181.320 86.28	11 45 31 +86 16 48 176.378 86.28	11 30 0 +80 7 12 172.500 80.12	11 37 52 +80 7 12 174.465 80.12	2.0182	3.44	.6			4U1144+84

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1145-61	11 45 7 -61 56 42 176.280 -61.945	295.56 -0.27	11 45 30 -61 47 49 176.375 -61.797	11 45 18 -61 46 30 176.323 -61.775	11 44 44 -62 6 0 176.183 -62.100	11 44 57 -62 7 8 176.237 -62.119	0.0094	72	10	STAR: HD102567 ?	3U1145-61	4U1145-61 *
4U1147-12	11 47 26 -12 24 36 176.860 -12.410	280.45 47.48	11 54 46 -14 26 24 178.69 -14.44	11 41 14 -10 5 24 175.31 -10.09	11 40 22 -10 18 0 175.09 -10.30	11 53 24 -14 47 24 178.35 -14.79	2.1110	2.42	.5	CLUSTER: ABELL 1391 (6,2) ? PKS1146-11 ?		4U1147-12 X
4U1153-11	11 53 36 -11 33 0 178.400 -11.550	282.14 48.80	11 55 36 -11 39 0 178.90 -11.65	11 51 53 -11 9 0 177.97 -11.15	11 51 14 -11 24 0 177.81 -11.40	11 55 0 -11 52 48 178.75 -11.88	0.2943	2.12	.3			4U1153-11
4U1153-40	11 53 54 -40 12 0 178.475 -40.200	291.75 21.20	11 56 28 -40 9 29 179.116 -40.158	11 51 46 -39 58 48 177.943 -39.980	11 51 42 -40 15 54 177.925 -40.265	11 56 11 -40 26 35 179.045 -40.443	0.2555	3.50	.8			4U1153-40 C
4U1203-06	12 3 41 - 6 7 12 180.920 -6.120	283.22 54.73	12 8 24 - 7 27 0 182.10 -7.45	11 59 43 - 4 37 48 179.93 -4.63	11 59 0 - 4 45 0 179.75 -4.75	12 7 38 - 7 37 48 181.91 -7.63	0.8465	2.21	.4	SUPERCLUSTER ?		4U1203-06
4U1206+39	12 6 48 +39 46 30 181.700 39.775	155.57 74.85	12 8 41 +39 50 6 182.170 39.835	12 4 47 +39 50 6 181.195 39.835	12 5 12 +39 42 29 181.300 39.708	12 9 5 +39 42 29 182.270 39.708	0.0949	4.30	.4	SEYFERT: NGC 4151	2A1207+397 (5) 3U1207+39	4U1206+39
4U1209-45	12 9 36 -45 12 0 182.400 -45.200	295.76 16.85	12 10 36 -44 57 36 182.650 -44.960	12 8 32 -44 45 36 182.135 -44.760	12 8 32 -45 24 54 182.135 -45.415	12 10 36 -45 40 12 182.650 -45.670	0.2477	2.71	.6			4U1209-45
4U1210-64	12 10 22 -64 38 24 182.590 -64.640	298.88 -2.35	12 10 50 -64 33 0 182.71 -64.55	12 9 53 -64 33 0 182.47 -64.55	12 9 53 -64 44 24 182.47 -64.74	12 10 50 -64 44 24 182.71 -64.74	0.0195	5.21	.3		3U1210-64	4U1210-64

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1221-08	12 21 24 - 8 9 0 185.350 -8.150	291.38 53.83	12 22 52 - 8 10 59 185.718 -8.183	12 20 49 - 7 47 24 185.205 -7.790	12 19 54 - 8 5 6 184.973 -8.085	12 21 56 - 8 29 6 185.485 -8.485	0.2427	3.36 .5			3U1237-07	4U1221-08
4U1223-62	12 23 58 -62 33 36 185.990 -62.560	300.12 -0.10	12 24 7 -62 33 4 186.031 -62.551	12 23 54 -62 28 59 185.974 -62.483	12 23 47 -62 34 16 185.947 -62.571	12 24 1 -62 38 28 186.004 -62.641	0.0032	40	5	STAR: WRAY 977 AT RA = 12H 23M 49.3S DEC = -62D 29M 36S OPTICAL PERIOD: 20.55 DAY PERIOD: 11.6 MIN	GX301-2 (9) 3U1223-62	4U1223-62 *
4U1226+02	12 26 5 + 2 28 48 186.520 2.480	289.61 64.48	12 26 52 + 2 28 5 186.716 2.468	12 25 33 + 2 38 46 186.386 2.646	12 25 17 + 2 30 22 186.320 2.506	12 26 36 + 2 19 55 186.650 2.332	0.0571	2.69 .2		QSO: 3C273	2A1225+022 (5) 3U1224+02	4U1226+02
4U1228+12	12 28 46 +12 40 12 187.190 12.670	284.18 74.53	12 29 28 +12 40 59 187.365 12.683	12 28 5 +12 45 22 187.019 12.756	12 28 0 +12 40 16 186.998 12.671	12 29 22 +12 36 0 187.342 12.600	0.0298	21.7 .3		CLUSTER: VIRGO =M87=VIR A	2A1228+125 (5) 3U1228+12	4U1228+12 *
4U1232+07	12 32 54 + 7 6 0 188.225 7.100	291.61 69.34	12 35 44 + 6 58 12 188.933 6.970	12 30 28 + 7 34 48 187.615 7.580	12 29 49 + 7 15 47 187.455 7.263	12 35 7 + 6 37 48 188.780 6.630	0.5272	3.09 .8		IC 3576 ?	3U1231+07	4U1232+07 X
4U1240-05	12 40 22 - 5 39 0 190.090 -5.650	299.06 56.88	12 54 24 - 9 15 47 193.600 -9.263	12 28 55 - 1 47 17 187.230 -1.788	12 27 55 - 1 58 30 186.980 -1.975	12 50 12 - 9 34 30 192.550 -9.575	6.2847	2.03 .6		CLUSTERS: ABELL 1588 (5.0) ? ABELL 1635 (5.1) ? 3C275 ?		4U1240-05
4U1246-58	12 46 10 -58 46 30 191.540 -58.775	302.63 3.82	12 47 7 -58 40 30 191.780 -58.675	12 45 14 -58 40 30 191.308 -58.675	12 45 14 -58 51 54 191.308 -58.865	12 47 7 -58 51 54 191.780 -58.865	0.0465	5.11 .4			A1246-58 (13)	4U1246-58
4U1246-41	12 46 13 -41 2 6 191.555 -41.035	302.44 21.56	12 46 44 -41 2 13 191.685 -41.037	12 46 5 -40 56 53 191.520 -40.948	12 45 48 -41 1 30 191.450 -41.025	12 46 21 -41 7 8 191.587 -41.119	0.0149	4.76 .3		CLUSTER: CENTAURUS = NGC 4696 = PKS1245-41	2A1246-410 (5) 3U1247-41	4U1246-41

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3F)	(4A)	(4B)	(5A)	(5B)	(6)
4U1249-28	12 49 36 -28 54 0 192.400 -28.900	303.16 33.70	12 51 23 -28 51 54 192.844 -28.865	12 47 54 -28 46 23 191.976 -28.773	12 47 37 -28 55 30 191.903 -28.925	12 51 8 -29 1 41 192.784 -29.028	0.1263	4.55 .3		CLUSTER: SC1251-288 (3,0) = PKS1252-289	2A1251-290 (5) 3U1252-28	4U1249-28
4U1253-00	12 53 54 - 0 16 30 193.475 -.275	305.64 62.30	12 55 42 - 0 31 5 193.925 -.518	12 52 53 + 0 10 30 193.220 .175	12 52 10 - 0 1 48 193.040 -.030	12 54 55 - 0 42 54 193.730 -.715	0.2694	3.56 .6				4U1253-00
4U1254-69	12 54 22 -69 1 12 193.590 -69.020	303.48 -6.43	12 54 17 -69 0 0 193.570 -69.000	12 54 5 -69 1 12 193.520 -69.020	12 54 26 -69 2 24 193.610 -69.040	12 54 38 -69 1 12 193.660 -69.020	0.0010	23.2 .5			3U1254-69	4U1254-69
4U1257+28	12 57 29 +28 11 24 194.370 28.190	56.33 87.97	12 57 55 +28 11 24 194.480 28.190	12 57 2 +28 14 24 194.260 28.240	12 56 55 +28 11 24 194.230 28.190	12 57 48 +28 8 24 194.450 28.140	0.0110	14.8 .3		CLUSTER: COMA = ABELL 1656 (1,2)	2A1257+283 (5) 3U1257+28	4U1257+28 *
4U1258-61	12 58 17 -61 22 12 194.572 -61.370	304.11 1.21	12 58 27 -61 23 42 194.613 -61.395	12 58 13 -61 16 59 194.556 -61.283	12 58 8 -61 20 38 194.532 -61.344	12 58 21 -61 27 7 194.587 -61.452	0.0029	55	10	PERIOD: 272.2 SEC	GX304-1 (9,10) 3U1258-61	4U1258-61 *
4U1300-48	13 0 42 -48 52 30 195.175 -48.875	304.98 13.68	13 3 5 -48 46 5 195.770 -48.768	12 58 42 -48 34 5 194.675 -48.568	12 58 23 -48 58 5 194.595 -48.968	13 2 43 -49 10 5 195.680 -49.168	0.2979	2.30 .6				4U1300-48 X
4U1302-77	13 2 0 -77 30 0 195.500 -77.500	303.73 -14.92	13 45 41 -80 16 30 206.42 -80.275	12 24 14 -74 31 48 186.06 -74.53	12 12 53 -74 52 48 183.22 -74.88	13 29 31 -80 50 42 202.38 -80.845	6.0493	3.52 .6				4U1302-77
4U1308+86	13 8 48 +86 28 48 197.200 86.480	122.65 30.91	13 23 22 +86 40 48 200.84 86.68	12 57 36 +86 40 48 194.40 86.68	12 53 36 +86 19 12 193.40 86.32	13 19 50 +86 19 12 199.96 86.32	0.1425	1.85 .4				4U1308+86

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1314+59	13 14 24 +59 31 30 198.600 59.525	116.99 57.58	13 39 55 +59 54 0 204.98 59.90	13 35 31 +61 0 36 203.88 61.01	12 53 2 +59 19 48 193.26 59.33	12 57 36 +58 18 36 194.40 58.31	6.6058	2.61	.3	CLUSTER: ABELL 1767 (4,1) ?		4U1314+59
4U1314-64	13 14 57 -64 36 0 198.737 -64.600	305.78 -2.14	13 16 36 -65 11 6 199.150 -65.185	13 13 39 -63 49 48 198.413 -63.830	13 13 19 -64 0 0 198.330 -64.000	13 16 15 -65 23 17 199.063 -65.388	0.1089	9.63	.8			4U1314-64
4U1317+06	13 17 30 + 6 46 30 199.375 6.775	322.45 68.29	13 23 50 + 5 27 47 200.958 5.463	13 13 9 + 8 16 30 198.288 8.275	13 12 10 + 8 2 6 198.040 8.035	13 22 6 + 5 11 6 200.523 5.185	1.6224	2.56	.6			4U1317+06 X
4U1322-42	13 22 22 -42 45 54 200.590 -42.765	309.48 19.42	13 22 48 -42 46 48 200.698 -42.780	13 22 5 -42 40 12 200.520 -42.670	13 21 53 -42 44 56 200.472 -42.749	13 22 36 -42 51 14 200.652 -42.854	0.0138	8.40	.4	NGC 5128 = CEN A	2A1322-427 (5) 3U1322-42	4U1322-42 *
4U1323-62	13 23 36 -62 0 54 200.900 -62.015	307.05 0.31	13 24 15 -62 7 1 201.064 -62.117	13 23 29 -61 49 19 200.870 -61.822	13 22 56 -61 54 43 200.732 -61.912	13 23 40 -62 12 32 200.918 -62.209	0.0278	4.22	.3		3U1320-61	4U1323-62
4U1325-31	13 25 36 -31 19 48 201.400 -31.330	312.08 30.63	13 37 26 -35 0 0 204.36 -35.00	13 15 22 -27 18 0 198.84 -27.30	13 13 12 -27 40 48 198.30 -27.68	13 36 24 -35 19 48 204.10 -35.33	4.3610	3.58	.8	CLUSTER: SC 1329-314 (4,0) = PKS1327-311	MX1329-31 (28) 2A1326-311 (5)	4U1325-31
4U1326+11	13 26 24 +11 54 0 201.600 11.900	334.32 72.19	13 18 43 +14 48 0 199.68 14.80	13 17 24 +14 33 36 199.35 14.56	13 34 22 + 9 2 24 203.59 9.04	13 35 14 + 9 10 48 203.81 9.18	2.2667	2.20	.5	CLUSTER: ABELL 1735 (6,1) ?		4U1326+11
4U1344-60	13 44 12 -60 57 0 206.050 -60.950	309.65 0.94	13 45 42 -61 16 48 206.425 -61.280	13 43 50 -60 30 0 205.960 -60.500	13 42 53 -60 39 0 205.720 -60.650	13 44 46 -61 26 6 206.190 -61.435	0.1248	4.00	.5		A1343-60 (13)	4U1344-60

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1345-32	13 45 36 -32 40 30 206.400 -32.675	316.53 28.44	13 46 37 -32 44 17 206.653 -32.738	13 45 13 -32 25 23 206.305 -32.423	13 44 32 -32 37 5 206.135 -32.618	13 45 56 -32 55 30 206.483 -32.925	0.1004	5.31 .8		CLUSTER: SC1345-301 (0,2) = PKS1344-302	MX1347-32 (28) 2A1344-325 (5)	4U1345-32
4U1348+25	13 48 0 +25 48 0 207.000 25.800	29.44 76.72	13 54 38 +25 38 24 208.66 25.64	13 42 24 +27 14 24 205.60 27.24	13 40 10 +26 12 0 205.04 26.20	13 52 38 +24 33 36 208.16 24.56	3.7144	4.12 .5		CLUSTER: ABELL 1795 (4,2)	2A1346+266 (5) 3U1349+24	4U1348+25
4U1404+14	14 4 26 +14 35 24 211.110 14.590	0.69 68.28	14 11 19 +12 25 23 212.830 12.423	13 58 14 +16 55 48 209.560 16.930	13 57 22 +16 40 59 209.343 16.683	14 10 45 +12 19 59 212.688 12.333	1.3061	2.49 .5		CLUSTER: ABELL 1852 (5,1) ? ABELL 1849 (5,0) ? ABELL 1860 (5,1) ?		4U1404+14 X
4U1410-03	14 10 55 - 3 3 36 212.730 -3.060	339.17 53.70	14 10 24 - 2 49 48 212.60 -2.83	14 9 29 - 3 0 0 212.37 -3.00	14 11 24 - 3 16 48 212.85 -3.28	14 12 12 - 3 7 48 213.05 -3.13	0.1366	3.00 .3		NGC 5506,5507 ?	2A1410-029 (5) 3U1410-03	4U1410-03
4U1414+25	14 14 12 +25 25 30 213.550 25.425	31.94 70.84	14 20 12 +23 51 0 215.050 23.850	14 10 24 +27 22 30 212.600 27.375	14 9 0 +26 46 30 212.250 26.775	14 18 42 +23 15 0 214.675 23.250	2.4755	3.41 .4		SEYFERT: NGC 5548	2A1415+255 (5)	4U1414+25
4U1416-62	14 16 18 -62 16 30 214.075 -62.275	312.96 -1.37	14 17 3 -62 22 5 214.263 -62.368	14 15 55 -62 4 23 213.978 -62.073	14 15 32 -62 10 12 213.883 -62.170	14 16 40 -62 27 36 214.168 -62.460	0.0255	7.59 .5				4U1416-62
4U1425-61	14 25 2 -61 13 30 216.260 -61.225	314.30 -0.74	14 32 18 -61 47 35 218.075 -61.793	14 19 53 -60 28 12 214.970 -60.470	14 17 58 -60 40 30 214.490 -60.675	14 30 21 -61 59 53 217.586 -61.998	0.6139	2.41 .5			MX1418-61(28)?	4U1425-61
4U1436-56	14 36 34 -56 36 36 219.140 -56.610	317.43 2.95	14 43 27 -58 26 46 220.862 -58.446	14 30 34 -54 36 0 217.640 -54.600	14 29 33 -54 48 36 217.388 -54.810	14 42 45 -58 36 7 220.688 -58.602	0.7776	3.80 .6				4U1436-56

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1438-18	14 38 24 -18 30 0 219.600 -18.500	336.06 37.00	14 42 58 -19 0 36 220.74 -19.01	14 35 14 -17 45 36 218.81 -17.76	14 34 10 -18 1 48 218.54 -18.03	14 41 53 -19 15 0 220.47 -19.25	0.7825	3.50	.8			4U1438-18 X
4U1444+43	14 44 36 +43 4 30 221.15 43.075	74.47 61.89	14 55 6 +43 23 17 223.775 43.388	14 30 12 +42 56 17 217.55 42.938	14 32 36 +42 44 17 218.15 42.738	14 57 30 +43 7 30 224.375 43.125	1.2349	3.21	.3		3U1443+43	4U1444+43
4U1446-55	14 46 48 -55 24 0 221.700 -55.400	319.24 3.45	14 40 55 -53 37 12 220.23 -53.62	14 40 0 -53 51 0 220.00 -53.85	14 54 10 -57 30 0 223.54 -57.50	14 55 7 -57 15 36 223.78 -57.26	0.9542	2.48	.5			4U1446-55
4U1450-80	14 50 36 -80 33 0 222.650 -80.550	308.05 -19.16	15 4 24 -80 46 12 226.10 -80.77	14 40 36 -80 6 36 220.15 -80.11	14 36 46 -80 20 24 219.19 -80.34	15 0 53 -81 0 36 225.22 -81.01	0.3315	2.37	.5			4U1450-80
4U1455+19	14 55 2 +19 6 0 223.760 19.100	23.77 59.98	14 58 9 +18 16 30 224.536 18.275	14 46 41 +22 9 18 221.672 22.155	14 46 22 +22 3 36 221.592 22.060	14 57 7 +18 4 48 224.28 18.080	1.0004	3.29	.5	CLUSTER: ABELL 1991 (3,1)		4U1455+19
4U1455-27	14 55 24 -27 22 12 223.850 -27.370	334.60 27.38	15 4 53 -28 23 24 226.22 -28.39	14 49 12 -24 59 24 222.30 -24.99	14 46 24 -26 6 0 221.60 -26.10	15 1 5 -30 0 0 225.27 -30.00	7.2503	3.71	.6			4U1455-27
4U1456+22	14 56 41 +22 35 24 224.170 22.590	30.70 60.75	15 1 55 +20 55 12 225.480 20.920	14 52 29 +24 31 12 223.120 24.520	14 51 0 +24 12 18 222.750 24.205	15 1 22 +20 42 36 225.340 20.710	1.4281	2.98	.5	SUPERCLUSTER ?		4U1456+22
4U1458-41	14 58 0 -41 30 0 224.500 -41.500	327.43 14.92	14 59 56 -41 39 54 224.984 -41.665	14 57 44 -41 8 24 224.432 -41.140	14 56 8 -41 18 54 224.032 -41.315	14 58 14 -41 51 54 224.560 -41.865	0.2417	2.41	.5	SNR: PKS 1459-41 ?	MX1457-41 (31) 3U1439-39	4U1458-41

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1505+57	15 5 54 +57 18 0 226.475 57.300	93.70 51.61	15 8 43 +57 31 23 227.178 57.523	15 3 7 +57 31 23 225.780 57.523	15 3 7 +57 5 17 225.780 57.088	15 8 43 +57 5 17 227.178 57.088	0.3284	3.47 1.0		SNR: 1954C ?		4U1505+57 X
4U1510-59	15 10 7 -59 0 0 227.530 -59.000	320.31 -1.21	15 10 46 -58 58 48 227.690 -58.980	15 9 36 -58 55 48 227.400 -58.930	15 9 34 -59 1 48 227.390 -59.030	15 10 36 -59 4 12 227.650 -59.070	0.0140	6.03 .4		SNR: MSH 15-52 ?	3U1510-59	4U1510-59
4U1515+23	15 15 0 +23 6 0 228.750 23.100	33.84 56.83	15 19 17 +21 43 12 229.820 21.720	15 6 46 +26 33 54 226.690 26.565	15 6 12 +26 20 24 226.550 26.340	15 18 22 +21 28 23 229.590 21.473	1.4869	3.07 .4				4U1515+23
4U1516-56	15 16 48 -56 59 56 229.202 -56.999	322.11 0.03	15 16 54 -57 0 14 229.224 -57.004	15 16 45 -56 58 55 229.187 -56.982	15 16 43 -56 59 42 229.180 -56.995	15 16 52 -57 0 58 229.217 -57.016	0.0003	720	> 10	STAR: CIR X-1 AT RA = 15H 16M 48.53S DEC = -56D 59M 11.8S PERIOD: 16.59 DAYS	LUP XR-1(1,2)? CIR X-1 (14) NOR 2 (3) ? 3U1516-56	4U1516-56 *
4U1521+28	15 21 17 +28 31 12 230.320 28.520	44.03 56.50	15 26 55 +26 27 0 231.73 26.45	15 17 10 +30 49 12 229.29 30.82	15 15 2 +30 30 36 228.76 30.51	15 26 0 +26 18 36 231.50 26.31	1.9286	2.01 .2		CLUSTER: ABELL 2065 (3,2)	2A1518+274 (5)	4U1521+28
4U1530-44	15 30 46 -44 23 24 232.690 -44.390	331.01 9.26	15 39 13 -44 57 0 234.805 -44.950	15 23 16 -43 39 11 230.815 -43.653	15 22 29 -43 54 0 230.620 -43.900	15 38 8 -45 2 42 234.535 -45.045	0.6809	4.06 .7				4U1530-44
4U1535-29	15 35 53 -29 13 12 233.97 -29.22	341.39 20.71	15 59 12 -30 34 48 239.80 -30.58	15 13 31 -27 47 24 228.38 -27.79	15 12 38 -27 51 36 228.16 -27.86	15 58 10 -30 39 0 239.54 -30.65	1.2620	200	> 10	X-RAY BURST SOURCE?		4U1535-29 *
4U1538-52	15 38 14 -52 10 48 234.560 -52.180	327.40 2.24	15 38 46 -52 10 48 234.690 -52.180	15 37 55 -52 7 48 234.480 -52.130	15 37 41 -52 11 24 234.420 -52.190	15 38 34 -52 14 24 234.640 -52.240	0.0096	18	2		NOR XR-2 (1) ? NOR 2 (3) ? 3U1538-52	4U1538-52

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1543-62	15 43 0 -62 24 36 235.750 -62.410	321.71 -6.29	15 43 31 -62 24 0 235.88 -62.40	15 42 43 -62 24 0 235.68 -62.40	15 42 26 -62 25 48 235.61 -62.43	15 43 17 -62 25 48 235.82 -62.43	0.0028	19.1 1.1			3U1543-62	4U1543-62
4U1543-47	15 43 50 -47 33 36 235.960 -47.560	330.93 5.36	15 43 55 -47 34 48 235.980 -47.580	15 43 41 -47 31 48 235.920 -47.530	15 43 48 -47 32 24 235.950 -47.540	15 44 2 -47 35 24 236.010 -47.590	0.0006	2000	> 100	TRANSIENT	3U1543-47	4U1543-47 *
4U1556+27	15 56 34 +27 14 6 239.140 27.235	44.04 48.60	15 57 14 +27 10 26 239.310 27.174	15 56 6 +27 29 20 239.027 27.489	15 55 56 +27 17 53 238.982 27.298	15 57 2 +26 58 44 239.259 26.979	0.0616	3.32 .3		CLUSTER: ABELL 2142 (4.2)	2A1556+274 (5) 3U1555+27	4U1556+27
4U1556-60	15 56 54 -60 37 48 239.227 -60.630	324.13 -5.97	15 57 38 -60 36 0 239.407 -60.600	15 56 12 -60 36 0 239.052 -60.600	15 56 12 -60 39 36 239.052 -60.660	15 57 38 -60 39 36 239.407 -60.660	0.0104	20	2		3U1556-60	4U1556-60
4U1601+15	16 1 6 +15 58 30 240.275 15.975	28.87 44.23	16 2 46 +15 52 59 240.691 15.883	16 0 6 +16 18 11 240.023 16.303	15 59 30 +16 3 18 239.874 16.055	16 2 10 +15 38 24 240.540 15.640	0.2176	3.02 .6		CLUSTER: ABELL 2147 (1.1)	2A1600+164 (5) 3U1551+15	4U1601+15
4U1608-52	16 8 46 -52 18 0 242.190 -52.300	330.91 -0.84	16 9 46 -52 27 32 242.440 -52.459	16 7 45 -52 5 24 241.938 -52.090	16 7 39 -52 7 16 241.912 -52.121	16 9 40 -52 29 24 242.417 -52.490	0.0151	40	10	X-RAY BURST SOURCE	MX1608-52 (29)	4U1608-52 *
4U1614-27	16 14 36 -27 47 24 243.650 -27.790	348.99 15.99	16 18 53 -27 57 29 244.720 -27.958	16 12 26 -27 27 47 243.110 -27.463	16 10 26 -27 37 5 242.610 -27.618	16 16 53 -28 6 29 244.220 -28.108	0.4350	3.35 .6				4U1614-27 X
4U1617-15	16 17 7 -15 32 13 244.278 -15.537	359.09 23.77	16 17 4 -15 30 47 244.266 -15.513	16 16 55 -15 31 48 244.231 -15.530	16 17 7 -15 33 36 244.280 -15.560	16 17 18 -15 32 35 244.325 -15.543	0.0020	17000	2.5	STAR: V 818 RA= 16H 17M 04.3S DEC= -15D 31M 13S OPTICAL PERIOD: .787 DAY	SCO X-1 (1.2) SCO 1 (3) 2A1616-155 (5) 3U1617-15	4U1617-15 *

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1621-23	16 21 12 -23 27 0 245.300 -23.450	353.37 17.85	16 25 8 -23 31 48 246.285 -23.530	16 18 18 -23 8 35 244.575 -23.143	16 17 28 -23 23 17 244.365 -23.388	16 24 20 -23 46 5 246.085 -23.768	0.4520	2.80 .7				4U1621-23 X
4U1624-49	16 24 19 -49 5 24 246.080 -49.090	334.92 -0.27	16 24 7 -49 3 36 246.030 -49.060	16 24 7 -49 4 48 246.030 -49.080	16 24 29 -49 7 48 246.120 -49.130	16 24 34 -49 6 0 246.140 -49.100	0.0019	50	2		NOR XR-1(1,2)? NOR 1 (3) ? 3U1624-49	4U1624-49
4U1625-33	16 25 36 -33 18 0 246.400 -33.300	346.55 10.48	16 36 43 -34 34 12 249.18 -34.57	16 15 19 -31 36 36 243.83 -31.61	16 13 46 -31 58 12 243.44 -31.97	16 35 24 -34 55 12 248.85 -34.92	2.4851	3.36 .4				4U1625-33
4U1626-67	16 26 24 -67 22 37 246.600 -67.377	321.71 -13.05	16 27 17 -67 22 59 246.820 -67.383	16 26 3 -67 19 37 246.514 -67.327	16 25 30 -67 22 30 246.373 -67.375	16 26 44 -67 25 41 246.685 -67.428	0.0084	18	2	PERIOD: 7.68 SEC	2A1627-673 (5) 3U1626-67	4U1626-67 *
4U1627-09	16 27 0 - 9 13 30 246.750 -9.225	6.19 25.79	16 28 55 - 9 21 11 247.228 -9.353	16 26 7 - 8 51 0 246.528 -8.850	16 25 19 - 9 7 48 246.328 -9.130	16 28 8 - 9 38 35 247.035 -9.643	0.2964	2.48 .7				4U1627-09 C
4U1627+39	16 27 48 +39 36 0 246.950 39.600	62.86 43.52	16 28 29 +39 45 36 247.120 39.760	16 26 55 +39 45 36 246.730 39.760	16 26 55 +39 25 48 246.730 39.430	16 28 29 +39 25 48 247.120 39.430	0.0992	3.84 .4		CLUSTER: ABELL 2199 (1,2)	2A1626+396 (5) 3U1639+40	4U1627+39
4U1628+28	16 28 26 +28 40 12 247.110 28.670	48.10 42.00	16 34 44 +25 54 18 248.684 25.905	16 23 55 +31 37 12 245.980 31.620	16 23 23 +31 23 42 245.844 31.395	16 31 46 +25 45 18 247.940 25.755	2.6276	3.27 .7		CLUSTER: ABELL 2200 (5,0) ? QSO: PKS 1634+26 ? 3C341 ?	3U1645+21	4U1628+28 X
4U1630-47	16 30 11 -47 16 23 247.544 -47.273	336.90 0.28	16 30 2 -47 14 53 247.510 -47.248	16 30 1 -47 15 50 247.505 -47.264	16 30 20 -47 18 7 247.585 -47.302	16 30 20 -47 16 52 247.585 -47.281	0.0010	220	> 20	RECURRENT TRANSIENT	NOR XR-1(1,2)? NOR 1 (3) ? 3U1630-47	4U1630-47 *

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1631-64	16 31 30 -64 19 48 247.875 -64.330	324.39 -11.40	16 33 0 -64 15 11. 248.248 -64.253	16 30 1 -64 15 11 247.503 -64.253	16 30 1 -64 24 22 247.503 -64.406	16 33 0 -64 24 22 248.248 -64.406	0.0494	4.89 .5			2A1631-644 (5) 3U1632-64	4U1631-64
4U1636+05	16 36 24 + 5 12 0 249.100 5.200	21.47 31.68	16 48 42 + 4 23 24 252.175 4.390	16 29 48 + 5 57 0 247.450 5.950	16 28 54 + 5 36 36 247.225 5.610	16 46 18 + 4 11 24 251.575 4.190	1.8335	3.61 .6		CLUSTER: ABELL 2204 (5,3)	2A1630+057 (5) 3U1623+05	4U1636+05
4U1636-53	16 36 54 -53 39 4 249.226 -53.651	332.91 -4.81	16 36 54 -53 38 28 249.225 -53.641	16 36 44 -53 38 38 249.183 -53.644	16 36 54 -53 39 47 249.225 -53.663	16 37 4 -53 39 32 249.268 -53.659	0.0006	250	2	X-RAY BURST SOURCE	MXB1637-53(25) 3U1636-53	4U1636-53 *
4U1642-45	16 42 6 -45 31 30 250.526 -45.525	339.58 -0.08	16 42 4 -45 30 32 250.515 -45.509	16 41 56 -45 30 54 250.485 -45.515	16 42 9 -45 32 31 250.536 -45.542	16 42 17 -45 32 13 250.570 -45.537	0.0008	450	3		GX340+0 (16) ARA 1 (3) ? L3,GX340-2(1)? 3U1642-45	4U1642-45
4U1644+69	16 44 36 +69 55 30 251.150 69.925	101.66 36.13	16 48 22 +69 58 48 252.09 69.980	16 47 5 +70 17 53 251.77 70.298	16 40 38 +69 53 6 250.16 69.885	16 41 55 +69 34 30 250.48 69.575	0.2183	3.29 .9				4U1644+69
4U1651+39	16 51 41 +39 55 30 252.920 39.925	63.70 38.97	16 54 0 +39 51 54 253.50 39.865	16 50 7 +40 8 42 252.53 40.145	16 49 36 +39 57 18 252.40 39.955	16 53 22 +39 40 30 253.34 39.675	0.1704	2.29 .3		BL LAC: MKN 501		4U1651+39 *
4U1651-06	16 51 48 - 6 31 30 252.950 -6.525	12.46 22.29	16 54 0 - 6 18 36 253.500 -6.310	16 49 27 - 6 18 36 252.363 -6.310	16 49 27 - 6 42 54 252.363 -6.715	16 54 0 - 6 42 54 253.500 -6.715	0.4575	4.47 1.3				4U1651-06 C X
4U1652+63	16 52 48 +63 33 0 253.200 63.550	93.75 37.16	16 54 26 +63 42 0 253.610 63.700	16 51 6 +63 42 0 252.775 63.700	16 51 6 +63 24 0 252.775 63.400	16 54 26 +63 24 0 253.610 63.400	0.1116	1.94 .3				4U1652+63

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1656+35	16 56 9 +35 24 14 254.036 35.404	58.14 37.50	16 56 19 +35 25 16 254.081 35.421	16 55 57 +35 25 16 253.989 35.421	16 55 57 +35 23 10 253.989 35.386	16 56 19 +35 23 10 254.081 35.386	0.0026	100	10	STAR: HZ HER AT RA = 16H 56M 02S DEC = 35D 25M 03S PERIODS:1.2SEC;1.7DAY;34.8DAY	2A1655+353 (5) HER X-1 3U1653+35	4U1656+35 *
4U1658-48	16 58 58 -48 43 37 254.740 -48.727	338.93 -4.32	16 59 10 -48 43 1 254.790 -48.717	16 58 46 -48 43 1 254.690 -48.717	16 58 46 -48 44 17 254.690 -48.738	16 59 10 -48 44 17 254.790 -48.738	0.0014	350	3		GX339-4 (17) 3U1658-48	4U1658-48
4U1659-76	16 59 24 -76 33 0 254.850 -76.550	315.75 -20.64	17 4 7 -76 18 0 256.030 -76.300	16 55 34 -76 18 0 253.890 -76.300	16 54 29 -76 48 0 253.620 -76.800	17 2 48 -76 48 0 255.700 -76.800	0.2453	2.33	.4		3U1544-75	4U1659-76 C
4U1700+24	17 0 18 +24 28 30 255.075 24.475	45.30 34.03	17 2 26 +24 30 36 255.610 24.510	16 58 31 +24 38 24 254.628 24.640	16 58 22 +24 25 30 254.593 24.425	17 2 18 +24 16 59 255.575 24.283	0.2019	3.34	.4		2A1704+241 (5)	4U1700+24
4U1700-37	17 0 34 -37 46 37 255.142 -37.777	347.76 2.17	17 0 42 -37 45 0 255.176 -37.750	17 0 13 -37 45 22 255.053 -37.756	17 0 25 -37 48 11 255.106 -37.803	17 0 55 -37 48 11 255.231 -37.803	0.0050	100	>10	STAR: HD153919 AT RA = 17H 00M 32.7S DEC = -37D 46M 27S PERIOD: 3.41 DAY	3U1700-37	4U1700-37 *
4U1702-42	17 2 19 -42 58 48 255.580 -42.980	343.84 -1.27	17 2 55 -42 57 36 255.730 -42.960	17 1 58 -42 55 48 255.490 -42.930	17 1 46 -43 0 36 255.440 -43.010	17 2 41 -43 3 0 255.670 -43.050	0.0160	30	3		ARA XR-1 (1) ? GX-14.1 (2) ? 3U1702-42	4U1702-42
4U1702-36	17 2 21 -36 21 54 255.587 -36.365	349.09 2.75	17 2 26 -36 22 5 255.608 -36.368	17 2 18 -36 21 18 255.576 -36.355	17 2 17 -36 21 47 255.572 -36.363	17 2 24 -36 22 34 255.600 -36.376	0.0003	750	2		GX349+2 (33) SCO XR-2,L6, GX-10.7 (1,2) SCO 2 (3) 3U1702-36	4U1702-36
4U1703+26	17 3 36 +26 6 0 255.900 26.100	47.44 33.80	17 13 31 +25 47 6 258.380 25.785	16 46 29 +27 5 24 251.620 27.090	16 44 34 +26 56 24 251.140 26.940	17 13 31 +25 24 36 258.380 25.410	1.9042	2.25	.4			4U1703+26

388

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1704-30	17 4 18 -30 24 0 256.075 -30.400	354.11 6.02	16 57 6 -29 13 12 254.275 -29.22	16 56 19 -29 21 36 254.080 -29.36	17 12 17 -31 39 36 258.070 -31.66	17 12 55 -31 33 36 258.228 -31.56	0.7635	3.14	.4		MX1716-31(28)? MXB1659-29?(15)	4U1704-30
4U1705-44	17 5 24 -44 3 0 256.349 -44.050	343.32 -2.36	17 5 17 -44 1 48 256.319 -44.030	17 5 15 -44 2 24 256.313 -44.040	17 5 30 -44 4 12 256.373 -44.070	17 5 31 -44 3 0 256.380 -44.050	0.0008	280	3		3U1705-44	4U1705-44
4U1705-32	17 5 41 -32 13 12 256.420 -32.220	352.82 4.70	17 6 39 -32 19 30 256.663 -32.325	17 4 48 -32 3 43 256.202 -32.062	17 4 42 -32 6 36 256.173 -32.110	17 6 32 -32 22 30 256.633 -32.375	0.0257	25	5		L8 (1) ? 3U1704-32	4U1705-32
4U1707+78	17 7 24 +78 40 30 256.850 78.675	110.96 31.74	17 9 4 +78 47 6 257.265 78.785	17 5 29 +78 47 6 256.370 78.785	17 5 29 +78 39 36 256.370 78.660	17 9 4 +78 39 36 257.265 78.660	0.0219	3.59	.4	CLUSTER: ABELL 2256 (3,2)	2A1705+786 (5) 3U1706+78	4U1707+78
4U1708-40	17 8 22 -40 46 12 257.090 -40.770	346.28 -0.84	17 8 46 -40 46 59 257.193 -40.783	17 7 58 -40 42 36 256.992 -40.710	17 7 54 -40 45 11 256.977 -40.753	17 8 44 -40 49 30 257.182 -40.825	0.0072	14.9	.6		MX1709-40 (28)	4U1708-40
4U1708-23	17 8 59 -23 17 42 257.245 -23.295	0.53 9.36	17 9 16 -23 18 47 257.317 -23.313	17 8 46 -23 14 28 257.192 -23.241	17 8 41 -23 16 44 257.171 -23.279	17 9 11 -23 20 49 257.297 -23.347	0.0055	30	3		OPH XR-2 (1) OPH 2 (3) 3U1709-23	4U1708-23
4U1715-39	17 15 7 -39 19 12 258.780 -39.320	348.21 -1.03	17 16 4 -39 18 47 259.015 -39.313	17 14 31 -39 9 32 258.630 -39.159	17 14 11 -39 19 5 258.546 -39.318	17 15 44 -39 28 44 258.934 -39.479	0.0586	12.8	1.7		(SCO XR-2,L6,GX-10.7)(1)? (SCO XR-5) (1) ? (SCO 2, SCO 5) (3) ? 3U1714-39	4U1715-39
4U1715+02	17 15 24 + 2 48 0 258.850 2.800	24.37 22.00	17 16 36 + 2 52 23 259.150 2.873	17 14 20 + 2 58 41 258.585 2.978	17 14 10 + 2 43 30 258.540 2.725	17 16 25 + 2 36 47 259.103 2.613	0.1495	3.15	.6			4U1715+02

TABLE 1—*Continuee*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1716-01	17 16 38 - 1 39 36 259.160 -1.660	20.37 19.55	17 33 31 - 0 33 36 263.38 -0.56	.16 59 46 - 1 31 12 254.94 -1.52	16 59 46 - 2 48 0 254.94 -2.80	17 33 31 - 1 44 24 263.38 -1.74	10.3367	2.62	.3	3C353 ?		4U1716-01
4U1720+34	17 20 12 +34 36 0 260.050 34.600	58.35 32.51	17 24 49 +31 15 43 261.203 31.262	17 15 54 +39 16 48 258.975 39.280	17 14 32 +38 54 0 258.633 38.900	17 23 28 +30 54 0 260.868 30.900	2.8810	2.01	.5	CLUSTER: ABELL 2261 (6,2) ? ABELL 2266 (6,2) ?	3U1706+32	4U1720+34
4U1722+11	17 22 48 +11 57 0 260.700 11.950	34.16 24.48	17 23 37 +11 58 41 260.905 11.978	17 22 13 +12 3 54 260.555 12.065	17 22 4 +11 54 18 260.518 11.905	17 23 28 +11 49 12 260.868 11.820	0.0576	3.00	.3			4U1722+11
4U1722-30	17 22 50 -30 31 30 260.710 -30.525	356.33 2.70	17 23 18 -30 31 59 260.826 -30.533	17 22 28 -30 27 50 260.616 -30.464	17 22 23 -30 31 26 260.595 -30.524	17 23 14 -30 35 13 260.809 -30.587	0.0115	6.87	.4	X-RAY BURST SOURCE ?		4U1722-30 *
4U1728-33	17 28 11 -33 48 22 262.047 -33.806	354.24 -0.07	17 28 21 -33 48 4 262.088 -33.801	17 28 3 -33 46 55 262.013 -33.782	17 28 1 -33 48 32 262.006 -33.809	17 28 20 -33 49 37 262.082 -33.827	0.0018	150	5	X-RAY BURST SOURCE	GX354+0 (18) M4.GX354-5 (1) GX-5.6 (1,2) MXB1728-34(21) 3U1727-33	4U1728-33 *
4U1728-24	17 28 50 -24 43 1 262.207 -24.717	1.91 4.82	17 29 1 -24 41 53 262.255 -24.698	17 28 41 -24 41 53 262.172 -24.698	17 28 38 -24 43 59 262.158 -24.733	17 29 0 -24 43 59 262.248 -24.733	0.0028	60	2	PERIOD: 122 SEC	GX1+4 (10,19) SGR 6 (3) ? GX2+5 (20) 3U1728-24	4U1728-24 *
4U1728-16	17 28 50 -16 56 53 262.208 -16.948	8.49 9.03	17 28 48 -16 56 10 262.202 -16.936	17 28 44 -16 56 38 262.185 -16.944	17 28 52 -16 57 36 262.216 -16.960	17 28 56 -16 57 7 262.234 -16.952	0.0005	260	1.5		GX9+9 (32,2) OPH 3 (3) 3U1728-16	4U1728-16 *
4U1730-22	17 30 56 -22 0 7 262.732 -22.002	4.47 5.89	17 31 9 -22 0 40 262.789 -22.011	17 30 52 -21 58 26 262.715 -21.974	17 30 43 -21 59 38 262.678 -21.994	17 31 0 -22 1 48 262.752 -22.030	0.0026	120	> 10	TRANSIENT		4U1730-22 *

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1735-44	17 35 22 -44 25 16 263.840 -44.421	346.06 -7.00	17 35 36 -44 24 25 263.899 -44.407	17 35 5 -44 25 5 263.769 -44.418	17 35 9 -44 26 10 263.789 -44.436	17 35 39 -44 25 26 263.912 -44.424	0.0017	210	1.7		3U1735-44	4U1735-44
4U1735-28	17 35 24 -28 27 0 263.850 -28.450	359.57 1.56	17 35 36 -28 18 0 263.90 -28.30	17 34 48 -28 27 0 263.70 -28.45	17 35 12 -28 36 0 263.80 -28.60	17 36 0 -28 27 0 264.00 -28.45	0.0396	565	> 10	TRANSIENT	3U1735-28	4U1735-28 *
4U1743-29	17 43 36 -29 7 48 265.900 -29.130	359.95 -0.33	17 45 12 -29 6 0 266.30 -29.10	17 43 12 -29 0 0 265.80 -29.00	17 42 24 -29 6 0 265.60 -29.10	17 43 36 -29 18 0 265.90 -29.30	0.0917	40.	5.	GCX	SGR 1 (3) ? L13,M1 (1) ? A1742-294 (30) 3U1743-29	4U1743-29 *
4U1743-19	17 43 55 -19 59 24 265.980 -19.990	7.79 4.38	17 48 8 -20 37 5 267.035 -20.618	17 39 57 -19 16 48 264.988 -19.280	17 39 43 -19 21 54 264.928 -19.365	17 47 53 -20 41 42 266.970 -20.695	0.2338	150.	15	GLOBULAR CLUSTER: NGC 6440 TRANSIENT	MX1746-20 (28)	4U1743-19
4U1744-26	17 44 38 -26 33 4 266.159 -26.551	2.27 0.83	17 44 44 -26 33 22 266.183 -26.556	17 44 33 -26 32 6 266.139 -26.535	17 44 32 -26 32 46 266.135 -26.546	17 44 43 -26 33 58 266.179 -26.566	0.0005	600	3		GX3+1,GX+2,L14 SGR XR-1 (1) GX3+1 (32) SGR 6 (3) 3U1744-26	4U1744-26
4U1745+39	17 45 19 +39 0 0 266.330 39.000	64.65 28.61	17 47 0 +37 7 30 266.750 37.125	17 45 1 +41 13 30 266.253 41.225	17 43 1 +41 13 30 265.753 41.225	17 46 18 +36 25 30 266.575 36.425	1.3209	2.45	.5		3U1736+43	4U1745+39
4U1745+29	17 45 36 +29 12 0 266.400 29.200	54.06 25.86	17 55 46 +28 17 24 268.94 28.290	17 33 2 +30 39 0 263.26 30.650	17 31 34 +30 26 6 262.89 30.435	17 54 29 +28 6 54 268.62 28.115	1.6673	3.77	.9			4U1745+29
4U1746-37	17 46 48 -37 0 36 266.700 -37.010	353.55 -4.99	17 47 48 -36 56 49 266.95 -36.947	17 47 0 -36 56 49 266.75 -36.947	17 45 55 -37 3 54 266.48 -37.065	17 46 41 -37 3 54 266.67 -37.065	0.0184	40	1.5	GLOBULAR CLUSTER: NGC6441	3U1746-37	4U1746-37

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1755-33	17 55 34 -33 48 0 268.890 -33.800	357.24 -4.91	17 55 19 -33 43 48 268.830 -33.730	17 54 58 -33 46 12 268.740 -33.770	17 55 48 -33 52 12 268.950 -33.870	17 56 10 -33 49 48 269.040 -33.830	0.0145	60	2		GX-2.5 (1,2) SCO XR-6 (1) 3U1755-33	4U1755-33
4U1758-25	17 58 7 -25 4 48 269.530 -25.080	5.08 -1.03	17 58 7 -25 4 12 269.530 -25.070	17 58 0 -25 4 48 269.500 -25.080	17 58 7 -25 6 0 269.530 -25.100	17 58 14 -25 5 24 269.560 -25.090	0.0008	1150	2		GX5-1,GX+5.2, SGR XR-3 (1) GX5-1 (32,10) SGR 5 (3) 3U1758-25	4U1758-25
4U1758-20	17 58 34 -20 32 13 269.643 -20.537	9.07 1.15	17 58 34 -20 31 37 269.640 -20.527	17 58 30 -20 32 6 269.623 -20.535	17 58 35 -20 32 49 269.646 -20.547	17 58 39 -20 32 20 269.664 -20.539	0.0004	600	3		GX9+1,GX+9.1, L13,L19,M3 (1) SGR 3 (3) GX9+1 (32) 3U1758-20	4U1758-20
4U1759-66	17 59 0 -66 27 0 269.750 -66.450	327.56 -20.19	18 1 12 -66 12 0 270.300 -66.200	17 53 30 -66 27 36 268.375 -66.460	17 58 0 -66 44 42 269.500 -66.745	18 5 18 -66 29 6 271.325 -66.485	0.3247	2.15 .5				4U1759-66 X
4U1803-60	18 3 26 -60 33 36 270.860 -60.560	333.50 -18.34	18 34 36 -60 1 12 278.65 -60.02	18 30 48 -59 21 0 277.70 -59.35	17 34 12 -60 55 48 263.55 -60.93	17 34 12 -61 56 24 263.55 -61.94	6.6050	2.43 .3				4U1803-60
4U1807-10	18 7 55 -10 52 48 271.98 -10.88	18.60 3.93	18 28 5 - 9 40 12 277.02 -9.67	18 28 5 - 9 8 24 277.02 -9.14	17 47 46 -12 4 48 266.94 -12.08	17 47 46 -12 37 12 266.94 -12.62	5.2676	10	3	TRANSIENT		4U1807-10 *
4U1811-17	18 11 42 -17 11 6 272.927 -17.185	13.52 0.08	18 11 42 -17 10 26 272.925 -17.174	18 11 36 -17 10 52 272.902 -17.181	18 11 43 -17 11 38 272.928 -17.194	18 11 48 -17 11 17 272.952 -17.188	0.0005	400	3		GX+13.5,L20, SGR XR-2 (1) GX13+1 (32) SGR 2 (3) 3U1811-17	4U1811-17
4U1811+37	18 11 48 +37 54 0 272.950 37.900	65.00 23.32	18 11 33 +41 21 0 272.888 41.35	18 9 53 +41 21 0 272.470 41.35	18 12 1 +34 27 0 273.003 34.45	18 13 37 +34 27 0 273.405 34.45	2.2208	3.06 .6				4U1811+37

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1812-12	18 12 26 -12 7 48 273.110 -12.130	18.03 2.36	18 13 25 -12 14 6 273.355 -12.235	18 11 29 -11 58 44 272.872 -11.979	18 11 19 -12 1 1 272.829 -12.017	18 13 20 -12 16 30 273.335 -12.275	0.0268	20	2		SER XR-2 (1) ? 3U1812-12	4U1812-12
4U1813-14	18 13 10 -14 3 36 273.290 -14.060	16.42 1.28	18 13 17 -14 3 36 273.32 -14.06	18 13 7 -14 2 24 273.28 -14.04	18 13 2 -14 3 36 273.26 -14.06	18 13 14 -14 4 12 273.31 -14.07	0.0009	950	4	PERIOD: 31.9 MIN	GX17+2,GX+16.7 (32) L21,SER XR-2(1)? SER 2 (3) 3U1813-14	4U1813-14 *
4U1813+50	18 13 18 +50 0 0 273.325 50.000	77.96 26.17	18 14 18 +49 59 17 273.573 49.988	18 12 36 +50 7 12 273.150 50.120	18 12 27 +49 59 17 273.113 49.988	18 14 9 +49 51 47 273.536 49.863	0.0380	5.33 .3		STAR: AM HER AT RA = 18H 14M 59S DEC = 49D 50M 55S PERIOD: 186 MIN	2A1815+500 (5) 3U1809+50	4U1813+50 *
4U1817-05	18 17 34 - 5 54 0 274.390 -5.900	24.13 4.21	18 28 31 - 7 15 18 277.130 -7.255	18 7 38 - 4 24 54 271.910 -4.415	18 6 19 - 4 33 54 271.580 -4.565	18 27 48 - 7 21 0 276.950 -7.350	1.3574	2.96 .7			A1829-06 (22)?	4U1817-05 X
4U1820-30	18 20 26 -30 23 20 275.107 -30.389	2.78 -7.91	18 20 31 -30 22 52 275.129 -30.381	18 20 20 -30 22 52 275.084 -30.381	18 20 20 -30 23 53 275.084 -30.398	18 20 31 -30 23 53 275.129 -30.398	0.0007	320	3	GLOBULAR CLUSTER: NGC6624 X-RAY BURST SOURCE	SGR XR-4 (1) SGR 4 (3) 3U1820-30	4U1820-30 *
4U1822-37	18 22 14 -37 11 24 275.560 -37.190	356.79 -11.29	18 21 55 -37 7 48 275.480 -37.130	18 21 14 -37 10 48 275.310 -37.180	18 22 36 -37 15 0 275.650 -37.250	18 23 17 -37 12 0 275.820 -37.200	0.0230	25	4		SGR 7 (3) SCO XR-6 (1) ? 2A1822-371 (5) 3U1822-37	4U1822-37
4U1823-00	18 23 6 - 0 4 12 275.775 -.070	29.95 5.71	18 23 25 - 0 6 22 275.855 -0.106	18 22 47 - 0 1 8 275.695 -0.019	18 22 45 - 0 1 48 275.688 -0.030	18 23 24 - 0 7 1 275.848 -0.117	0.0024	55	2		A1822+00 (22) 3U1822-00	4U1823-00
4U1825+33	18 25 7 +33 56 24 276.280 33.940	61.93 19.48	18 31 14 +33 8 24 277.808 33.140	18 20 13 +35 7 26 275.056 35.124	18 19 0 +34 43 12 274.752 34.720	18 30 6 +32 45 14 277.526 32.754	1.3845	4.13 1.0				4U1825+33 C

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1830+34	18 30 7 +34 30 0 277.530 34.500	62.87 18.72	18 33 48 +34 0 0 278.451 34.000	18 27 30 +35 11 2 276.876 35.184	18 26 20 +35 0 14 276.582 35.004	18 32 40 +33 49 48 278.166 33.830	0.5089	3.29 .7				4U1830+34 C
4U1831-23	18 31 47 -23 12 18 277.945 -23.205	10.40 -6.90	18 32 13 -23 9 14 278.053 -23.154	18 31 21 -23 9 29 277.837 -23.158	18 31 21 -23 15 25 277.839 -23.257	18 32 13 -23 15 11 278.055 -23.253	0.0197	6.00 .4			3U1832-23	4U1831-23
4U1832-05	18 32 30 - 5 9 0 278.125 -5.150	26.53 1.28	18 33 47 - 5 7 12 278.445 -5.120	18 31 29 - 5 0 0 277.870 -5.000	18 31 25 - 5 12 11 277.853 -5.203	18 33 44 - 5 19 30 278.435 -5.325	0.1192	3.34 .6			3U1832-05	4U1832-05
4U1835-11	18 35 48 -11 24 0 278.950 -11.40	21.37 -2.34	18 39 42 -11 9 0 279.925 -11.150	18 31 54 -11 9 0 277.975 -11.150	18 31 54 -11 37 30 277.975 -11.625	18 39 42 -11 37 30 279.925 -11.625	0.9078	4.45 .6			A1829-10 (22)	4U1835-11
4U1837+04	18 37 32 + 4 59 13 279.382 4.987	36.12 4.83	18 37 38 + 4 58 48 279.410 4.980	18 37 27 + 5 0 4 279.363 5.001	18 37 26 + 4 59 42 279.360 4.995	18 37 37 + 4 58 19 279.406 4.972	0.0004	280	2	X-RAY BURST SOURCE	GX+36.3 (1) ? SER XR-1 (1,2) SER 1 (3) MXB1837+05(23) 3U1837+04	4U1837+04 *
4U1847+78	18 47 36 +78 54 0 281.900 78.900	110.53 26.91	18 52 42 +80 10 12 283.175 80.170	18 49 58 +81 34 12 282.490 81.570	18 42 50 +77 54 36 280.710 77.910	18 45 37 +76 39 0 281.405 76.650	0.9211	2.79 .5		SEYFERT: 3C390.3	3U1825+81	4U1847+78
4U1849-31	18 49 12 -31 12 0 282.300 -31.200	4.75 -13.83	18 52 38 -30 58 30 283.16 -30.975	18 45 14 -31 13 30 281.310 -31.225	18 45 42 -31 27 11 281.425 -31.453	18 53 2 -31 11 24 283.26 -31.190	0.3725	3.88 .4				4U1849-31
4U1850-03	18 50 14 - 3 27 18 282.560 -3.455	30.07 -1.86	18 33 53 - 1 46 48 278.47 -1.78	18 34 5 - 1 19 48 278.52 -1.33	19 6 46 - 5 22 48 286.69 -5.38	19 6 14 - 5 37 48 286.56 -5.63	3.1781	5.49 .7				4U1850-03

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1850-08	18 50 14 - 8 41 24 282.560 -8.690	25.41 -4.26	18 58 29 - 9 38 6 284.62 -9.635	18 42 43 - 7 39 54 280.68 -7.665	18 42 12 - 7 43 30 280.55 -7.725	18 57 36 - 9 43 30 284.40 -9.725	0.6304	8.88 .9		GLOBULAR CLUSTER: NGC6712	A1850-08 (22)	4U1850-08 *
4U1852+37	18 52 38 +37 0 0 283.160 37.000	67.07 15.41	18 54 14 +41 13 26 283.559 41.224	18 52 37 +41 13 26 283.156 41.224	18 51 12 +33 55 41 282.798 33.928	18 52 56 +33 55 41 283.234 33.928	2.4189	1.77 .4				4U1852+37
4U1853-23	18 53 36 -23 57 0 283.400 -23.950	11.93 -11.72	19 4 0 -23 4 30 286.000 -23.075	18 34 53 -24 48 36 278.720 -24.810	18 38 10 -25 2 24 279.540 -25.040	19 4 38 -23 33 18 286.160 -23.555	2.9092	3.22 1.1				4U1853-23 X
4U1857+01	18 57 24 + 1 11 24 284.350 1.190	35.02 -1.32	19 16 24 - 1 9 0 289.100 -1.15	18 39 34 + 3 45 36 279.890 3.76	18 38 22 + 3 31 48 279.590 3.53	19 15 12 - 1 22 12 288.800 -1.37	3.5191	4.05 1.1		X-RAY BURST SOURCE	A1905+00 (22) MXB1906+00(23)	4U1857+01 *
4U1859+69	18 59 24 +69 51 0 284.850 69.850	100.74 24.72	18 52 48 +73 54 0 283.200 73.900	18 46 48 +73 45 0 281.700 73.750	19 5 28 +65 52 30 286.365 65.875	19 9 0 +66 16 48 287.250 66.280	3.3713	2.09 .4		CLUSTER: ABELL 2312 (4,1)? ABELL 2315 (4,1)?	2A1854+683 (5) 3U1904+67 3U1843+67	4U1859+69
4U1901+03	19 1 42 + 3 6 0 285.425 3.100	37.21 -1.39	19 3 49 + 2 51 47 285.955 2.863	18 59 31 + 3 25 30 284.878 3.425	18 59 23 + 3 21 36 284.846 3.360	19 3 41 + 2 48 0 285.921 2.800	0.0872	87	> 10	TRANSIENT	3U1901+03	4U1901+03 *
4U1907+09	19 7 18 + 9 43 30 286.825 9.725	43.73 0.45	19 9 24 + 9 29 24 287.350 9.490	19 5 18 +10 2 2 286.323 10.034	19 5 9 + 9 58 12 286.288 9.970	19 9 16 + 9 25 59 287.318 9.433	0.0792	20	5		A1907+09 (22) 3U1906+09	4U1907+09
4U1908+00	19 8 7 + 0 31 12 287.030 .520	35.67 -4.00	19 7 50 + 0 32 24 286.960 .540	19 7 50 + 0 31 48 286.960 .530	19 8 22 + 0 29 24 287.090 .490	19 8 29 + 0 30 0 287.120 .500	0.0020	200	> 20	RECURRENT TRANSIENT	AQL XR-1 (1) AQL 1 (3) 3U1908+00	4U1908+00 *

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1908+05	19 8 12 + 5 7 30 287.050 5.125	39.76 -1.88	19 11 3 + 4 51 18 287.763 4.855	19 5 43 + 5 30 47 286.430 5.513	19 5 30 + 5 24 0 286.375 5.400	19 10 47 + 4 43 30 287.695 4.725	0.2013	3.66 .4			A1909+04 (22)	4U1908+05
4U1909+07	19 9 12 + 7 37 30 287.300 7.625	42.09 -0.94	19 10 55 + 7 27 36 287.730 7.460	19 7 50 + 7 53 42 286.960 7.895	19 7 31 + 7 46 12 286.880 7.770	19 10 35 + 7 19 48 287.645 7.330	0.1328	4.61 .5			A1908+07 (22) 3U1912+07	4U1909+07
4U1915-05	19 15 18 - 5 12 0 288.825 -5.200	31.38 -8.22	19 16 53 - 5 20 6 289.220 -5.335	19 13 54 - 4 55 12 288.475 -4.920	19 13 38 - 5 3 54 288.410 -5.065	19 16 38 - 5 26 42 289.160 -5.445	0.1196	20	2		A1916-05 (22) 3U1915-05	4U1915-05
4U1916-79	19 16 0 -79 18 0 289.000 -79.300	315.07 -28.14	20 19 26 -76 27 36 304.86 -76.46	17 46 7 -80 18 36 266.53 -80.31	17 50 19 -80 52 12 267.58 -80.87	20 26 34 -76 46 48 306.64 -76.78	4.5808	2.50 .2			3U1849-77	4U1916-79
4U1918+15	19 18 48 +15 0 0 289.700 15.000	49.70 0.45	19 21 14 +15 10 48 290.310 15.180	19 19 34 +15 35 24 289.890 15.590	19 16 18 +14 44 24 289.075 14.740	19 17 54 +14 21 0 289.475 14.350	0.6515	50	> 10	TRANSIENT	A1918+14 (22)	4U1918+15 *
4U1919+44	19 19 25 +44 4 12 289.855 44.070	75.88 13.63	19 20 1 +43 59 28 290.006 43.991	19 19 26 +44 14 20 289.859 44.239	19 18 51 +44 8 56 289.711 44.149	19 19 25 +43 54 14 289.855 43.904	0.0357	3.90 .3		CLUSTER: ABELL 2319 (3,1)	2A1919+438 (5) 3U1921+43	4U1919+44
4U1920+34	19 20 12 +34 3 0 290.050 34.050	66.77 9.08	19 21 28 +33 55 12 290.365 33.920	19 19 47 +34 22 48 289.946 34.380	19 18 52 +34 9 54 289.715 34.165	19 20 33 +33 42 47 290.138 33.713	0.1601	3.50 .7				4U1920+34 X
4U1924-59	19 24 35 -59 26 20 291.146 -59.439	337.60 -27.78	19 48 18 -59 4 30 297.075 -59.075	19 43 55 -57 58 48 295.980 -57.980	19 2 24 -59 18 0 285.600 -59.300	19 3 43 -61 24 0 285.930 -61.400	9.5113	1.93 .4			2A1914-589 (5)	4U1924-59

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U1933+36	19 33 36 +36 9 0 293.400 36.150	69.93 7.63	19 34 22 +36 54 36 293.59 36.91	19 32 55 +36 54 36 293.23 36.91	19 32 55 +35 26 24 293.23 35.44	19 34 22 +35 26 24 293.59 35.44	0.4271	2.26	.4			4U1933+36
4U1943+36	19 43 24 +36 24 0 295.850 36.400	71.12 6.03	19 45 18 +38 3 36 296.325 38.060	19 44 14 +38 16 48 296.060 38.280	19 40 48 +33 30 0 295.200 33.500	19 41 36 +33 21 0 295.400 33.350	1.0238	3.02	.5			4U1943+36
4U1954+31	19 54 2 +31 57 25 298.507 31.957	68.42 1.87	19 54 23 +31 55 8 298.596 31.919	19 53 43 +32 1 19 298.430 32.022	19 53 40 +31 59 53 298.415 31.998	19 54 19 +31 53 49 298.581 31.897	0.0045	63	5		3U1953+31	4U1954+31
4U1955-68	19 55 36 -68 54 0 298.900 -68.900	326.83 -31.39	19 58 7 -68 34 30 299.530 -68.575	19 52 48 -68 34 30 298.200 -68.575	19 52 48 -69 11 24 298.200 -69.190	19 58 7 -69 11 24 299.530 -69.190	0.2947	3.07	.4	CLUSTER: CA1955-692 ? (5,2) = PKS1955-692 CA2013-710 ? (0,0)	3U1959-69	4U1955-68
4U1956+35	19 56 22 +35 3 36 299.092 35.060	71.32 3.08	19 56 30 +35 3 58 299.124 35.066	19 56 19 +35 5 10 299.078 35.086	19 56 15 +35 3 14 299.064 35.054	19 56 26 +35 2 2 299.109 35.034	0.0014	1175	5	STAR: HDE226868 AT RA= 19H 56M 28.843S DEC= 35D 03M 54.51S	CYG X-1 (1,2) CYG 1 (3) 3U1956+35	4U1956+35 *
4U1957+11	19 57 17 +11 34 30 299.320 11.575	51.34 -9.38	19 57 53 +11 32 2 299.470 11.534	19 56 58 +11 42 22 299.243 11.706	19 56 42 +11 37 12 299.175 11.620	19 57 36 +11 26 24 299.402 11.440	0.0317	17.4	0.9		3U1956+11	4U1957+11
4U1957+40	19 57 17 +40 32 24 299.320 40.540	76.10 5.80	19 58 39 +40 25 26 299.664 40.424	19 56 21 +40 45 0 299.088 40.750	19 56 2 +40 38 53 299.008 40.648	19 58 17 +40 18 58 299.572 40.316	0.0670	4.03	.4	CLUSTER: CYG A = 3C405	3U1957+40	4U1957+40 *
4U2001+62	20 1 24 +62 36 0 300.350 62.600	95.88 16.36	20 5 50 +62 0 0 301.460 62.000	19 57 58 +63 35 6 299.490 63.585	19 56 41 +63 11 24 299.170 63.190	20 4 35 +61 36 36 301.145 61.610	0.5874	2.56	.5		3U1956+65	4U2001+62

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U2003+64	20 3 36 +64 22 12 300.900 64.370	97.63 16.98	20 6 36 +63 58 41 301.650 63.978	20 1 37 +64 57 0 300.405 64.950	20 0 38 +64 45 14 300.160 64.754	20 5 36 +63 45 43 301.400 63.762	0.2158	2.64	.4			4U2003+64
4U2019+39	20 19 0 +39 30 0 304.750 39.500	77.50 1.75	20 20 50 +39 15 36 305.210 39.260	20 18 2 +39 45 54 304.510 39.765	20 17 34 +39 42 0 304.390 39.700	20 20 2 +39 11 24 305.010 39.190	0.0972	3.45	.4			4U2019+39
4U2028+42	20 28 48 +42 49 12 307.200 42.820	81.28 2.18	20 34 2 +42 4 34 308.510 42.076	20 24 2 +43 40 34 306.010 43.676	20 23 31 +43 33 7 305.880 43.552	20 33 35 +41 57 36 308.395 41.960	0.3638	3.84	.4			4U2028+42
4U2030+40	20 30 33 +40 47 6 307.639 40.785	79.84 0.71	20 30 33 +40 48 22 307.636 40.806	20 30 27 +40 47 38 307.613 40.794	20 30 35 +40 45 50 307.645 40.764	20 30 40 +40 46 34 307.666 40.776	0.0008	385	2	PERIODS: 4.8 HR;16.8 DAY	CYG X-3 (1,2) CYG 3 (3) 3U2030+40	4U2030+40 *
4U2046+31	20 46 46 +31 54 0 311.690 31.900	74.81 -7.31	20 53 30 +35 6 54 313.373 35.115	20 52 48 +35 6 54 313.200 35.115	20 39 22 +27 54 36 309.840 27.910	20 41 26 +27 42 0 310.358 27.700	2.4640	1.69	.4	SNR: CYGNUS LOOP ?		4U2046+31 X
4U2048+44	20 48 36 +44 22 30 312.150 44.375	84.71 0.32	20 50 0 +44 19 48 312.500 44.330	20 47 35 +44 38 17 311.894 44.638	20 47 6 +44 25 5 311.776 44.418	20 49 34 +44 6 18 312.390 44.105	0.1223	3.57	.5			4U2048+44
4U2056+49	20 56 0 +49 19 30 314.000 49.325	89.30 2.55	20 56 55 +49 15 0 314.230 49.250	20 55 22 +49 29 24 313.843 49.490	20 55 5 +49 23 42 313.770 49.395	20 56 41 +49 9 47 314.170 49.163	0.0336	3.39	.2		3U2052+47	4U2056+49
4U2058+32	20 58 12 +32 52 30 314.550 32.875	77.12 -8.55	21 3 58 +35 22 30 315.990 35.375	21 2 31 +35 27 0 315.630 35.450	20 48 25 +30 16 30 312.105 30.275	20 53 2 +29 51 0 313.260 29.850	4.1064	2.88	.5			4U2058+32

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U2104+31	21 4 0 +31 30 0 316.000 31.500	76.89 -10.38	21 11 48 +35 22 12 317.950 35.370	21 10 58 +35 45 36 317.740 35.760	20 57 -6 +28 4 48 314.275 28.080	20 58 0 +27 39 36 314.500 27.660	2.6040	2.08 .4				4U2104+31 X
4U2120+32	21 20 22 +32 7 48 320.090 32.130	79.76 -12.50	21 27 37 +35 10 30 321.906 35.175	21 25 36 +35 20 38 321.400 35.344	21 13 12 +29 1 8 318.300 29.019	21 15 0 +28 57 47 318.750 28.963	2.8238	3.05 .7				4U2120+32
4U2126-60	21 26 28 -60 19 30 321.615 -60.325	334.41 -42.74	22 8 24 -59 10 30 332.10 -59.175	20 45 36 -59 10 30 311.40 -59.175	20 42 36 -61 28 30 310.65 -61.475	22 9 14 -61 28 30 332.31 -61.475	23.9342	1.81 .5			2A2155-609 (5) MX2140-60 (28)	4U2126-60
4U2129+47	21 29 36 +47 6 18 322.400 47.105	91.60 -3.01	21 30 1 +47 3 11 322.506 47.053	21 29 17 +47 11 42 322.321 47.195	21 29 10 +47 9 25 322.291 47.157	21 29 55 +47 1 12 322.479 47.020	0.0072	20	2		3U2129+47	4U2129+47
4U2129+12	21 29 46 +12 6 0 322.440 12.100	65.53 -27.63	21 30 48 +12 21 58 322.700 12.366	21 28 21 +12 8 28 322.089 12.141	21 28 46 +11 51 14 322.192 11.854	21 31 10 +12 5 2 322.790 12.084	0.1896	4.42 .3		GLOBULAR CLUSTER: NGC7078 =M15	2A2127+120 (5) 3U2131+11	4U2129+12
4U2134+55	21 34 36 +55 45 0 323.650 55.750	98.00 2.86	21 36 50 +55 38 53 324.210 55.648	21 33 10 +56 6 47 323.290 56.113	21 32 20 +55 50 17 323.085 55.838	21 36 1 +55 22 5 324.005 55.368	0.1976	2.63 .5				4U2134+55 X
4U2135+57	21 35 42 +57 9 0 323.925 57.150	99.04 3.81	21 39 55 +56 34 48 324.98 56.58	21 32 43 +57 55 48 323.18 57.93	21 31 22 +57 44 24 322.84 57.74	21 38 38 +56 24 0 324.66 56.40	0.4220	2.83 .6			CEP X-4 ?	4U2135+57
4U2142+38	21 42 36 +38 5 13 325.648 38.087	87.32 -11.32	21 42 41 +38 5 35 325.669 38.093	21 42 33 +38 5 35 325.636 38.093	21 42 30 +38 4 55 325.624 38.082	21 42 39 +38 4 55 325.662 38.082	0.0003	550	2	STAR: CYG X-2 AT RA= 21H 42M 36.91S DEC= 38D 05M 27.9S PERIOD: 11.17 DAY	CYG X-2 (1,2) CYG 2 (3) 2A2142+381 (5) 3U2142+38	4U2142+38 *

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U2206+54	22 6 18 +54 24 0 331.575 54.400	100.70 -1.02	22 7 36 +54 14 17 331.898 54.238	22 5 40 +54 41 53 331.418 54.698	22 5 10 +54 34 48 331.290 54.580	22 7 1 +54 6 29 331.753 54.108	0.0711	2.93	.3		A2204+54 (24) 3U2208+54	4U2206+54
4U2209+26	22 9 12 +26 6 0 332.300 26.100	83.81 -24.13	22 14 0 +27 42 36 333.500 27.710	22 12 55 +27 54 0 333.230 27.900	22 2 45 +23 36 36 330.688 23.610	22 3 12 +23 30 0 330.800 23.500	1.0787	2.47	.4			4U2209+26
4U2213+23	22 13 54 +23 54 0 333.475 23.900	83.22 -26.51	22 22 43 +27 16 12 335.680 27.270	22 21 46 +27 30 0 335.440 27.500	22 8 16 +21 58 12 332.065 21.970	22 9 44 +21 40 48 332.433 21.680	2.3201	2.19	.5			4U2213+23 X
4U2224-78	22 24 48 -78 15 0 336.200 -78.250	311.59 -36.64	22 35 24 -77 25 48 338.85 -77.43	22 30 55 -76 55 48 337.73 -76.93	22 13 5 -79 14 24 333.27 -79.24	22 17 36 -79 41 24 334.40 -79.69	0.9453	3.90	1.1			4U2224-78
4U2238+60	22 38 54 +60 43 30 339.725 60.725	107.75 2.03	22 41 21 +60 17 24 340.338 60.290	22 37 10 +61 22 59 339.290 61.383	22 36 24 +61 11 6 339.100 61.185	22 40 32 +60 5 6 340.135 60.085	0.2079	2.81	.4		3U2233+59	4U2238+60
4U2240+26	22 40 24 +26 42 0 340.100 26.700	90.53 -27.69	22 44 55 +28 4 48 341.230 28.080	22 44 23 +28 32 24 341.095 28.540	22 30 46 +23 29 2 337.690 23.484	22 31 0 +22 56 24 337.750 22.940	1.9927	2.95	.7			4U2240+26 X
4U2252+18	22 52 34 +18 9 0 343.140 18.150	87.94 -36.42	22 58 11 +19 49 12 344.545 19.820	22 56 59 +20 3 0 344.245 20.050	22 47 1 +16 24 0 341.755 16.400	22 48 8 +16 18 36 342.033 16.310	1.3627	2.49	.5			4U2252+18
4U2259+16	22 59 7 +16 6 0 344.780 16.100	88.24 -38.99	23 3 49 +17 34 48 345.955 17.580	23 3 10 +17 45 0 345.790 17.750	22 54 6 +14 40 48 343.525 14.680	22 55 24 +14 24 0 343.848 14.400	1.2057	2.95	.6	SUPERCLUSTER ?		4U2259+16 X

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U2300+08	23 0 43 + 8 46 34 345.178 8.776	83.23 -45.32	23 10 21 + 9 55 30 347.588 9.925	23 8 28 +10 32 24 347.115 10.540	22 51 54 + 7 27 0 342.975 7.450	22 52 8 + 7 11 17 343.035 7.188	2.6426	2.69	.5	SEYFERT: NGC 7469	2A2259+085 (5)	4U2300+08
4U2305-07	23 5 10 - 7 18 54 346.293 -7.315	67.41 -58.25	23 19 55 - 5 58 12 349.98 -5.97	23 13 0 - 4 0 0 348.25 -4.00	22 50 58 - 8 43 48 342.74 -8.73	22 56 48 -10 33 36 344.20 -10.56	17.9500	2.31	.6		2A2302-088 (5)	4U2305-07
4U2315+15	23 15 26 +15 19 12 348.860 15.320	92.19 -41.63	23 21 34 +17 4 12 350.390 17.070	23 20 7 +17 15 0 350.030 17.250	23 9 52 +13 30 36 347.465 13.510	23 10 10 +13 25 48 347.540 13.430	1.1064	4.41	.4	CLUSTER: ABELL 2589 (3,0)	2A2322+166 (5)	4U2315+15
4U2316+61	23 16 36 +61 48 0 349.150 61.800	112.31 1.13	23 18 5 +62 19 12 349.520 62.320	23 14 13 +61 42 58 348.555 61.716	23 15 12 +61 19 12 348.800 61.320	23 19 6 +61 55 5 349.775 61.918	0.2537	2.40	.5			4U2316+61
4U2321+58	23 21 13 +58 33 29 350.303 58.558	111.75 -2.12	23 21 13 +58 34 26 350.305 58.574	23 21 6 +58 33 0 350.276 58.550	23 21 13 +58 32 35 350.303 58.543	23 21 20 +58 33 58 350.332 58.566	0.0004	53.4	1.	SNR: CAS A=3C461 RA = 23H 21M 10.8S DEC = 58D 32M 49.2S	CAS A (1,2,3) 3U2321+58	4U2321+58
4U2335+42	23 35 54 +42 43 30 353.975 42.725	108.99 -17.88	23 37 16 +42 47 24 354.315 42.790	23 36 8 +43 4 30 354.035 43.075	23 34 29 +42 38 42 353.620 42.645	23 35 35 +42 22 30 353.895 42.375	0.1713	1.97	.5			4U2335+42
4U2344+08	23 44 5 + 8 39 0 356.020 8.650	97.15 -50.67	23 50 29 +10 20 24 357.62 10.34	23 48 48 +10 42 0 357.20 10.70	23 38 10 + 6 51 0 354.54 6.85	23 38 50 + 6 43 12 354.71 6.72	1.7593	3.03	.7	CLUSTER: ABELL 2657 (3,1)		4U2344+08
4U2344-27	23 44 6 -27 0 0 356.025 -27.000	30.85 -75.57	23 46 20 -26 47 24 356.585 -26.790	23 45 32 -26 32 6 356.385 -26.535	23 41 54 -27 13 12 355.473 -27.220	23 42 38 -27 28 12 355.660 -27.470	0.3243	1.80	.4	CLUSTER: KLEMOLA 44	2A2344-285 (5)	4U2344-27

TABLE 1—*Continued*

(1)	(2A)	(2B)	(3A)	(3B)	(3C)	(3D)	(3E)	(4A)	(4B)	(5A)	(5B)	(6)
4U2345+27	23 45 24 +27 18 0 356.350 27.300	106.08 -33.21	23 46 58 +27 45 36 356.740 27.760	23 43 10 +27 16 12 355.790 27.270	23 44 2 +26 51 0 356.010 26.850	23 47 48 +27 21 0 356.950 27.350	0.4430	2.44	.4	CLUSTER: ABELL 2666 (1,0)	3U2346+26	4U2345+27
4U2351+06	23 51 17 + 6 46 12 357.820 6.770	98.67 -53.09	23 58 34 + 8 52 48 359.64 8.88	23 57 17 + 9 9 36 359.32 9.16	23 44 0 + 4 37 12 356.00 4.62	23 45 12 + 4 24 0 356.30 4.40	2.2104	3.69	.5	SEYFERT: MKN 541 ? CLUSTER: ABELL 2665 (4,0) ?		4U2351+06
4U2358+21	23 58 42 +21 4 30 359.675 21.075	107.62 -40.02	0 0 6 +21 21 54 0.025 21.365	23 56 58 +21 5 24 359.240 21.090	23 57 26 +20 46 48 359.360 20.780	0 0 32 +21 3 54 0.135 21.065	0.2520	1.92	.4			4U2358+21 *

spurious is less than 0.01. However, the tail of the distribution extends to probabilities of ~0.10. To assist users we have marked those sources whose probabilities exceed 0.01 with the symbol X in column (6) of Table 1.

A number of our sources are defined by many overlapping collinear lines of position which themselves produce a long, narrow error box. In such cases, single crossing lines were used to reduce the positional uncertainty only when the probability that the crossing line was spurious was less than 10%.

We wish to emphasize that while the probability that a source is spurious may be arbitrarily small, the probability that a particular line is spurious could be substantial. This can result in error boxes which are too small or mislocated when single crossing lines have been used.

V. THE CATALOG

The catalog is given in Table 1, which is divided into six columns. Column (1) gives the source name derived from the right ascension and declination (in 1950 coordinates). Column (2) contains the position of the maximum probability density in right ascension and declination (col. [2A]) and in galactic coordinates (col. [2B]). The corners of the 90% confidence level error box in right ascension and declination are given in columns (3A)–(3D). The area of the error box (in square degrees) is given in column (3E). Column (4) contains the available information on the 2–6 keV intensity. The average intensity (counts s^{-1}) of the lines of position used in the position determination and its associated uncertainty is given in column (4A) when the source is constant in intensity within the statistics of our measurements. When a source is observed to be variable, column (4A) contains the maximum intensity and column (4B) gives the ratio of the maximum and minimum observed values. The conversion from 2–6 keV counts s^{-1} to 2–6 keV flux is given by

$$1.7 \times 10^{-11} \text{ ergs cm}^{-2} \text{ s}^{-1} = 1 \textit{ Uhuru} \text{ count s}^{-1} .$$

To compute 2–10 keV flux we find

$$2.4 \times 10^{-11} \text{ ergs cm}^{-2} \text{ s}^{-1} = 1 \textit{ Uhuru} \text{ count s}^{-1} .$$

These values are computed for a Crab-like spectrum but vary by only 10–20% for all but the most extreme source spectra. Previously published values of these conversion factors have been somewhat lower, but those above represent our final best calibrations. The intensities reported in this section of the catalog are derived only from the positive source detections. We do not include those days for which the source was not observed in our calculation of the average intensities. Therefore, these values can substantially overestimate the true average intensities (see below for PST intensities). This discrepancy is greatest for weak sources.

Column (5A) gives the available information on possible source identifications. Identifications and possible identifications based upon positional coincidence were made by scanning the catalogs listed in Table 2. We have included suggested identifications taken from published papers or IAU circulars. We have also included periods of binary and pulsating sources. All periods are from X-ray measurements unless otherwise noted. Column (5B) contains previously used names for the sources with references corresponding to those of Table 3.

Finally, column (6) repeats the source name and contains the following additional information: (1) C denotes that the source is possibly confused and was

TABLE 2

CATALOGS OF INTERESTING OBJECTS

Type of Object	Reference
Seyfert Galaxies..........	Weedman 1977, Adams 1977
Radio Pulsars............	Terzian 1973
Clusters of Galaxies......	Abell 1958, Klemola 1969
Supernova Remnants.....	Moore 1977, Downes 1971
Globular Clusters........	Arp 1966
Radio Sources...........	Milne 1970, Bennett 1962, Finlay and Jones 1973, Kraus 1966
Bright Galaxies..........	de Vaucouleurs and de Vaucouleurs 1964
Quasars.................	de Veny *et al.* 1972

TABLE 3

PREVIOUSLY USED SOURCE NAMES

Number	Reference
1........	Oda and Matsuoka 1970
2........	Kellogg 1970
3........	Seward 1970
4........	Leong *et al.* 1971
5........	Cooke *et al.* 1978
6........	Fritz *et al.* 1971
7........	Giacconi *et al.* 1971*a*
8........	Jernigan 1976
9........	Lewin *et al.* 1971*a*
10........	Ricker *et al.* 1973
11........	Eyles *et al.* 1975
12........	Markert 1973
13........	Seward *et al.* 1976*b*
14........	Schreier *et al.* 1971
15........	Lewin *et al.* 1976
16........	Bradt *et al.* 1971
17........	Markert *et al.* 1973
18........	Kellogg *et al.* 1971
19........	Lewin *et al.* 1971*b*
20........	Hawkins *et al.* 1973
21........	Lewin 1976
22........	Seward *et al.* 1976*a*
23........	Li and Lewin 1976
24........	Villa *et al.* 1976
25........	Hoffman *et al.* 1977
26........	Markert *et al.* 1976
27........	Markert and Clark 1974
28........	Markert *et al.* 1975
29........	Li 1976
30........	Carpenter *et al.* 1977
31........	Winkler and Laird 1976
32........	Bradt *et al.* 1968
33........	Mayer *et al.* 1970

TABLE 4

COMMENTS AND REFERENCES

4U Name	Comments and References
4U 0026−73........	This source most likely results from the confusion of SMC X-2 and SMC X-3. Li, Jernigan, and Clark 1977.
4U 0115+63........	Transient. Forman, Jones, and Tananbaum 1976*a*.
4U 0115−73........	Pulsating, eclipsing binary. Leong *et al.* 1971; Schreier *et al.* 1972*a*; Liller 1973; Lucke *et al.* 1976.
4U 0316+41........	Extended and point source (NGC 1275). Forman *et al.* 1972; Fabian *et al.* 1974.
4U 0336+01........	One week duration high latitude transient
4U 0339−54........	Optical identification suggested by Melnick and Quintana (1975). Classified by Lugger (1978). Variable in 2A catalog (Cooke *et al.* 1978).
4U 0352+30........	Pulsating X-ray source identified with X Per. White *et al.* 1976*b*; Hutchings *et al.* 1974.
4U 0410+10........	Determination of distance of A478 corresponds to distance class 4. Bahcall and Sargent 1977.
4U 0423−53........	Optical identification suggested by Penston and Sparke 1975 and Lugger 1978. Classified by Lugger 1978.
4U 0427−61........	Optical identification suggested by Vidal 1975*a* and Lugger 1978. Classified by Lugger 1978.
4U 0432+05........	*SAS 3* RMC position. Schnopper *et al.* 1977.
4U 0513−40........	Possible X-ray burster. Forman and Jones 1976.
4U 0531+21........	X-ray pulsar in supernova remnant. Remnant is observed as an extended X-ray source. Bowyer *et al.* 1964; Fritz *et al.* 1969.
4U 0520−72........	*SAS 3* RMC position. Delvaille 1976.
4U 0532−66........	*SAS 3* RMC position. Delvaille 1976.
4U 0538−64........	*SAS 3* RMC position. Delvaille 1976.
4U 0540−69........	*SAS 3* RMC position. Delvaille 1976.
4U 0614+09........	Optical counterpart from Davidsen *et al.* 1974; Murdin *et al.* 1974.
4U 0627−54........	Optical identification suggested by Vidal 1975*a* and Lugger 1978. Classified by Lugger 1978.
4U 0833−45........	X-ray point source = PSR 0833−45 in X-ray supernova remnant = Vela X. Harnden and Gorenstein 1973.
4U 0836−42........	Transient. Cominsky *et al.* 1978.
4U 0900−40........	Pulsating, eclipsing binary X-ray source. Ulmer *et al.* 1972; Hiltner *et al.* 1972; Brucato and Kristian 1972; Forman *et al.* 1973; McClintock *et al.* 1976.
4U 1037−60........	Observed iron line possibly from point radio source. Becker *et al.* 1976. Optical counterpart from Seward *et al.* 1976*b*.
4U 1118−60........	Pulsating, eclipsing binary X-ray source. Irregular high and low states. Giacconi *et al.* 1971*a*; Schreier *et al.* 1972*b*; Krzeminski 1974.
4U 1145−61........	Optical counterpart suggested by Maraschi *et al.* 1976.
4U 1223−62........	Optical conterpart suggested by Vidal 1973 and Mauder and Amman 1976. X-ray pulsations. White *et al.* 1976*a*.
4U 1228+12........	Extended source centered on M87. Kellogg *et al.* 1973.
4U 1249−28........	Optical identification suggested by Vidal 1975*b* and Lugger 1978. Classified by Lugger 1978.
4U 1257+28........	Extended source. Forman *et al.* 1972.
4U 1258−61........	Pulsating X-ray source. McClintock *et al.* 1977.
4U 1322−42........	Variable X-ray source observed up to 3×10^{11} eV. Associated with Cen A. Davison *et al.* 1975; Grindlay *et al.* 1975*a*.
4U 1325−31........	Identification and classification by Lugger 1978.
4U 1345−32........	Identification and classification by Lugger 1978.
4U 1516−56........	Binary X-ray source exhibiting short-time-scale intensity fluctuations. Jones *et al.* 1974; Kaluzienski *et al.* 1976; Toor 1977.
4U 1535−29........	Single event with duration $\lesssim$25 minutes.
4U 1543−47........	Transient. Matilksy *et al.* 1972.
4U 1608−52........	Norma burst source. Belian *et al.* 1976; Tananbaum *et al.* 1976.
4U 1617−15........	Sco X-1, optically identified. Sandage *et al.* 1966.
4U 1626−67........	Pulsating X-ray source. Markert *et al.* 1977.
4U 1630−47........	Four outbursts at 600 day intervals. Jones *et al.* 1976.
4U 1636−53........	X-ray burster. Swank *et al.* 1976*a*.
4U 1651+39........	Radio-emitting BL Lacertae object. Colla *et al.* 1972.
4U 1656+35........	Pulsating, eclipsing binary with regular high and low states. Tananbaum *et al.* 1972*b*; Giacconi *et al.* 1973; Bahcall and Bahcall 1972; Liller 1972.
4U 1700−37........	Eclipsing binary. Jones *et al.* 1973.
4U 1722−30........	Single event, ~100 s. Swank *et al.* 1977.
4U 1728−33........	X-ray burster. Hoffman *et al.* 1976.
4U 1728−24........	X-ray pulsations. Lewin *et al.* 1971*b*.
4U 1728−16........	*SAS 3* RMC position. Doxsey 1975.
4U 1730−22........	Transient. Cominsky *et al.* 1978.
4U 1735−28........	Transient. Kellogg *et al.* 1971.
4U 1743−29........	Extended source. Kellogg *et al.* 1971.
4U 1743−19........	Transient. Forman, Jones, and Tananbaum 1976*b*.
4U 1807−10........	Transient seen on last day of processed *Uhuru* data.
4U 1813−14........	X-ray pulsations. White *et al.* 1976*a*. *SAS 3* RMC position. Doxsey 1975.
4U 1813+50........	Eclipsing binary X-ray source. Cowley *et al.* 1976; Hearn and Richardson 1977.
4U 1820−30........	X-ray burster. Grindlay *et al.* 1976.
4U 1837+04........	X-ray burster. Swank *et al.* 1976*b*. *SAS 3* RMC position. Doxsey 1975.
4U 1857+01........	X-ray burster. Li and Lewin 1976.
4U 1850−08........	X-ray flare. Cominsky *et al.* 1977.
4U 1901+03........	Transient. Forman, Jones, and Tananbaum 1976*a*.
4U 1908+00........	Recurrent outbursts. Kaluzienski *et al.* 1977. *SAS 3* RMC position. Doxsey 1975.
4U 1918+15........	Transient. Cominsky *et al.* 1978.
4U 1955−68........	Optical identification suggested by Melnick and Quintana 1975 and Lugger 1978. Classified by Lugger 1978.
4U 1956+35........	Black-hole candidate in binary system. Exhibits low and high states correlated with changing spectrum. Tananbaum *et al.* 1972*a*; Hjellming and Wade 1971; Webster and Murdin 1972; Bolton 1972; Rothschild *et al.* 1974.
4U 1957+40........	Possible extended source. Brinkman *et al.* 1977.
4U 2030+40........	Correlated X-ray and IR modulation. Exhibits intense radio and X-ray flares. Parsignault *et al.* 1972; Becklin *et al.* 1973; Gregory *et al.* 1972; Holt *et al.* 1976*b*.
4U 2142+38........	Optically identified, reported 11.2 day X-ray period. Giacconi *et al.* 1967, Tananbaum *et al.* 1971; Holt *et al.* 1976*a*.
4U 2358+21........	Flare with duration less than 1000 seconds and positional uncertainty of 6 sq. degrees. Contains this source as well as the well-known flare star EQ Peg.

not a unique choice based upon the available lines of position. (2) An asterisk indicates that additional comments can be found in Table 4 along with references for column (5A). (3) X has been used to denote sources which have probabilities of being spurious in excess of 0.01.

The extensive analyses and observations that have taken place in X-ray astronomy make it impossible to give complete references for each source. We have concentrated on the referencing of periodicities, fundamental properties, and identifications. We have generally referenced the discovery papers.

VI. AVERAGE INTENSITIES

We have computed average intensities using the Point Summation Technique (PST) for all sources with intensities of less than 10 counts s^{-1} as given in Table 1. We have included this section to facilitate the comparison of *Uhuru* observations with more recent observations made with other satellites. The importance of these average intensities derives partially from the growing list of compact extragalactic X-ray sources which are observed to be variable.

PST intensities are computed using all scans over a particular source position for which the source was less than 2°.5 from the center of the collimator, rather than the more limited set used in Table 1 for which lines of position were detected. This provides a more reasonable estimate of the average source intensity. Table 5 contains the source name, the PST intensity and its error, the collimator(s) used for the intensity determination, and occasionally a comment. When a source is variable we have replaced the intensity with the maximum observed intensity, and the error with the ratio of the maximum to minimum observed intensity. The background is computed from data to either side of the source where no cataloged sources are observed. The program subtracts the background from the data at the source position and corrects the observed flux to the intensity based on the position of the source in the collimator. These intensities are then added together to yield the PST intensity.

This technique has several limitations. First, for large boxes, especially those which are long and narrow, the intensity (and hence the source significance computed from I/σ_I) can be significantly in error. For example, if the source were actually at an edge of a long box, the source could be very near the edge of the field of view where the signal-to-noise ratio approaches zero. Also, while regions containing known sources are excluded from the background, the lack of completeness of the catalog at the weakest intensity levels permits the presence of weak uncataloged sources in the background. This problem is of less importance in the program which detects lines of position since all significant excesses are eliminated from the background. This difference results in less significant detections with the PST than with our lines of position.

The positions used to compute the PST were the locations of maximum probability density of Table 1, with a few exceptions as noted in Table 5. Thus sources whose true positions are substantially offset from these most probable positions could have significantly larger intensities.

Thirteen of the 261 sources with $I < 10$ counts lie in dense source regions, and therefore we were unable to obtain sufficient background data for the PST computation. Of the remaining 248 sources, 202 have $I/\sigma_I > 3.0$. Assuming our data are normally distributed, we would expect 0.33 fluctuations with $I/\sigma_I > 3.0$. Therefore, we conclude that the 202 sources with $I/\sigma_I > 3.0$ are real. The remaining sample contains 46 sources, of which 25 have $I/\sigma_I > 2.0$. In this group we expect 1.05 spurious sources. Therefore, all but a few of these also are confirmed by the PST. The remaining 21 sources consist of 13 variable sources and eight sources with $2.0 > I/\sigma_I > 1.0$. These last eight sources (four are within 20° of the galactic plane) either are variable, are spurious, or suffer from the difficulties described above, which can reduce I/σ_I.

We can use the analysis of Tananbaum *et al.* (1978) to verify the normal behavior of I/σ_I computed randomly over the sky. Tananbaum *et al.* (1978) analyzed 88 Seyfert galaxies using the point summation technique. Fifteen had already been reported as sources, which left 73 possible sources. In this sample of 73 PST computations, three candidates were found with I/σ_I of 3.09, 2.69, and 2.62. The remaining 70 Seyferts had $I/\sigma_I < 2.5$, and the intensities were distributed normally about zero. The three Seyferts with $I/\sigma_I > 2.5$ are very likely real X-ray sources. The bulk of the sources exhibited no detectable emission. The important point is that the PST behaves as expected and can be used to provide independent confirmation of existence for our sources with $I/\sigma_I > 2.0$.

VII. COMPARISON WITH OTHER CATALOGS

The third *Uhuru* catalog contained 161 sources. The statistical criteria of that catalog were similar to those of the present work. The 1% false criterion should have yielded about two spurious sources. The 12 sources we do not observe in the present catalog are listed in Table 6. The reasons for the excess above the two expected spurious sources is not due to a lack of understanding or an inappropriate application of the statistics. Rather, we have found instances of nonrandom background events which contaminated the superposed data used in the 3U catalog. A major portion of the effort for this present catalog was to eliminate such events from the data base.

The recent *Ariel 5* catalog (Cooke *et al.* 1978) covering high galactic latitudes ($|b| > 10°$) contains 107 sources, of which 52 are 3U sources characterized as confirmed or improved. Comparing the *Ariel 5* catalog with the present fourth *Uhuru* catalog, we find no substantial disagreement. We observe 73 of the 107 sources contained in the 2A catalog. The 34 sources we do not observe are listed in Table 7. These are predominantly located in regions of low exposure, and we would not expect to detect them. Two of these

TABLE 5

261 SOURCES

Name	Intensity	Error	Collimator	Comments
0000+72...	1.39	0.4	1	
0005+20...	1.38	0.4	1	
0009−33...	2.37	0.3	2	
0010+39...	1.69	0.52	1	At R.A. = 1.7, Decl. = 37.0
0015+02...	0.64	0.17	1	
0022+63...	7.27	0.7	1	
0026−73...	2.44	0.3	1	
0026−29...	0.98	0.4	B	
0027+59...	C	...	...	
0028+22...	1.05	0.50	B	
0033+58...	1.30	0.33	1	
0037+39...	0.89	0.3	1	
0037−10...	2.70	0.24	B	On cluster position
0041+36...	5.2	$\gtrsim$3	1	V
0050−01...	1.53	0.14	B	On cluster position
0052−68...	0.94	0.3	1	
0054+60...	4.20	0.3	1	
0103−21...	1.31	0.36	B	On cluster position
0106−59...	2.10	0.5	2	
0115−36...	1.38	0.3	2	
0129−09...	1.31	0.3	1	
0134−11...	2.80	0.9	2	
0138+48...	0.69	0.37	1	
0142+61...	4.24	0.2	1	
0148+36...	2.14	0.25	B	On cluster position
0223+31...	0.76	0.3	1	
0228−13...	2.02	0.59	1	
0241+61...	1.19	0.3	1	
0248−85...	0.97	0.3	1	
0253+41...	3.44	0.5	1	
0254+13...	4.47	0.23	2	On cluster position
0302−22...	1.05	0.3	2	
0310+46...	1.83	0.5	1	
0311+53...	1.43	0.4	1	
0321−45...	1.82	0.5	B	
0322+59...	2.05	0.5	2	
0334−30...	0.88	0.2	B	
0339−54...	1.68	0.24	1	
0344+11...	2.04	0.6	2	
0357−74...	1.21	0.4	2	
0404+47...	0.85	0.3	1	
0406−30...	0.62	0.2	1	
0407+37...	1.13	0.3	1	
0410+10...	2.67	0.22	B	On cluster position
0421+34...	1.63	0.4	1	
0423−53...	1.79	0.5	1	
0427−07...	2.02	0.5	1	
0427−61...	2.03	0.17	B	On cluster position
0429−31...	0.9	0.3	B	
0431−12...	2.30	0.50	B	On cluster position
0432+05...	2.00	0.3	1	
0443−09...	1.64	0.3	B	
0446+44...	5.03	0.23	B	3C 129
0457−35...	0.24	0.1	1	
0504−84...	0.7	0.3	1	
0505−21...	0.71	0.2	B	
0506−03...	1.4	0.3	B	
0509+01...	1.79	0.3	1	
0515+38...	0.74	0.27	1	
0517+17...	0.70	0.27	1	
0518−26...	1.55	0.4	B	
0519+06...	0.62	0.20	B	On cluster position
0531−05...	3.12	0.6	1	
0532−66...	1.57	0.5	1	
0538+26...	9.5	$\gtrsim$10	1	V
0541+60...	0.92	0.3	B	
0543−31...	1.12	0.4	B	
0546−88...	1.65	0.6	1	
0548+29...	2.64	0.6	1	
0553−48...	1.31	0.4	1	
0557−38...	0.84	0.15	1	
0558+46...	1.99	0.4	1	
0559−57...	0.4	0.4	1	
0608−49...	1.21	0.35	1	
0614+15...	5.5	$\gtrsim$4	1	V
0617+23...	1.23	0.4	1	
0621+11...	1.67	0.2	1	
0627+67...	0.84	0.4	1	
0627−38...	4.7	$\gtrsim$6	1	V
0627−54...	2.63	0.27	B	On cluster position
0628−28...	2.76	0.85	1	
0630+02...	1.5	0.5	1	
0635−03...	2.11	0.3	B	
0638+74...	1.4	0.2	B	
0656−03...	0.84	0.3	1	
0708−16...	0.77	0.4	B	
0708−49...	2.19	0.5	1	
0711−38...	0.74	0.17	1	
0718−54...	4.2	$\gtrsim$4	1	V
0720+55...	2.17	0.31	2	On cluster position
0728−25...	1.72	0.3	1	
0729−37...	0.46	0.18	1	
0733−18...	0.67	0.4	1	
0737−10...	2.26	0.5	B	
0739−19...	1.64	0.3	1	
0742−28...	0.82	0.3	1	
0750−49...	0.8	0.6	1	
0813−38...	0.6	0.2	1	
0814−56...	1.44	0.4	1	
0821−42...	4.63	0.3	1	
0833−45...	7.93	0.3	1	
0842−47...	2.62	0.7	1	
0842−34...	3.5	$\gtrsim$5	1	V
0845−29...	3.6	$\gtrsim$2	1	V
0854−44...	C	...	...	
0900−09...	4.16	0.48	B	On cluster position
0913−46...	0.66	0.26	1	At R.A. = 136.8, Decl. = −47.15
0919−54...	5.48	0.3	1	
0923−31...	2.66	0.19	1	
0937−12...	1.40	0.3	B	
0945−30...	1.73	0.2	1	
0954+70...	2.39	0.4	B	
0955−28...	0.47	0.26	1	Nearby candidate sources
1015−25...	5.3	3	B	V
1022−40...	7.0	$\gtrsim$6	1	V
1033−26...	1.37	0.20	1	On cluster position
1036−56...	14.5	$\gtrsim$7	B	V
1037−60...	2.26	0.3	1	On η Carinae
1041−21...	7.1	$\gtrsim$4	1	V
1057−21...	0.87	0.2	1	
1110−58...	1.09	0.36	1	
1119−77...	0.94	0.3	1	
1120−43...	0.74	0.21	B	
1130−14...	1.21	0.3	1	
1136−37...	1.97	0.4	1	
1137−65...	C	...	...	
1143+19...	2.53	0.19	B	On cluster position
1144+84...	2.26	0.6	1	
1147−12...	0.62	0.2	B	
1153−11...	1.1	0.2	B	
1153−40...	1.55	0.5	1	
1203−06...	1.19	0.3	1	
1206+39...	3.33	0.5	1	
1209−45...	0.91	0.3	1	
1210−64...	4.50	0.5	1	
1221−08...	1.37	0.2	B	
1226+02...	1.91	0.2	1	
1232+07...	0.90	0.3	1	
1240−05...	0.6	0.2	1	
1246−58...	2.20	0.6	1	
1246−41...	5.12	0.20	B	On cluster position
1249−28...	3.57	0.5	1	
1253−00...	0.75	0.2	1	
1300−48...	1.7	0.3	1	
1302−77...	1.06	0.3	B	

TABLE 5—*Continued*

Name	Intensity	Error	Collimator	Comments
1308+86...	0.66	0.2	1	
1314+59...	3.55	0.4	B	
1314−64...	C	...	...	
1317+06...	0.70	0.27	1	
1322−42...	7.6	0.4	1	
1323−62...	3.6	1.1	1	
1325−31...	2.09	0.6	1	
1326+11...	0.99	0.3	B	
1344−60...	2.26	0.2	1	
1345−32...	5.53	1.0	1	
1348+25...	3.65	0.45	B	On cluster position
1404+14...	0.92	0.2	1	
1410−03...	3.00	0.30	1	
1414+25...	2.38	0.7	2	
1416−62...	C	...	...	
1425−61...	1.69	0.4	1	
1436−56...	0.61	0.2	1	
1438−18...	0.65	0.3	1	
1444+43...	1.7	0.3	2	
1446−55...	2.11	0.4	1	
1450−80...	1.26	0.4	1	
1455+19...	0.78	0.2	1	
1455−27...	3.78	1.0	2	
1456+22...	1.0	0.2	1	
1458−41...	1.5	0.5	1	
1505+57...	1.0	0.6	1	
1510−59...	6.3	1.1	1	
1515+23...	0.69	0.2	B	
1521+28...	1.07	0.11	B	On cluster position
1530−44...	2.97	0.6	1	
1556+27...	3.62	0.19	2	On cluster position
1601+15...	1.84	0.18	B	On cluster position
1614−27...	1.37	0.4	1	
1621−23...	1.20	0.4	1	
1625−33...	1.98	0.5	1	
1627−09...	1.89	0.4	1	
1627+39...	2.96	0.58	1	On cluster position
1628+28...	0.71	0.2	1	
1631−64...	4.58	0.7	1	
1636+05...	1.20	0.3	B	
1644+69...	0.79	0.23	1	
1651+39...	1.62	0.3	1	
1651−06...	1.32	0.6	1	
1652+63...	0.74	0.2	1	
1659−76...	1.63	0.3	B	
1700+24...	4.2	$\gtrsim$2	1	V
1703+26...	1.19	0.27	B	
1704−30...	C	...	...	
1707+78...	2.38	0.16	B	On cluster position
1715+02...	0.8	0.3	1	
1716−01...	1.8	0.3	B	
1720+34...	0.3	0.1	1	
1722+11...	1.67	0.2	1	
1722−30...	4.48	0.6	1	
1745+39...	0.7	0.2	1	
1745+29...	1.05	0.5	1	
1759−66...	1.95	0.4	1	
1803−60...	1.4	0.2	B	
1811+37...	0.50	0.16	1	
1813+50...	2.27	0.4	1	
1817−05...	0.87	0.3	1	
1825+33...	C	...	...	
1830+34...	C	...	...	
1831−23...	6.51	0.6	1	
1832−05...	3.43	0.6	1	
1835−11...	2.5	0.4	1	
1847+78...	1.33	0.3	1	
1849−31...	2.74	0.5	1	
1850−03...	10.0	$\gtrsim$4	1	V
1850−08...	7.1	0.7	1	
1852+37...	0.57	0.15	B	
1853−23...	2.87	1.1	1	
1857+01...	C	...	...	
1859+69...	2.08	0.3	2	
1908+05...	3.64	0.4	1	
1909+07...	C	...	...	
1916−79...	2.93	0.2	2	
1919+44...	4.59	0.23	B	On cluster position
1920+34...	1.01	0.3	1	
1924−59...	1.45	0.3	B	
1933+36...	0.92	0.3	1	
1943+36...	2.15	0.3	1	
1955−68...	2.10	0.4	B	
1957+40...	2.64	0.3	1	
2001+62...	1.45	0.4	2	
2003+64...	2.39	0.4	1	
2019+39...	3.14	0.4	1	
2028+42...	3.00	0.3	1	
2046+31...	0.49	0.17	1	
2048+44...	0.66	0.2	1	
2056+49...	2.98	0.2	1	
2058+32...	1.30	0.3	1	
2104+31...	0.72	0.2	1	
2120+32...	0.6	0.2	1	
2126−60...	2.36	0.4	B	
2129+12...	3.84	0.7	1	
2134+55...	2.21	0.5	1	
2135+57...	C	...	...	
2206+54...	0.94	0.2	1	
2209+26...	0.76	0.2	1	
2213+23...	0.33	0.2	1	
2224−78...	1.68	0.4	2	
2238+60...	C	...	...	
2240+26...	1.79	0.5	1	
2252+18...	0.44	0.2	1	
2259+16...	0.78	0.2	B	
2300+08...	2.22	0.5	2	
2305−07...	2.0	0.6	B	
2315+15...	1.89	0.20	2	On cluster position
2316+61...	C	...	...	
2335+42...	0.84	0.2	1	
2344+08...	2.64	0.69	2	On cluster position
2344−27...	1.85	0.4	B	
2345+27...	2.36	0.27	2	On cluster position
2351+06...	1.13	0.2	B	
2358+21...	1.75	0.5	1	

NOTES.—Collimator 1 = $\frac{1}{2}°$ × 5° FWHM; Collimator 2 = 5° × 5° FWHM. B ≡ data from both collimators used. V ≡ source variable.

TABLE 6

SOURCES FROM THE THIRD *Uhuru* CATALOG NOT OBSERVED IN THE FOURTH *Uhuru* CATALOG

3U 0012−05	3U 0449+66	3U 1109+59
3U 0055−79	3U 0657−35	3U 1144−74
3U 0138−01	3U 0804−53	3U 2041+75
3U 0305+53	3U 0917+63	3U 2128+81

sources are transient. Thus there is no compelling evidence for widespread variability among the high-latitude sources.

We have compared our PST intensities with the intensities given in the 2A catalog for those sources observed in common which have not been characterized as variable. The agreement is quite good, as can be seen from Figure 4.

TABLE 7

SOURCES FROM THE SECOND *Ariel* CATALOG NOT OBSERVED IN THE FOURTH *Uhuru* CATALOG

Name	Intensity (Ariel counts s^{-1})	2A Error Box Area (deg^2)
2A 0102−242......	0.3 ± 0.1	1.00
2A 0122+338......	0.6 ± 0.1	0.22
2A 0235−526......	0.5 ± 0.1	0.08
2A 0349−139......	0.3 ± 0.1	0.30
2A 0456−449......	0.7 ± 0.1	1.13
2A 0526−328......	0.8 ± 0.1	0.16
2A 0708−357......	0.6 ± 0.1	1.07
2A 0710+456......	0.6 ± 0.1	0.15
2A 0738+498......	0.6 ± 0.1	0.58
2A 0815−075......	0.8 ± 0.1	0.45
2A 0859+509......	0.3 ± 0.1	1.45
2A 1041−079......	0.4 ± 0.1	0.39
2A 1052+606......	0.3 ± 0.1	1.34
2A 1102+384......	0.8 ± 0.2	0.04
2A 1150+720......	0.8 ± 0.1	0.10
2A 1219+305......	0.9 ± 0.1	0.10
2A 1306−012......	1.1 ± 0.1	0.21
2A 1347−300......	1.7 ± 0.2	0.10
2A 1348+700......	0.9 ± 0.2	0.28
2A 1418+485......	0.4 ± 0.1	0.22
2A 1508+062......	1.4 ± 0.2	0.09
2A 1519+082......	1.3 ± 0.1	0.28
2A 1556−756......	0.9 ± 0.1	0.66
2A 1659+337......	0.6 ± 0.1	0.76
2A 1705+609......	0.4 ± 0.1	1.62
2A 1938−105......	0.7 ± 0.1	0.24
2A 2009−569......	1.2 ± 0.1	0.07
2A 2040−115......	0.9 ± 0.1	0.40
2A 2151−316......	0.9 ± 0.1	0.25
2A 2220−022......	1.0 ± 0.1	0.17
2A 2237−256......	0.5 ± 0.1	0.41
2A 2251−179......	0.8 ± 0.1	0.19
2A 2315−428......	0.7 ± 0.1	0.07
2A 2318−272......	0.4 ± 0.1	0.56

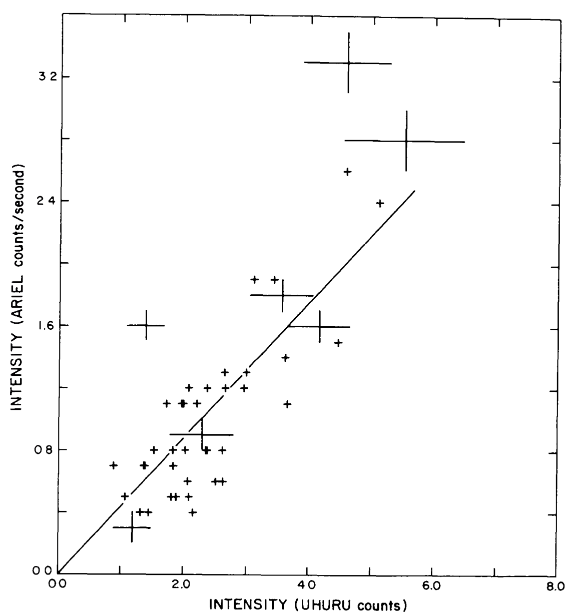

FIG. 4.—*Uhuru* PST intensities of nonvariable sources listed in Table 5 are plotted versus intensities listed in the 2A catalog. The line is of slope 2.3, which represents our best estimate of the conversion from *Ariel* (SSI) to *Uhuru* counts.

VIII. DISCUSSION

a) Source Distributions

The sources in this catalog are displayed in galactic coordinates in Figure 5. This distribution does not differ markedly from that shown in the third *Uhuru* catalog. However, we do wish to emphasize two points.

First, we note the presence of an increased number of weak galactic sources ($I < 10$ counts s^{-1}) in the region $100° < l^{\text{II}} < 240°$. As Gursky (1975) suggested, these sources must be at distances of 5–10 kpc if they are to have luminosities comparable to those of the X-ray binaries. Because of their galactic longitude we would expect them to be nearer and hence of lower luminosity. Thus they may represent a distinct class of low-luminosity sources.

Second, the number-intensity distributions for galactic and extragalactic sources present no surprising results. Figure 6 shows both the galactic ($|b^{\text{II}}| < 20°$) and extragalactic ($|b^{\text{II}}| > 20°$) distributions. The observations from the fourth *Uhuru* catalog agree with previously derived functional forms and their normalizations (Murray 1977; Schwartz, Murray, and Gursky 1976; Matilsky *et al.* 1973).

b) Transient Phenomena

Variability of X-ray sources has now been observed to encompass an extraordinary range of characteristics. As the data base of X-ray astronomy continues to grow, the observed time scales increase correspondingly, and as capabilities improve, phenomena with ever shorter time scales are detected and studied. Table 8 lists the transient sources observed by *Uhuru* and listed in the catalog portion of this paper. We have included as transient those sources which are below the limits of detectability for a large portion—at least 50%—of the working life of *Uhuru*. These sources include "standard" transients such as the Norma transient, 4U 1543−47 = 3U 1543−47

TABLE 8

TRANSIENT SOURCES

Name	Maximum Intensity	Max/Min	Comments
4U 0115+63.....	70	>10	
4U 0336+01.....	100	>10	Several-day transient
4U 0836−42.....	47	>10	
4U 1543−47.....	2000	>100	
4U 1630−47.....	220	>20	Recurrent transient
4U 1730−22.....	120	>10	
4U 1735−28.....	565	>20	
4U 1743−19.....	150	>15	Globular cluster transient in NGC 6440
4U 1807−10.....	10	>3	
4U 1901+03.....	87	>10	
4U 1908+00.....	200	>20	Recurrent transient
4U 1918+15.....	50	>10	

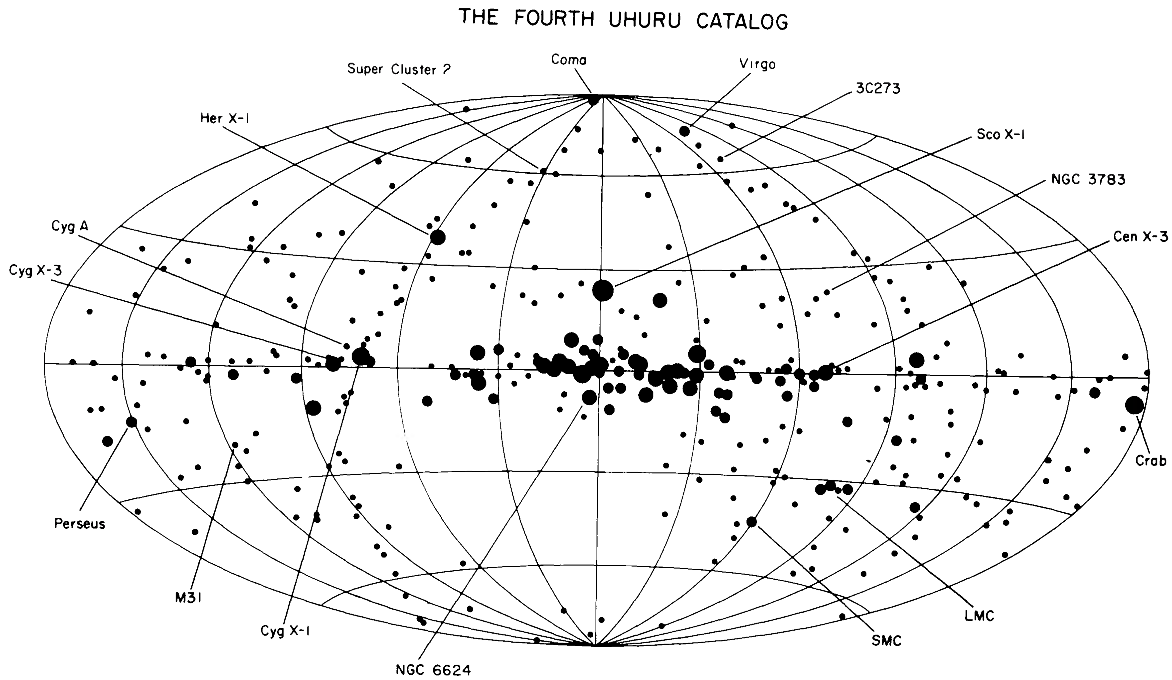

FIG. 5.—The sources listed in Table 1 are displayed in galactic coordinates. The size of the symbols representing the sources is proportional to the logarithm of the peak source intensity.

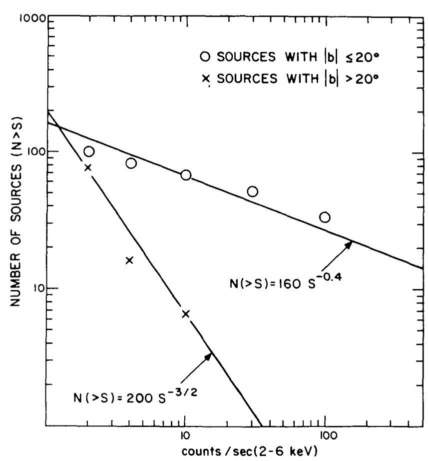

FIG. 6.—The log N-log S curves for galactic ($|b| < 20°$) and extragalactic ($|b| > 20°$) latitudes are shown. PST intensities were used for sources in Table 5. Sources with intensity less than 2.0 counts s^{-1} were omitted since we cannot reliably correct for our coverage. We have corrected the galactic distribution for contamination using the $|b| > 20°$ distribution.

In the galactic plane we cannot detect the weaker sources within 1°–2° of the strong sources. Therefore, the coverage for the weak sources is reduced, which could increase the points at 2 and 4 counts s^{-1} by 10–20%.

The lines drawn to schematically show the galactic and extraglactic distributions are of slope -0.4 and -1.5 and normalizations 160 and 200, respectively. The extragalactic distribution is normalized to the entire celestial sphere, while the galactic distribution covers $|b| < 20°$ only.

(Matilsky *et al.* 1972; Li, Sprott, and Clark 1976); the first recurrent transient, 4U 1630−47 (Jones *et al.* 1976); and a high-latitude phenomenon lasting several days, 4U 0336+01.

We have surveyed the entire *Uhuru* data base for transient events with durations of less than 1 day. Each peak detected in the computer search of the superposed data was tested for upward fluctuations by a factor of 2 or by 3 σ above the average intensity. In general the sources associated with such fluctuations were well known, e.g., Cygnus X-1 or binary sources going into or coming out of eclipse. Only a few single peaks resulting from such variability were found out of a total sample of 10,000 which could not be attributed to background fluctuations. These possible sources will be discussed in detail elsewhere. However, we mention this work here to point out that the weak sources in this catalog are not of this type.

We also wish to note that Grindlay and Gursky (1977) found bursts from MXB 1730−335 = rapid burster (Lewin *et al.* 1976) in the *Uhuru* data. This source is seen in the wide collimator superposed on other strong galactic center sources. It was therefore not selected by the data-processing system and is not contained in the catalog.

c) Seyfert Galaxies and BL Lacertae Objects

The first Seyfert galaxy X-ray source, NGC 4151, was observed by *Uhuru* (Gursky *et al.* 1971*a*) and was listed in the third *Uhuru* catalog. The recent *Ariel 5* catalog lists 10 additional Seyferts and shows that this type of galaxy comprises a significant fraction of the observed extragalactic X-ray sources. The present catalog confirms five of the already reported

11 and lists five additional suggested identifications. It is interesting to note that all the observed Seyferts are of type 1, supporting the suggested difference in the energy production mechanisms between type 1 and type 2 Seyferts (Weedman 1977). Also of interest is the large range of X-ray luminosity for this class of objects. Depending on the actual average luminosity of this class of X-ray emitting galaxies and their space density, they could produce a substantial fraction of the diffuse X-ray background. Tananbaum *et al.* (1978) discuss the Seyfert X-ray phenomenon in detail using *Uhuru* observations.

Cooke *et al.* (1978) reported X-ray emission from the BL Lacertae object Mrk 421. In this catalog we suggest that Mrk 501 is also an X-ray emitter and is associated with 4U 1651+39. Both of these BL Lacertae objects have been identified as radio sources (Colla *et al.* 1972) and may represent the first members of a new class of extragalactic X-ray sources.

d) *Clusters of Galaxies*

X-ray emission from clusters of galaxies was first reported by Meekins *et al.* (1971), Fritz *et al.* (1971), and Gursky *et al.* (1971*a*, *b*). Kellogg *et al.* (1972) and Forman *et al.* (1972) first reported that the cluster sources are extended, with sizes comparable to those of the optically defined clusters. Clusters of galaxies form the largest single class of extragalactic X-ray sources. In the present catalog, 45 X-ray sources are associated with clusters whose distance class is less than or equal to 4. The distance and richness classes for each cluster are given in column (5A) of Table 1. We anticipate additional identifications as the presently unidentified high-galactic-latitude objects in the southern sky are studied optically.

Jones and Forman (1977) discuss the cluster sources listed in this catalog. They find that the X-ray luminosity of clusters is correlated with the optically determined richness. Based on PST results, several clusters appear more extended than suggested by other observations.

e) *Superclusters*

Superclusters of clusters of galaxies, or second-order clusters, were first discussed by Abell (1958, 1961). Based on his catalog of clusters, Abell listed a subset of typical superclusters. When compiling this catalog, we found that several X-ray sources lay in groups of clusters. We therefore examined the possibility that superclusters are associated with X-ray sources.

Murray *et al.* (1978) have analyzed the sources contained in this catalog and suggest that superclusters may be a new class of X-ray-emitting objects. We have noted possible supercluster identifications in column (5A) of Table 1. Murray *et al.* (1978) suggest that the emission is produced by thermal bremsstrahlung from a hot gas pervading the entire supercluster. Their computations indicate that the mass of the gas is comparable to that of the clusters themselves. These objects should be extended, with sizes of several degrees, and their association with X-ray sources can be verified by the *HEAO* X-ray observatories.

As this catalog of X-ray sources represents the final compilation of sources observed by *Uhuru*, we wish to thank the many people who have helped make it possible.

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