The Peculiar Motions of Elliptical Galaxies in Two Distant Regions.  
I. Cluster and Galaxy Selection

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ABSTRACT

The EFAR project is a study of 736 candidate elliptical galaxies in 84 clusters  
lying in two regions towards Hercules-Corona Borealis and Perseus-Pisces-Cetus at  
distances $cz\approx6000$–15000 km s$^{-1}$. In this paper (the first of a series) we present an  
introduction to the EFAR project and describe in detail the selection of the clusters  
and galaxies in our sample. Fundamental data for the galaxies and clusters are given,  
including accurate new positions for each galaxy and redshifts for each cluster. The  
galaxy selection functions are determined using diameters measured from Schmidt  
sky survey images for 2185 galaxies in the cluster fields. Future papers in this series  
will present the spectroscopic and photometric observations of this sample, investigate  
the properties of the fundamental plane for ellipticals, and determine the large-scale  
peculiar velocity fields in these two regions of the universe.
1. Introduction

This paper is the first in a series reporting the results of the EFAR project studying the properties and peculiar motions of elliptical galaxies and clusters in two volumes of the universe at distances between 6000 and 15000 km s\(^{-1}\). The aims of this extensive observational program are: (i) to study the intrinsic properties of elliptical galaxies in clusters by compiling a large and homogeneous sample with high-quality photometric and spectroscopic data; (ii) to test possible systematic errors, such as environmental dependence, in existing elliptical galaxy distance estimators; (iii) to seek improved distance estimators based on a more comprehensive understanding of the properties of ellipticals and how these are affected by the cluster environment; and (iv) to determine the peculiar velocity field in regions that are dynamically independent of the mass concentrations within 6000 km s\(^{-1}\) in order to test whether the large-amplitude coherent flows seen locally are typical of bulk motions in the universe.

The EFAR project was conceived in 1986 as a natural progression from the work of the Seven Samurai (7S; Dressler et al. 1987a; Lynden-Bell et al. 1988), who studied the peculiar velocity field traced by elliptical galaxies closer than 6000 km s\(^{-1}\). The major finding of that work was that the local region of the universe was dominated by large-scale, large-amplitude coherent motions. This result has been substantially confirmed both by further analysis (Faber & Burstein 1988; Bertschinger et al. 1990) and by subsequent observational studies, mostly employing the independent Tully-Fisher distance estimator for spiral galaxies (Aaronson et al. 1986, 1989; Han & Mould 1990; Willick 1990, 1991; Mathewson et al. 1992; Mould et al. 1993; Courteau et al. 1993; Mathewson & Ford 1994). Although something is known about the peculiar velocity field within 6000 km s\(^{-1}\) the nature of the mass concentrations causing the flow remains controversial (see reviews by Bertschinger 1990; Burstein 1990; Dekel 1994; Strauss & Willick 1995) and relatively little is known about galaxy motions far away.

Initial comparisons of the velocity field with the predictions of cosmological models (Vittorio et al. 1986; Bertschinger & Juszkiewicz 1988) suggested that the observed motions were difficult to reconcile with the favoured biased CDM models that they considered. The immediate question raised was whether the local volume was indeed typical of other regions of the universe (implying that the standard cosmological models were incorrect) or whether the local motions are merely an unusual statistical fluctuation in the universal velocity field. More recent analyses (Kaiser 1988, 1991; Feldman & Watkins 1994; Seljak & Bertschinger 1994; Dekel et al. 1996), suggest that the local motions are consistent with the COBE-normalised standard CDM model. Nonetheless, whether or not the local motions are typical of the universe at large remains an important
question. In order to answer this we are measuring the peculiar motions in similarly-large regions at sufficient distances to be dynamically independent of the local volume studied by 7S and most other workers.

During the period it has taken to complete the EFAR observing program, however, a wider variety of questions have arisen. Chief among these has been a more searching inquiry as to the reliability of the $D_n-\sigma$ distance indicator developed by 7S (Dressler et al. 1987b; Lynden-Bell et al. 1988) and the physical origin of the fundamental plane (FP) of elliptical galaxies (Djorgovski & Davis 1987; Bender et al. 1992; Saglia et al. 1993a; Jørgensen et al. 1993; Pahre et al. 1995) of which it is simply a convenient projection. Various authors have suggested that there may be variations in the FP which correlate with galaxy environment, either directly, through mechanisms such as tidal stripping (Silk 1989), or indirectly via different stellar populations (Gregg 1992, 1995). Such effects could lead to significant systematic errors in any distance estimators based on the FP relations. Some claims have been made for the detection of such variations (de Carvalho & Djorgovski 1992; Guzman & Lucey 1993). Other studies, however, find little variation of the FP with environment (Lynden-Bell et al. 1988; Burstein et al. 1990; Lucey et al. 1991), and comparisons of FP and $D_n-\sigma$ distance estimates with those derived from relatively independent and perhaps more accurate estimators, such as the Tully-Fisher and surface brightness fluctuation methods, show good agreement (Jacoby et al. 1992).

These concerns, and the focus they bring on the formation and evolution of the elliptical galaxy population, have become as important a motivation for this work as the original goal of measuring the peculiar velocity field at large distances. The EFAR project’s goal of measuring the peculiar motions of distant ellipticals from a large and homogeneous sample, provides a test of the FP distance estimators that is both severe (since systematic errors in peculiar velocities are amplified at large distances) and fair (given the difficulties of comparing the FP for differently selected samples observed in different studies). It is worth noting that the 7S dataset is still the largest in the literature for elliptical galaxies, though it was obtained a decade ago and is based on photoelectric aperture photometry and IDS spectroscopy. The EFAR sample is comparable in size to that of 7S and is based largely on CCD imaging and spectroscopy, which confer a number of advantages in the attempt to reduce observational errors.

Even if systematic errors prove negligible, the relatively large ($\sim$20%) random errors in the $D_n-\sigma$ and Tully-Fisher distance estimators limit exploration of the velocity field beyond about 6000 km s$^{-1}$ (the ‘local’ region). The only studies which have attempted to measure the velocity field as far out as 15000 km s$^{-1}$ are those of Lauer & Postman (1994), using brightest cluster galaxies as distance estimators, and Riess et al. (1995), using Type Ia supernovae. These sparse, all-sky samples are suitable for measuring the convergence of the Local Group dipole motion to the cosmic microwave background dipole (or lack thereof), but they do not probe the velocity field on scales of tens of Mpc. This requires the use of distance estimators which have greater precision per object and/or apply to clustered objects, allowing denser sampling.
FP-based distance estimators for elliptical galaxies fulfill these criteria. As recent work by Jørgensen et al. (1993) has shown, the FP can yield distances with errors as low as 11% per galaxy (compared to 17% for $D_{n-\sigma}$ distances based on the same data, and 25% for the original $D_{n-\sigma}$ distances obtained by the 7S). For individual clusters it is possible to reduce the distance errors by $\sqrt{N}$, where $N$ is the number of galaxies in each cluster. With 5–15 ellipticals per cluster it is therefore possible in principle to measure individual cluster distances with 3–5% precision, corresponding to peculiar velocity errors of 500-750 km s$^{-1}$ at a distance of 15000 km s$^{-1}$. Thus with sufficient clusters in a given volume it becomes feasible to measure the peculiar velocity field with enough precision to reliably detect large-scale coherent motions at distances out to 15000 km s$^{-1}$ which have amplitudes comparable to those observed in the local volume within 6000 km s$^{-1}$. Provided significant sources of systematic error in the FP distance estimator can be ruled out or corrected for, the potential exists to determine the peculiar velocity fields in distant regions and thus further constrain cosmological models.

Two preparatory papers have discussed the photoelectric photometry and photometric system we use (Colless et al. 1993) and the methods we apply to correct for seeing in measuring the galaxies’ light profiles (Saglia et al. 1993b), an important effect for galaxies at greater distances. Other aspects of this project and some preliminary results have been reported in Wegner et al. (1991), Davies et al. (1993) and Baggley et al. (1994).

This paper (Paper I) describes how the galaxy clusters and galaxies belonging to those clusters were selected for this project. Future papers in this series will detail the spectroscopic and photometric data we have obtained, describe the methods used to analyze the luminosity profiles of the galaxies, examine the intrinsic properties of the galaxies and their dependence on environment, derive an optimal distance estimator, and discuss the peculiar motions of the galaxies and clusters and their significance for models of the large-scale structure of the universe.

In §2 of this paper we describe the selection of the regions and clusters used in this study, setting them in context with the surrounding large-scale structures. §3 gives the procedures used to select candidate elliptical galaxies in each cluster, and gives the master list of basic information on the galaxies in the study. The selection functions for the galaxies in each cluster are quantified in §4, and the conclusions we draw from this analysis are given in §5.

2. Selection of the Cluster Sample

We wanted to probe the peculiar velocity field of the galaxies to greater distances than had been sampled in the 7S study in order to discover whether the motions found locally within 4000 km s$^{-1}$ are typical of elsewhere in the universe. In order to achieve this, we chose two regions of similar size at sufficient distance from each other and the main parts of the local supercluster that their peculiar motions should be largely independent of the mass concentrations producing bulk motions in the local volume. Choosing directions perpendicular to the Supergalactic plane
ensures the maximum separation between our two regions, and helps avoid possible confusion with distant parts of the local supercluster.

The depth of the sample is dictated by the choice of the distance indicator. For example, if a distance indicator has errors of about 20% for individual objects, then at around 10000 \( \text{km s}^{-1} \) motions less than 1000 \( \text{km s}^{-1} \) can only be detected by averaging over several galaxies. The strong clustering of elliptical galaxies allows the selection of sets of galaxies at the same distance, so that the fundamental plane for elliptical galaxies is a natural choice for the distance estimator. We have chosen our regions to lie in the range \( cz = 6000–15000 \text{ km s}^{-1} \): from about twice the outer limit of the 7S sample to about the practical upper limit of the distance indicator.

An all-sky survey at this depth would have been considerably more difficult. As it was, about 350 galaxies had to be observed in each region to obtain sufficient sampling. Moreover an all-sky survey is not necessary to achieve our goal of comparing the bulk motions of other regions with the local motions within a distance of about 6000 \( \text{km s}^{-1} \). We expect that the geometry of the sample is well-suited for picking out specific components of the bulk flow if we compare e.g. with Lauer & Postman, though not as sensitive to all other directions (Cf. Kaiser 1988; Feldman & Watkins 1995; Watkins & Feldman 1996).

These considerations led us to look for regions that were rich in clusters (so that they could be well sampled) and which lie out of the Supergalactic plane at distances between 6000 \( \text{km s}^{-1} \) and 15000 \( \text{km s}^{-1} \). The selection of suitable regions and clusters (by which we mean elliptical-rich galaxy associations ranging from Abell clusters to poor groups) was accomplished in two steps.

(1) Selection of the regions. Our cluster sample is based on the Abell (1958) catalog and Jackson’s (1982) unpublished list of elliptical-rich groups and clusters. To select suitable regions we compiled a list of all the Abell and Jackson clusters with redshifts in the range \( cz = 6000–15000 \text{ km s}^{-1} \) as given by Struble & Rood (1987) and Jackson (1982). Examining the distribution of these clusters on the sky led us to choose two regions which we will refer to as HCB (Hercules–Corona Borealis) and PPC (Perseus–Pisces–Cetus), although they do not correspond precisely to the supercluster complexes with similar names identified by Tully & Fisher (1987). HCB is bounded by \( \alpha = 13^h \) to \( 19^h \) and \( 90 \text{ deg} > \delta > -21 \text{ deg} \) and PPC by \( \alpha = 21^h \) to \( 06^h \) and \( 90 \text{ deg} > \delta > -27 \text{ deg} \), in both cases excluding the region with \( |b| < 10 \text{ deg} \). The declination limit in HCB is the southern limit of Jackson’s catalog; in PPC we extended this limit to incorporate some more southerly clusters at \( \alpha \approx 5^h \).

Subsequent examination of the redshift distributions in each cluster showed that many have fore- or background galaxies or groups superposed on them. The problems caused by such contamination have been discussed in the literature (e.g. Primack et al. 1991) and will be dealt with in the context of our sample in a subsequent paper. Here we note that it complicates the problem of selecting a volume-limited sample of clusters. In particular, we find that the redshift of an Abell cluster given in the literature is sometimes that of a bright foreground galaxy while the true cluster is more distant (see below).
(2) Inspection of the Sky Survey plates. We next examined glass copies of all the Palomar Observatory Sky Survey (POSS) E plates in these two areas and the J plates from the SERC Sky Survey in the south, identifying the Abell and Jackson aggregates. In addition we searched the plates to find all elliptical galaxies in each region with diameters (or redshifts if they appeared in the Huchra redshift catalog) which indicated that they were likely to be at roughly the same distance as the Struble & Rood (1987) and Jackson (1982) clusters on the plate. This led us to identify some aggregates not previously cataloged, and in a few cases led us to follow the galaxy distributions onto neighboring Sky Survey plates. Only those aggregates which contained at least three ellipticals, as judged by examining the plates, were retained for further study. The KPNO photographic lab then made enlargements of all the cluster fields found on the plates in order to provide a standard set of images which would allow us to select galaxies in a more reproducible way than is possible from the glass Sky Survey plates. The selection of the galaxy sample is described in detail in §3.

Table 1 lists the clusters in our sample. Columns 1-9 give respectively the cluster ID number (CID), \(N\), the number of sample galaxies selected in the cluster, the R.A. and Dec. (J2000), the Galactic coordinates \((l, b)\), the number of sample galaxies selected in the cluster \(N\), the median redshift \(cz_{EFAR}\) in \(\text{km}\,\text{s}^{-1}\) (from the cluster members in our sample), the redshift from the literature \(cz_{lit}\) (obtained using NED\(^1\)), and the name of the cluster. The cluster positions are in fact those of the ‘A’ galaxy in the cluster (normally the brightest; see §3), and so are not necessarily coincident with the Abell catalog positions. The table includes the 84 program clusters we initially selected (CID=1–84) and the Coma cluster (CID=90), our primary reference cluster.

For the 40 cases where there is a redshift in the literature, Fig.1 shows the distribution of differences between the median cluster redshifts we obtain and the literature values (the notes to Table 1 indicate the few cases where we prefer another literature redshift to the one adopted by NED). The scatter of 312\,\text{km}\,\text{s}^{-1} shown in Fig. 1 is consistent with the 200–400\,\text{km}\,\text{s}^{-1} errors expected when estimating the mean redshift of clusters with line-of-sight velocity dispersions in the range 500–1000\,\text{km}\,\text{s}^{-1} from 6 galaxy redshifts (the median number of usable objects in our sample). The mean difference of \(-49\,\text{km}\,\text{s}^{-1}\) is consistent with the standard error in the mean expected from the observed scatter. Better estimates of the individual errors of the cluster \(cz_{EFAR}\) in Table 1 first require the assignment of membership to the clusters. That can only be finalized using both redshift and distance information because of the fore and background objects. That information will be presented in subsequent papers dealing with the spectroscopy (Wegner et al. 1996) and the photometry (Saglia et al. 1996).

The cluster names given in Table 1 are either the Abell number (e.g. A2052) from the catalogs of Abell (1958) and Abell et al. (1989), Jackson numbers (e.g. J17) from Jackson (1982), or P-numbers which combine the number of the Sky Survey field on which the cluster was found with

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\(^1\)NED, the NASA/IPAC extragalactic database, is operated for NASA by the Jet Propulsion Laboratory at Caltech.
a sequence number (e.g. P777-1, P777-2 etc.). Some clusters were split into suspected components (there is a J34/35 as well as J34 and J35, a A533-1 as well as A533, a A2162-N and a A2162-S, etc.). Some clusters have alternate names: A85 is also J29, A2152 is also J19, our A2162-S is A2162, and of course Coma is A1656. A few clusters were misnamed in Colless et al. (1993): A85, A147, A1983, A1991, A2152 and P522-1 were called J29, A150, A1983-1, A1983, J19 and A2506 in that paper; the names are given correctly in Table 1, and the galaxies in these clusters are also renamed in the list of sample galaxies (see §3 and Table 3 below).

The locations of the survey regions and the 84 program clusters are shown in Fig.2. The projection in Galactic coordinates is shown for three redshift shells, with the middle shell corresponding to the nominal redshift range of our cluster sample, \(cz=6000–15000 \text{ km s}^{-1}\). In order to illustrate the level of completeness in our sample, the figure also shows the positions of all Abell clusters (Abell et al. 1989; excluding supplementary clusters) with measured redshifts (extracted from NED in May 1995). Fig.2 also shows the direction of the Local Group motion with respect to the cosmic microwave background (Smoot et al. 1992) and with respect to the reference frame of Abell clusters within 15000 km s\(^{-1}\) (Lauer & Postman 1994; Colless 1995). The HCB and PPC regions are well away from the CMB dipole direction, while the Lauer & Postman dipole lies towards the edge of PPC.

A summary of the numbers of Abell \((N_A)\), Jackson \((N_J)\) and supplementary P-numbered \((N_P)\) clusters and their sum \((N_S)\) as a function of redshift range is given in Table 2 and shows that we were very successful in choosing clusters in the nominal redshift range 6000–15000 km s\(^{-1}\). Only 11 of the 84 program clusters are outside this range, and only 2 lie outside the range 4000–17000 km s\(^{-1}\). These two clusters are A419 (#23, \(cz=20329 \text{ km s}^{-1}\)) and A2148 (#56; \(cz=26322 \text{ km s}^{-1}\)). They were selected on the basis of redshifts from Struble & Rood’s compilation (12180 km s\(^{-1}\) and 13250 km s\(^{-1}\) respectively) which proved erroneous. Note that Coma is not a program cluster—although it has an appropriate redshift, it lies just outside the survey region (it is the Abell cluster nearest the NGP in Fig.2) and the galaxies in it were not selected in the same way (see below).

In the nominal redshift range \(cz=6000–15000 \text{ km s}^{-1}\) there are a total of 32 distinct Abell clusters in our sample, 12 in HCB and 20 in PPC. (The total of 37 in Table 2 arises because we split 5 Abell clusters into two components due to apparent substructure: A533, A548, A2063, A2162, A2593.) NED lists a total of 50 Abell clusters in the survey region over this same redshift range, 15 in HCB and 35 in PPC (Abell et al. 1989, excluding supplementaries). However scrutiny of the literature references and comparison with the Sky Survey plates provide strong evidence that the NED redshifts for a significant number of the Abell clusters which apparently should have been in our sample are incorrect, mostly belonging to foreground objects (see Appendix A for details).

Excluding these clusters as very probably outside our sample redshift range, we find there are in fact 13 Abell clusters in the HCB volume and 27 in the PPC volume, so that our samples
of Abell clusters are 12/13=92% complete in HCB and 20/27=74% complete in PPC. In fact 4 of the clusters missed from our PPC sample are from Abell et al. (1989), which was not available when we were selecting our sample; excluding these our completeness in PPC is 20/23=87%. The selection of our cluster sample will need to be accounted for in interpreting the results obtained on the velocity field.

The location of our survey volumes with respect to the major large-scale structures is illustrated in Fig.3, which shows the program clusters relative to the superclusters identified by Einasto et al. (1994). These are very similar to the superclusters given in the earlier supercluster catalogues of Bahcall & Soneira (1984), Batasuki & Burns (1985), Tully & Fisher (1987), Tully et al. (1992) and Zucca et al. (1993), differing only in the effective density threshold used to define the superclusters and in having more Abell clusters with redshifts to work with. The names of the superclusters are those given in Einasto et al. (following earlier authors) except for Pisces A and Pisces B, which we have supplied for Einasto et al.'s superclusters 16 and 17. The volume we call HCB is centered on the Hercules supercluster at 10000 km s$^{-1}$, and reaches towards (but does not encompass) the Corona Borealis and Bootes superclusters at around 20000 km s$^{-1}$. It does not include any other superclusters identified by Einasto et al. The PPC volume includes the Perseus-Pegasus A, Pisces A and Lepus superclusters at distances around 12000 km s$^{-1}$ and has an outer boundary that does not quite include the Pisces B, Pisces-Cetus and Horologium-Reticulum superclusters at around 18000 km s$^{-1}$.

3. Selection of the Galaxy Sample

The search for suitable ellipticals in each of the selected clusters was carried out using the high-quality enlargements of the relevant regions of Sky Survey glass copies described above. These enlargement prints greatly aided the uniform selection of our galaxy sample and the quantification of the selection criteria. Galaxies were selected entirely by their morphology and size on the enlargements. As redshifts were unavailable for many of the galaxies in our program clusters we used the ellipticals with known redshifts as a guide in finding other galaxies with elliptical morphologies and similar apparent sizes. We erred on the side of including some objects with disks rather than exclude possible ellipticals. In order not to bias the selection, we did not identify known galaxies, but chose objects solely on the basis of their appearance on the Sky Survey enlargement prints.

From our previous experience (Faber et al. 1989), high-quality photographic enlargements of the Sky Survey glass copies can be used to make quantifiable selection of elliptical galaxies. Thus an initial survey of the enlargements was conducted picking out suitably-sized objects that could possibly be E or S0 galaxies. As many galaxy images are saturated on the Sky Survey plates, we realized at the outset that this selection procedure also yields spiral galaxies which would have to be weeded out with further imaging. However we decided it was preferable to use an inclusive procedure in order to make the selection criteria more readily quantifiable, and to bear
the overhead of the extra subsequent imaging needed to make final morphological classifications.

All galaxies identified as possible E or S0 galaxies by the initial selection process were given capital letter designations within each cluster (e.g. A119_A, J3_C, P777-3_B). This yielded 598 E/S0 galaxy candidates. A second pass through the selection process added 145 additional candidates (generally fainter, smaller galaxies), which are given numerical designations (e.g. A119_2, J3_1) to distinguish them from the first set. Altogether we selected a total of 743 E/S0 galaxy candidates in the program clusters. The final list of galaxies useful as distance indicators was further refined after spectroscopy and spectra were obtained.

In order to have a calibration and comparison sample, we also chose 52 well-studied galaxies in Coma, Virgo and the field. These galaxies were not selected in the same way as the program galaxies, but were drawn from samples studied by previous workers investigating the $D_n-\sigma$ and fundamental plane relations. Our primary comparison sample of 32 Coma cluster galaxies are designated by their Dressler (1984) numbers (e.g. COMA_124 is D124). The 7 Virgo cluster and 13 field galaxies are called by their NGC names (e.g. NGC 4486 is N4486).

Table 3 gives the basic data on all 795 objects observed in the EFAR project, listing the Galaxy Identification Number (GIN), the galaxy name, its position (J2000), the R-band extinction $A_R$ derived as described below, the galactic coordinates ($l$, $b$), the log of the photographic diameter $D_W$ in arcsec (see §4), and some comments, which include other names for the galaxies (mainly NGC/IC names). The GIN is the unique identifier for each galaxy: the 743 program objects are assigned numbers 1 to 742 and 901 (P777-2_2). The 52 calibration galaxies are assigned numbers 750 to 801. Note that there has been some re-naming of the galaxies compared to Colless et al. (1993) due to the incorrect cluster names used in that paper. Only the cluster part of the name has been changed (following §2 and the notes to Table 1); the alphanumeric designation (and the GIN) remains the same (e.g. A2506_A has become P522-1_A).

Of the total of 743 E/S0 galaxy candidates it was subsequently found that there were 3 duplicated pairs (GINs 53=55, 406=435, 565=576) and that 4 ‘galaxies’ are actually stars (GINs 123, 131, 133, 191); these are all noted in the comments column of Table 3. Excluding the duplicates and stars gives a sample of 736 galaxies which are E/S0 candidates. The distribution of the number of galaxies per program cluster is shown in Fig.4; the number of galaxies selected per cluster ranges from 2 to 19, with a median of 8.

Accurate positions were determined for all program galaxies using the Galaxy Automated Scanning Program (GASP) of the Space Telescope Science Institute. The positions obtained appear to have an accuracy of 0.5", and have been checked repeatedly during acquisition at the telescope. The R-band extinctions given in Table 3 were computed as $A_R = 2.4E(B - V)$, with $E(B - V)$ obtained from Burstein & Heiles (1982, 1984).
4. Sample Selection Functions

It has long been known, starting with Malmquist (1920), Neyman & Scott (1959) and others, that the statistical properties of a sample of objects depend on a number of observational factors including the cutoff and completeness of the sample. In investigations of this kind, there are two levels of selection with which we must deal: (1) the choice of the clusters (or “fields”) which we have described above and (2) the selection of the galaxies themselves. Having dealt with the former in §2 we now turn to quantifying the latter.

Incompleteness amongst the small, faint galaxies observed in a given cluster can lead to a strong selection bias which affects the estimated distance to the cluster (cf. Lynden-Bell et al. 1988; Willick 1994; Strauss & Willick 1995; Freudling et al. 1995). As each cluster has its own intrinsic distance, richness, and structure, it will also have its own selection function which depends on the observational quantity on which the sample is selected. The relevant quantity in this study is the photographic diameter as measured from the Sky Survey images.

For a cluster of galaxies, index $j$, found within a fixed solid angle on the sky, we estimated the selection function of the survey (the completeness as a function of the selection variable $X$), $S_j(X)$, by binning the program elliptical galaxies in $k$ fixed intervals $\Delta X$ and summing the number in each bin. We excluded program galaxies found to be spirals or otherwise unusable in our subsequent CCD imaging, as these will not be used for obtaining distances and so should not be included in the selection function. This gives the count, $N_{\text{obs}}^j$, of observed galaxies with the range of desired morphological types belonging to cluster $j$ in the interval $X_k - \frac{1}{2}\Delta X \leq X < X_k + \frac{1}{2}\Delta X$. The ratio of this to the true number of galaxies in this cluster and interval with the range of desired morphological types, $N_{\text{all}}^j$, yields the selection function,

$$S_j(X_k) = \frac{N_{\text{obs}}^j(X_k)}{N_{\text{all}}^j(X_k)}.$$ (1)

In order to estimate $N_{\text{all}}^j$ and thus determine $S_j$, a second catalog of all galaxies that might have been in the sample must be constructed. This means, for each cluster, measuring the photographic diameters for all ellipticals (spirals were excluded) as big or bigger than the smallest galaxy that is included in our sample.

The method for selecting candidate galaxies simply consisted of choosing, by eye, objects larger than some size which looked like ellipticals on our high-quality photographic enlargements of the glass copies of the Sky Survey plates. This selection procedure can be quantified by measuring optical major-axis diameters, $D_W$ (in arcsec), for every elliptical-like galaxy in all the cluster fields (including both the galaxies in the sample and other, mostly smaller, galaxies in the same fields). These diameters were measured in a homogeneous fashion by GW off the photographic enlargements of the Sky Survey glass copies. In all, 2185 diameter measurements were made; those for the program galaxies are listed in Table 3. These $D_W$ are a good measure of the true size of the galaxies, as is illustrated by Fig.5, which, using preliminary estimates of $D_R$ (the diameter enclosing a mean surface brightness of 20.5 mag arcsec$^{-2}$ in the Kron-Cousins $R$ band), shows the
good correlation that exists between $\log D_W$ and $\log D_R$. The full details of the derivation of the $D_R$ values will be given in the Paper III on the photometry (Saglia et al. 1996).

The selection function for each cluster $j$ was computed from the ratio of the $\log D_W$ distributions (with $\Delta \log D_W = 0.2$ dex binning) of the EFAR program galaxies (with spirals omitted), $N_j^{EFAR}$, and all galaxies with measured $D_W$, $N_j^{all}$:

$$S_j(\log D_W) = \frac{N_j^{EFAR}(\log D_W)}{N_j^{all}(\log D_W)}.$$  (2)

To characterise the selection function $S_j(\log D_W)$ we follow Neyman & Scott (1959) and Willick (1994) and adopt the useful form

$$S_j(\log D_W) = 0.5 \{ 1 + \text{erf}(\frac{\log D_W - \log D_{W_j}^0}{\delta_{W_j}}) \} ,$$  (3)

where $\log D_{W_j}^0$ is the midpoint, and $\delta_{W_j}$ the width, of the cutoff in the selection function. In practice, we fitted this relation by doing a linear least-squares fit to

$$\text{erf}^{-1}[2S_j(\log D_W) - 1] = \frac{(\log D_W - \log D_{W_j}^0)}{\delta_{W_j}} ,$$  (4)

where erf$^{-1}$ denotes the inverse error function. For some of the clusters there were too few points to fit both parameters and we used the mean width $\langle \delta_{W_j} \rangle = 0.24$ and determined only the cut-off $\log D_{W_j}^0$. The uncertainty in $\log D_{W_j}^0$ is dominated by the small numbers of galaxies in each cluster, and is approximately 0.1 dex. Example selection functions for some of the clusters are shown in Fig.6. Note that the cutoff in the selection function for Coma is particularly broad, due to the fact that the galaxies in Coma were not selected in the same way as the other clusters but were simply garnered from the literature of previous observations in the cluster.

Our estimates of the selection functions for each cluster are valid as long as (1) the diameters measured for all galaxies are as small or smaller than the smallest program galaxy in the cluster and (2) the two samples are not badly contaminated by galaxies of the wrong morphological types. Fig. 7a shows that this first requirement is satisfied, for the catalog of all $\log D_W$ diameters (striped histogram) only begins to show incompleteness about 0.2 dex below the cutoff $\log D_{W_j}^0$ in the sample of program galaxies in each cluster.

The second potential source of error in the galaxy counts stemming from the difficulty of assigning correct types to the smallest galaxies could produce a systematic change in the contamination by spirals with diameter. However this would be compensated approximately if the fractions of incorrectly selected galaxies are similar in the two catalogs. This is shown to be the case in Fig. 7b which compares the distributions of rejected spirals from the two samples. Here the two distributions have nearly the same shape and their ratio remains nearly constant at $\sim 0.5$ near the cutoff of the selection functions. The final morphological types will be given in the photometry paper (Saglia et al. 1996). Here we are concerned purely with the initial sample selection; this involved the by-eye morphologies, but not the detailed CCD-image-based classifications which will be discussed in later papers.
The combined selection function for the whole sample, correcting for differences in \( \log D_W \) between clusters, is shown in Fig. 8. The selection function corresponding to the mean parameters \( \langle \log D_W^0 \rangle = 1.25 \) and \( \langle \delta_W \rangle = 0.24 \) (i.e. cluster-weighted using the subsample of clusters for which we could directly determine these parameters) is shown as the solid curve. Fitting the combined galaxy sample directly yields the dashed curve which is the galaxy weighted selection function and it has a slightly higher cutoff \( \log D_W^0 = 1.30 \) and is slightly broader \( \delta_W = 0.30 \). Thus the selection functions typically have a cutoff at \( \langle D_W^0 \rangle = 18–20'' \) and drop from 90% to 10% completeness over a range of 1.8(\( \delta_W \))=0.44–0.54 dex (i.e. between 30'' and 10''). Fig. 9 shows that the selection is indeed by angular diameter: note the curves of constant angular size produced by the discreteness of the \( \log D_W^0 \) estimates. Over the range from 6000 km s\(^{-1}\) to 15000 km s\(^{-1}\) a typical cutoff diameter of 19'' corresponds to a metric diameter increasing from 11 kpc to 28 kpc (for \( H_0=50 \) km s\(^{-1}\) Mpc\(^{-1}\)).

The selection regions and the parameters of the selection functions for all clusters are given in Table 4. The CID in the first column correspond to those in Table 1. The solid angles on the sky that were surveyed for each cluster were measured from the photographic prints and with the exception of two clusters, the fields are rectangles running EW and NS. Thus we measured the right ascension and declination of the center of each rectangle (not the same as the cluster centers in Table 1), given in columns 2 and 3, and the total length and height, \( \Delta \alpha \) and \( \Delta \delta \) of the sides of these rectangles in units of arc minutes in columns 4 and 5. The selection function parameters \( N_W \) (the total number of \( D_W \) diameters measured in each field), \( \log D_W \), and \( \delta_W \) are listed in columns 6, 7, and 8.

In subsequent papers we will apply additional selection criteria (such as the availability of spectroscopic and photometric observations or morphological criteria based on the CCD imaging) in order to refine the initial program sample. We will then compute the corresponding new selection functions using the method described above. In general we would expect such subsamples to omit more objects with small diameters, leading to larger values of the cutoff diameter. This is borne out using a preliminary stringently chosen list of our highest quality distance indicators (Saglia et al. 1996). With this whittled down subsample which is 55% of the original list, the mean \( \log D_W^0 \) increases by only 0.1 while \( \delta_W \) changes insignificantly and shows the insensitivity of the selection function to large changes in the sample.

A maximum likelihood fitting method is to be used to determine the galaxy distances, and since this technique fits a probability distribution to all observables this gives additional explicit and implicit selection criteria besides \( S_j(D_W) \). The final values that we use will be given in subsequent papers, but examples of these with preliminary values are as follows: the lower cutoff in the velocity dispersion at \( \sigma<140 \) km s\(^{-1}\) due to the resolution of the instruments is an explicit limit (Wegner et al. 1996), while the mean surface brightness \( 23.39 \geq \langle SB_e \rangle \geq 16.84 \) mag arcsec\(^{-2}\) and the smallest effective radius \( R_e \geq 1.5'' \) we have observed in our sample are implicit limits (Saglia et al. 1996).
5. Conclusions

The EFAR project is aimed at measuring the properties and peculiar motions of elliptical galaxies in clusters selected in two regions at distances of 6000–15000 km s\(^{-1}\). The primary goals of the project are: first, to study the physical properties of a large sample of elliptical galaxies and derive an optimal distance estimator; and second, to determine the bulk motions in the two selected regions in order to establish whether the large-scale coherent motions seen within 6000 km s\(^{-1}\) are typical of other regions of the universe, thereby tightening the constraints on cosmological models set by the local velocity field.

There are 84 clusters in our sample, 39 in the region we call Hercules-Corona Borealis (HCB) and 45 on the opposite side of the sky in the region we call Perseus-Pisces-Cetus (PPC). Most of these clusters lie in the redshift range 6000–15000 km s\(^{-1}\), with 42 being drawn from the Abell (1958) catalog, 32 from the catalog of Jackson (1982), and a further 10 supplementary clusters found by us on the Sky Survey plates. We give the redshifts for all of these clusters and show where they are located with respect to the superclusters identified by Einasto et al. (1994). We find that our sample of Abell (1958) clusters in the range 6000-15000 km s\(^{-1}\) is 92% complete in HCB and 87% complete in PPC.

In these clusters we have selected 736 candidate elliptical galaxies based on their morphology and apparent size on enlargements of Sky Survey glass copies. Our master list of EFAR galaxies gives the fundamental data, including accurate new positions, for these program galaxies and for 52 calibration galaxies in Coma, Virgo and the nearby field. In order to quantify our selection criteria we have measured visual diameters from the Sky Survey enlargements for all the program galaxies (and for the calibration galaxies in Coma) and for a large number of other galaxies in these clusters—a total of 2185 objects. The visual diameters of the program galaxies turn out to correlate with preliminary estimates of the the photometric sizes established by subsequent CCD imaging. For each cluster we are therefore able to characterise the selection criterion for the sample galaxies in terms of these visual diameters. We find that the samples of galaxies in the program clusters are typically 50% complete at 18–20\arcsec, and drop from 90% to 10% completeness between 30\arcsec and 10\arcsec.

Subsequent papers in this series will report the spectroscopic and photometric observations, estimate distances and peculiar velocities for the galaxies and clusters, and interpret the implied peculiar velocity field.

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and NASA grant NAG5-2816 to EB. The entire collaboration benefitted from NATO Collaborative Research Grant 900159 and from the hospitality and monetary support of Dartmouth College, Oxford University, the University of Durham and Arizona State University. Support was also received from PPARC visitors grants to Oxford and Durham Universities and a PPARC rolling grant: "Extragalactic Astronomy and Cosmology in Durham 1994-98." The KPNO photographic laboratory produced the extensive set of prints from the Sky Surveys used for measuring galaxy diameters and as finders, which were provided by RLD and DB. DB measured the positions of all program galaxies using the GASP system; we extend our great appreciation to the STScI personnel for their help. Josef Wegner compiled the initial sample of candidate galaxies and provided a list of cross-references which proved invaluable.

A. Clusters Omitted from the Survey Sample

As of mid-1995 there were 56 Abell clusters with known redshifts and sky positions that would nominally have placed them in the survey sample. The EFAR sample has 34 (61%) of these clusters. The 22 remaining Abell clusters were excluded for the reasons listed below.

Five clusters had redshifts known at the time of the 1986 search but were rejected:

(1) A195 - Nominal $z=0.047$. Examination of POSS print shows that the cluster is much fainter and likely to have $z>0.05$.

(2) A261 - Nominal $z=0.0467$. Examination of POSS prints shows quoted redshift is that of a foreground elliptical. The real Abell cluster is much more distant.

(3) A407 - Nominal $z=0.047$. Famous “cD-in-the-making”, seven galaxies in a common envelope associated with UGC 2489 (cf. Nilson 1973). We could not get good data on each part of this complex system.

(4) A484 - Nominal $z=0.0386$. Redshift quoted corresponds to a small radio galaxy near the cluster, but not in it. The real Abell cluster is of very faint galaxies in background.

(5) A539 - Nominal $z=0.0267$. This cluster lies at low Galactic latitude, has strong differential reddening, and is in the middle of an emission line nebula.

Ten clusters did not have redshifts known at the time of the 1986 search and subsequent investigation indicates our survey would not have used them:

(6) A256 - Nominal $cz=13379$ km s$^{-1}$. Examination of POSS prints finds a foreground E superimposed on a faint, background cluster. Zabludoff et al. (1993) show this region to have galaxies with $cz$ from 6000 to 30000 km s$^{-1}$, but no definite clusters except at the highest $cz$.

(7) A2995 - Nominal $cz=11332$ km s$^{-1}$. Examination of POSS prints finds 3 larger galaxies (2 spirals, 1 elliptical) superimposed on faint background clusters. Abell (1958) calls this cluster
distance class 5, making it too far away for our survey. Quoted redshift comes from NED.

(8) A480 - Nominal $cz=14180\ \text{km}\ \text{s}^{-1}$. Struble & Rood (1991) report this as an incorrect redshift. We confirm this from examination of the POSS, as we only see faint cluster and Abell gives it a distance class of 5.

(9) S0449 - Nominal $cz=14390\ \text{km}\ \text{s}^{-1}$. Redshift from Dalton et al. (1994), but assigned probability of 0.05 or less of being correct. Examination of SRC J prints indicate galaxies in cluster have $z>0.1$.

(10) S0471 - Nominal $cz=12891\ \text{km}\ \text{s}^{-1}$. Redshift from Dalton et al. (1994), but assigned probability of 0.05 or less of being correct. Examination of SRC J prints indicate galaxies in cluster have $z>0.1$.

(11) A3175 - Nominal $cz=11691\ \text{km}\ \text{s}^{-1}$. Redshift from Dalton et al. (1994), but assigned probability of 0.05 or less of being correct. Examination of SRC J prints indicate galaxies in cluster have $z>0.1$.

(12) A2022B - Nominal $cz=9144\ \text{km}\ \text{s}^{-1}$. Examination of POSS shows this to be a foreground group to a much fainter Abell cluster. The actual Abell cluster is too distant for our survey.

(13) A2025 - Nominal $cz=13550\ \text{km}\ \text{s}^{-1}$. Examination of POSS shows only faint galaxies at the Abell cluster position. Quoted redshift probably of foreground galaxy.

(14) A2506 - Nominal $cz=8660\ \text{km}\ \text{s}^{-1}$. The confusing picture given by POSS examination is clarified by Zabludoff et al. (1993) which shows the galaxies in this region have a large range in redshift. Only the nearest galaxies are used for the quoted redshift. Our survey originally identified a set of galaxies at this redshift as A2506, but these are really a degree away from the Abell cluster position, and are now called the P522-1 group.

(15) A2592 - Nominal $cz=13880\ \text{km}\ \text{s}^{-1}$. Examination of the POSS finds only faint galaxies. Struble & Rood (1991) state that this is an incorrect redshift for this cluster.

Two clusters did not have redshifts at the time of our 1986 search and would have been of marginal use for this survey.

(16) A3367 - Nominal $z=0.0443$. Examination of POSS prints shows this cluster is dominated by a cD but the other galaxies in the cluster are too faint and too small for our survey. This could be another foreground galaxy contaminated-cluster.

(17) A3374 - Nominal $z=0.0471$. Examination of POSS prints shows this cluster is dominated by a cD. Only faint galaxies are seen around this cD, too faint for this survey.

Five clusters would have been included in the EFAR survey had we known about their redshifts in 1986:

(18) A154A - $cz=12837\ \text{km}\ \text{s}^{-1}$. 
(19) A295 - \( cz = 12717 \text{ km s}^{-1} \).
(20) A536 - \( cz = 11931 \text{ km s}^{-1} \).
(21) A2881 - \( cz = 13280 \text{ km s}^{-1} \).
(22) A3223 - \( cz = 12981 \text{ km s}^{-1} \).

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Table 1.  The Cluster Sample

| CID | N  | R.A. (J2000) Dec. | l    | b    | \( cz_{EFAR} \) | \( cz_{lit} \) | Name |
|-----|----|-------------------|------|------|----------------|----------------|------|
| 1   | 7  | 00 39.4           | +06 44 | 117.57 | -56.02 | 12082 | 12471 | A76 |
| 2   | 5  | 00 41.8           | -09 18 | 115.23 | -72.04 | 16614 | 16680 | A85$^a$ |
| 3   | 12 | 00 56.4           | -01 15 | 125.80 | -64.07 | 13140 | 13307 | A119 |
| 4   | 6  | 01 02.0           | +26 57 | 125.87 | -35.86 | 14052 | ...   | J3  |
| 5   | 5  | 00 58.8           | +12 58 | 125.72 | -49.85 | 12684 | ...   | J4  |
| 6   | 7  | 01 09.3           | +02 12 | 132.02 | -35.86 | 14052 | ...   | J3  |
| 7   | 12 | 01 12.4           | +15 44 | 130.33 | -46.82 | 13150 | 13400 | A160 |
| 8   | 9  | 01 13.0           | -00 15 | 134.36 | -61.61 | 13473 | 13427 | A168 |
| 9   | 4  | 01 25.4           | +01 44 | 140.13 | -59.99 | 9603  | 9594  | A189 |
| 10  | 9  | 01 20.9           | -13 51 | 151.84 | -75.04 | 15390 | ...   | J30 |
| 11  | 6  | 01 25.1           | +08 41 | 136.94 | -53.26 | 14701 | 14584 | A193 |
| 12  | 12 | 01 37.2           | -09 11 | 156.21 | -69.05 | 12298 | ...   | J32 |
| 13  | 9  | 01 50.7           | +33 04 | 137.00 | -38.17 | 11035 | 10433 | A260 |
| 14  | 10 | 01 52.7           | +36 09 | 136.59 | -25.09 | 5161  | 4827  | A262 |
| 15  | 7  | 02 25.6           | +36 57 | 143.10 | -22.18 | 10726 | ...   | J7  |
| 16  | 13 | 02 30.2           | +23 09 | 150.69 | -34.33 | 9425  | ...   | J8  |
| 17  | 7  | 02 46.0           | +36 54 | 147.11 | -20.52 | 14550 | 14659 | A376 |
| 18  | 7  | 02 49.7           | +46 58 | 143.01 | -11.22 | 8426  | ...   | J9  |
| 19  | 2  | 02 55.7           | -14 12 | 195.20 | -58.30 | 9235  | ...   | J33 |
| 20  | 9  | 02 56.5           | +15 54 | 161.84 | -37.33 | 9518  | 9743  | A397 |
| 21  | 14 | 02 57.5           | +05 58 | 170.28 | -45.00 | 6804  | 7189  | A400 |
| 22  | 3  | 03 08.3           | -04 08 | 183.86 | -50.08 | 8660  | ...   | J28 |
| 23  | 12 | 03 08.2           | -23 41 | 214.31 | -59.00 | 20329 | 19936 | A419 |
| 24  | 6  | 04 33.6           | -13 15 | 209.59 | -34.69 | 9691  | 9844  | A496 |
| 25  | 10 | 04 45.1           | -15 52 | 213.90 | -34.95 | 10809 | ...   | J34 |
| 26  | 3  | 04 52.7           | +01 14 | 197.18 | -25.49 | 8933  | ...   | J10 |
| 27  | 6  | 04 58.8           | -00 29 | 198.62 | -24.50 | 4490  | ...   | P597-1 |
| 28  | 5  | 04 54.8           | -18 06 | 217.47 | -33.61 | 9530  | ...   | J35 |
| 29  | 7  | 04 51.3           | -17 30 | 216.40 | -34.19 | 9460  | ...   | J34/35 |
| 30  | 4  | 04 59.7           | -18 34 | 218.49 | -32.70 | 12701 | ...   | P777-1 |
| 31  | 8  | 05 02.9           | -20 21 | 220.77 | -32.62 | 8254  | ...   | P777-2 |
| 32  | 10 | 05 05.2           | -19 13 | 219.72 | -31.71 | 16392 | ...   | P777-3 |
| 33  | 8  | 05 04.0           | -23 59 | 224.95 | -33.54 | 12422 | ...   | A533-1 |
| 34  | 9  | 05 01.6           | -22 36 | 223.18 | -33.65 | 14543 | 14150 | A533 |
| 35  | 19 | 05 48.6           | -25 28 | 230.28 | -24.43 | 12357 | 12291 | A548-1 |
| 36  | 17 | 05 42.3           | -26 05 | 230.40 | -25.97 | 11629 | 12291 | A548-2 |
| 37  | 8  | 13 05.6           | +53 33 | 118.21 | 63.43  | 8868  | ...   | J11 |
| 38  | 8  | 13 43.4           | +30 04 | 50.52  | 78.23  | 12685 | ...   | J12 |
| 39  | 18 | 13 55.2           | +25 03 | 28.27  | 75.54  | 8855  | ...   | J13 |
| 40  | 7  | 14 08.1           | -09 04 | 332.77 | 49.31  | 11437 | ...   | J36 |
| 41  | 9  | 14 47.0           | +13 40 | 12.21  | 59.85  | 9114  | ...   | J14 |
Table 1—Continued

| CID | N | R.A. (J2000) Dec. | $l$ | $b$ | $cz_{EFAR}$ | $cz_{lit}$ | Name   |
|-----|---|------------------|-----|-----|-------------|------------|--------|
| 42  | 10| 14 47.1          | +11 35 | 8.80 | 58.73       | 8806       | ... J14-1 |
| 43  | 10| 14 54.3          | +16 21 | 18.59 | 59.60       | 13740      | 13238   |
| 44  | 11| 14 54.5          | +18 38 | 22.74 | 60.52       | 16845      | 17567   |
| 45  | 12| 15 19.0          | +04 31 | 6.81  | 48.20       | 10973      | ... J16  |
| 46  | 11| 15 11.6          | +04 29 | 5.08  | 49.63       | 11129      | ... J16W |
| 47  | 3 | 15 21.9          | +08 25 | 12.36 | 49.83       | 12850      | ... A2063-S |
| 48  | 10| 15 12.8          | +07 25 | 9.08  | 51.15       | 13544      | 13526   |
| 49  | 7 | 15 16.7          | +07 01 | 9.42  | 50.11       | 10002      | 10432   |
| 50  | 10| 15 23.0          | +08 36 | 12.80 | 49.70       | 10381      | 10609   |
| 51  | 7 | 15 39.6          | +21 46 | 34.41 | 51.51       | 12573      | 12369   |
| 52  | 10| 15 55.0          | +41 34 | 66.25 | 49.99       | 9988       | ... J17  |
| 53  | 15| 16 02.2          | +15 58 | 28.91 | 44.53       | 10746      | 10537   |
| 54  | 4 | 15 57.1          | +22 24 | 37.99 | 47.81       | 14430      | ... P386-1 |
| 55  | 6 | 16 11.3          | +23 57 | 40.53 | 45.09       | 9624       | ... P386-2 |
| 56  | 9 | 16 03.3          | +25 27 | 41.97 | 47.23       | 26322      | 26606   |
| 57  | 8 | 16 04.9          | +23 55 | 39.95 | 46.50       | 9598       | ... J18f |
| 58  | 16| 16 04.5          | +17 43 | 31.47 | 44.64       | 11122      | 11059   |
| 59  | 17| 16 06.4          | +15 41 | 29.06 | 43.50       | 13016      | 13047   |
| 60  | 8 | 15 58.3          | +18 04 | 31.19 | 46.17       | 13890      | ... P445-1 |
| 61  | 4 | 15 57.8          | +16 18 | 28.77 | 45.63       | 10757      | ... P445-2 |
| 62  | 6 | 16 13.2          | +30 54 | 50.36 | 46.10       | 14866      | ... A2162-N |
| 63  | 11| 16 12.5          | +29 29 | 48.36 | 46.03       | 9668       | 9593    |
| 64  | 5 | 16 18.0          | +35 06 | 56.54 | 45.58       | 8960       | ... J20  |
| 65  | 17| 16 29.7          | +40 48 | 64.68 | 43.50       | 9337       | 9134    |
| 66  | 19| 16 28.6          | +39 33 | 62.92 | 43.70       | 8892       | 9063    |
| 67  | 11| 16 37.5          | +50 20 | 77.51 | 41.64       | 13798      | ... J21  |
| 68  | 8 | 16 52.8          | +81 37 | 114.45| 31.01       | 11559      | 11751   |
| 69  | 9 | 17 01.9          | +28 25 | 49.95 | 35.22       | 10507      | ... P332-1 |
| 70  | 8 | 16 57.9          | +27 51 | 49.02 | 35.93       | 10394      | ... J22i |
| 71  | 5 | 17 15.3          | +57 24 | 85.81 | 35.40       | 8421       | ... J23  |
| 72  | 6 | 17 33.0          | +43 45 | 69.51 | 32.08       | 10383      | ... J24  |
| 73  | 3 | 17 55.8          | +62 36 | 91.82 | 30.22       | 8245       | ... J25  |
| 74  | 5 | 18 02.6          | +42 47 | 69.59 | 26.60       | 15083      | ... J26  |
| 75  | 5 | 18 36.3          | +51 27 | 80.41 | 23.15       | 9754       | ... J27  |
| 76  | 4 | 21 41.0          | -16 41 | 36.09 | -44.90      | 15540      | ... J38  |
| 77  | 12| 22 50.0          | +11 41 | 81.75 | -41.26      | 7610       | ... P522-1j |
| 78  | 7 | 23 18.7          | +18 41 | 94.28 | -38.95      | 11338      | 11841   |
| 79  | 10| 23 23.9          | +16 46 | 94.64 | -41.23      | 12657      | 12621   |
| 80  | 18| 23 24.3          | +14 38 | 93.44 | -43.19      | 12420      | 12981   |
| 81  | 7 | 23 24.4          | +13 58 | 93.05 | -43.79      | 12708      | 12981   |
| 82  | 13| 23 38.5          | +27 01 | 103.50| -33.08      | 9463       | 9354    | A2634  |
Table 1—Continued

| CID | N  | R.A. (J2000) Dec. | l   | b   | czEFAR | czlit | Name       |
|-----|----|------------------|-----|-----|--------|------|------------|
| 83  | 9  | 23 44.9          | +09 12 | 96.73 | -50.25 | 12252 | 12099 A2657 |
| 84  | 5  | 23 50.9          | +27 09 | 106.71 | -33.80 | 8389  | 7945 A2666   |
| 90  | 32 | 12 59.6          | +27 58 | 58.00  | 88.00  | 6769  | 6853 COMA\(^k\) |

\(^a\)CID=2: A85 is also J29, the name used by Colless et al. (1993); cz\(\text{lit}\) is from Fetisova (1982).

\(^b\)CID=6: A147 was incorrectly called A150 in Colless et al. (1993).

\(^c\)CID=43: A1983 was incorrectly called A1983-1 in Colless et al. (1993).

\(^d\)CID=44: A1991 was incorrectly called A1983 in Colless et al. (1993).

\(^e\)CID=56: A2148 cz\(\text{lit}\) is from Postman & Lauer (1995).

\(^f\)CID=57: J18 is also AWM 4

\(^g\)CID=59: A2152 is also J19, as used by Colless et al. (1993); cz\(\text{lit}\) is for the BCG (UGC 10187) from RC3.

\(^h\)CID=63: A2162-S is A2162

\(^i\)CID=70: J22 is also AWM 5

\(^j\)CID=77: P522-1 was incorrectly called A2506 in Colless et al. (1993).

\(^k\)CID=90: COMA is A1656; cz\(\text{lit}\) is from Colless & Dunn (1996).

Note. — The sky survey fields originally examined for the cluster selection are (P=POSS, S=SERC): P010, P102, P103, P133, P141, P155, P179, P225, P226, P228, P229, P245, P246, P247, P247, P273, P276, P294, P297, P324, P324, P330, P332, P351, P354, P381, P385, P386, P403, P408, P412, P442, P445, P463, P467, P468, P502, P503, P522, P523, P526, P528, P532, P553, P584, P587, P588, P595, P597, P649, P653, P655, P680, P706, P708, P709, P712, P777, P819, S480, S486, S488.
Table 2. Cluster Sample by Type and Redshift

| cz range     | \( N_A \) | \( N_J \) | \( N_P \) | \( N_S \) |
|--------------|-----------|-----------|-----------|-----------|
|              | HCB       |           |           |           |
| <6000        | 0         | 0         | 1         | 1         |
| 6000–15000   | 14        | 17        | 4         | 35        |
| 15000–20000  | 1         | 1         | 0         | 2         |
| >20000       | 1         | 0         | 0         | 1         |
| Total        | 16        | 18        | 5         | 39        |
|              | PPC       |           |           |           |
| <6000        | 1         | 0         | 1         | 2         |
| 6000–15000   | 23        | 12        | 3         | 38        |
| 15000–20000  | 1         | 2         | 1         | 4         |
| >20000       | 1         | 0         | 0         | 1         |
| Total        | 26        | 14        | 5         | 45        |
Table 3. The Master List of EFAR Sample Galaxies

| GIN | Name | R.A. (J2000) | Dec. | $A_R$ | $l$  | $b$  | log $D_W$ | Comments |
|-----|------|-------------|------|-------|------|------|-----------|----------|
| 1   | A76  A | 00 39 26.27 | +06 44 03.3 | 0.037 | 117.60 | -56.01 | 1.57      | I1565    |
| 2   | A76  B | 00 40 28.02 | +06 43 10.9 | 0.041 | 118.05 | -56.05 | 1.36      | I1569    |
| 3   | A76  C | 00 39 55.95 | +06 50 55.0 | 0.037 | 117.83 | -55.91 | 1.45      | I1568    |
| 4   | A76  D | 00 40 30.59 | +06 55 02.9 | 0.058 | 118.10 | -55.85 | 1.49      |          |
| 5   | A76  E | 00 38 54.76 | +07 03 45.3 | 0.053 | 117.42 | -55.67 | 1.36      | N0190    |
| 6   | A76  F | 00 39 04.56 | +07 29 33.5 | 0.082 | 117.55 | -55.25 | 1.41      |          |
| 7   | A76  G | 00 40 44.71 | +06 33 32.2 | 0.041 | 118.15 | -56.21 | 1.23      |          |
| 8   | A85  A | 00 41 50.40 | -09 18 12.5 | 0.089 | 115.24 | -72.03 | 1.54      | HOLM015A,H |
| 9   | A85  B | 00 41 50.07 | -09 25 47.4 | 0.082 | 115.18 | -72.16 | 1.10      |          |
| 10  | A85  C | 00 42 54.67 | -09 13 50.1 | 0.089 | 116.11 | -71.99 | 1.24      |          |
| 11  | A85  D | 00 43 10.15 | -09 51 42.7 | 0.068 | 116.10 | -72.62 | 1.24      |          |
| 12  | A85  E | 00 41 22.23 | -09 52 41.9 | 0.070 | 114.62 | -72.59 | 1.20      |          |
| 13  | A119 A | 00 56 25.63 | -01 15 45.5 | 0.046 | 125.79 | -64.11 | 1.39      |          |
| 14  | A119 B | 00 56 16.09 | -01 15 18.9 | 0.046 | 125.70 | -64.10 | 1.65      |          |
| 15  | A119 C | 00 57 34.95 | -01 23 27.9 | 0.032 | 126.46 | -64.22 | 1.45      | 3C 029   |
| 16  | A119 D | 00 56 56.98 | -01 12 43.2 | 0.032 | 126.08 | -64.05 | 1.31      |          |
| 17  | A119 E | 00 56 02.67 | -01 20 03.4 | 0.046 | 125.58 | -64.18 | 1.26      |          |
| 18  | A119 F | 00 55 40.64 | -01 18 43.3 | 0.046 | 125.36 | -64.16 | 1.35      |          |
| 19  | A119 G | 00 55 18.82 | -01 16 37.3 | 0.037 | 125.15 | -64.13 | 1.15      |          |
| 20  | A119 H | 00 57 45.27 | -00 25 11.3 | 0.041 | 126.44 | -63.25 | 1.54      |          |
| 21  | A119 I | 00 57 27.84 | -00 28 18.9 | 0.041 | 126.29 | -63.30 | 1.31      |          |
| 22  | A119 J | 00 57 17.12 | -00 40 11.2 | 0.041 | 126.21 | -63.50 | 1.31      |          |
| 23  | A119 K | 00 56 12.82 | -00 35 49.1 | 0.037 | 125.60 | -63.44 | 1.09      |          |
| 24  | A119 L | 00 55 21.46 | -01 21 09.6 | 0.037 | 125.18 | -64.21 | 1.26      |          |
| 25  | J3   A | 01 02 05.44 | +26 57 06.4 | 0.159 | 125.86 | -35.86 | 1.50      |          |
| 26  | J3   B | 00 58 47.45 | +26 58 39.3 | 0.125 | 124.95 | -35.87 | 1.28      |          |
| 27  | J3   C | 00 59 24.44 | +27 03 32.8 | 0.149 | 125.12 | -35.78 | 1.24      | I0064    |
| 28  | J3   D | 00 58 22.68 | +26 51 58.7 | 0.125 | 124.84 | -35.98 | 1.54      | N0326    |
| 29  | J3   E | 01 00 56.43 | +27 09 53.1 | 0.154 | 125.53 | -35.66 | 1.15      |          |
| 30  | J3   F | 01 00 18.06 | +26 56 57.3 | 0.149 | 125.37 | -35.88 | 1.04      |          |
| 31  | J4   A | 00 58 51.18 | +12 58 21.2 | 0.085 | 125.73 | -49.86 | 1.64      |          |
| 32  | J4   B | 00 59 36.06 | +12 59 09.7 | 0.073 | 126.02 | -49.84 | 1.38      |          |
| 33  | J4   C | 00 58 41.32 | +12 41 35.0 | 0.099 | 125.69 | -50.14 | 1.36      |          |
| 34  | J4   D | 00 59 39.27 | +12 57 34.1 | 0.073 | 126.04 | -49.86 | 1.12      |          |
| 35  | J4   E | 00 58 48.27 | +13 05 57.5 | 0.085 | 125.71 | -49.73 | 1.31      |          |
| 36  | A147  A | 01 09 18.13 | +02 12 15.1 | 0.010 | 131.98 | -60.35 | 1.32      |          |
Table 3—Continued

| GIN | Name | R.A. (J2000) | Dec. | $A_R$ | $l$ | $b$ | log $D_W$ | Comments |
|-----|------|--------------|------|-------|-----|-----|----------|----------|
| 37  | A147 B | 01 08 38.00 | +02 16 06.5 | 0.008 | 131.63 | −60.31 | 1.48 |
| 38  | A147 C | 01 08 12.09 | +02 11 37.5 | 0.008 | 131.43 | −60.40 | 1.40 |
| 39  | A147 D | 01 08 14.59 | +02 10 36.1 | 0.008 | 131.46 | −60.42 | 1.14 |
| 40  | A147 E | 01 08 43.32 | +02 11 31.0 | 0.008 | 131.70 | −60.39 | 1.10 |
| 41  | A147 F | 01 08 14.98 | +02 09 44.2 | 0.008 | 131.83 | −60.42 | 1.10 |
| 42  | A147 1 | 01 07 41.75 | +02 07 09.2 | 0.010 | 131.20 | −60.49 | 1.26 |
| 43  | A160 A | 01 12 27.34 | +15 44 59.9 | 0.053 | 130.33 | −60.39 | 1.38 |
| 44  | A160 B | 01 12 23.50 | +15 43 33.8 | 0.058 | 130.31 | −60.42 | 1.10 |
| 45  | A160 C | 01 10 28.96 | +16 11 25.7 | 0.077 | 130.57 | −61.30 | 1.30 |
| 46  | A160 D | 01 12 18.66 | +16 19 33.5 | 0.080 | 130.18 | −62.25 | 1.23 |
| 47  | A160 E | 01 13 15.75 | +15 30 58.1 | 0.058 | 130.58 | −62.07 | 1.35 |
| 48  | A160 F | 01 13 02.89 | +15 31 37.9 | 0.058 | 130.57 | −62.06 | 1.51 |
| 49  | A160 G | 01 12 59.67 | +15 29 27.1 | 0.058 | 130.84 | −62.02 | 1.19 |
| 50  | A160 H | 01 13 47.70 | +15 30 28.9 | 0.056 | 130.50 | −62.02 | 1.23 |
| 51  | A160 I | 01 11 24.88 | +15 34 21.9 | 0.051 | 130.00 | −62.02 | 1.57 |
| 52  | A160 J | 01 11 42.70 | +15 53 54.1 | 0.051 | 130.59 | −62.42 | 1.05 |
| 53  | A160 1 | 01 11 50.18 | +15 21 00.8 | 0.051 | 130.18 | −62.23 | 1.05 |
| 54  | A160 2 | 01 10 37.92 | +16 14 42.8 | 0.063 | 129.62 | −62.38 | 1.10 |
| 55  | A160 3 | 01 11 50.18 | +15 21 00.8 | 0.051 | 130.18 | −62.23 | 1.05 |
| 56  | A160 A | 01 13 00.07 | +00 15 11.3 | 0.015 | 134.72 | −62.63 | 1.64 |
| 57  | A160 B | 01 12 48.76 | +00 17 26.8 | 0.015 | 134.64 | −62.68 | 1.52 |
| 58  | A160 C | 01 14 21.60 | +00 10 46.5 | 0.025 | 135.27 | −62.14 | 1.32 |
| 59  | A160 D | 01 14 57.64 | +00 25 49.2 | 0.022 | 135.48 | −61.87 | 1.42 |
| 60  | A160 E | 01 14 54.38 | +00 18 10.2 | 0.027 | 135.51 | −61.99 | 1.15 |
| 61  | A160 F | 01 15 15.83 | +00 12 46.9 | 0.034 | 135.73 | −62.07 | 1.24 |
| 62  | A160 G | 01 16 12.86 | −00 06 30.5 | 0.029 | 136.37 | −62.33 | 1.15 |
| 63  | A160 H | 01 15 16.88 | +00 11 06.7 | 0.034 | 135.75 | −62.09 | 1.20 |
| 64  | A160 I | 01 14 46.35 | −00 00 06.3 | 0.022 | 135.56 | −62.30 | 1.32 |
| 65  | A189 A | 01 25 31.36 | +01 45 32.8 | 0.034 | 140.15 | −59.97 | 1.96 |
| 66  | A189 B | 01 24 47.80 | +01 36 25.8 | 0.013 | 139.87 | −60.16 | 1.49 |
| 67  | A189 C | 01 25 13.09 | +02 03 58.4 | 0.041 | 139.84 | −59.69 | 1.49 |
| 68  | A189 D | 01 24 36.50 | +02 02 37.6 | 0.046 | 139.56 | −59.75 | 1.53 |
| 69  | J30 A | 01 20 58.56 | −13 51 00.8 | 0.008 | 151.84 | −75.04 | 1.41 |
| 70  | J30 B | 01 20 55.53 | −13 50 06.2 | 0.008 | 151.77 | −75.03 | 1.22 |
| 71  | J30 C | 01 20 36.23 | −13 51 50.0 | 0.008 | 151.55 | −75.09 | 1.04 |
| 72  | J30 D | 01 20 34.24 | −13 51 50.6 | 0.008 | 151.52 | −75.09 | 1.22 |
Table 3—Continued

| GIN  | Name | R.A. (J2000) Dec. | $A_R$ | $l$  | $b$  | log $D_W$ | Comments |
|------|------|------------------|------|------|------|-----------|----------|
| 73   | J30  | E 01 20 20.61    | -13 53 23.1 | 0.020 | 151.37 | -75.14    | 1.27     |
| 74   | J30  | F 01 20 20.53    | -13 58 26.4 | 0.020 | 151.51 | -75.22    | 0.97     |
| 75   | J30  | G 01 19 16.79    | -13 54 08.6 | 0.010 | 150.48 | -75.26    | 1.17     |
| 76   | J30  | 1 01 20 04.97    | -13 47 47.2 | 0.008 | 150.99 | -75.09    | 1.11     |
| 77   | J30  | 2 01 19 32.19    | -13 43 34.6 | 0.037 | 150.41 | -75.08    | 1.27     |
| 78   | A193 | A 01 25 07.66    | +08 41 56.9 | 0.080 | 136.94 | -53.25    | 1.50     |
| 79   | A193 | B 01 25 11.99    | +08 39 20.1 | 0.080 | 136.98 | -53.29    | 1.06     |
| 80   | A193 | C 01 24 40.94    | +08 36 31.5 | 0.065 | 136.79 | -53.37    | 1.16     |
| 81   | A193 | D 01 24 38.64    | +08 30 35.0 | 0.080 | 136.81 | -53.46    | 1.31     |
| 82   | A193 | E 01 24 34.81    | +08 34 34.2 | 0.065 | 136.76 | -53.40    | 1.11     |
| 83   | A193 | 1 01 24 43.69    | +08 46 33.4 | 0.065 | 136.75 | -53.20    | 1.11     |
| 84   | J32  | A 01 37 15.38    | -09 11 51.7 | 0.053 | 156.19 | -69.06    | 1.59     |
| 85   | J32  | B 01 37 23.42    | -09 10 07.9 | 0.065 | 156.23 | -69.01    | 1.33     |
| 86   | J32  | C 01 37 06.95    | -09 08 58.0 | 0.053 | 156.04 | -69.03    | 1.18     |
| 87   | J32  | D 01 37 23.14    | -09 16 14.5 | 0.053 | 156.37 | -69.10    | 1.33     |
| 88   | J32  | E 01 37 59.90    | -09 00 26.6 | 0.065 | 156.37 | -68.80    | 1.38     |
| 89   | J32  | F 01 37 50.26    | -08 58 50.4 | 0.065 | 156.24 | -68.80    | 1.38     |
| 90   | J32  | G 01 37 25.93    | -08 55 53.7 | 0.056 | 155.93 | -68.80    | 1.26     |
| 91   | J32  | H 01 39 24.84    | -09 24 04.0 | 0.049 | 157.76 | -68.96    | 1.43     |
| 92   | J32  | 1 01 38 22.32    | -08 58 32.7 | 0.049 | 156.55 | -68.73    | 1.08     |
| 93   | J32  | 2 01 37 23.39    | -09 05 59.2 | 0.065 | 156.14 | -68.95    | 1.22     |
| 94   | J32  | 3 01 37 15.68    | -09 01 33.1 | 0.056 | 155.96 | -68.91    | 1.26     |
| 95   | J32  | 4 01 36 27.66    | -09 28 44.1 | 0.056 | 156.10 | -69.40    | 1.13     |
| 96   | A260 | A 01 50 43.02    | +33 04 54.4 | 0.097 | 137.00 | -28.17    | 1.52     |
| 97   | A260 | B 01 50 51.78    | +33 05 31.9 | 0.097 | 137.03 | -28.15    | 1.34     |
| 98   | A260 | C 01 51 23.66    | +33 01 51.3 | 0.092 | 137.17 | -28.18    | 1.40     |
| 99   | A260 | D 01 51 21.37    | +33 11 10.5 | 0.092 | 137.12 | -28.03    | 1.15     |
| 100  | A260 | E 01 49 13.02    | +33 05 44.0 | 0.082 | 136.65 | -28.23    | 1.27     |
| 101  | A260 | F 01 50 15.59    | +33 29 43.4 | 0.082 | 136.78 | -27.79    | 1.40     |
| 102  | A260 | G 01 51 45.53    | +33 32 14.1 | 0.068 | 137.11 | -27.67    | 1.34     |
| 103  | A260 | H 01 52 24.98    | +33 30 26.4 | 0.068 | 137.26 | -27.66    | 1.19     |
| 104  | A260 | 1 01 50 32.13    | +33 02 49.7 | 0.097 | 136.97 | -28.21    | 1.23     |
| 105  | A260 | A 01 52 46.45    | +36 09 06.8 | 0.145 | 136.57 | -25.09    | 1.87     |
| 106  | A260 | B 01 50 51.29    | +36 16 31.7 | 0.125 | 136.12 | -25.07    | 1.68     |
| 107  | A260 | C 01 50 33.28    | +36 22 14.1 | 0.125 | 136.03 | -24.99    | 1.74     |
| 108  | A260 | D 01 49 43.79    | +35 47 06.8 | 0.111 | 136.01 | -25.60    | 1.68     |
| GIN | Name | R.A. (J2000) | Dec. | $A_R$ | $l$  | $b$  | $\log D_W$ | Comments |
|-----|------|-------------|------|------|------|------|------------|----------|
| 109 | A262 | E 01 55 10.27 +35 16 53.6 0.123 137.34 −25.80 1.79 | I0171 |
| 110 | A262 | F 01 53 08.53 +36 49 10.8 0.121 136.46 −24.43 1.68 | N0712 |
| 111 | A262 | G 01 57 50.41 +36 20 34.3 0.123 137.60 −24.63 1.61 | N0759 |
| 112 | A262 | H 01 58 54.87 +36 40 28.9 0.121 137.72 −24.25 1.57 | I0178 |
| 113 | A262 | I 01 52 39.68 +36 10 16.5 0.145 136.54 −25.08 1.53 | A0151+36 |
| 114 | A262 | J 01 52 39.68 +36 10 16.5 0.145 136.54 −25.08 1.68 | N0703 |
| 115 | J7   | A 02 25 38.27 +36 57 13.4 0.141 143.10 −22.19 1.57 | STAR |
| 116 | J7   | B 02 25 27.43 +37 10 26.7 0.116 142.98 −22.01 1.48 | A0222+36 |
| 117 | J7   | C 02 23 56.01 +37 03 45.3 0.118 142.72 −22.23 1.37 | I0222 |
| 118 | J7   | D 02 26 27.62 +37 13 17.7 0.142 143.23 −22.06 1.21 | I1803 |
| 119 | J7   | E 02 26 14.63 +37 17 30.3 0.116 143.08 −21.84 1.27 | I1806 |
| 120 | J7   | F 02 26 12.24 +37 02 24.3 0.142 143.10 −22.19 1.21 | I1807 |
| 121 | J7   | G 02 26 09.82 +36 47 04.7 0.109 143.28 −22.32 1.18 | I1807 |
| 122 | J8   | A 02 30 16.42 +23 09 12.3 0.185 150.67 −34.34 1.28 | STAR |
| 123 | J8   | B 02 30 10.54 +23 08 33.5 0.185 150.65 −34.36 1.11 | STAR |
| 124 | J8   | C 02 29 54.43 +23 05 48.5 0.185 150.61 −34.43 1.37 | STAR |
| 125 | J8   | D 02 29 49.91 +23 06 29.6 0.169 150.59 −34.43 1.47 | STAR |
| 126 | J8   | E 02 29 14.08 +23 04 56.5 0.169 150.45 −34.51 1.50 | STAR |
| 127 | J8   | F 02 29 34.98 +22 56 34.3 0.185 150.62 −34.60 1.28 | STAR |
| 128 | J8   | G 02 30 31.04 +22 56 56.7 0.185 150.84 −34.50 1.28 | STAR |
| 129 | J8   | H 02 28 39.84 +23 00 43.3 0.169 150.35 −34.63 1.11 | STAR |
| 130 | J8   | I 02 29 13.98 +22 57 57.7 0.169 150.51 −34.61 1.23 | STAR |
| 131 | J8   | J 02 28 20.94 +23 01 42.0 0.197 150.26 −34.65 1.23 | STAR |
| 132 | J8   | K 02 27 33.18 +23 03 35.2 0.197 150.04 −34.70 1.17 | STAR |
| 133 | J8   | L 02 27 44.34 +23 01 42.4 0.197 150.11 −34.71 1.17 | STAR |
| 134 | J8   | M 02 29 14.30 +22 50 22.0 0.169 150.59 −34.73 0.87 | STAR |
| 135 | A376 | A 02 46 04.03 +36 54 17.8 0.123 147.10 −20.53 1.35 | STAR |
| 136 | A376 | B 02 45 48.39 +36 51 12.3 0.123 147.08 −20.60 1.10 | STAR |
| 137 | A376 | C 02 45 43.87 +36 51 16.1 0.123 147.06 −20.60 1.04 | STAR |
| 138 | A376 | D 02 46 50.09 +36 58 43.5 0.159 147.21 −20.39 1.15 | STAR |
| 139 | A376 | E 02 45 13.82 +36 41 40.5 0.123 147.05 −20.79 1.20 | STAR |
| 140 | A376 | F 02 45 12.56 +36 42 42.9 0.123 147.03 −20.78 1.10 | STAR |
| 141 | A376 | G 02 45 04.07 +36 42 34.8 0.123 147.01 −20.79 1.20 | STAR |
| 142 | J9   | A 02 49 45.56 +46 58 33.3 0.526 143.02 −11.23 1.74 | I0257 |
| 143 | J9   | B 02 49 40.40 +46 57 15.1 0.526 143.01 −11.26 1.18 | I0260 |
| 144 | J9   | C 02 51 01.00 +46 57 16.5 0.517 143.22 −11.15 1.68 | I0260 |
Table 3—Continued

| GIN | Name | R.A. (J2000) | Dec. | $A_R$ | $l$ | $b$ | log $D_W$ | Comments |
|-----|------|-------------|------|-------|----|----|-----------|----------|
| 145 | J9   | 02 50 12.86 | +47 10 51.0 | 0.526 | 142.99 | −11.01 | 1.51 |
| 146 | J9   | 02 52 16.90 | +46 54 47.1 | 0.519 | 143.44 | −11.09 | 1.35 |
| 147 | J9   | 02 48 59.87 | +47 06 11.8 | 0.526 | 142.84 | −11.17 | 1.18 |
| 148 | J9   | 02 48 10.87 | +47 01 36.0 | 0.608 | 142.75 | −11.30 | 1.30 |
| 149 | J33  | 02 55 44.28 | −14 14 30.0 | 0.037 | 195.18 | −58.31 | 1.66 |
| 150 | J33  | 02 55 48.39 | −14 15 14.5 | 0.032 | 195.28 | −58.31 | 1.09 |
| 151 | A397 | 02 56 32.92 | +15 54 36.3 | 0.159 | 161.83 | −37.34 | 1.23 |
| 152 | A397 | 02 56 28.85 | +15 54 57.0 | 0.159 | 161.81 | −37.34 | 1.50 |
| 153 | A397 | 02 56 27.92 | +16 00 28.6 | 0.248 | 161.74 | −37.27 | 1.23 |
| 154 | A397 | 02 57 04.64 | +15 58 59.2 | 0.248 | 161.91 | −37.20 | 1.20 |
| 155 | A397 | 02 56 32.53 | +16 00 14.8 | 0.248 | 161.76 | −37.26 | 1.29 |
| 156 | A397 | 02 57 23.63 | +16 05 41.8 | 0.248 | 161.91 | −37.07 | 1.26 |
| 157 | A397 | 02 57 37.59 | +16 04 03.7 | 0.248 | 161.98 | −37.06 | 1.39 |
| 158 | A397 | 02 57 57.55 | +16 06 19.1 | 0.245 | 162.04 | −36.98 | 1.17 |
| 159 | A397 | 02 57 08.06 | +15 58 47.2 | 0.248 | 161.93 | −37.20 | 1.17 |
| 160 | A400 | 02 57 33.72 | +05 58 36.0 | 0.190 | 170.28 | −44.99 | 1.47 |
| 161 | A400 | 02 55 19.94 | +06 07 29.0 | 0.164 | 169.54 | −45.24 | 1.30 |
| 162 | A400 | 02 55 14.90 | +06 10 38.6 | 0.171 | 169.47 | −45.21 | 1.30 |
| 163 | A400 | 02 58 14.27 | +05 58 18.0 | 0.190 | 170.46 | −44.88 | 1.25 |
| 164 | A400 | 02 58 21.03 | +06 05 41.4 | 0.190 | 170.37 | −44.77 | 1.44 |
| 165 | A400 | 02 58 37.77 | +06 10 32.8 | 0.190 | 170.37 | −44.67 | 1.53 |
| 166 | A400 | 02 58 54.29 | +06 06 57.8 | 0.190 | 170.50 | −44.67 | 1.20 |
| 167 | A400 | 02 59 16.14 | +06 07 59.6 | 0.190 | 170.58 | −44.59 | 1.30 |
| 168 | A400 | 02 58 29.75 | +06 18 22.3 | 0.190 | 170.22 | −44.59 | 1.55 |
| 169 | A400 | 03 00 08.67 | +05 48 15.2 | 0.176 | 171.12 | −44.69 | 1.44 |
| 170 | A400 | 02 58 24.62 | +06 35 30.2 | 0.188 | 169.93 | −44.39 | 1.64 |
| 171 | A400 | 02 58 42.37 | +06 31 57.5 | 0.200 | 170.37 | −44.19 | 1.50 |
| 172 | A400 | 02 57 41.61 | +06 01 35.4 | 0.190 | 170.26 | −44.93 | 1.71 |
| 173 | A400 | 03 00 20.06 | +04 08 19.2 | 0.092 | 183.86 | −50.07 | 1.57 |
| 174 | J28  | 03 08 20.92 | +04 19 09.6 | 0.087 | 183.94 | −50.30 | 1.34 |
| 175 | J28  | 03 08 03.25 | −04 23 59.8 | 0.087 | 184.11 | −50.29 | 1.42 |
| 176 | J28  | 03 08 15.97 | −23 43 29.6 | 0.003 | 214.30 | −59.01 | 1.43 |
| 177 | A419 | 03 08 10.82 | −23 40 53.9 | 0.003 | 214.27 | −59.02 | 1.17 |
| 178 | A419 | 03 08 15.85 | −23 40 47.2 | 0.003 | 214.28 | −59.00 | 1.09 |
| 179 | A419 | 03 08 28.07 | −23 46 30.6 | 0.000 | 214.48 | −58.98 | 0.99 |
Table 3—Continued

| GIN  | Name | R.A. (J2000) Dec. | $A_R$ | $l$   | $b$   | log $D_W$ | Comments |
|------|------|-------------------|-------|-------|-------|-----------|----------|
| 181  | A419 | E 03 08 33.26 $-23 47 55.3$ | 0.000 | 214.53 | $-58.97$ | 1.23 |
| 182  | A419 | F 03 08 21.63 $-23 38 47.7$ | 0.003 | 214.22 | $-58.97$ | 1.20 |
| 183  | A419 | G 03 08 20.24 $-23 37 32.3$ | 0.003 | 214.18 | $-58.97$ | 1.34 |
| 184  | A419 | H 03 08 16.33 $-23 33 50.2$ | 0.003 | 214.06 | $-58.97$ | 1.29 |
| 185  | A419 | I 03 08 48.58 $-23 26 07.3$ | 0.003 | 213.88 | $-58.82$ | 1.17 |
| 186  | A419 | J 03 09 20.17 $-23 25 44.4$ | 0.003 | 213.92 | $-58.70$ | 1.20 |
| 187  | A419 | 1 03 07 03.44 $-23 35 52.0$ | 0.003 | 214.10 | $-59.03$ | 0.99 |
| 188  | A419 | 2 03 07 50.76 $-23 48 54.5$ | 0.013 | 214.49 | $-59.13$ | 1.13 |
| 189  | A419 | 1 04 33 37.80 $-13 15 43.3$ | 0.015 | 209.59 | $-36.49$ | 1.62 |
| 190  | A419 | 2 04 34 10.46 $-13 22 12.7$ | 0.017 | 209.78 | $-36.41$ | 1.27 |
| 191  | A496 | A 04 33 37.80 $-13 23 30.6$ | 0.017 | 208.75 | $-35.90$ | ... |
| 192  | A496 | D 04 33 57.05 $-13 27 45.7$ | 0.017 | 208.95 | $-36.50$ | 1.30 |
| 193  | A496 | 1 04 35 06.96 $-13 23 39.2$ | 0.041 | 209.92 | $-36.21$ | 1.18 |
| 194  | A496 | 2 04 33 41.55 $-13 10 13.1$ | 0.020 | 209.49 | $-36.44$ | 1.30 |
| 195  | A496 | 3 04 33 32.12 $-13 10 20.7$ | 0.020 | 209.47 | $-36.47$ | 1.13 |
| 196  | J34  | A 04 45 11.53 $-15 52 13.4$ | 0.181 | 213.90 | $-34.94$ | 1.70 |
| 197  | J34  | B 04 45 21.72 $-15 47 29.0$ | 0.142 | 213.83 | $-34.88$ | 1.17 |
| 198  | J34  | C 04 45 35.11 $-16 01 18.6$ | 0.065 | 214.11 | $-34.91$ | 1.22 |
| 199  | J34  | D 04 45 31.16 $-16 04 17.7$ | 0.065 | 214.16 | $-34.95$ | 1.17 |
| 200  | J34  | E 04 43 45.39 $-15 49 01.5$ | 0.166 | 213.68 | $-35.24$ | 1.36 |
| 201  | J34  | F 04 47 51.82 $-15 31 31.3$ | 0.123 | 213.81 | $-34.22$ | 1.43 |
| 202  | J34  | 1 04 47 13.48 $-15 55 25.5$ | 0.070 | 214.18 | $-34.51$ | 1.22 |
| 203  | J34  | 2 04 46 55.95 $-16 26 17.4$ | 0.065 | 214.73 | $-34.77$ | 1.28 |
| 204  | J34  | 3 04 46 51.88 $-16 20 09.1$ | 0.065 | 214.61 | $-34.75$ | 1.17 |
| 205  | J34  | 4 04 46 37.84 $-16 18 15.6$ | 0.065 | 214.55 | $-34.79$ | 1.22 |
| 206  | J10  | A 04 52 49.27 $+01 15 31.5$ | 0.178 | 197.18 | $-25.48$ | 1.61 |
| 207  | J10  | B 04 52 57.66 $+01 15 22.5$ | 0.178 | 197.20 | $-25.45$ | 1.31 |
| 208  | J10  | C 04 53 28.79 $+01 16 55.6$ | 0.178 | 197.25 | $-25.33$ | 1.27 |
| 209  | P597-1 | A 04 58 54.68 $-00 29 21.4$ | 0.149 | 199.70 | $-25.06$ | 1.88 |
| 210  | P597-1 | B 04 58 44.03 $-00 28 41.8$ | 0.149 | 199.66 | $-25.09$ | 1.58 |
| 211  | P597-1 | C 04 58 33.27 $-00 33 12.0$ | 0.173 | 199.71 | $-25.17$ | 1.44 |
| 212  | P597-1 | D 04 58 31.50 $-00 34 30.3$ | 0.173 | 199.73 | $-25.18$ | 1.48 |
| 213  | P597-1 | E 04 58 38.51 $-00 17 28.2$ | 0.149 | 199.47 | $-25.02$ | 1.48 |
| 214  | P597-1 | 1 04 59 43.03 $-00 35 58.9$ | 0.149 | 199.91 | $-24.94$ | 1.18 |
| 215  | J35  | A 04 54 52.26 $-18 06 55.7$ | 0.066 | 217.46 | $-33.62$ | 1.89 |
| 216  | J35  | B 04 57 04.52 $-18 17 09.2$ | 0.094 | 217.87 | $-33.19$ | 1.41 |
| GIN   | Name        | R.A. (J2000) | Dec.     | $A_R$ | $l$  | $b$  | log $D_{W}$ | Comments  |
|-------|-------------|--------------|----------|-------|------|------|-------------|-----------|
| 217   | J35         | C 04 56 53.65 | -18 14 43.8 | 0.094 | 217.81 | -33.22 | 1.41         |
| 218   | J35         | D 04 55 23.18 | -18 23 14.3 | 0.061 | 217.81 | -33.60 | 1.41         |
| 219   | J35         | E 04 57 17.76 | -17 27 15.5 | 0.094 | 216.97 | -32.84 | 1.29         |
| 220   | J35         | 1 04 53 55.35 | -18 20 44.2 | 0.061 | 217.62 | -33.91 | 1.29         |
| 221   | J34/35 A    | 04 51 20.62 | -17 30 14.3 | 0.056 | 216.40 | -34.18 | 1.45 A0449-17 |
| 222   | J34/35 B    | 04 52 12.23 | -17 24 30.7 | 0.051 | 216.39 | -33.96 | 1.72         |
| 223   | J34/35 C    | 04 47 34.26 | -17 20 51.6 | 0.051 | 215.83 | -34.96 | 1.39         |
| 224   | J34/35 D    | 04 47 04.10 | -17 20 58.1 | 0.053 | 215.78 | -35.08 | 1.45         |
| 225   | J34/35 1    | 04 53 20.62 | -17 19 55.0 | 0.061 | 216.17 | -34.20 | 1.26         |
| 226   | J34/35 2    | 04 50 41.65 | -16 45 03.9 | 0.070 | 215.49 | -34.05 | 1.31         |
| 227   | J34/35 3    | 04 48 00.05 | -16 39 51.8 | 0.053 | 215.10 | -34.62 | 1.31         |
| 228   | P777-1 A    | 04 59 47.30 | -18 34 51.9 | 0.097 | 218.47 | -32.70 | 1.51 E552G044 |
| 229   | P777-1 B    | 05 00 24.30 | -18 51 58.2 | 0.099 | 218.85 | -32.66 | 1.23         |
| 230   | P777-1 C    | 04 59 33.35 | -18 12 18.1 | 0.109 | 218.03 | -32.61 | 1.36         |
| 231   | P777-1 1    | 05 01 27.70 | -18 18 33.2 | 0.116 | 218.34 | -32.23 | 1.09         |
| 232   | P777-2 A    | 05 02 54.33 | -20 21 59.7 | 0.037 | 220.77 | -32.63 | 1.48 E552G057 |
| 233   | P777-2 B    | 05 03 11.53 | -20 19 01.4 | 0.037 | 220.74 | -32.55 | 1.33         |
| 234   | P777-2 C    | 05 03 03.56 | -20 16 32.4 | 0.039 | 220.68 | -32.56 | 1.06         |
| 235   | P777-2 D    | 05 03 23.43 | -20 18 42.0 | 0.039 | 220.75 | -32.50 | 1.06         |
| 236   | P777-2 E    | 05 04 14.86 | -20 06 59.4 | 0.037 | 220.61 | -32.25 | 1.48         |
| 237   | P777-2 F    | 05 03 47.48 | -20 00 06.2 | 0.037 | 220.44 | -32.31 | 1.31         |
| 238   | P777-2 1    | 05 03 29.86 | -20 27 25.0 | 0.037 | 220.92 | -32.53 | 1.01         |
| 239   | P777-3 A    | 05 05 16.35 | -19 13 06.6 | 0.053 | 219.72 | -31.71 | 1.32         |
| 240   | P777-3 B    | 05 05 12.75 | -19 08 35.8 | 0.053 | 219.63 | -31.70 | 1.35         |
| 241   | P777-3 C    | 05 04 35.55 | -19 16 11.5 | 0.053 | 219.71 | -31.88 | 1.37         |
| 242   | P777-3 D    | 05 06 20.79 | -19 28 01.6 | 0.041 | 220.10 | -31.56 | 1.51 N1780, E553G001 |
| 243   | P777-3 E    | 05 04 22.36 | -19 02 26.3 | 0.053 | 219.44 | -31.85 | 1.30         |
| 244   | P777-3 F    | 05 04 43.59 | -19 18 37.5 | 0.053 | 219.77 | -31.86 | 1.09         |
| 245   | P777-3 G    | 05 04 35.63 | -19 19 20.8 | 0.053 | 219.77 | -31.90 | 1.24         |
| 246   | P777-3 H    | 05 03 54.39 | -19 07 43.5 | 0.053 | 219.49 | -31.98 | 1.35         |
| 247   | P777-3 1    | 05 05 34.94 | -19 09 24.4 | 0.053 | 219.68 | -31.62 | 1.14         |
| 248   | P777-3 2    | 05 04 58.94 | -19 18 58.1 | 0.053 | 219.80 | -31.81 | 1.30         |
| 249   | A533-1 A    | 05 04 01.44 | -23 59 48.2 | 0.027 | 224.97 | -33.55 | 1.59 E486G023 |
| 250   | A533-1 B    | 05 03 57.88 | -24 00 32.8 | 0.027 | 224.98 | -33.57 | 1.18         |
| 251   | A533-1 C    | 05 03 50.66 | -23 31 01.3 | 0.017 | 224.40 | -33.45 | 1.48         |
Table 3—Continued

| GIN | Name  | R.A. (J2000) | Dec.  | $A_R$ | $l$      | $b$  | $\log D_W$ | Comments          |
|-----|-------|--------------|-------|-------|----------|------|------------|-------------------|
| 252 | A533-1 D | 05 05 36.41 | −24 19 54.6 | 0.013 | 225.48   | −33.31 | 1.41       |                   |
| 253 | A533-1 E | 05 01 35.38 | −23 44 47.4 | 0.013 | 224.48   | −34.01 | 1.18       |                   |
| 254 | A533-1 F | 05 01 07.97 | −23 44 28.0 | 0.005 | 224.43   | −34.11 | 1.41       |                   |
| 255 | A533-1 G | 05 01 11.54 | −23 56 34.5 | 0.005 | 224.67   | −34.15 | 1.38       |                   |
| 256 | A533-1 H | 05 05 39.92 | −23 44 49.7 | 0.017 | 224.82   | −33.12 | 1.29       |                   |
| 257 | A533 A  | 05 01 36.10 | −22 36 03.6 | 0.008 | 223.17   | −33.65 | 1.41       |                   |
| 258 | A533 B  | 05 01 08.32 | −22 34 58.7 | 0.008 | 223.11   | −33.75 | 1.41       |                   |
| 259 | A533 C  | 05 01 06.68 | −22 34 28.0 | 0.005 | 223.43   | −34.11 | 1.41       |                   |
| 260 | A533 D  | 05 00 18.34 | −22 34 58.7 | 0.010 | 224.43   | −33.75 | 1.15       |                   |
| 261 | A533 E  | 05 00 31.02 | −22 18 28.8 | 0.010 | 224.43   | −33.79 | 1.21       |                   |
| 262 | A533 F  | 05 02 28.48 | −22 43 40.6 | 0.017 | 223.39   | −33.50 | 1.21       |                   |
| 263 | A533 G  | 05 02 31.49 | −22 58 58.9 | 0.005 | 223.60   | −33.79 | 1.27       |                   |
| 264 | A533 H  | 05 01 45.72 | −23 09 42.1 | 0.008 | 223.82   | −33.79 | 1.27       |                   |
| 265 | A533 I  | 05 03 44.24 | −23 19 24.3 | 0.008 | 224.18   | −33.41 | 1.37       |                   |
| 266 | A548-1 A | 05 48 38.47 | −25 28 41.0 | 0.000 | 230.28   | −24.43 | 1.61       | E488G027          |
| 267 | A548-1 B | 05 48 43.20 | −25 28 39.6 | 0.000 | 230.28   | −24.41 | 1.55       |                   |
| 268 | A548-1 C | 05 47 34.77 | −25 32 46.4 | 0.000 | 230.26   | −24.68 | 1.48       |                   |
| 269 | A548-1 D | 05 47 25.23 | −25 34 20.4 | 0.000 | 230.27   | −24.72 | 1.53       | E488G016          |
| 270 | A548-1 E | 05 46 55.52 | −25 38 09.1 | 0.000 | 230.30   | −24.85 | 1.59       | E488G013          |
| 271 | A548-1 F | 05 47 47.55 | −25 44 45.5 | 0.000 | 230.48   | −24.70 | 1.45       |                   |
| 272 | A548-1 G | 05 47 43.24 | −25 54 56.9 | 0.003 | 230.66   | −24.77 | 1.43       |                   |
| 273 | A548-1 H | 05 49 21.79 | −25 20 48.3 | 0.000 | 230.20   | −24.23 | 1.65       | E488G033          |
| 274 | A548-1 I | 05 47 26.62 | −25 14 50.5 | 0.000 | 229.94   | −24.60 | 1.40       | E488G019, VV180b  |
| 275 | A548-1 J | 05 47 24.70 | −25 15 22.5 | 0.000 | 229.95   | −24.61 | 1.20       | E488G015, VV180a  |
| 276 | A548-1 K | 05 48 33.28 | −25 21 52.9 | 0.000 | 230.15   | −24.41 | 1.20       |                   |
| 277 | A548-1 L | 05 49 59.06 | −25 44 22.3 | 0.000 | 230.66   | −24.23 | 1.36       |                   |
| 278 | A548-1 M | 05 50 02.72 | −25 46 16.0 | 0.000 | 230.70   | −24.23 | 1.40       |                   |
| 279 | A548-1 N | 05 45 22.15 | −25 47 30.6 | 0.003 | 230.33   | −25.23 | 1.61       | E488G006          |
| 280 | A548-1 O | 05 45 05.02 | −25 47 42.0 | 0.000 | 230.31   | −25.29 | 1.36       |                   |
| 281 | A548-1 P | 05 49 13.16 | −25 36 43.6 | 0.000 | 230.47   | −24.35 | 1.29       |                   |
| 282 | A548-1 Q | 05 45 27.20 | −25 53 53.9 | 0.010 | 230.45   | −25.25 | 1.20       |                   |
| 283 | A548-1 R | 05 45 29.67 | −25 55 58.6 | 0.010 | 230.49   | −25.25 | 1.10       | E488G009, VV162C  |
| 284 | A548-1 S | 05 46 34.05 | −25 22 52.7 | 0.000 | 230.00   | −24.84 | 1.25       |                   |
| 285 | A548-2 A | 05 42 18.85 | −26 05 53.5 | 0.000 | 230.40   | −25.98 | 1.48       |                   |
| 286 | A548-2 B | 05 42 04.62 | −26 07 20.5 | 0.000 | 230.41   | −26.04 | 1.64       |                   |
| 287 | A548-2 C | 05 42 04.79 | −26 08 42.4 | 0.000 | 230.43   | −26.04 | 1.48       |                   |
| GIN    | Name   | R.A. (J2000) | Dec. | $A_R$ | $l$  | $b$  | log $D_W$ | Comments          |
|--------|--------|-------------|------|-------|------|------|-----------|-------------------|
| 288    | A548-2 D | 05 42 07.27 | −26 11 54.4 | 0.000 | 230.49 | −26.05 | 1.50 |                   |
| 289    | A548-2 E | 05 41 25.55 | −26 14 31.2 | 0.000 | 230.48 | −26.21 | 1.30 |                   |
| 290    | A548-2 F | 05 41 20.59 | −26 15 34.5 | 0.000 | 230.49 | −26.24 | 1.40 |                   |
| 291    | A548-2 G | 05 41 02.52 | −26 11 14.0 | 0.000 | 230.39 | −26.28 | 1.30 |                   |
| 292    | A548-2 H | 05 43 14.95 | −25 54 12.5 | 0.049 | 230.27 | −25.71 | 1.37 |                   |
| 293    | A548-2 I | 05 42 20.92 | −25 32 29.0 | 0.022 | 229.82 | −25.79 | 1.67 | E487G036         |
| 294    | A548-2 J | 05 42 14.62 | −25 32 25.4 | 0.022 | 229.81 | −25.81 | 1.40 |                   |
| 295    | A548-2 K | 05 44 56.19 | −25 55 16.8 | 0.049 | 230.43 | −25.36 | 1.40 |                   |
| 296    | A548-2 L | 05 45 07.99 | −26 05 35.1 | 0.000 | 230.63 | −25.38 | 1.37 |                   |
| 297    | A548-2 M | 05 43 03.54 | −25 59 07.3 | 0.000 | 230.34 | −25.78 | 1.26 |                   |
| 298    | A548-2 N | 05 44 29.72 | −26 03 32.6 | 0.000 | 230.54 | −25.50 | 1.48 |                   |
| 299    | A548-2 O | 05 44 26.08 | −26 04 41.4 | 0.000 | 230.55 | −25.52 | 1.30 |                   |
| 300    | A548-2 1 | 05 42 54.82 | −26 18 43.9 | 0.000 | 230.68 | −25.92 | 1.33 |                   |
| 301    | A548-2 2 | 05 41 46.38 | −25 51 57.5 | 0.015 | 230.11 | −26.02 | 1.48 |                   |
| 302    | J11     | 13 05 36.58 | +53 33 49.9 | 0.020 | 118.22 | +63.43 | 1.44 | N4967            |
| 303    | J11     | 13 05 56.16 | +53 39 32.8 | 0.020 | 118.14 | +63.33 | 1.51 | N4973            |
| 304    | J11     | 13 05 32.28 | +53 41 05.6 | 0.020 | 118.28 | +63.32 | 1.44 | I0847            |
| 305    | J11     | 13 05 03.09 | +53 39 13.5 | 0.020 | 118.43 | +63.36 | 1.44 |                   |
| 306    | J11     | 13 05 25.93 | +53 35 29.2 | 0.020 | 118.29 | +63.41 | 1.24 |                   |
| 307    | J11     | 13 07 21.93 | +53 35 10.9 | 0.027 | 117.65 | +63.38 | 1.47 |                   |
| 308    | J11     | 13 06 50.97 | +53 32 48.1 | 0.037 | 117.81 | +63.43 | 1.16 |                   |
| 309    | J11     | 13 06 25.02 | +53 29 03.5 | 0.037 | 117.94 | +63.50 | 1.16 |                   |
| 310    | J12     | 13 43 24.96 | +53 30 08.8 | 0.000 | 50.45  | +78.23 | 1.35 | N5282            |
| 311    | J12     | 13 42 55.61 | +29 52 05.6 | 0.000 | 49.57  | +78.37 | 1.38 | N5280            |
| 312    | J12     | 13 42 48.71 | +29 42 19.2 | 0.000 | 48.80  | +78.42 | 1.28 |                   |
| 313    | J12     | 13 44 14.21 | +29 48 13.4 | 0.000 | 49.02  | +78.10 | 1.28 |                   |
| 314    | J12     | 13 42 23.39 | +29 50 50.6 | 0.000 | 49.58  | +78.49 | 1.35 | N5274            |
| 315    | J12     | 13 42 23.64 | +29 49 28.0 | 0.000 | 49.46  | +78.49 | 1.35 |                   |
| 316    | J12     | 13 44 11.74 | +29 34 59.2 | 0.000 | 47.97  | +78.14 | 1.24 |                   |
| 317    | J12     | 13 41 17.06 | +29 50 03.4 | 0.000 | 49.74  | +78.72 | 1.10 |                   |
| 318    | J13     | 13 55 13.46 | +25 03 04.7 | 0.000 | 28.26  | +75.54 | 1.52 | I4345            |
| 319    | J13     | 13 55 12.60 | +25 01 15.2 | 0.000 | 28.14  | +75.54 | 1.59 | I4344            |
| 320    | J13     | 13 55 34.47 | +25 02 58.1 | 0.000 | 28.32  | +75.46 | 1.38 | Hickson 69B       |
| 321    | J13     | 13 54 55.88 | +25 07 20.3 | 0.000 | 28.48  | +75.62 | 1.48 | I4343            |
| 322    | J13     | 13 53 40.70 | +25 04 43.8 | 0.000 | 28.08  | +75.89 | 1.43 |                   |
| 323    | J13     | 13 52 44.93 | +25 02 22.4 | 0.000 | 27.74  | +76.09 | 1.38 |                   |
| GIN | Name | R.A. (J2000) | Dec. | $A_R$ | $l$  | $b$  | log $D_W$ | Comments |
|-----|------|-------------|------|-------|------|------|-----------|----------|
| 324 | J13  | G           | 13 52 37.52 | +24 44 54.1 | 0.000 | 26.54 | +76.05    | 1.59     |
| 325 | J13  | H           | 13 51 05.48 | +25 05 35.4 | 0.000 | 27.64 | +76.46    | 1.48     |
| 326 | J13  | I           | 13 51 04.69 | +25 04 57.2 | 0.000 | 27.59 | +76.46    | 1.08     |
| 327 | J13  | J           | 13 50 31.88 | +24 58 22.5 | 0.000 | 27.02 | +76.56    | 1.38     |
| 328 | J13  | K           | 13 50 30.87 | +24 57 44.7 | 0.000 | 26.97 | +76.56    | 1.33     |
| 329 | J13  | L           | 13 50 25.15 | +24 54 30.3 | 0.000 | 26.72 | +76.57    | 1.08     |
| 330 | J13  | M           | 13 49 52.58 | +25 11 25.7 | 0.000 | 27.81 | +76.75    | 1.33     |
| 331 | J13  | N           | 13 55 48.41 | +24 48 17.8 | 0.000 | 27.41 | +75.36    | 1.26     |
| 332 | J13  | O           | 13 55 56.21 | +24 57 02.2 | 0.000 | 28.00 | +75.36    | 1.26     |
| 333 | J13  | P           | 13 56 09.37 | +25 11 42.5 | 0.000 | 28.99 | +75.36    | 1.26     |
| 334 | J13  | Q           | 13 56 01.99 | +24 40 30.7 | 0.000 | 26.96 | +75.28    | 1.18     |
| 335 | J13  | R           | 13 51 39.37 | +24 41 17.4 | 0.000 | 26.08 | +76.25    | 1.18     |
| 336 | J36  | A           | 14 08 07.00 | -09 04 18.4 | 0.039 | 332.76 | +49.31    | 1.39     |
| 337 | J36  | B           | 14 08 07.56 | -09 03 42.8 | 0.039 | 332.77 | +49.32    | 0.94     |
| 338 | J36  | C           | 14 08 06.20 | -09 04 41.5 | 0.039 | 332.75 | +49.30    | 0.99     |
| 339 | J36  | D           | 14 06 36.63 | -09 13 45.6 | 0.032 | 332.14 | +49.33    | 1.17     |
| 340 | J36  | E           | 14 09 55.79 | -09 04 55.7 | 0.037 | 333.36 | +49.10    | 0.94     |
| 341 | J36  | F           | 14 09 54.01 | -08 49 22.2 | 0.037 | 333.53 | +49.33    | 1.09     |
| 342 | J36  | G           | 14 08 04.25 | -09 09 06.2 | 0.039 | 332.68 | +49.24    | 1.09     |
| 343 | J14  | A           | 14 47 02.19 | +13 40 04.3 | 0.010 | 12.22 | +59.86    | 1.36     |
| 344 | J14  | B           | 14 46 39.21 | +13 40 32.6 | 0.010 | 12.13 | +59.95    | 1.25     |
| 345 | J14  | C           | 14 46 47.82 | +13 41 40.3 | 0.010 | 12.20 | +59.93    | 1.14     |
| 346 | J14  | D           | 14 46 54.17 | +13 42 35.8 | 0.010 | 12.25 | +59.91    | 1.01     |
| 347 | J14  | E           | 14 48 17.28 | +13 45 25.1 | 0.010 | 12.68 | +59.65    | 1.06     |
| 348 | J14  | F           | 14 48 05.20 | +13 28 48.9 | 0.010 | 12.16 | +59.55    | 1.18     |
| 349 | J14  | G           | 14 47 45.66 | +13 20 31.6 | 0.005 | 11.84 | +59.54    | 1.06     |
| 350 | J14  | H           | 14 46 50.42 | +13 50 51.8 | 0.010 | 12.47 | +60.00    | 1.33     |
| 351 | J14  | I           | 14 46 22.02 | +13 28 35.6 | 0.005 | 11.72 | +59.90    | 0.88     |
| 352 | J14  | J           | 14 47 06.34 | +11 35 36.9 | 0.013 | 8.81  | +58.73    | 1.50     |
| 353 | J14  | K           | 14 46 53.77 | +11 37 33.7 | 0.013 | 8.80  | +58.80    | 1.31     |
| 354 | J14  | L           | 14 46 46.51 | +11 34 11.5 | 0.015 | 8.68  | +58.79    | 1.35     |
| 355 | J14  | M           | 14 46 27.74 | +11 30 24.9 | 0.015 | 8.50  | +58.82    | 1.31     |
| 356 | J14  | N           | 14 47 06.93 | +10 59 57.6 | 0.015 | 7.87  | +58.40    | 1.43     |
| 357 | J14  | O           | 14 49 07.62 | +10 58 46.2 | 0.008 | 8.37  | +57.98    | 1.35     |
| 358 | J14  | P           | 14 49 34.94 | +11 14 52.6 | 0.005 | 8.91  | +58.04    | 1.28     |
| 359 | J14  | Q           | 14 48 36.62 | +11 19 31.4 | 0.005 | 8.78  | +58.28    | 1.28     |
## Table 3—Continued

| GIN   | Name | R.A. (J2000) | Dec.     | A_R  | l    | b    | log D_W | Comments |
|-------|------|-------------|----------|------|------|------|---------|----------|
| 360   | J14-1| 14 47 17.71 | +11 07 47.9 | 0.015 | 8.12 | +58.43 | 1.28    |
| 361   | J14-1| 14 46 53.56 | +11 22 46.3 | 0.015 | 8.41 | +58.66 | 1.20    |
| 362   | A1983| 14 54 23.50 | +16 21 17.6 | 0.010 | 18.58| +59.59 | 1.76    | I4516   |
| 363   | A1983| 14 52 55.36 | +16 42 09.4 | 0.010 | 18.90| +60.06 | 1.57    |
| 364   | A1983| 14 52 56.91 | +16 43 39.0 | 0.010 | 18.95| +60.06 | 1.43    |
| 365   | A1983| 14 52 43.31 | +16 54 12.6 | 0.015 | 19.22| +60.19 | 1.53    |
| 366   | A1983| 14 52 22.90 | +17 07 16.7 | 0.008 | 19.55| +60.35 | 1.53    |
| 367   | A1983| 14 49 59.15 | +16 48 35.6 | 0.008 | 18.48| +60.74 | 1.34    |
| 368   | A1983| 14 49 56.99 | +16 48 30.5 | 0.008 | 18.47| +60.74 | 1.23    |
| 369   | A1983| 14 52 57.84 | +16 41 48.3 | 0.010 | 18.90| +60.04 | 1.23    |
| 370   | A1983| 14 51 14.66 | +16 41 42.0 | 0.000 | 18.54| +60.41 | 1.34    |
| 371   | A1983| 14 49 22.41 | +16 25 55.8 | 0.003 | 17.65| +60.70 | 1.18    |
| 372   | A1991| 14 54 31.54 | +18 38 32.0 | 0.015 | 22.79| +60.50 | 1.66    | N5778   |
| 373   | A1991| 14 54 48.00 | +18 33 49.3 | 0.015 | 22.69| +60.41 | 1.51    |
| 374   | A1991| 14 54 17.98 | +18 33 10.8 | 0.015 | 22.58| +60.51 | 1.42    |
| 375   | A1991| 14 51 14.31 | +18 45 25.9 | 0.022 | 22.40| +61.26 | 1.21    |
| 376   | A1991| 14 51 17.70 | +18 41 12.4 | 0.022 | 22.27| +61.22 | 1.49    | I1062   |
| 377   | A1991| 14 53 40.02 | +18 04 11.1 | 0.013 | 21.56| +60.46 | 1.29    |
| 378   | A1991| 14 54 54.07 | +18 50 11.5 | 0.020 | 23.22| +60.49 | 1.21    |
| 379   | A1991| 14 54 05.16 | +18 26 00.2 | 0.015 | 22.31| +60.51 | 1.21    |
| 380   | A1991| 14 55 56.80 | +18 02 48.9 | 0.025 | 21.95| +59.95 | 1.29    |
| 381   | A1991| 14 55 58.08 | +18 30 07.9 | 0.015 | 22.79| +60.13 | 1.17    |
| 382   | A1991| 14 55 23.88 | +18 50 08.1 | 0.020 | 23.31| +60.38 | 1.29    |
| 383   | J16  | 15 19 01.53 | +04 31 13.5 | 0.039 | 6.82 | +48.20 | 1.53    |
| 384   | J16  | 15 19 03.56 | +04 19 59.6 | 0.027 | 6.60 | +48.08 | 1.40    |
| 385   | J16  | 15 18 27.88 | +04 40 30.6 | 0.039 | 6.88 | +48.40 | 1.19    |
| 386   | J16  | 15 21 22.60 | +04 20 28.9 | 0.027 | 7.13 | +47.62 | 1.27    |
| 387   | J16  | 15 17 23.00 | +04 12 47.8 | 0.022 | 6.08 | +48.34 | 1.27    |
| 388   | J16  | 15 19 24.75 | +04 34 45.5 | 0.039 | 6.98 | +48.16 | 1.19    |
| 389   | J16  | 15 18 52.61 | +04 51 55.6 | 0.041 | 7.20 | +48.43 | 1.34    |
| 390   | J16  | 15 20 51.87 | +04 23 27.5 | 0.027 | 7.07 | +47.75 | 1.04    |
| 391   | J16  | 15 19 37.41 | +04 26 53.7 | 0.027 | 6.87 | +48.04 | 1.10    |
| 392   | J16  | 15 19 33.78 | +04 20 15.3 | 0.027 | 6.72 | +47.98 | 1.10    |
| 393   | J16  | 15 19 27.82 | +04 05 44.2 | 0.025 | 6.41 | +47.86 | 1.19    |
| 394   | J16  | 15 18 09.29 | +04 33 45.6 | 0.039 | 6.67 | +48.40 | 1.27    |
| 395   | J16W | 15 11 41.53 | +04 29 26.9 | 0.051 | 5.10 | +49.64 | 1.33    |
| GIN  | Name  | R.A. (J2000) | Dec.  | $A_R$ | $l$  | $b$  | $\log D_W$ | Comments       |
|------|-------|--------------|-------|-------|------|------|------------|----------------|
| 396  | J16W B| 15 11 31.53  | +04 31 01.5 | 0.049 | 5.09 | +49.68 | 1.36       |                |
| 397  | J16W C| 15 11 37.04  | +04 28 01.6 | 0.049 | 5.05 | +49.64 | 1.19       |                |
| 398  | J16W D| 15 12 52.96  | +04 30 48.4 | 0.053 | 5.41 | +49.41 | 1.42       |                |
| 399  | J16W E| 15 13 10.47  | +04 28 54.2 | 0.053 | 5.43 | +49.34 | 1.27       |                |
| 400  | J16W F| 15 13 18.61  | +04 28 37.4 | 0.053 | 5.46 | +49.31 | 1.27       |                |
| 401  | J16W G| 15 14 06.19  | +04 13 18.0 | 0.027 | 5.34 | +49.00 | 1.33       |                |
| 402  | J16W H| 15 13 50.80  | +04 37 19.4 | 0.032 | 5.76 | +49.29 | 1.09       |                |
| 403  | J16W I| 15 13 49.70  | +04 43 23.2 | 0.058 | 5.88 | +49.36 | 1.27       |                |
| 404  | J16W J| 15 13 43.46  | +04 43 43.1 | 0.029 | 5.42 | +49.16 | 1.09       |                |
| 405  | J16W K| 15 10 52.32  | +04 52 03.8 | 0.058 | 5.37 | +50.03 | 1.09       |                |
| 406  | A2063-SA| 15 21 55.39 | +08 25 24.5 | 0.049 | 12.34 | +49.83 | 1.54       | same as 435, I1116 |
| 407  | A2063-SB| 15 20 53.32 | +08 23 47.1 | 0.044 | 12.09 | +50.03 | 1.37       |                |
| 408  | A2063-SC| 15 21 36.91 | +07 43 08.4 | 0.044 | 11.36 | +49.51 | 1.26       |                |
| 409  | A2040-A| 15 12 50.76  | +07 25 25.5 | 0.032 | 9.07 | +51.14 | 1.01       |                |
| 410  | A2040-B| 15 12 47.60  | +07 26 02.2 | 0.032 | 9.07 | +51.16 | 1.26       |                |
| 411  | A2040-C| 15 12 43.37  | +07 26 48.1 | 0.032 | 9.07 | +51.18 | 1.09       |                |
| 412  | A2040-D| 15 12 37.66  | +07 27 04.1 | 0.032 | 9.06 | +51.20 | 1.01       |                |
| 413  | A2040-E| 15 12 34.39  | +07 25 51.9 | 0.032 | 9.02 | +51.20 | 1.15       |                |
| 414  | A2040-F| 15 11 31.44  | +07 15 05.5 | 0.029 | 8.54 | +51.31 | 1.31       |                |
| 415  | A2040-G| 15 10 11.06  | +07 37 41.8 | 0.029 | 8.73 | +51.80 | 1.15       |                |
| 416  | A2040-H| 15 09 28.27  | +07 33 22.4 | 0.029 | 8.47 | +51.90 | 1.21       |                |
| 417  | A2040-I| 15 12 28.21  | +07 58 24.0 | 0.025 | 9.71 | +51.53 | 1.09       |                |
| 418  | A2040-J| 15 11 16.11  | +07 29 19.9 | 0.034 | 8.80 | +51.50 | 1.15       |                |
| 419  | A2052-A| 15 16 44.56  | +07 01 15.6 | 0.027 | 9.42 | +50.12 | 1.70       | A1514+07       |
| 420  | A2052-B| 15 16 45.87  | +07 00 14.6 | 0.027 | 9.40 | +50.11 | 1.34       |                |
| 421  | A2052-C| 15 16 53.98  | +06 56 20.3 | 0.027 | 9.35 | +50.04 | 1.16       |                |
| 422  | A2052-D| 15 16 09.85  | +06 57 51.3 | 0.025 | 9.22 | +50.21 | 1.06       |                |
| 423  | A2052-E| 15 16 09.99  | +06 57 04.2 | 0.025 | 9.20 | +50.20 | 1.06       |                |
| 424  | A2052-F| 15 17 12.64  | +07 01 40.9 | 0.027 | 9.53 | +50.03 | 1.24       |                |
| 425  | A2052-G| 15 17 10.91  | +06 56 29.3 | 0.027 | 9.41 | +49.98 | 1.06       |                |
| 426  | A2063-A| 15 23 05.35  | +08 36 31.9 | 0.044 | 12.82 | +49.68 | 1.55       |                |
| 427  | A2063-B| 15 23 10.92  | +08 38 02.1 | 0.044 | 12.87 | +49.68 | 1.13       |                |
| 428  | A2063-C| 15 23 14.06  | +08 38 42.3 | 0.044 | 12.90 | +49.67 | 1.13       |                |
| 429  | A2063-D| 15 23 15.06  | +08 34 24.4 | 0.044 | 12.81 | +49.63 | 1.25       |                |
| 430  | A2063-E| 15 23 07.52  | +08 31 41.0 | 0.044 | 12.72 | +49.63 | 1.25       |                |
| 431  | A2063-F| 15 23 10.45  | +08 30 18.7 | 0.044 | 12.70 | +49.61 | 1.13       |                |
Table 3—Continued

| GIN | Name | R.A. (J2000) Dec. | $A_R$ | $l$ | $b$ | $\log D_W$ | Comments |
|-----|------|-------------------|------|----|----|-------------|----------|
| 432 | A2063 | 15 23 35.30 +09 20 45.1 | 0.046 | 13.89 | +49.97 | 1.35 |
| 433 | A2063 | 15 23 39.26 +08 45 31.6 | 0.039 | 13.13 | +49.65 | 1.25 |
| 434 | A2063 | 15 24 37.34 +08 59 24.3 | 0.046 | 13.63 | +49.57 | 1.19 |
| 435 | A2063 | 15 21 55.40 +08 25 24.6 | 0.049 | 12.34 | +49.83 | 1.50 |
| 436 | A2063 | 15 39 39.10 +21 46 56.3 | 0.109 | 34.39 | +51.52 | 1.54 |
| 437 | A2107 | 15 39 22.96 +21 44 20.0 | 0.109 | 34.30 | +51.57 | 1.24 |
| 438 | A2107 | 15 37 26.16 +21 44 36.5 | 0.101 | 34.09 | +52.00 | 1.21 |
| 439 | A2107 | 15 39 56.82 +21 49 25.6 | 0.109 | 34.49 | +51.47 | 1.16 |
| 440 | A2107 | 15 40 17.34 +21 54 52.9 | 0.113 | 34.66 | +51.42 | 1.07 |
| 441 | A2107 | 15 40 46.69 +21 46 20.0 | 0.109 | 34.50 | +51.27 | 0.94 |
| 442 | A2107 | 15 39 51.38 +21 42 13.6 | 0.109 | 34.29 | +51.45 | 0.77 |
| 443 | J17  | 15 55 02.01 +41 34 40.7 | 0.017 | 66.26 | +49.99 | 1.51 |
| 444 | J17  | 15 55 13.93 +41 34 53.5 | 0.017 | 66.26 | +49.95 | 1.26 |
| 445 | J17  | 15 55 40.26 +41 30 16.1 | 0.010 | 66.13 | +49.88 | 1.33 |
| 446 | J17  | 15 53 28.98 +41 34 47.9 | 0.025 | 66.31 | +50.28 | 1.41 |
| 447 | J17  | 15 55 27.12 +41 33 29.0 | 0.017 | 66.22 | +49.91 | 1.29 |
| 448 | J17  | 15 54 14.24 +41 24 52.9 | 0.017 | 66.03 | +50.16 | 1.19 |
| 449 | J17  | 15 53 45.57 +41 23 23.7 | 0.017 | 66.01 | +50.25 | 1.29 |
| 450 | J17  | 15 55 14.23 +41 28 00.8 | 0.017 | 66.08 | +49.96 | 1.05 |
| 451 | J17  | 15 55 09.60 +41 26 54.2 | 0.017 | 66.06 | +49.98 | 1.19 |
| 452 | J17  | 15 53 52.95 +41 29 50.9 | 0.017 | 66.17 | +50.21 | 1.05 |
| 453 | A2147 | 16 02 17.10 +15 58 27.1 | 0.017 | 28.91 | +44.52 | 1.76 |
| 454 | A2147 | 16 02 12.87 +15 54 26.2 | 0.017 | 28.81 | +44.51 | 1.56 |
| 455 | A2147 | 16 02 19.92 +16 20 43.9 | 0.022 | 29.40 | +44.65 | 1.58 |
| 456 | A2147 | 16 02 18.07 +16 21 56.4 | 0.017 | 29.42 | +44.67 | 1.43 |
| 457 | A2147 | 16 03 14.80 +16 24 09.1 | 0.017 | 29.59 | +44.47 | 1.51 |
| 458 | A2147 | 16 00 35.80 +15 41 07.4 | 0.029 | 28.31 | +44.79 | 1.51 |
| 459 | A2147 | 16 01 16.90 +15 38 41.8 | 0.029 | 28.35 | +44.62 | 1.36 |
| 460 | A2147 | 16 01 30.60 +15 30 12.6 | 0.029 | 28.20 | +44.51 | 1.43 |
| 461 | A2147 | 16 03 43.78 +16 19 38.2 | 0.017 | 29.55 | +44.34 | 1.40 |
| 462 | A2147 | 16 03 45.91 +16 20 16.3 | 0.017 | 29.57 | +44.33 | 1.13 |
| 463 | A2147 | 16 03 38.19 +15 54 01.7 | 0.029 | 28.99 | +44.20 | 1.13 |
| 464 | A2147 | 16 02 40.43 +15 45 20.2 | 0.032 | 28.68 | +44.35 | 1.36 |
| 465 | A2147 | 16 02 08.11 +15 41 46.8 | 0.032 | 28.53 | +44.45 | 1.46 |
| 466 | A2147 | 16 01 54.96 +16 27 15.3 | 0.017 | 29.48 | +44.79 | 1.40 |
| 467 | A2147 | 16 01 21.26 +16 40 34.5 | 0.017 | 29.70 | +45.00 | 1.40 |
Table 3—Continued

| GIN   | Name    | R.A. (J2000) Dec. | $A_R$ | $l$   | $b$   | $\log D_W$ | Comments          |
|-------|---------|-------------------|------|-------|-------|------------|-------------------|
| 468   | P386-1  A | 15 57 08.24 +22 24 14.8 | 0.068 | 37.08 | +47.81 | 1.71       | N6020, I1148      |
| 469   | P386-1  B | 15 58 17.52 +22 40 28.0 | 0.061 | 37.58 | +47.63 | 1.42       |                   |
| 470   | P386-1  C | 15 58 06.96 +22 39 51.9 | 0.061 | 37.55 | +47.67 | 1.06       |                   |
| 471   | P386-1  I | 15 58 12.49 +22 29 19.4 | 0.065 | 37.31 | +47.60 | 1.06       |                   |
| 472   | P386-2  A | 16 11 22.62 +23 57 53.2 | 0.082 | 40.55 | +45.08 | 1.51       | N6075, VV380      |
| 473   | P386-2  B | 16 12 05.95 +23 50 28.8 | 0.082 | 40.44 | +44.89 | 1.21       |                   |
| 474   | P386-2  C | 16 12 07.80 +23 43 04.6 | 0.082 | 40.27 | +44.85 | 1.29       |                   |
| 475   | P386-2  D | 16 11 18.91 +24 10 54.0 | 0.101 | 40.84 | +45.15 | 1.14       |                   |
| 476   | P386-2  I | 16 12 22.40 +24 12 25.0 | 0.092 | 40.96 | +44.93 | 1.06       |                   |
| 477   | P386-2  2 | 16 10 30.59 +24 03 14.5 | 0.106 | 40.60 | +45.30 | 1.14       |                   |
| 478   | A2148- A | 16 03 19.91 +25 27 12.5 | 0.094 | 41.98 | +47.22 | 1.35       |                   |
| 479   | A2148- B | 16 03 03.48 +25 27 09.3 | 0.094 | 41.96 | +47.28 | 1.11       |                   |
| 480   | A2148- C | 16 03 52.47 +25 26 47.6 | 0.082 | 42.02 | +47.10 | 1.17       |                   |
| 481   | A2148- D | 16 04 04.67 +25 33 45.3 | 0.082 | 42.20 | +47.08 | 1.20       |                   |
| 482   | A2148- E | 16 02 30.36 +25 36 03.8 | 0.082 | 42.13 | +47.43 | 1.08       |                   |
| 483   | A2148- F | 16 04 03.08 +25 29 48.5 | 0.082 | 42.10 | +47.07 | 1.14       |                   |
| 484   | A2148- 1 | 16 03 22.26 +25 22 20.8 | 0.094 | 41.87 | +47.19 | 0.97       |                   |
| 485   | A2148- 2 | 16 03 20.94 +25 18 32.2 | 0.094 | 41.78 | +47.18 | 1.04       |                   |
| 486   | A2148- 3 | 16 02 47.85 +25 30 32.1 | 0.082 | 42.02 | +47.35 | 1.04       |                   |
| 487   | J18-    A | 16 04 56.79 +23 55 56.4 | 0.099 | 39.96 | +46.49 | 1.80       | N6051             |
| 488   | J18-    B | 16 05 17.71 +23 45 19.5 | 0.089 | 39.74 | +46.37 | 1.33       |                   |
| 489   | J18-    C | 16 04 50.62 +23 58 29.0 | 0.099 | 40.01 | +46.53 | 1.27       |                   |
| 490   | J18-    D | 16 03 41.91 +24 05 41.1 | 0.099 | 40.08 | +46.81 | 1.15       |                   |
| 491   | J18-    E | 16 04 46.89 +24 16 42.5 | 0.104 | 40.43 | +46.62 | 1.15       |                   |
| 492   | J18-    F | 16 05 49.60 +24 10 32.1 | 0.104 | 40.37 | +46.36 | 1.15       |                   |
| 493   | J18-    1 | 16 06 23.28 +24 13 23.3 | 0.101 | 40.49 | +46.25 | 1.15       |                   |
| 494   | J18-    2 | 16 05 06.54 +23 51 52.7 | 0.089 | 39.88 | +46.44 | 1.15       |                   |
| 495   | A2151- A | 16 04 35.86 +17 43 15.9 | 0.025 | 31.47 | +44.66 | 1.73       | N6041, VV213a,b   |
| 496   | A2151- B | 16 04 39.62 +17 42 01.6 | 0.025 | 31.45 | +44.64 | 1.52       | N6042             |
| 497   | A2151- C | 16 05 01.42 +17 46 31.9 | 0.037 | 31.60 | +44.58 | 1.30       | N6043             |
| 498   | A2151- D | 16 05 09.04 +17 43 45.9 | 0.037 | 31.55 | +44.54 | 1.49       | N6047             |
| 499   | A2151- E | 16 04 59.74 +17 52 12.0 | 0.037 | 31.72 | +44.62 | 1.42       | N6044, I1172      |
| 500   | A2151- F | 16 05 44.72 +17 42 59.0 | 0.039 | 31.60 | +44.40 | 1.42       | I1185             |
| 501   | A2151- G | 16 06 32.23 +17 42 48.8 | 0.039 | 31.70 | +44.22 | 1.42       | I1193             |
| 502   | A2151- H | 16 06 39.39 +17 45 39.0 | 0.039 | 31.77 | +44.21 | 1.42       | I1193             |
| 503   | A2151- I | 16 05 46.38 +18 00 59.2 | 0.034 | 32.00 | +44.50 | 1.42       |                   |
Table 3—Continued

| GIN  | Name  | R.A. (J2000) | Dec.   | $A_R$ | $l$   | $b$   | $\log D_W$ | Comments |
|------|-------|--------------|--------|-------|-------|-------|------------|----------|
| 504  | A2151 | J 16 05 32.64 +18 09 33.0 0.032 32.16 +44.60 1.55 | N6055 |
| 505  | A2151 | K 16 05 39.71 +18 09 50.0 0.032 32.18 +44.58 1.30 | N6057 |
| 506  | A2151 | L 16 05 36.62 +18 16 21.2 0.032 32.32 +44.63 1.49 |        |
| 507  | A2151 | M 16 06 16.09 +18 14 58.7 0.049 32.36 +44.47 1.42 | N6061, I1190 |
| 508  | A2151 | N 16 06 06.15 +18 36 23.4 0.027 32.82 +44.63 1.25 |        |
| 509  | A2151 | O 16 07 09.93 +18 38 27.4 0.034 32.98 +44.41 1.25 |        |
| 510  | A2151 | 1 16 07 38.61 +18 28 46.9 0.034 32.83 +44.25 1.19 |        |
| 511  | A2152 | A 16 06 25.49 +15 41 07.2 0.037 29.07 +43.49 1.50 | VV215a |
| 512  | A2152 | B 16 06 25.85 +15 41 36.5 0.037 29.08 +43.50 1.45 | VV215b |
| 513  | A2152 | C 16 05 47.16 +15 47 26.2 0.037 28.92 +43.85 1.55 |        |
| 514  | A2152 | D 16 04 51.79 +15 43 21.9 0.037 29.12 +43.68 1.45 |        |
| 515  | A2152 | E 16 07 19.57 +15 50 57.9 0.037 29.39 +43.36 1.27 |        |
| 516  | A2152 | F 16 05 15.15 +15 55 31.8 0.037 29.23 +43.85 1.32 |        |
| 517  | A2152 | G 16 06 19.60 +16 25 52.0 0.051 30.01 +43.80 1.39 |        |
| 518  | A2152 | H 16 05 29.24 +16 26 07.9 0.017 29.91 +43.99 1.42 |        |
| 519  | A2152 | I 16 05 26.47 +16 26 35.3 0.017 29.92 +44.00 1.42 |        |
| 520  | A2152 | J 16 04 41.19 +16 25 46.4 0.017 29.80 +44.16 1.27 |        |
| 521  | A2152 | K 16 04 43.77 +16 31 19.4 0.017 29.93 +44.19 1.23 |        |
| 522  | A2152 | L 16 04 49.94 +16 35 02.4 0.020 30.02 +44.19 1.35 |        |
| 523  | A2152 | M 16 06 03.55 +16 10 31.4 0.041 29.65 +43.76 1.27 |        |
| 524  | A2152 | N 16 06 16.55 +16 02 19.4 0.041 29.50 +43.66 1.23 |        |
| 525  | A2152 | 1 16 04 41.61 +16 38 56.9 0.020 30.09 +44.24 1.27 |        |
| 526  | A2152 | 2 16 06 58.41 +16 09 43.4 0.044 29.75 +43.55 1.23 |        |
| 527  | A2152 | 3 16 04 10.55 +16 05 13.9 0.025 29.30 +44.15 1.18 |        |
| 528  | P445-1 | A 15 58 20.65 +17 04 49.7 0.037 31.20 +46.18 1.51 |        |
| 529  | P445-1 | B 15 58 32.40 +17 52 16.2 0.037 30.94 +46.06 1.44 |        |
| 530  | P445-1 | C 15 54 24.32 +18 39 05.8 0.034 31.51 +47.25 1.51 |        |
| 531  | P445-1 | D 15 54 06.07 +18 38 51.0 0.032 31.46 +47.32 1.36 |        |
| 532  | P445-1 | E 15 60 14.93 +18 22 32.6 0.034 31.83 +45.85 1.21 |        |
| 533  | P445-1 | F 15 53 50.03 +18 20 27.6 0.032 31.35 +47.27 1.27 |        |
| 534  | P445-1 | G 15 53 30.92 +18 21 27.6 0.032 30.99 +47.35 1.27 |        |
| 535  | P445-1 | H 15 57 04.43 +17 37 31.7 0.053 30.43 +46.30 1.36 |        |
| 536  | P445-2 | A 15 57 49.66 +16 18 35.0 0.051 28.77 +45.64 1.60 | N6023 |
| 537  | P445-2 | B 15 57 42.66 +16 13 04.0 0.051 28.63 +45.63 1.40 |        |
| 538  | P445-2 | C 15 57 30.79 +15 57 20.8 0.032 28.26 +45.58 1.63 | N6021 |
| 539  | P445-2 | D 15 56 23.65 +16 31 22.6 0.032 28.86 +46.04 1.50 |        |
Table 3—Continued

| GIN   | Name    | R.A. (J2000) | Dec.   | $A_R$ | $l$    | $b$    | $\log D_W$ | Comments |
|-------|---------|--------------|--------|-------|--------|--------|------------|----------|
| 540   | A2162-N | A 16 13 14.77 | +30 54 08.8 | 0.032 | 50.38 | +46.09 | 1.52       |
| 541   | A2162-N | B 16 13 04.99 | +30 54 05.0 | 0.032 | 50.37 | +46.12 | 1.17       |
| 542   | A2162-N | C 16 13 04.17 | +30 54 00.4 | 0.032 | 50.37 | +46.13 | 1.52       |
| 543   | A2162-N | D 16 13 08.90 | +30 49 37.0 | 0.032 | 50.27 | +46.10 | 1.59       |
| 544   | A2162-N | E 16 13 24.75 | +30 35 58.0 | 0.032 | 49.96 | +46.01 | 1.25       |
| 545   | A2162-N | 1 16 12 57.06 | +30 46 14.1 | 0.032 | 50.18 | +46.13 | 1.32       |
| 546   | A2162-S | A 16 12 35.61 | +29 29 04.3 | 0.044 | 48.33 | +46.01 | 1.73       |
| 547   | A2162-S | B 16 11 58.88 | +29 50 26.4 | 0.039 | 48.81 | +46.20 | 1.60       |
| 548   | A2162-S | C 16 11 55.34 | +29 49 45.5 | 0.039 | 48.79 | +46.21 | 1.41       |
| 549   | A2162-S | D 16 12 16.76 | +29 34 21.6 | 0.044 | 48.44 | +46.09 | 1.15       |
| 550   | A2162-S | E 16 12 11.31 | +29 34 25.9 | 0.044 | 48.44 | +46.11 | 1.57       |
| 551   | A2162-S | F 16 11 56.69 | +29 27 15.1 | 0.049 | 48.25 | +46.14 | 1.30       |
| 552   | A2162-S | G 16 12 38.94 | +29 38 35.7 | 0.044 | 48.56 | +46.02 | 1.49       |
| 553   | A2162-S | H 16 11 29.61 | +29 26 59.9 | 0.049 | 48.22 | +46.24 | 1.23       |
| 554   | A2162-S | I 16 11 02.05 | +29 31 27.7 | 0.051 | 48.31 | +46.35 | 1.30       |
| 555   | A2162-S | 1 16 14 15.01 | +29 17 31.5 | 0.053 | 48.15 | +45.62 | 1.15       |
| 556   | A2162-S | 2 16 11 36.32 | +29 29 31.7 | 0.049 | 48.29 | +46.22 | 1.15       |
| 557   | J20     | A 16 18 00.61 | +35 06 35.6 | 0.003 | 56.54 | +45.57 | 1.32       |
| 558   | J20     | B 16 17 40.60 | +35 00 13.8 | 0.008 | 56.38 | +45.63 | 1.49       |
| 559   | J20     | C 16 17 20.19 | +34 54 04.9 | 0.008 | 56.23 | +45.69 | 1.66       |
| 560   | J20     | D 16 17 09.39 | +34 52 43.2 | 0.005 | 56.19 | +45.72 | 1.52       |
| 561   | J20     | E 16 18 23.70 | +35 10 26.2 | 0.003 | 56.64 | +45.49 | 1.46       |
| 562   | A2197   | A 16 29 44.93 | +40 48 39.7 | 0.000 | 64.68 | +43.51 | 1.79       |
| 563   | A2197   | B 16 27 41.20 | +40 55 36.1 | 0.003 | 64.84 | +43.90 | 1.55       |
| 564   | A2197   | C 16 25 10.37 | +40 53 33.1 | 0.000 | 64.79 | +44.37 | 1.60       |
| 565   | A2197   | D 16 30 41.91 | +40 42 31.4 | 0.000 | 64.29 | +43.32 | 1.25       |
| 566   | A2197   | E 16 30 33.98 | +40 32 20.7 | 0.000 | 64.31 | +43.35 | 1.42       |
| 567   | A2197   | F 16 30 17.83 | +40 35 53.0 | 0.000 | 64.39 | +43.40 | 1.30       |
| 568   | A2197   | G 16 29 23.84 | +40 52 28.6 | 0.000 | 64.77 | +43.57 | 1.25       |
| 569   | A2197   | H 16 28 54.21 | +40 51 58.3 | 0.000 | 64.75 | +43.67 | 1.19       |
| 570   | A2197   | I 16 26 39.89 | +40 28 39.7 | 0.008 | 64.21 | +44.09 | 1.55       |
| 571   | A2197   | J 16 28 37.98 | +41 09 48.6 | 0.000 | 65.16 | +43.72 | 1.19       |
| 572   | A2197   | K 16 28 27.59 | +41 09 38.3 | 0.000 | 65.16 | +43.75 | 1.19       |
| 573   | A2197   | L 16 28 41.72 | +41 08 12.4 | 0.000 | 65.13 | +43.71 | 1.19       |
| 574   | A2197   | M 16 30 58.83 | +40 55 48.4 | 0.000 | 64.85 | +43.27 | 1.25       |
| 575   | A2197   | N 16 28 21.60 | +40 54 23.1 | 0.001 | 64.81 | +43.77 | 1.25       |
| GIN | Name | R.A. (J2000) | Dec. | $A_R$ | $l$ | $b$ | log $D_W$ | Comments          |
|-----|------|-------------|------|-------|----|----|---------|------------------|
| 576 | A2197 | 1 16 30 42.04 | +40 31 45.1 | 0.000 | 64.30 | +43.32 | 1.25 | same as 565 |
| 577 | A2197 | 2 16 30 26.90 | +41 29 01.9 | 0.003 | 65.61 | +43.38 | 1.49 |
| 578 | A2197 | 3 16 29 09.44 | +40 59 14.7 | 0.001 | 64.92 | +43.62 | 1.25 |
| 579 | A2199 | A 16 28 38.31 | +39 33 03.3 | 0.000 | 62.93 | +43.69 | 1.75 | N6166, VV364 |
| 580 | A2199 | B 16 28 23.40 | +39 34 11.8 | 0.000 | 62.96 | +43.74 | 1.27 | N6166C |
| 581 | A2199 | C 16 27 58.76 | +39 36 13.4 | 0.001 | 63.00 | +43.82 | 1.27 |
| 582 | A2199 | D 16 27 55.33 | +39 15 30.1 | 0.000 | 62.52 | +43.82 | 1.48 |
| 583 | A2199 | E 16 33 49.71 | +39 15 45.4 | 0.008 | 62.59 | +42.68 | 1.42 | I4610, I4612 |
| 584 | A2199 | F 16 31 02.84 | +39 47 31.7 | 0.000 | 63.29 | +43.24 | 1.53 |
| 585 | A2199 | G 16 28 50.21 | +39 50 04.7 | 0.003 | 63.33 | +43.66 | 1.39 |
| 586 | A2199 | H 16 31 19.30 | +39 09 01.4 | 0.000 | 62.41 | +43.16 | 1.27 |
| 587 | A2199 | I 16 31 07.06 | +39 12 17.8 | 0.000 | 62.48 | +43.20 | 1.23 |
| 588 | A2199 | J 16 30 45.32 | +39 11 41.6 | 0.000 | 62.46 | +43.27 | 1.27 |
| 589 | A2199 | K 16 31 03.50 | +39 50 17.6 | 0.000 | 63.35 | +43.24 | 1.35 |
| 590 | A2199 | L 16 27 40.96 | +39 22 57.5 | 0.000 | 62.69 | +43.87 | 1.48 | N6158 |
| 591 | A2199 | M 16 27 03.69 | +39 31 37.5 | 0.003 | 62.89 | +44.00 | 1.35 |
| 592 | A2199 | N 16 27 22.16 | +39 06 33.3 | 0.003 | 62.31 | +43.92 | 1.53 |
| 593 | A2199 | O 16 24 17.68 | +39 12 39.4 | 0.000 | 62.43 | +44.52 | 1.35 |
| 594 | A2199 | P 16 23 28.15 | +39 11 28.9 | 0.000 | 62.40 | +44.68 | 1.35 |
| 595 | A2199 | 1 16 30 20.31 | +39 48 15.0 | 0.001 | 63.30 | +43.37 | 1.18 |
| 596 | A2199 | 2 16 29 56.67 | +39 56 36.3 | 0.003 | 63.48 | +43.45 | 1.23 |
| 597 | A2199 | 3 16 26 14.31 | +39 58 00.9 | 0.001 | 63.50 | +44.16 | 1.35 |
| 598 | J21  | A 16 37 34.39 | +50 20 42.0 | 0.000 | 77.52 | +41.63 | 1.63 |
| 599 | J21  | B 16 33 40.97 | +50 22 28.8 | 0.000 | 77.66 | +42.24 | 1.39 |
| 600 | J21  | C 16 33 13.93 | +50 23 53.9 | 0.000 | 77.71 | +42.31 | 1.33 |
| 601 | J21  | D 16 33 01.02 | +50 23 41.5 | 0.000 | 77.71 | +42.34 | 1.09 |
| 602 | J21  | E 16 32 57.28 | +50 24 05.3 | 0.000 | 77.72 | +42.35 | 1.55 |
| 603 | J21  | F 16 32 05.78 | +50 22 45.5 | 0.000 | 77.71 | +42.49 | 1.36 |
| 604 | J21  | G 16 32 16.69 | +50 11 21.0 | 0.000 | 77.45 | +42.48 | 1.50 |
| 605 | J21  | H 16 31 42.76 | +50 14 10.4 | 0.000 | 77.53 | +42.57 | 1.15 | VV687 |
| 606 | J21  | I 16 31 42.58 | +50 10 03.1 | 0.000 | 77.44 | +42.58 | 1.25 |
| 607 | J21  | 1 16 33 06.19 | +50 32 08.6 | 0.000 | 77.89 | +42.31 | 1.02 |
| 608 | J21  | 2 16 33 10.40 | +50 18 21.5 | 0.000 | 77.58 | +42.33 | 1.09 |
| 609 | A2247 | A 16 52 48.57 | +81 37 56.1 | 0.161 | 114.45 | +31.01 | 1.35 |
| 610 | A2247 | B 16 52 13.43 | +81 37 10.6 | 0.161 | 114.44 | +31.04 | 1.15 |
| 611 | A2247 | C 16 51 45.53 | +81 35 29.3 | 0.161 | 114.42 | +31.06 | 1.23 |
Table 3—Continued

| GIN | Name  | R.A. (J2000) | Dec.  | $A_R$ | $l$   | $b$   | log $D_W$ | Comments |
|-----|-------|-------------|-------|-------|-------|-------|-----------|----------|
| 612 | A2247 D | 16 51 07.88 | +81 34 56.1 | 0.161 | 114.43 | +31.09 | 0.92      |
| 613 | A2247 E | 16 50 59.18 | +81 34 28.1 | 0.161 | 114.42 | +31.10 | 1.15      |
| 614 | A2247 F | 16 48 45.85 | +81 36 37.8 | 0.161 | 114.50 | +31.15 | 1.29      |
| 615 | A2247 1 | 17 01 42.70 | +81 54 44.7 | 0.202 | 114.59 | +30.61 | 1.05      |
| 616 | A2247 2 | 16 51 58.72 | +81 30 42.2 | 0.161 | 114.34 | +31.09 | 1.15      |
| 617 | P332-1 A | 17 01 55.00 | +28 25 01.9 | 0.169 | 49.95  | +35.24 | 1.46      |
| 618 | P332-1 B | 17 01 56.14 | +28 23 15.5 | 0.169 | 49.92  | +35.23 | 1.33      |
| 619 | P332-1 C | 17 00 53.63 | +27 43 27.4 | 0.142 | 49.06  | +35.28 | 1.40      |
| 620 | P332-1 D | 17 00 46.98 | +27 50 55.4 | 0.152 | 49.20  | +35.34 | 1.33      |
| 621 | P332-1 E | 17 00 43.67 | +28 01 31.8 | 0.152 | 49.41  | +35.39 | 1.25      |
| 622 | P332-1 F | 16 59 46.97 | +27 46 01.1 | 0.157 | 49.04  | +35.53 | 1.43      |
| 623 | P332-1 G | 17 00 11.49 | +28 16 45.1 | 0.152 | 49.67  | +35.57 | 1.21      |
| 624 | P332-1 1 | 17 02 13.68 | +28 07 43.9 | 0.157 | 49.63  | +35.10 | 1.21      |
| 625 | P332-1 2 | 17 00 03.28 | +28 25 40.4 | 0.147 | 49.84  | +35.64 | 1.10      |
| 626 | J22 A | 16 57 58.17 | +27 51 14.1 | 0.157 | 49.01  | +35.94 | 1.71      |
| 627 | J22 B | 16 56 43.27 | +27 49 17.9 | 0.166 | 48.89  | +36.20 | 1.47      |
| 628 | J22 C | 16 57 29.18 | +27 50 38.3 | 0.157 | 48.97  | +36.04 | 1.44      |
| 629 | J22 D | 16 58 44.08 | +27 51 31.6 | 0.157 | 49.07  | +35.78 | 1.36      |
| 630 | J22 E | 16 58 50.77 | +27 57 52.7 | 0.157 | 49.21  | +35.78 | 1.31      |
| 631 | J22 F | 16 57 55.29 | +27 41 56.7 | 0.140 | 48.82  | +35.91 | 1.14      |
| 632 | J22 G | 16 57 42.89 | +27 39 32.1 | 0.140 | 48.76  | +35.94 | 1.14      |
| 633 | J22 H | 16 57 52.96 | +28 07 41.2 | 0.157 | 49.33  | +36.03 | 1.36      |
| 634 | J23 A | 17 15 22.96 | +57 24 39.8 | 0.044 | 85.81  | +35.40 | 1.75      |
| 635 | J23 B | 17 15 24.51 | +57 19 20.8 | 0.037 | 85.70  | +35.40 | 1.40      |
| 636 | J23 C | 17 14 37.65 | +57 18 19.4 | 0.017 | 85.69  | +35.51 | 1.37      |
| 637 | J23 D | 17 16 24.64 | +57 25 16.9 | 0.044 | 85.81  | +35.26 | 1.28      |
| 638 | J23 E | 17 14 53.84 | +57 40 21.6 | 0.049 | 86.13  | +35.44 | 1.15      |
| 639 | J24 A | 17 33 02.11 | +43 45 33.0 | 0.041 | 69.52  | +32.07 | 1.61      |
| 640 | J24 B | 17 33 08.86 | +43 42 33.6 | 0.041 | 69.46  | +32.05 | 1.25      |
| 641 | J24 C | 17 33 21.53 | +43 38 03.8 | 0.041 | 69.38  | +32.00 | 1.18      |
| 642 | J24 D | 17 33 20.49 | +43 54 46.9 | 0.046 | 69.71  | +32.04 | 1.52      |
| 643 | J24 E | 17 32 35.17 | +43 51 08.8 | 0.046 | 69.61  | +32.17 | 1.18      |
| 644 | J24 F | 17 31 21.11 | +43 36 57.1 | 0.041 | 69.30  | +32.35 | 1.42      |
| 645 | J25 A | 17 55 48.45 | +62 36 42.2 | 0.106 | 91.82  | +30.22 | 1.60      |
| 646 | J25 B | 17 54 50.34 | +62 38 40.1 | 0.106 | 91.85  | +30.33 | 1.35      |
| 647 | J25 C | 17 55 22.96 | +62 39 28.2 | 0.106 | 91.87  | +30.27 | 1.07      |
Table 3—Continued

| GIN | Name  | R.A. (J2000) | Dec. | $A_R$ | $l$ | $b$ | log $D_W$ | Comments |
|-----|-------|-------------|------|------|-----|-----|----------|----------|
| 648 | J26   | A 18 02 40.27 | +42 47 42.7 | 0.082 | 69.60 | +26.60 | 1.32 |
| 649 | J26   | B 18 01 42.90 | +42 43 07.8 | 0.070 | 69.47 | +26.75 | 1.20 |
| 650 | J26   | C 17 59 30.25 | +42 30 54.0 | 0.056 | 69.14 | +27.10 | 1.30 |
| 651 | J26   | 1 17 59 11.67 | +42 35 27.8 | 0.056 | 69.21 | +27.17 | 1.20 |
| 652 | J26   | 2 18 03 04.42 | +42 57 21.2 | 0.082 | 69.79 | +26.56 | 1.07 |
| 653 | J27   | A 18 36 20.76 | +51 27 57.9 | 0.099 | 80.39 | +23.15 | 1.71 |
| 654 | J27   | B 18 35 58.69 | +51 27 31.1 | 0.099 | 80.37 | +23.21 | 1.57 |
| 655 | J27   | C 18 34 05.01 | +51 24 47.9 | 0.099 | 80.24 | +23.48 | 1.39 |
| 656 | J27   | D 18 36 51.50 | +51 26 03.3 | 0.099 | 80.38 | +23.07 | 1.37 |
| 657 | J27   | E 18 36 52.29 | +51 31 50.0 | 0.099 | 80.48 | +23.09 | 1.17 |
| 658 | J38   | A 21 41 03.96 | −16 41 40.3 | 0.106 | 36.08 | −44.90 | 1.41 |
| 659 | J38   | B 21 40 57.65 | −16 42 58.7 | 0.106 | 36.04 | −44.89 | 1.23 |
| 660 | J38   | C 21 42 15.95 | −16 56 19.9 | 0.073 | 35.91 | −45.26 | 1.36 |
| 661 | J38   | 1 21 42 01.58 | −16 54 13.1 | 0.068 | 35.93 | −45.19 | 1.27 |
| 662 | P522-1| A 22 50 02.23 | +11 41 53.8 | 0.089 | 81.76 | −41.27 | 1.76 N7386 |
| 663 | P522-1| B 22 49 54.69 | +11 36 30.1 | 0.089 | 81.66 | −41.32 | 1.68 N7385 |
| 664 | P522-1| C 22 49 25.31 | +11 35 32.5 | 0.080 | 81.52 | −41.26 | 1.20 |
| 665 | P522-1| D 22 49 35.70 | +11 33 22.2 | 0.080 | 81.53 | −41.32 | 1.50 N7383 |
| 666 | P522-1| E 22 49 46.00 | +11 33 08.6 | 0.080 | 81.57 | −41.35 | 1.11 |
| 667 | P522-1| F 22 50 19.62 | +11 31 51.7 | 0.089 | 81.70 | −41.45 | 1.28 N7390 |
| 668 | P522-1| G 22 50 17.73 | +11 38 11.7 | 0.089 | 81.78 | −41.36 | 1.46 N7387 |
| 669 | P522-1| 1 22 51 28.23 | +11 37 53.4 | 0.104 | 82.08 | −41.53 | 1.20 |
| 670 | P522-1| 2 22 51 09.04 | +11 15 19.1 | 0.085 | 81.70 | −41.79 | 1.11 |
| 671 | P522-1| 3 22 49 21.56 | +11 55 56.0 | 0.089 | 81.77 | −40.98 | 1.28 |
| 672 | P522-1| 4 22 49 10.26 | +11 32 59.2 | 0.080 | 81.42 | −41.26 | 1.35 |
| 673 | P522-1| 5 22 48 55.55 | +11 20 31.7 | 0.075 | 81.19 | −41.39 | 0.98 |
| 674 | A2572 | A 23 18 43.60 | +18 41 52.7 | 0.080 | 94.28 | −38.96 | 1.34 N7602 |
| 675 | A2572 | B 23 18 33.27 | +18 44 57.7 | 0.080 | 94.26 | −38.90 | 1.23 N7598 |
| 676 | A2572 | C 23 18 30.26 | +18 41 19.5 | 0.080 | 94.22 | −38.95 | 1.52 N7597 |
| 677 | A2572 | D 23 19 13.34 | +18 54 40.4 | 0.070 | 94.54 | −38.82 | 1.21 |
| 678 | A2572 | E 23 17 21.45 | +18 56 28.4 | 0.092 | 94.05 | −38.60 | 1.12 |
| 679 | A2572 | 1 23 18 39.28 | +18 41 21.3 | 0.080 | 94.26 | −38.96 | 1.06 |
| 680 | A2572 | 2 23 18 29.45 | +18 37 15.8 | 0.092 | 94.17 | −39.00 | 0.93 |
| 681 | A2589 | A 23 23 57.48 | +16 46 36.7 | 0.029 | 94.62 | −41.24 | 1.73 N7647 |
| 682 | A2589 | B 23 23 59.18 | +16 48 39.4 | 0.029 | 94.65 | −41.21 | 1.29 |
| 683 | A2589 | C 23 23 48.23 | +16 46 07.0 | 0.029 | 94.57 | −41.23 | 1.21 |
| GIN     | Name    | R.A. (J2000) | Dec.   | $A_R$  | $l$    | $b$    | log $D_W$ | Comments |
|---------|---------|--------------|--------|--------|--------|--------|-----------|----------|
| 684 A2589 D | 23 23 54.47 | +16 40 50.2 | 0.029 | 94.55  | −41.32 | 1.16  |           |          |
| 685 A2589 E | 23 23 51.43 | +16 38 41.6 | 0.029 | 94.51  | −41.34 | 1.35  |           |          |
| 686 A2589 F | 23 23 50.89 | +16 53 48.3 | 0.029 | 94.66  | −41.12 | 1.21  |           |          |
| 687 A2589 G | 23 23 47.68 | +16 51 07.9 | 0.029 | 94.62  | −41.15 | 1.05  |           |          |
| 688 A2589 H | 23 23 58.99 | +16 52 29.1 | 0.029 | 94.68  | −41.15 | 0.90  |           |          |
| 689 A2589 I | 23 23 19.65 | +16 43 53.7 | 0.029 | 94.70  | −41.32 | 1.05  |           |          |
| 690 A2589 J | 23 23 10.61 | +16 54 45.5 | 0.041 | 94.48  | −41.03 | 1.05  |           |          |
| 691 A2589 K | 23 23 20.20 | +14 38 48.8 | 0.065 | 93.45  | −43.18 | 1.68  | N7649     |          |
| 692 A2589 L | 23 23 12.24 | +14 37 06.7 | 0.065 | 93.39  | −43.19 | 1.22  |           |          |
| 693 A2589 M | 23 23 32.21 | +14 38 20.2 | 0.065 | 93.50  | −43.21 | 1.16  |           |          |
| 694 A2593-N A | 23 23 37.33 | +14 38 31.8 | 0.065 | 93.53  | −43.22 | 1.22  |           |          |
| 695 A2593-N B | 23 24 41.30 | +14 37 58.1 | 0.065 | 93.54  | −43.23 | 1.46  | I1487     |          |
| 696 A2593-N C | 23 24 23.10 | +14 39 29.9 | 0.065 | 93.47  | −43.18 | 1.08  |           |          |
| 697 A2593-N D | 23 24 35.89 | +14 40 01.2 | 0.065 | 93.55  | −43.20 | 1.19  |           |          |
| 698 A2593-N E | 23 24 23.70 | +14 42 23.9 | 0.065 | 93.50  | −43.14 | 1.22  |           |          |
| 699 A2593-N F | 23 24 12.15 | +14 25 25.2 | 0.061 | 93.27  | −43.37 | 1.31  |           |          |
| 700 A2593-N G | 23 24 31.05 | +14 31 05.0 | 0.063 | 93.48  | −43.34 | 1.36  |           |          |
| 701 A2593-N H | 23 24 31.66 | +14 34 24.8 | 0.063 | 93.78  | −43.39 | 1.16  |           |          |
| 702 A2593-N I | 23 24 20.20 | +14 42 23.9 | 0.065 | 93.50  | −43.14 | 1.22  |           |          |
| 703 A2593-N J | 23 24 36.87 | +14 35 00.5 | 0.065 | 93.49  | −43.27 | 1.16  |           |          |
| 704 A2593-N K | 23 24 28.45 | +14 41 40.5 | 0.065 | 93.52  | −43.16 | 0.92  |           |          |
| 705 A2593-N L | 23 24 01.52 | +14 28 52.7 | 0.061 | 93.25  | −43.30 | 1.03  |           |          |
| 706 A2593-N M | 23 24 33.56 | +14 34 35.3 | 0.065 | 93.17  | −43.16 | 1.03  |           |          |
| 707 A2593-N N | 23 24 11.85 | +14 54 03.7 | 0.065 | 93.27  | −42.83 | 1.22  |           |          |
| 708 A2593-N O | 23 24 26.11 | +13 58 18.1 | 0.061 | 93.05  | −43.79 | 1.61  | N7651     |          |
| 709 A2593-S A | 23 24 34.91 | +13 59 46.1 | 0.061 | 93.18  | −43.82 | 1.28  |           |          |
| 710 A2593-S B | 23 24 16.69 | +13 57 58.8 | 0.061 | 93.00  | −43.78 | 1.31  |           |          |
| 711 A2593-S C | 23 24 31.86 | +14 16 18.3 | 0.061 | 93.27  | −43.54 | 1.26  |           |          |
| 712 A2593-S D | 23 23 26.77 | +14 07 52.6 | 0.061 | 92.86  | −43.54 | 1.35  |           |          |
| 713 A2593-S E | 23 24 03.51 | +13 56 51.1 | 0.061 | 92.92  | −43.77 | 1.06  |           |          |
| 714 A2593-S F | 23 23 55.54 | +13 54 36.6 | 0.061 | 92.86  | −43.79 | 1.13  |           |          |
| 715 A2593-S G | 23 28 29.53 | +27 01 53.0 | 0.097 | 103.50 | −33.07 | 1.84  | N7720     |          |
| 716 A2634 A | 23 38 38.90 | +27 00 39.5 | 0.087 | 103.53 | −33.10 | 1.34  | I5342     |          |
| 717 A2634 B | 23 38 29.34 | +26 58 42.1 | 0.087 | 103.48 | −33.12 | 1.31  |           |          |
| 718 A2634 C | 23 38 26.90 | +26 59 04.6 | 0.087 | 103.47 | −33.11 | 1.31  | I5341     |          |
| GIN   | Name | R.A. (J2000) | Dec.  | $A_R$ | $b$  | log $D_W$ | Comments |
|-------|------|--------------|-------|-------|------|-----------|----------|
| 720   | A2634| 23 38 50.79  | +27 16 01.0 | 0.097 | 103.68 | −32.88    | 1.47     |
| 721   | A2634| 23 37 57.93  | +27 15 50.9 | 0.109 | 103.46 | −32.81    | 1.31     |
| 722   | A2634| 23 40 00.95  | +27 07 58.6 | 0.104 | 103.82 | −33.09    | 1.68     | N7728    |
| 723   | A2634| 23 40 46.92  | +26 50 04.3 | 0.082 | 104.00 | −33.43    | 1.55     | A2338+26 |
| 724   | A2634| 23 39 49.50  | +26 22 31.9 | 0.097 | 103.97 | −32.85    | 1.31     |
| 725   | A2634| 23 39 19.15  | +27 33 39.5 | 0.111 | 104.17 | −32.71    | 1.59     |
| 726   | A2634| 23 40 00.95  | +27 15 32.5 | 0.111 | 104.29 | −32.80    | 1.34     |
| 727   | A2634| 23 44 57.45  | +09 11 33.9 | 0.133 | 96.72  | −50.26    | 1.57     |
| 728   | A2634| 23 44 43.91  | +09 12 55.2 | 0.133 | 96.65  | −50.22    | 1.13     |
| 729   | A2634| 23 44 30.50  | +09 15 48.2 | 0.133 | 96.60  | −50.16    | 1.32     |
| 730   | A2634| 23 44 27.78  | +09 16 00.2 | 0.133 | 96.59  | −50.15    | 0.91     |
| 731   | A2634| 23 45 01.73  | +09 02 39.8 | 0.133 | 96.65  | −50.41    | 0.99     |
| 732   | A2634| 23 45 17.34  | +09 16 16.4 | 0.133 | 96.89  | −50.23    | 1.18     |
| 733   | A2634| 23 45 40.65  | +09 14 06.3 | 0.133 | 97.00  | −50.30    | 1.18     |
| 734   | A2634| 23 50 58.70  | +27 08 48.5 | 0.080 | 106.72 | −33.81    | 1.79     | N7768    |
| 735   | A2634| 23 50 52.42  | +27 09 56.9 | 0.080 | 106.69 | −33.79    | 1.36     | N7765    |
| 736   | A2634| 23 51 01.30  | +27 15 26.1 | 0.080 | 106.76 | −33.71    | 1.20     |
| 737   | A2634| 23 51 00.92  | +27 17 18.8 | 0.061 | 106.77 | −33.68    | 1.28     |
| 738   | A2634| 23 51 30.16  | +27 14 08.5 | 0.065 | 106.88 | −33.76    | 1.36     |
| 739   | A2634| 23 50 07.91  | +27 46 10.7 | 0.024 | 53.97  | +88.18    | 1.34     | I3957    |
| 740   | A2634| 23 50 07.90  | +27 47 01.7 | 0.024 | 54.38  | +88.17    | 1.46     | I3959    |
| 741   | A2634| 23 51 31.89  | +28 28 16.0 | 0.026 | 78.18  | +88.10    | 1.63     | N4841A   |
| 742   | A2634| 23 51 33.88  | +28 28 54.0 | 0.026 | 78.26  | +88.08    | 1.46     | N4841B   |
| 743   | A2634| 23 50 03.79  | +28 07 25.6 | 0.031 | 63.89  | +88.04    | 1.62     | N4860    |
| 744   | A2634| 23 51 12.82  | +27 58 37.8 | 0.031 | 59.60  | +88.08    | 1.52     | N4864    |
| 745   | A2634| 23 51 14.92  | +27 58 13.8 | 0.031 | 59.33  | +88.08    | 1.44     | N4867    |
| 746   | A2634| 23 51 22.82  | +27 54 44.0 | 0.031 | 57.39  | +88.07    | 1.52     | N4869    |
| 747   | A2634| 23 51 24.27  | +27 59 47.9 | 0.014 | 48.81  | +88.62    | 1.67     | N4839    |
| 748   | A2634| 23 51 04.45  | +27 37 28.8 | 0.024 | 45.59  | +87.62    | 1.55     | N4926    |
| 749   | A2634| 23 50 30.84  | +27 47 35.1 | 0.024 | 53.76  | +88.09    | 1.19     |
| 750   | A2634| 23 50 30.81  | +27 53 03.1 | 0.024 | 56.28  | +88.06    | 1.42     | I3973    |
| 751   | A2634| 23 50 22.82  | +27 53 49.0 | 0.031 | 56.97  | +88.08    | 1.30     |
Table 3—Continued

| GIN  | Name       | R.A. (J2000) | Dec.    | $A_R$ | $l$   | $b$   | log $D_W$ | Comments |
|------|------------|--------------|---------|-------|-------|-------|-----------|----------|
| 763  | COMA 107   | 12 59 20.83  | +27 53 15.0 | 0.031 | 56.79 | +88.09 | 1.40      |          |
| 764  | COMA 118   | 13 00 39.62  | +27 55 21.4 | 0.029 | 54.69 | +87.81 | 1.49 N4906 |
| 765  | COMA 129   | 12 59 34.77  | +27 57 38.2 | 0.029 | 58.16 | +88.01 | 1.96 N4874 |
| 766  | COMA 134   | 12 59 03.85  | +27 57 32.6 | 0.031 | 59.54 | +88.12 | 1.19      |          |
| 767  | COMA 135   | 12 58 59.86  | +27 58 02.6 | 0.031 | 59.97 | +88.13 | 1.12      |          |
| 768  | COMA 136   | 12 58 55.87  | +27 58 01.5 | 0.031 | 60.16 | +88.14 | 1.16      |          |
| 769  | COMA 148   | 13 00 07.68  | +27 58 32.8 | 0.029 | 57.18 | +87.90 | 2.08 N4889 |
| 770  | COMA 160   | 12 59 05.83  | +27 59 47.7 | 0.031 | 60.46 | +88.09 | 1.57 I3955 |
| 771  | COMA 172   | 13 00 13.64  | +28 02 20.9 | 0.029 | 58.50 | +87.85 | 1.36 I4021 |
| 772  | COMA 217   | 12 59 57.60  | +28 14 50.6 | 0.034 | 64.10 | +87.81 | 1.60 N4881 |
| 773  | N3379      | 10 47 49.50  | +12 34 56.9 | 0.029 | 233.49| +57.63 |          |          |
| 774  | N 936      | 02 27 37.67  | −01 09 17.2 | 0.029 | 168.57| −55.26 |          |          |
| 775  | N3115      | 10 05 13.42  | −07 43 06.5 | 0.058 | 247.78| +36.78 |          |          |
| 776  | N3377      | 10 47 42.05  | +13 59 09.1 | 0.036 | 231.18| +58.32 |          |          |
| 777  | N4365      | 12 24 27.87  | +07 19 04.9 | 0.000 | 283.80| +69.18 |          |          |
| 778  | N4374      | 12 25 03.15  | +12 53 11.2 | 0.074 | 278.20| +74.48 |          |          |
| 779  | N4382      | 12 25 24.23  | +18 11 23.4 | 0.017 | 267.72| +79.24 |          |          |
| 780  | N4406      | 12 26 11.07  | +12 56 47.7 | 0.067 | 279.07| +74.64 |          |          |
| 781  | N4472      | 12 29 46.57  | +08 00 07.5 | 0.000 | 286.92| +70.20 |          |          |
| 782  | N4473      | 12 29 47.75  | +13 25 49.6 | 0.036 | 281.60| +75.40 |          |          |
| 783  | N4486B     | 12 30 31.85  | +12 29 26.0 | 0.053 | 283.41| +74.56 |          |          |
| 784  | N4494      | 12 31 23.50  | +25 46 32.5 | 0.031 | 228.58| +85.31 |          |          |
| 785  | COMA 130   | 12 59 33.78  | +27 56 50.2 | 0.029 | 57.85 | +88.02 | 1.49 N4872 |
| 786  | COMA 153   | 12 59 43.73  | +27 59 47.4 | 0.029 | 58.70 | +87.97 | 1.30      |          |
| 787  | COMA 124   | 12 59 43.77  | +27 54 44.4 | 0.029 | 56.51 | +88.00 | 1.49 N4876 |
| 788  | COMA 125   | 12 59 42.76  | +27 55 37.4 | 0.029 | 56.94 | +88.00 | 1.27      |          |
| 789  | COMA 143   | 13 00 52.56  | +28 00 21.7 | 0.029 | 56.24 | +87.73 | 1.60 I4051 |
| 790  | COMA 168   | 13 00 48.54  | +28 05 21.6 | 0.034 | 58.31 | +87.71 | 1.51 I4045 |
| 791  | COMA 151   | 13 00 03.69  | +27 59 08.7 | 0.029 | 57.59 | +87.91 | 1.56 N4886 |
| 792  | COMA 150   | 13 00 06.67  | +28 00 08.8 | 0.029 | 57.89 | +87.89 | 1.36 I4011 |
| 793  | COMA 174   | 13 00 07.64  | +28 04 38.8 | 0.029 | 59.68 | +87.85 | 1.39 I4012 |
| 794  | N 584      | 01 31 21.01  | −06 52 16.1 | 0.065 | 149.81| −67.64 |          |          |
| 795  | N 596      | 01 32 52.08  | −07 01 54.6 | 0.062 | 150.89| −67.63 |          |          |
| 796  | N4697      | 12 48 35.71  | −05 48 02.9 | 0.022 | 301.63| +57.06 |          |          |
| 797  | N5846      | 15 06 28.73  | +01 36 15.6 | 0.084 | 0.42 | +48.80 |          |          |
| 798  | N6181      | 16 32 21.00  | +19 49 35.6 | 0.137 | 37.17 | +39.21 |          |          |
Table 3—Continued

| GIN | Name | R.A. (J2000) | Dec.  | \( A_R \) | \( l \) | \( b \) | \( \log D_W \) | Comments |
|-----|------|-------------|-------|----------|------|-----|-------------|----------|
| 799 | N7626 | 23 20 42.29 | +08 13 02.5 | 0.096 | 87.86 | −48.38 | ⋯         |
| 800 | N4486 | 12 30 49.24 | +12 23 32.1 | 0.053 | 283.77 | +74.49 | ⋯         |
| 801 | N 224 | 00 42 44.23 | +41 16 07.7 | 0.187 | 121.17 | −21.57 | ⋯         |
| CID | R.A. (J2000) Dec. | $\Delta \alpha'$ | $\Delta \delta'$ | $N_W$ | log $D_W^0$ | $\delta_W$ |
|-----|------------------|-----------------|-----------------|------|-------------|---------|
| 1   | 00 39.4 +06 54   | 83.22           | 92.15           | 28   | 1.3         | 0.20    |
| 2   | 00 42.1 −09 32   | 67.41           | 53.12           | 26   | 1.3         | 0.24    |
| 3   | 00 56.4 −01 05   | 58.66           | 81.38           | 49   | 1.4         | 0.24    |
| 4   | 00 59.9 +27 00   | 99.38           | 51.42           | 29   | 1.2         | 0.23    |
| 5   | 00 58.9 +12 56   | 48.16           | 38.85           | 20   | 1.2         | 0.20    |
| 6   | 01 08.6 +02 11   | 62.01           | 44.76           | 23   | 1.1         | 0.20    |
| 7   | 01 12.3 +15 32   | 81.74           | 47.44           | 48   | 1.4         | 0.24$^a$|
| 7   | 01 12.2 +16 20   | 68.86           | 45.10           |      |             | $\cdots$|
| 8   | 01 14.8 +00 08   | 79.65           | 65.17           | 27   | 1.2         | 0.22    |
| 9   | 01 24.8 +01 47   | 65.19           | 44.52           | 21   | 1.4         | 0.20    |
| 10  | 01 20.6 −13 47   | 41.92           | 30.58           | 34   | 1.2         | 0.36    |
| 11  | 01 25.0 +08 44   | 50.42           | 47.47           | 25   | 1.1         | 0.20    |
| 12  | 01 37.5 −09 06   | 58.91           | 50.16           | 19   | 1.2         | 0.26    |
| 13  | 01 50.7 +33 15   | 64.38           | 50.55           | 16   | 1.2         | 0.21    |
| 14  | 01 53.9 +36 11   | 126.25          | 113.05          | 31   | 1.6         | 0.21    |
| 15  | 02 25.1 +37 06   | 41.03           | 38.28           | 9    | 1.1         | 0.20    |
| 16  | 02 29.7 +23 04   | 65.53           | 34.73           | 23   | 1.2         | 0.24    |
| 17  | 02 45.9 +36 59   | 56.48           | 51.29           | 24   | 1.1         | 0.20    |
| 18  | 02 50.6 +47 00   | 64.13           | 41.96           | 20   | 1.3         | 0.27    |
| 19  | 02 55.5 −14 12   | 58.14           | 45.45           | 8    | 1.1         | 0.20    |
| 20  | 02 57.3 +16 03   | 56.26           | 39.74           | 22   | 1.3         | 0.24    |
| 21  | 02 58.0 +06 10   | 88.06           | 58.27           | 25   | 1.3         | 0.20    |
| 22  | 03 08.5 −04 09   | 64.73           | 51.10           | 12   | 1.2         | 0.20    |
| 23  | 03 08.4 −23 35   | 36.55           | 39.63           | 33   | 1.2         | 0.42    |
| 24  | 04 33.9 −13 13   | 75.26           | 54.96           | 27   | 1.4         | 0.24    |
| 25  | 04 45.6 −15 57   | 75.49           | 70.34           | 32   | 1.4         | 0.24    |
| 26  | 04 52.8 +01 18   | 32.99           | 27.32           | 5    | 1.3         | 0.20    |
| 27  | 04 58.8 −00 23   | 45.41           | 41.32           | 12   | 1.1         | 0.20    |
| 28  | 04 55.0 −18 04   | 79.41           | 69.31           | 23   | 1.3         | 0.20    |
| 29  | 04 49.8 −17 05   | 89.69           | 68.17           | 20   | 1.3         | 0.20    |
| 30  | 04 60.4 −18 32   | 48.42           | 51.33           | 20   | 1.2         | 0.21    |
| 31  | 05 03.5 −20 11   | 44.98           | 42.57           | 8    | 1.1         | 0.20    |
| 32  | 05 04.8 −19 15   | 50.04           | 41.59           | 15   | 1.1         | 0.20    |
| 33  | 05 03.2 −23 57   | 98.88           | 72.28           | 44   | 1.3         | 0.24    |
| 34  | 05 01.6 −22 56   | 72.36           | 76.31           | 25   | 1.4         | 0.36    |
| 35  | 05 47.9 −25 27   | 80.87           | 58.78           | 39   | 1.3         | 0.22$^b$|
Table 4—Continued

| CID | R.A. (J2000) | Dec. | $\Delta \alpha'$ | $\Delta \delta'$ | $N_W$ | $\log D_W^0$ | $\delta_W$ |
|-----|-------------|------|------------------|------------------|-------|--------------|-----------|
| 36  | 05 43.5     | -25 55 | 75.53            | 53.15            | 60    | 1.3          | 0.20c     |
| 37  | 13 05.7     | +53 43 | 58.00            | 45.96            | 21    | 1.3          | 0.27      |
| 38  | 13 43.3     | +29 58 | 67.89            | 51.79            | 21    | 1.2          | 0.24      |
| 39  | 13 53.3     | +25 00 | 93.08            | 49.85            | 32    | 1.2          | 0.21      |
| 40  | 14 08.3     | -09 02 | 57.22            | 40.96            | 23    | 1.2          | 0.24      |
| 41  | 14 47.3     | +13 40 | 57.67            | 41.53            | 23    | 1.1          | 0.24      |
| 42  | 14 47.7     | +11 23 | 66.61            | 52.49            | 30    | 1.3          | 0.20      |
| 43  | 14 51.8     | +16 45 | 76.32            | 55.66            | 30    | 1.4          | 0.29      |
| 44  | 14 53.2     | +18 28 | 85.88            | 54.83            | 43    | 1.3          | 0.22      |
| 45  | 15 19.2     | +04 27 | 83.60            | 50.03            | 16    | 1.1          | 0.20      |
| 46  | 15 10.9     | +04 29 | 118.93           | 50.22            | 50    | 1.3          | 0.24      |
| 47  | 15 21.9     | +08 08 | 47.57            | 60.07            | 10    | 1.5          | 0.24      |
| 48  | 15 11.7     | +07 35 | 80.74            | 67.48            | 27    | 1.2          | 0.24      |
| 49  | 15 17.1     | +07 02 | 64.95            | 47.19            | 33    | 1.4          | 0.24      |
| 50  | 15 23.7     | +08 57 | 92.42            | 75.62            | 22    | 1.3          | 0.24      |
| 51  | 15 39.1     | +21 44 | 56.20            | 48.24            | 24    | 0.9          | 0.24      |
| 52  | 15 54.6     | +41 34 | 42.35            | 32.71            | 25    | 1.1          | 0.20      |
| 53  | 16 01.9     | +16 07 | 59.01            | 84.49            | 32    | 1.5          | 0.24      |
| 54  | 15 57.3     | +22 30 | 36.49            | 31.14            | 8     | 1.1          | 0.20      |
| 55  | 16 11.6     | +23 59 | 41.84            | 37.66            | 12    | 1.2          | 0.24      |
| 56  | 16 03.3     | +25 28 | 31.27            | 30.00            | 23    | 1.0          | 0.22      |
| 57  | 16 05.1     | +23 58 | 40.78            | 38.97            | 31    | 1.3          | 0.24      |
| 58  | 16 05.9     | +18 09 | 69.42            | 68.28            | 49    | 1.4          | 0.24      |
| 59  | 16 06.1     | +16 08 | 58.37            | 83.84            | 65    | 1.3          | 0.34      |
| 60  | 15 57.0     | +18 08 | 105.42           | 71.07            | 38    | 1.3          | 0.20      |
| 61  | 15 57.9     | +16 07 | 52.24            | 84.17            | 16    | 1.4          | 0.20      |
| 62  | 16 13.1     | +30 58 | 57.71            | 49.03            | 27    | 1.1          | 0.20      |
| 63  | 16 12.8     | +29 32 | 60.51            | 46.34            | 42    | 1.2          | 0.24      |
| 64  | 16 17.6     | +35 01 | 78.37            | 69.19            | 26    | 1.5          | 0.23      |
| 65  | 16 28.2     | +40 55 | 117.87           | 72.36            | 27    | 1.3          | 0.42      |
| 66  | 16 28.5     | +39 29 | 125.14           | 61.31            | 54    | 1.3          | 0.28      |
| 67  | 16 34.0     | +50 25 | 76.86            | 57.42            | 12    | 1.3          | 0.24      |
| 68  | 16 50.8     | +81 43 | 57.62            | 45.47            | 12    | 1.0          | 0.24      |
| 69  | 17 01.2     | +28 03 | 46.12            | 59.88            | 20    | 1.2          | 0.24      |
| 70  | 16 57.6     | +27 54 | 45.15            | 38.53            | 15    | 1.3          | 0.24      |
| 71  | 17 15.4     | +57 28 | 50.62            | 52.49            | 16    | 1.2          | 0.22      |
| CID | R.A. (J2000) | Dec. | $\Delta \alpha'$ | $\Delta \delta'$ | $N_W$ | $\log D_{W}^{0}$ | $\delta_W$ |
|-----|--------------|------|----------------|----------------|-------|----------------|---------|
| 72  | 17 33.1      | +43 50 | 42.18         | 41.96         | 19    | 1.3            | 0.24    |
| 73  | 17 55.5      | +62 41 | 41.03         | 38.28         | 17    | 1.2            | 0.24    |
| 74  | 18 01.5      | +42 44 | 70.69         | 42.88         | 14    | 1.3            | 0.24    |
| 75  | 18 36.4      | +51 35 | 49.78         | 40.37         | 11    | 1.2            | 0.30    |
| 76  | 21 41.2      | −16 43 | 64.49         | 46.69         | 14    | 1.2            | 0.20    |
| 77  | 22 50.1      | +11 41 | 43.67         | 54.04         | 16    | 1.1            | 0.20    |
| 78  | 23 18.1      | +18 48 | 35.84         | 31.62         | 24    | 1.3            | 0.24    |
| 79  | 23 23.9      | +16 49 | 31.17         | 26.64         | 23    | 1.1            | 0.20    |
| 80  | 23 24.8      | +14 42 | 45.98         | 38.09         | 34    | 1.1            | 0.24    |
| 81  | 23 24.7      | +14 04 | 43.14         | 31.79         | 18    | 1.2            | 0.24    |
| 82  | 23 39.2      | +27 10 | 60.11         | 50.49         | 30    | 1.3            | 0.20    |
| 83  | 23 45.0      | +09 14 | 33.11         | 29.12         | 16    | 1.1            | 0.24    |
| 84  | 23 51.4      | +27 14 | 39.43         | 29.23         | 18    | 1.2            | 0.24    |
| 90  | 12 60.0      | +28 01 | 36.19         | 51.03         | 74    | 1.5            | 0.55    |

\[^a^]\text{CID}=7: Two adjacent fields; the smaller lies N of the larger and runs nearly along the E edge.

\[^b^]\text{CID}=35: Overlap with CID=36 in SW corner.

\[^c^]\text{CID}=36: Overlap with CID=35 in NE corner. The region is 19.02 arcmin EW and 28.53 arcmin NS centered at (05 43.6, −25 45), and was excluded from this field.
Fig. 1.— The distribution of differences between our median redshifts for each Abell cluster in our sample and the cluster redshifts given by NED. The curve is a Gaussian with mean and standard deviation determined from the data.

Mean = -49 km/s
S.D.  = 312 km/s
Fig. 2.— The EFAR cluster sample compared to the overall distribution of Abell clusters. The boundaries of the HCB and PPC regions on the sky are indicated. Large circles are Abell clusters (filled if they are in the EFAR sample); small dots are non-Abell clusters in the EFAR sample. The three panels show the cluster distribution (in an Aitoff projection of Galactic coordinates) for three redshift ranges: (a) $cz=0$–6000 km s$^{-1}$, (b) $cz=6000$–15000 km s$^{-1}$, (c) $cz=15000$–20000 km s$^{-1}$. The scale in h$^{-1}$ Mpc at the upper end of each redshift range is indicated by the bar at left. Also indicated are the direction of the Local Group motion with respect to the CMB (⊙) and with respect to the Lauer-Postman dipole for the Abell clusters within 15000 km s$^{-1}$ (⊕).
Fig. 3.— The EFAR cluster sample in relation to the surrounding large-scale structures. Large dots are Abell clusters and small dots are non-Abell clusters. The ellipses are the superclusters identified by Einasto et al. (1994), with the relevant ones named. The clusters and superclusters are shown projected onto the supergalactic SGY–SGZ plane, with the four panels corresponding to four slices in SGX: (a) \( \text{SGX} > 50 \, \text{h}^{-1} \, \text{Mpc} \), (b) \( \text{SGX} = 0–50 \, \text{h}^{-1} \, \text{Mpc} \), (c) \( \text{SGX} = -50–0 \, \text{h}^{-1} \, \text{Mpc} \), and (d) \( \text{SGX} < -50 \, \text{h}^{-1} \, \text{Mpc} \). The size of each supercluster given by Einasto et al. (1994) is represented by the axes of the ellipses and thus should roughly correspond to the extent of supercluster.
Fig. 4.— The distribution of the number of galaxies selected in each program cluster.
Fig. 5.— The relation between log $D_W$ (diameters measured by hand) and log $D_R$ (photometric diameter at fixed surface brightness) for the whole galaxy sample, without allowing for offsets between clusters due to differences in extinction etc.
Fig. 6.— Examples of the selection functions for some individual galaxy clusters. The dots and histograms show the selection function for elliptical galaxies measured for the cluster whose name is in the upper left corner of each panel. The dashed curves give the fit to these data using equation (3) with the cutoff and slope parameters $D^0_W$ and $\delta_W$. 
Fig. 7.— (a) The distributions of $\log D_w - \log D_w^0$ for the complete set of objects (E, S0, and cD galaxies) with $D_w$ diameter measurements from the POSS (striped histogram) and for subset of the EFAR program galaxies only (hashed histogram). (b) The corresponding distributions of spirals rejected from the two samples.
Fig. 8.— The combined selection function for the whole sample, with each cluster's selection function shifted to the mean log $D_{W}^{0}$. The solid curve has $\langle \log D_{W}^{0} \rangle = 1.2$ and $\langle \delta_{W} \rangle = 0.24$, the mean parameters averaged over all the clusters. The dashed curve has $\log D_{W}^{0} = 1.30$ and $\delta_{W} = 0.30$, and is the fit to the combined selection function.
Fig. 9.— The relation between cluster redshift and the cutoff diameter $D^0_w$ in units of kiloparsecs (for $H_0=50\text{ km s}^{-1}\text{ Mpc}^{-1}$), showing that the selection criterion is effectively a constant cut in angular diameter and thus corresponds to a metric diameter that increases with redshift.