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Interferometer phase calibration sources – II. The region $0^\circ \leq \delta_{\mathbf{B1950}} \leq +20^\circ$

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ABSTRACT

We present a catalogue of 781 compact radio sources in the declination range $0^\circ \leq \delta_{\rm B1950} \leq +20^\circ$ whose positions have been measured to an rms accuracy of about 14 mas with the Very Large Array (VLA). These sources are primarily intended for use as phase calibration sources for the Jodrell Bank MERLIN. However, they will also be suitable as phase calibrators for the VLA and can be considered as candidate phase calibrators for very long-baseline interferometry (VLBI) networks.

Key words: instrumentation: interferometers – techniques: interferometric – catalogues – surveys – astrometry – radio continuum: general.

1 INTRODUCTION

Phase-referenced observations with radio interferometers have two key advantages over pure self-calibration techniques (Patnaik et al. 1992a, hereafter Paper I). First, weaker 'target' sources can be observed, since the effective coherence time is increased from minutes to hours. This greatly increases the number of targets available to the interferometer. Secondly, the position of the target source can be measured accurately relative to the phase-reference source. Having such accurate positions is of increasing importance in this VLBA–*HST*–*Hipparcos* era. Clearly, an interferometer cannot routinely be used in a phase-referenced mode – and so offer these key advantages – unless it has access to a catalogue of compact radio continuum sources suitable for use as phase calibration sources. This paper presents the results of our continuing efforts (collectively described as JVAS – the Jodrell Bank–VLA Astrometric Survey) to build such catalogues, with particular emphasis on the phase-referencing requirements of MERLIN, but also useful for the VLA, VLBA and other interferometer networks. As discussed in Paper I, a MERLIN phase calibrator should: (1) lie within $\sim 3^\circ$ of the target source; (2) produce $\geq$50 mJy correlated flux density on all baselines at all times and be a point or be point-dominated; and (3) have its position known to $\leq$0.02 arcsec.

The present paper describes observations with the NRAO VLA (Thompson et al. 1980; Napier, Thompson & Ekers 1983) which have enabled us to produce a suitable grid of reference sources for MERLIN in the region $0^\circ \leq \delta_{\rm B1950} \leq +20^\circ$. This grid extends to more southerly declinations the grid published in Paper I in the region $+35^\circ \leq \delta_{\rm B1950} \leq +75^\circ$. A grid covering $+20^\circ \leq \delta_{\rm B1950} \leq +35^\circ$ and $+75^\circ \leq \delta_{\rm B1950} \leq +90^\circ$ will be published separately (Wilkinson et al., in preparation). In addition to its astrometric goals, JVAS is proving an effective way of finding gravitationally lensed systems (Patnaik et al. 1992b, 1993).

2 INITIAL TARGET LIST

As in Paper I, we assumed that a source with a flat radio spectrum has structure dominated by a milliarcsec core. We selected sources from the NRAO Green Bank Survey at 5 GHz (Condon, Broderick & Seielstad 1989) using our own source lists extracted from images kindly supplied by Dr J. J. Condon. Then, using images from the NRAO Green Bank Survey at 1.4 GHz (Condon & Broderick 1985, 1986), we calculated the two-point spectral index from 1.4 to 5 GHz, and selected all sources with spectral indices larger than $\alpha = -0.5$ (α is defined as flux density $S \propto \nu^{\alpha}$), i.e., with flatter spectra. We note that on average the flux densities we derived from the Condon et al. images are high by $\sim$ 10 per cent compared with those given by Gregory & Condon (1991). Our $\alpha = -0.5$ corresponds to their $\alpha = -0.59$. The same is true for sources in Paper I. Where possible, the sources in the current paper were cross-checked against lower frequency catalogues, most notably the Texas Survey at 0.365 GHz (Douglas et al. 1996), to make sure that they had genuinely flat spectra. The required surface density of sources was achieved by setting a flux density limit of 200 mJy at 5 GHz. Positions at 5 GHz from the Green Bank survey are typically accurate to about 20 arcsec rms. For many sources we obtained $\sim$ arcsec accuracy positions from the Texas Survey. However, because a small fraction of the Texas sources suffer from $\sim$ arcmin 'lobe shifts', their positions were compared with those given by Gregory & Condon (1991) and only used if they agreed to within the quoted errors of the latter. Confusion from galactic emission, particularly in the NRAO 1.4-GHz Survey, required us to exclude sources with $|b| < 2^\circ.5$. Thus our initial list contained 933 sources

Table 1. VLBI phase calibrators used in the VLA survey.

Name	Name	Name	Name
B0007+106	B0539−057	B1116+128	B1821+107
B0106+013	B0657+172	B1148−001	B1923+210
B0119+115	B0723−008	B1219+285	B1947+079
B0119+041	B0735+178	B1222+037	B2029+121
B0146+056	B0736+017	B1252+119	B2121+053
B0149+218	B0742+103	B1354+195	B2136+141
B0202+149	B0754+100	B1442+101	B2144+092
B0235+164	B0808+019	B1502+106	B2145+067
B0256+075	B0823+033	B1532+016	B2150+173
B0319+121	B0851+202	B1546+027	B2251+158
B0336−019	B0906+015	B1555+001	B2254+074
B0400+258	B0912+029	B1606+106	B2318+049
B0406+121	B0953+255	B1655+077	B2328+107
B0420−014	B1004+141	B1717+178	
B0457+024	B1055+018	B1743+173	
B0528+134	B1111+149	B1749+096	

satisfying the following criteria:

(i) $S_{5\,\mathrm{GHz}} \geq 200$ mJy;
(ii) $\alpha \geq -0.5$;
(iii) $|b| \geq 2^\circ.5$; and
(iv) $0^\circ \leq \delta_{\mathrm{B1950}} \leq +20^\circ$.

3 OBSERVATIONS AND DATA REDUCTION

3.1 Observing strategy

As emphasized in Paper I, the VLA is the instrument of choice to measure accurate positions for a large number of sources in a relatively short time. A single 'snapshot' observation per target can provide positions with adequate accuracy, and can also provide enough structural information to enable us to reject some sources as unsuitable calibrators. Our observations were made during one 60.5-h session during 1992 October 16–18, a time of year when the VLA phase stability is normally good (Sramek 1990). We again selected 8.4 GHz as the observing frequency and the 'A' configuration for the reasons given in Paper I. Only 22 antennas were available, reduced from the normal 27 because some were being used for a simultaneous yet independent observing project. We restricted the VLA observing bandwidth to 25 MHz to avoid excessive bandwidth smearing of those sources whose initial positions were derived from the Green Bank surveys and were thus only accurate to ∼20 arcsec rms.

The VLA phases were calibrated with observations of VLBI sources whose positions had been measured to ∼1 mas accuracy (Ma et al. 1990; Russell et al. 1991; Dr J. L. Russell, private communication) These VLBI sources are adequately spaced for phase-reference observations with the VLA; by this, we mean that the vast majority of target-to-calibrator 'throws' were no more than about 10°, and only rarely were throws between about 10° and 15° required. The list of VLBI phase calibrators used in our observations is given in Table 1. The assumed positions of the calibrators either appear in Table 2 described below (if they lie within the declination strip $0^\circ \leq \delta_{\mathrm{B1950}} \leq +20^\circ$), or can be found in the VLBI references given above.

All sources, whether targets or calibrators, were scheduled in 2-min scans or snapshots. Only one snapshot per source was taken; allowing for telescope drive and electronics settling time, this gives about 1 to 1.5 min of integration time on each source. Observations of B1328+307 = J1331+3030 (3C 286) were used to bring the calibrated amplitudes to within 3 per cent of the Baars et al. (1977) scale. Information on all Stokes parameters was obtained but only the Stokes *I* results are presented here. Observations of the target sources B0935+181, B0937+117, B1124+067, B1125+061, B1126+169, B1126+101, B1127+105, B1139+160 and B1252+092 were missed due to software problems at the VLA. In addition, the phase information on B0119+041 was corrupted; for completeness the Ma et al. (1990) VLBI position is included in our table of results.

To minimize the phase errors arising from temporal changes in the atmospheric phase paths we observed the same VLBI calibration source before and after pairs of target sources, meaning that the time between repeat observations of the calibrator was about 6 min. All observations were made within ±2 h of meridian transit. We used J2000.0 coordinates throughout the observations and analyses. To establish the reliability and accuracy of the positions obtained, we made a series of test and repeat measurements, as follows. First, we made observations of 31 sources with known VLBI positions treating them identically to other targets. Secondly, we observed a group of sources at about 16 h RA on two separate days to test the internal consistency of our results and to also study how the position accuracy obtained in our observations depends on factors like the throw to the calibration source.

3.2 Data reduction

The data were reduced in the way described in Paper I. Briefly, the NRAO AIPS software package was used throughout. We used the antenna positions supplied by VLA operations staff and made no additional corrections to the phases. An automatic procedure was employed, which first located the target source by making a large image with a field of view of 82 arcsec from which we obtained the source position by fitting a quadratic to the brightest component using the AIPS program MAXFIT. Then, to determine the source structure, two iterations of phase-only self-calibration were performed. We measured flux densities and rms noise levels from the final CLEANed image. A typical angular resolution was ∼ 200 mas FWHM. We stress that our quoted positions in Table 2 were obtained from the data before self-calibration.

The automatic imaging procedure did not always produce the desired results, usually when the position used for pointing the VLA was > 40 arcsec in RA or Dec. from the true position. For this reason the output of the procedure for all sources was carefully examined by eye and, if the map quality was poor or if any inconsistency between the resulting map and the visibility data was noted, the map was remade manually. For the 35 sources where the VLA pointing position turned out to be > 40 arcsec from the derived position we cannot be sure that they are good calibrators, because source resolution is difficult to distinguish from delay smearing. These sources have been excluded from the list of calibration sources in Table 2.

4 RESULTS AND DISCUSSION

The positions and the flux densities of the 781 (mostly) phase calibration sources found from our VLA observations are given in Table 2. Included in Table 2 for completeness are sources with VLBI astrometric positions we used as phase calibration sources. Table 3 gives the names and parameters of a further 58 sources that do *not* meet our criteria for calibrators because they are too weak

Table 2. Sources suitable as phase calibrators.

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B0000+183	J0003+1837	00 03 01.1613	18 37 59.039	68	73	
B0002+051	J0005+0524	00 05 20.2163	05 24 10.798	235	224	
B0003+123	J0006+1235	00 06 23.0574	12 35 53.103	161	156	
B0004+171	J0006+1728	00 06 47.3631	17 28 13.792	95	94	
B0005+114	J0008+1144	00 08 00.8394	11 44 00.784	150	142	
B0006+061	J0009+0638	00 09 03.9327	06 28 21.238	202	184	
B0007+106	J0010+1058	00 10 31.0066	10 58 29.509	44	45	vlbi
B0007+171	J0010+1724	00 10 33.9920	17 24 18.791	884	845	
B0007+177	J0009+1803	00 09 34.8618	18 03 43.036	66	66	
B0009+081	J0011+0823	00 11 35.2702	08 23 55.586	365	311	image
B0011+188	J0013+1910	00 13 56.3781	19 10 41.946	388	372	
B0019+058	J0022+0608	00 22 32.4413	06 08 04.259	322	308	check
B0024+092	J0027+0929	00 27 05.7947	09 29 57.752	131	121	
B0025+197	J0028+2000	00 28 29.8198	20 00 26.766	213	206	
B0026+048	J0029+0509	00 29 03.5922	05 09 34.860	234	232	
B0026+076	J0028+0757	00 28 45.9911	07 57 59.297	145	140	
B0027+056	J0029+0554	00 29 45.8964	05 54 40.695	381	366	weak sec 2.8″ pa-110°
B0033+143	J0035+1438	00 35 44.0895	14 38 01.979	184	171	
B0034+108	J0037+1109	00 37 26.0418	11 09 50.910	232	228	
B0034+142	J0036+1434	00 36 35.1101	14 34 03.629	193	181	
B0035+161	J0037+1625	00 37 48.9310	16 25 17.369	80	78	
B0037+011	J0040+0125	00 40 13.5252	01 25 46.303	185	178	
B0037+139	J0039+1411	00 39 39.6197	14 11 57.558	386	363	
B0038+133	J0041+1339	00 41 17.2116	13 39 27.521	118	105	
B0040+098	J0042+1009	00 42 44.3715	10 09 49.187	270	261	
B0046+063	J0048+0640	00 48 58.7225	06 40 06.449	106	100	
B0047+023	J0049+0237	00 49 43.2363	02 37 03.785	525	521	
B0049+162	J0052+1633	00 52 36.1655	16 33 00.452	115	114	
B0054+078	J0057+0805	00 57 18.7671	08 05 36.923	92	99	
B0054+161	J0056+1625	00 56 55.2949	16 25 13.340	602	590	
B0055+060	J0058+0620	00 58 33.8058	06 20 06.084	192	184	
B0059+163	J0101+1639	01 01 57.7197	16 39 40.956	204	207	
B0100+151	J0103+1526	01 03 26.0022	15 26 24.675	131	122	
B0103+127	J0106+1300	01 06 33.3558	13 00 02.608	254	250	
B0104+195	J0106+1951	01 06 52.6324	19 51 02.572	140	144	
B0105+129	J0107+1312	01 07 45.9616	13 12 05.194	175	174	
B0106+013	J0108+0135	01 08 38.7714	01 35 00.319	2337	2250	vlbi weak sec 4.5″ pa-177°
B0107+069	J0110+0714	01 10 33.0201	07 14 42.258	95	101	
B0111+018	J0114+0208	01 14 07.8553	02 08 09.395	108	101	
B0111+021	J0113+0222	01 13 43.1454	02 22 17.322	639	637	check weak jet pa130°
B0111+131	J0113+1324	01 13 54.5102	13 24 52.478	231	226	
B0114+140	J0117+1418	01 17 25.2035	14 18 12.434	226	218	
B0118+111	J0121+1127	01 21 29.0009	11 27 00.529	206	213	
B0119+115	J0121+1149	01 21 41.5950	11 49 50.415	1585	1565	vlbi weak sec 0.9″ pa10°
B0119+041	J0121+0422	01 21 56.8621	04 22 24.735	1519	1528	vlbi
B0124+017	J0127+0158	01 27 22.8822	01 58 24.534	171	158	weak jet pa-45°
B0127+084	J0130+0842	01 30 27.6358	08 42 46.197	249	262	
B0137+176	J0139+1753	01 39 41.9795	17 53 07.539	260	252	
B0140+120	J0143+1215	01 43 31.0932	12 15 42.947	105	96	
B0145+102	J0148+1028	01 48 28.8756	10 28 21.324	107	100	
B0146+012	J0148+0129	01 48 33.7949	01 29 01.421	79	84	
B0146+056	J0149+0555	01 49 22.3714	05 55 53.571	1233	1223	vlbi
B0147+186	J0149+1857	01 49 49.7189	18 57 20.599	481	451	
B0148+054	J0151+0540	01 51 01.8421	05 40 34.010	108	104	
B0149+082	J0152+0831	01 52 14.9024	08 31 41.823	91	86	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B0151+081	J0154+0823	01 54 02.7707	08 23 51.080	154	155	
B0152+043	J0155+0438	01 55 03.7263	04 38 30.349	256	260	
B0156+128	J0158+1307	01 58 56.2740	13 07 02.737	255	240	
B0156+166	J0158+1655	01 58 57.6774	16 55 47.321	97	92	
B0158+031	J0200+0322	02 00 40.8172	03 22 49.502	120	117	
B0159+034	J0201+0343	02 01 51.5093	03 43 09.256	324	302	
B0201+023	J0203+0235	02 03 54.8119	02 35 55.121	102	107	
B0201+088	J0204+0903	02 04 34.7589	09 03 49.248	435	413	
B0201+113	J0203+1134	02 03 46.6571	11 34 45.394	696	665	check
B0202+145	J0205+1444	02 05 13.1179	14 44 32.380	180	179	
B0202+149	J0204+1514	02 04 50.4143	15 14 11.044	3361	3137	vlbi
B0206+136	J0209+1352	02 09 35.9987	13 52 00.744	473	469	
B0208+106	J0211+1051	02 11 13.1775	10 51 34.790	352	343	
B0209+168	J0211+1707	02 11 48.7801	17 07 22.726	238	209	ext pa135°
B0210+181	J0213+1820	02 13 10.5299	18 20 25.459	362	356	
B0211+055	J0213+0547	02 13 36.1720	05 47 48.715	88	85	sli res
B0211+171	J0214+1722	02 14 44.9138	17 22 49.514	162	162	
B0213+051	J0215+0524	02 15 55.0114	05 24 25.551	186	183	
B0215+015	J0217+0144	02 17 48.9551	01 44 49.687	1176	1172	
B0216+011	J0219+0120	02 19 07.0246	01 20 59.850	580	575	
B0217+166	J0220+1652	02 20 00.7597	16 52 28.585	226	223	
B0221+067	J0224+0659	02 24 28.4276	06 59 23.301	830	791	check
B0222+185	J0225+1846	02 25 04.6697	18 46 48.773	314	311	
B0229+131	J0231+1322	02 31 45.8945	13 22 54.709	1741	1678	check
B0231+045	J0234+0446	02 34 07.1546	04 46 43.052	207	198	
B0234+052	J0237+0526	02 37 14.0372	05 26 49.929	318	310	
B0235+164	J0238+1636	02 38 38.9305	16 36 59.275	5340	5520	vlbi
B0237+040	J0239+0416	02 39 51.2631	04 16 21.403	908	890	
B0237+185	J0240+1848	02 40 42.8169	18 48 00.054	390	390	
B0239+108	J0242+1101	02 42 29.1710	11 01 00.716	1398	1378	check
B0239+175	J0242+1742	02 42 24.2689	17 42 58.846	234	235	
B0240+110	J0243+1115	02 43 17.6591	11 15 41.697	72	75	
B0241+131	J0244+1320	02 44 45.6943	13 20 07.220	150	145	
B0243+181	J0246+1823	02 46 11.8222	18 23 30.086	120	125	
B0245+043	J0248+0434	02 48 14.8277	04 34 40.850	138	129	
B0246+061	J0249+0619	02 49 18.0166	06 19 51.952	614	598	
B0247+076	J0249+0749	02 49 51.9166	07 49 20.362	98	98	
B0249+171	J0252+1718	02 52 07.7188	17 18 42.687	195	194	
B0250+178	J0253+1805	02 53 34.8829	18 05 42.527	154	136	image
B0253+133	J0256+1334	02 56 34.9852	13 34 35.330	369	349	weak sec 1″ pa145°
B0254+185	J0257+1847	02 57 45.6294	18 47 05.369	241	210	
B0256+054	J0258+0541	02 58 50.5267	05 41 08.036	244	246	
B0256+075	J0259+0747	02 59 27.0770	07 47 39.643	466	465	vlbi
B0258+011	J0301+0118	03 01 23.6061	01 18 35.971	296	271	sli res pa70°
B0258+058	J0301+0602	03 01 33.7137	06 02 27.276	332	325	
B0259+121	J0302+1218	03 02 30.5478	12 18 56.769	414	426	
B0302+173	J0305+1734	03 05 10.2245	17 34 59.093	232	227	
B0303+051	J0305+0523	03 05 48.1916	05 23 31.519	209	205	
B0306+102	J0309+1029	03 09 03.6245	10 29 16.340	1163	1179	check
B0310+013	J0312+0133	03 12 43.6028	01 33 17.538	474	456	
B0310+022	J0313+0228	03 13 13.4051	02 28 35.287	127	133	
B0316+162	J0318+1628	03 18 57.8034	16 28 32.706	1563	1487	CTA21 ext pa155°
B0317+188	J0319+1901	03 19 51.2577	19 01 31.312	586	584	
B0318+063	J0321+0629	03 21 27.6689	06 29 26.168	99	95	
B0319+121	J0321+1221	03 21 53.1039	12 21 13.954	1155	1138	vlbi

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B0320+015	J0323+0145	03 23 09.8726	01 45 50.517	351	357	
B0320+046	J0323+0446	03 23 14.7235	04 46 12.588	112	114	
B0323+151	J0326+1521	03 26 31.6336	15 21 26.755	147	154	
B0325+005	J0327+0044	03 27 59.2161	00 44 22.735	248	248	
B0332+078	J0334+0800	03 34 53.3183	08 00 14.452	458	451	
B0336+133	J0339+1329	03 39 43.8464	13 29 03.837	150	142	
B0341+158	J0344+1559	03 44 23.1736	15 59 43.377	258	262	
B0342+147	J0345+1453	03 45 06.4176	14 53 49.557	689	693	check
B0344+199	J0347+2004	03 47 29.5604	20 04 53.057	219	245	
B0345+085	J0348+0842	03 48 10.4178	08 42 08.873	119	102	sli res pa-110°
B0348+049	J0350+0506	03 50 54.2039	05 06 21.207	259	249	
B0350+024	J0352+0238	03 52 46.2337	02 38 35.416	150	141	
B0351+045	J0354+0441	03 54 24.1296	04 41 07.275	283	268	
B0355+055	J0357+0542	03 57 46.1266	05 42 31.282	247	230	
B0357+057	J0400+0550	04 00 11.7358	05 50 43.135	406	402	
B0358+040	J0401+0413	04 01 19.9136	04 13 34.417	238	230	
B0403+064	J0406+0637	04 06 34.3071	06 37 14.971	229	223	
B0403+187	J0406+1850	04 06 38.7934	18 50 42.721	105	101	
B0404+075	J0407+0742	04 07 29.0866	07 42 07.458	168	155	
B0406+065	J0409+0640	04 09 25.8474	06 40 35.086	169	174	
B0406+121	J0409+1217	04 09 22.0092	12 17 39.847	657	657	vlbi
B0408+085	J0411+0843	04 11 33.8575	08 43 11.408	116	118	
B0409+000	J0412+0010	04 12 33.4574	00 10 48.504	258	263	
B0409+025	J0412+0240	04 12 28.7157	02 40 37.938	94	97	
B0409+045	J0412+0438	04 12 38.1879	04 38 06.058	204	212	
B0409+188	J0412+1856	04 12 45.9456	18 56 37.086	330	323	
B0410+065	J0412+0638	04 12 45.7030	06 38 24.405	97	93	
B0420+022	J0422+0219	04 22 52.2150	02 19 26.936	968	984	
B0420+076	J0423+0743	04 23 17.9631	07 43 28.535	101	99	
B0421+019	J0424+0204	04 24 08.5623	02 04 24.973	576	591	
B0421+023	J0424+0226	04 24 02.5782	02 26 42.646	149	149	
B0421+145	J0424+1442	04 24 23.4914	14 42 16.688	228	229	
B0422+004	J0424+0036	04 24 46.8427	00 36 06.343	288	284	check
B0425+048	J0427+0457	04 27 47.5711	04 57 08.340	495	498	check
B0425+174	J0428+1732	04 28 35.6345	17 32 23.595	249	238	
B0429+174	J0431+1731	04 31 57.3798	17 31 35.792	261	230	image
B0430+052	J0433+0521	04 33 11.0960	05 21 15.634	2093	2029	3C120 check sli res pa-100°
B0436+052	J0439+0520	04 39 02.2628	05 20 43.698	172	183	
B0437+145	J0440+1437	04 40 21.1404	14 37 56.952	192	199	
B0438+040	J0441+0408	04 41 28.8622	04 08 39.645	122	116	
B0439+001	J0442+0011	04 42 30.2385	00 11 39.052	125	124	
B0439+186	J0442+1843	04 42 51.1627	18 43 38.953	136	133	
B0441+106	J0444+1042	04 44 12.4672	10 42 47.289	305	307	
B0442+071	J0445+0715	04 45 01.4293	07 15 53.931	259	259	
B0443+028	J0446+0256	04 46 19.8154	02 56 53.936	137	131	
B0446+112	J0449+1121	04 49 07.6721	11 21 28.626	2218	2164	check
B0446+113	J0448+1127	04 48 50.4131	11 27 54.391	219	205	
B0450+013	J0453+0128	04 53 02.2386	01 28 35.625	111	112	
B0452+063	J0455+0624	04 55 03.1047	06 24 53.968	117	122	
B0454+039	J0456+0400	04 56 47.1749	04 00 52.950	306	310	
B0454+066	J0457+0645	04 57 07.7101	06 45 07.275	402	432	
B0457+024	J0459+0229	04 59 52.0509	02 29 31.176	1283	1278	vlbi
B0458+138	J0501+1356	05 01 45.2706	13 56 07.218	380	373	check
B0459+060	J0502+0609	05 02 15.4466	06 09 07.507	548	547	
B0459+135	J0502+1338	05 02 33.2194	13 38 10.949	928	901	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B0500+019	J0503+0203	05 03 21.1972	02 03 04.674	1498	1484	check
B0502+049	J0505+0459	05 05 23.1850	04 59 42.730	812	804	
B0506+056	J0509+0541	05 09 25.9652	05 41 35.337	684	703	
B0506+101	J0509+1011	05 09 27.4566	10 11 44.588	286	276	check
B0507+179	J0510+1800	05 10 02.3692	18 00 41.591	754	744	check
B0508+139	J0511+1357	05 11 38.3202	13 57 19.192	463	462	
B0509+011	J0511+0110	05 11 57.6125	01 10 49.434	321	314	sli res pa-55°
B0509+152	J0512+1517	05 12 41.0134	15 17 23.475	515	499	
B0511+009	J0513+0100	05 13 40.0320	01 00 21.642	356	333	
B0514+074	J0516+0732	05 16 56.3640	07 32 53.233	135	145	
B0515+067	J0517+0648	05 17 51.3437	06 48 03.191	572	557	
B0516+087	J0519+0848	05 19 10.8113	08 48 56.717	160	159	
B0517+020	J0520+0204	05 20 29.1491	02 04 24.616	135	140	
B0517+114	J0520+1128	05 20 47.4517	11 28 28.603	103	109	
B0519+011	J0522+0113	05 22 17.4672	01 13 31.170	361	362	
B0519+142	J0522+1415	05 22 45.1465	14 15 29.282	214	222	
B0521+016	J0523+0142	05 23 41.7085	01 42 34.281	124	124	
B0521+089	J0524+0857	05 24 26.5727	08 57 45.051	158	147	
B0524+034	J0527+0331	05 27 32.7052	03 31 31.492	344	327	
B0528+134	J0530+1331	05 30 56.4171	13 31 55.148	3110	3110	vlbi
B0529+013	J0532+0120	05 32 08.7760	01 20 06.330	120	106	res pa155°
B0529+075	J0532+0732	05 32 38.9981	07 32 43.326	2780	2779	
B0530+184	J0533+1830	05 33 51.6302	18 30 28.221	132	131	
B0532+196	J0535+1942	05 35 03.5989	19 42 21.097	133	140	
B0533+097	J0536+0944	05 36 31.9780	09 44 20.624	191	187	weak sec 0.6″ pa165°
B0533+175	J0536+1733	05 36 15.0958	17 33 29.040	56	58	
B0536+145	J0539+1433	05 39 42.3663	14 33 45.564	1093	1083	check
B0536+198	J0539+1951	05 39 54.1745	19 51 45.065	155	153	
B0542+112	J0544+1118	05 44 52.1995	11 18 49.909	241	233	
B0548+084	J0551+0829	05 51 11.2291	08 29 11.210	198	184	
B0549+192	J0552+1913	05 52 25.8858	19 13 40.275	151	160	
B0550+032	J0552+0313	05 52 50.1026	03 13 27.266	662	658	
B0550+146	J0553+1439	05 53 38.0306	14 39 29.790	108	103	
B0555+007	J0558+0044	05 58 08.4413	00 44 48.120	122	141	
B0600+063	J0603+0622	06 03 14.3552	06 22 27.928	93	97	
B0602+096	J0605+0939	06 05 10.1131	09 39 13.593	258	254	
B0602+109	J0604+1055	06 04 49.3695	10 55 40.363	236	238	
B0611+131	J0613+1306	06 13 57.6934	13 06 45.401	590	601	
B0616+076	J0619+0736	06 19 09.9711	07 36 41.205	153	147	
B0624+034	J0627+0324	06 27 38.2819	03 24 59.451	155	133	ext pa-45°
B0627+176	J0630+1738	06 30 07.2587	17 38 12.930	231	218	
B0629+159	J0632+1554	06 32 33.5153	15 54 22.575	108	101	
B0629+160	J0632+1559	06 32 43.1349	15 59 57.606	518	483	
B0632+193	J0635+1916	06 35 27.1432	19 16 25.529	194	181	
B0634+150	J0637+1458	06 37 51.0523	14 58 57.278	230	213	
B0641+126	J0643+1238	06 43 59.8549	12 38 18.088	105	102	
B0646+079	J0649+0756	06 49 04.9054	07 56 28.343	108	96	
B0651+101	J0654+1004	06 54 09.9012	10 04 25.079	100	101	
B0656+082	J0659+0813	06 59 17.9957	08 13 30.928	832	834	
B0657+172	J0700+1709	07 00 01.5256	17 09 21.701	1234	1257	vlbi
B0709+008	J0711+0048	07 11 47.3263	00 48 19.752	127	112	sli res pa40°
B0715+028	J0717+0242	07 17 48.4291	02 42 56.302	128	120	
B0718+042	J0721+0406	07 21 23.9106	04 06 44.221	569	581	
B0718+157	J0721+1540	07 21 02.4136	15 40 42.964	198	197	
B0722+032	J0724+0308	07 24 48.4093	03 08 25.095	232	225	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B0722+145	J0725+1425	07 25 16.8072	14 25 13.731	1175	1123	check
B0723+067	J0726+0636	07 26 36.3651	06 36 42.867	167	171	
B0729+019	J0732+0150	07 32 22.7885	01 50 35.380	172	178	
B0729+146	J0731+1433	07 31 58.9970	14 33 36.480	216	195	
B0731+050	J0733+0456	07 33 57.4605	04 56 14.505	232	234	
B0733+016	J0735+0130	07 35 58.6349	01 30 03.634	210	210	
B0733+076	J0735+0734	07 35 58.8123	07 34 36.999	81	84	
B0735+178	J0738+1742	07 38 07.3941	17 42 18.996	2845	2787	vlbi
B0736+017	J0739+0137	07 39 18.0342	01 37 04.617	1746	1730	vlbi
B0736+177	J0739+1739	07 39 28.5533	17 39 27.172	111	114	
B0740+173	J0743+1714	07 43 05.1067	17 14 24.405	277	275	
B0742+017	J0744+0137	07 44 56.2740	01 37 09.562	127	125	
B0742+103	J0745+1011	07 45 33.0598	10 11 12.690	2565	2542	vlbi
B0746+110	J0749+1057	07 49 27.3854	10 57 33.124	134	132	
B0747+185	J0750+1823	07 50 00.3305	18 23 11.410	342	330	
B0748+019	J0751+0152	07 51 02.2822	01 52 15.758	163	165	
B0748+042	J0750+0406	07 50 59.6922	04 06 16.535	102	102	
B0748+126	J0750+1231	07 50 52.0466	12 31 04.828	2067	2071	check
B0750+049	J0753+0451	07 53 14.0782	04 51 28.978	141	127	
B0751+095	J0753+0924	07 53 51.9450	09 24 19.757	183	168	image
B0754+100	J0757+0956	07 57 06.6432	09 56 34.850	1377	1369	vlbi
B0755+117	J0758+1136	07 58 07.6584	11 36 46.050	272	275	
B0759+183	J0802+1809	08 02 48.0327	18 09 49.263	621	634	
B0801+044	J0803+0421	08 03 56.4444	04 21 02.724	242	229	
B0804+140	J0807+1352	08 07 38.5058	13 52 17.370	116	116	
B0805+010	J0808+0057	08 08 04.3459	00 57 07.582	137	134	
B0805+046	J0807+0432	08 07 57.5380	04 32 34.513	281	265	weak sec 3.8″ pa130°
B0805+072	J0807+0708	08 07 56.7614	07 08 40.189	151	133	
B0806+053	J0808+0514	08 08 38.8478	05 14 39.941	115	115	
B0808+019	J0811+0146	08 11 26.7076	01 46 52.219	1310	1300	vlbi
B0815+078	J0818+0742	08 18 39.4791	07 42 05.398	124	132	
B0815+054	J0818+0517	08 18 56.2370	05 17 37.274	213	200	weak ext pa-30°
B0822+137	J0825+1332	08 25 11.8915	13 32 32.541	229	241	
B0823+033	J0825+0309	08 25 50.3387	03 09 24.519	1910	1910	vlbi
B0824+110	J0827+1052	08 27 06.5133	10 52 24.150	165	154	
B0829+046	J0831+0429	08 31 48.8778	04 29 39.085	1235	1236	
B0829+108	J0832+1040	08 32 38.4779	10 40 19.678	196	200	
B0829+185	J0832+1721	08 32 24.8814	18 21 22.002	121	111	
B0829+187	J0832+1832	08 32 16.0408	18 32 12.123	529	520	
B0830+040	J0833+0350	08 33 18.9134	03 50 32.356	251	248	weak ext pa30°
B0830+115	J0833+1123	08 33 14.3682	11 23 36.250	343	343	
B0830+160	J0832+1554	08 32 49.3967	15 54 08.610	187	185	
B0833+010	J0836+0052	08 36 15.7913	00 52 59.996	219	211	
B0836+182	J0839+1802	08 39 30.7209	18 02 47.141	332	315	
B0837+012	J0839+0104	08 39 49.6112	01 04 26.730	651	629	
B0837+035	J0839+0319	08 39 49.1966	03 19 53.858	629	624	
B0839+187	J0842+1835	08 42 05.0944	18 35 40.987	883	845	
B0842+048	J0845+0439	08 45 17.1444	04 39 47.361	266	249	
B0843+072	J0846+0704	08 46 00.3674	07 04 24.642	130	122	
B0844+081	J0847+0759	08 47 01.2445	07 59 48.495	122	132	
B0848+089	J0851+0845	08 51 28.4261	08 45 15.319	218	208	
B0851+071	J0853+0654	08 53 48.1908	06 54 47.227	257	291	
B0851+075	J0854+0720	08 54 35.0369	07 20 24.137	166	166	
B0854+178	J0856+1739	08 56 56.6903	17 39 47.776	164	158	
B0859+032	J0901+0304	09 01 50.9785	03 04 22.703	124	113	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B0906+015	J0909+0121	09 09 10.0918	01 21 35.614	778	766	vlbi
B0906+163	J0908+1609	09 08 55.9258	16 09 54.752	239	228	
B0907+021	J0909+0200	09 09 39.8481	02 00 05.268	226	223	
B0912+029	J0914+0245	09 14 37.9135	02 45 59.245	693	678	vlbi
B0913+003	J0915+0007	09 15 51.6955	00 07 13.304	155	155	weak ext pa150°
B0913+188	J0916+1838	09 16 38.0273	18 38 15.290	80	88	
B0915+099	J0918+0946	09 18 38.5697	09 46 52.919	257	244	ext pa-90°
B0918+082	J0921+0805	09 21 01.0648	08 05 05.671	155	142	
B0918+140	J0921+1350	09 21 31.3736	13 50 48.230	239	234	
B0922+005	J0925+0019	09 25 07.8153	00 19 13.930	500	491	
B0923+171	J0925+1658	09 25 49.9648	16 58 12.212	190	189	
B0928+008	J0930+0034	09 30 52.2542	00 34 58.941	260	243	
B0928+144	J0931+1414	09 31 05.3424	14 14 16.522	197	203	
B0932+075	J0935+0719	09 35 01.0770	07 19 18.622	208	201	dou 0.4″ pa55°
B0932+094	J0935+0915	09 35 13.6411	09 15 07.813	210	207	
B0932+197	J0935+1929	09 35 29.2196	19 29 35.090	154	152	
B0936+034	J0938+0314	09 38 54.7898	03 14 31.604	106	99	
B0938+119	J0941+1145	09 41 13.5583	11 45 32.330	82	71	
B0940+172	J0943+1702	09 43 17.2243	17 02 18.969	309	288	
B0943+076	J0946+0723	09 46 02.9595	07 23 37.513	86	75	ext pa-135°
B0943+105	J0946+1017	09 46 35.0693	10 17 06.126	297	285	
B0945+114	J0947+1113	09 47 45.8575	11 13 53.994	133	131	
B0946+006	J0948+0022	09 48 57.3209	00 22 25.563	234	226	
B0946+181	J0949+1752	09 49 39.7627	17 52 49.422	157	150	
B0948+139	J0950+1343	09 50 43.5502	13 43 46.690	67	63	
B0951+175	J0953+1720	09 53 59.2316	17 20 56.669	128	129	
B0952+179	J0954+1743	09 54 56.8245	17 43 31.242	487	488	
B0953+086	J0955+0823	09 55 57.1353	08 23 38.365	116	109	
B0959+105	J1001+1015	10 01 57.7349	10 15 49.696	279	268	
B1000+124	J1002+1216	10 02 52.8457	12 16 14.588	244	212	
B1003+054	J1006+0509	10 06 37.6102	05 09 53.949	152	143	
B1004+141	J1007+1356	10 07 41.4985	13 56 29.601	970	942	vlbi
B1005+066	J1008+0621	10 08 00.8161	06 21 21.201	674	646	
B1005+073	J1007+0708	10 07 49.8153	07 08 35.923	158	148	
B1007+066	J1009+0622	10 09 49.8072	06 22 00.965	118	116	
B1008+013	J1011+0106	10 11 15.6384	01 06 42.473	222	191	
B1009+067	J1012+0630	10 12 13.3476	06 30 57.184	169	151	weak jet pa135°
B1011+043	J1014+0408	10 14 35.2495	04 08 52.334	164	154	
B1013+054	J1016+0513	10 16 03.1362	05 13 02.310	303	291	
B1013+126	J1015+1227	10 15 44.0237	12 27 07.070	302	288	
B1015+057	J1018+0530	10 18 27.8483	05 30 29.936	295	292	
B1020+191	J1022+1853	10 22 55.1577	18 53 34.281	293	301	
B1022+194	J1024+1912	10 24 44.8105	19 12 20.431	631	624	
B1023+131	J1025+1253	10 25 56.2854	12 53 49.023	903	891	
B1025+031	J1028+0255	10 28 20.4020	02 55 22.463	315	306	
B1026+055	J1029+0519	10 29 21.8307	05 19 38.756	144	142	
B1030+074	J1033+0711	10 33 34.0246	07 11 26.122	216	200	image
B1035+046	J1037+0424	10 37 39.3399	04 24 01.749	187	197	
B1036+054	J1038+0512	10 38 46.7803	05 12 29.096	489	474	sli res
B1038+064	J1041+0610	10 41 17.1636	06 10 16.920	1330	1312	check weak sec 0.7″ pa160°
B1040+080	J1042+0748	10 42 57.5887	07 48 50.548	97	100	
B1042+071	J1044+0655	10 44 55.9117	06 55 38.263	315	327	check image
B1042+178	J1045+1735	10 45 14.3605	17 35 48.088	324	272	image MIT
B1043+066	J1045+0624	10 45 52.7340	06 24 36.454	397	409	
B1045+011	J1048+0055	10 48 07.7454	00 55 43.478	246	239	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B1045+019	J1048+0141	10 48 22.8677	01 41 48.099	309	293	
B1050+189	J1053+1842	10 53 26.0455	18 42 03.311	61	65	weak sec 1″ pa-45°
B1055+018	J1058+0133	10 58 29.6054	01 33 58.823	3691	3668	vlbi
B1057+167	J1100+1629	11 00 21.0326	16 29 14.646	96	95	
B1059+025	J1101+0215	11 01 37.4330	02 15 12.226	122	108	
B1100+122	J1103+1158	11 03 03.5299	11 58 16.610	194	187	
B1101+077	J1104+0730	11 04 24.0709	07 30 53.166	96	97	
B1103+023	J1105+0202	11 05 38.9928	02 02 57.484	84	78	weak ext pa-70°
B1103+174	J1106+1713	11 06 26.1246	17 13 21.593	81	84	
B1104+167	J1107+1628	11 07 15.0479	16 28 02.241	364	367	
B1106+084	J1108+0811	11 08 37.4988	08 11 01.562	199	187	
B1106+150	J1109+1444	11 09 14.0440	14 44 52.938	102	100	
B1107+072	J1109+0658	11 09 51.2541	06 58 56.303	127	127	
B1109+076	J1112+0724	11 12 09.5581	07 24 49.101	156	149	
B1111+149	J1113+1442	11 13 58.6954	14 42 26.951	450	450	vlbi
B1113+087	J1116+0829	11 16 09.9728	08 29 22.023	329	320	
B1116+128	J1118+1234	11 18 57.3018	12 34 41.717	1640	1548	vlbi image
B1117+044	J1119+0410	11 19 42.8247	04 10 27.941	366	343	
B1117+113	J1120+1104	11 20 21.3730	11 04 34.776	72	78	
B1117+146	J1120+1420	11 20 27.8062	14 20 54.989	657	598	
B1118+073	J1120+0704	11 20 38.4439	07 04 47.158	226	204	
B1119+183	J1122+1805	11 22 29.7105	18 05 26.350	589	582	
B1128+090	J1130+0846	11 30 35.9503	08 46 43.088	156	152	
B1130+005	J1133+0015	11 33 03.0298	00 15 48.981	127	124	
B1130+008	J1132+0034	11 32 45.6189	00 34 27.821	230	206	ext pa90°
B1130+009	J1133+0040	11 33 20.0560	00 40 52.840	327	329	
B1140+188	J1143+1834	11 43 26.0706	18 34 38.375	247	237	
B1141+011	J1144+0054	11 44 08.7145	00 54 36.333	177	167	
B1142+052	J1145+0455	11 45 21.3159	04 55 26.699	318	305	image
B1143+052	J1146+0458	11 46 31.7417	04 58 19.296	138	120	
B1146+189	J1148+1840	11 48 37.7776	18 40 08.983	298	288	
B1147+067	J1150+0630	11 50 32.7301	06 30 29.433	141	131	
B1150+095	J1153+0914	11 53 12.5524	09 14 02.312	275	259	sli res pa-20°
B1151+102	J1153+0955	11 53 48.5280	09 55 54.904	202	203	
B1154+098	J1156+0932	11 56 54.4763	09 32 41.389	140	136	
B1154+127	J1157+1231	11 57 17.4544	12 31 13.405	110	110	weak ext pa-10°
B1155+169	J1157+1638	11 57 34.8375	16 38 59.671	558	547	
B1156+101	J1159+0954	11 59 11.8674	09 54 47.014	155	156	
B1157+026	J1159+0220	11 59 35.2547	02 20 10.598	104	100	
B1159+148	J1201+1431	12 01 44.2698	14 31 36.486	188	197	
B1200+068	J1203+0634	12 03 01.0128	06 34 41.549	265	245	
B1202+043	J1204+0407	12 04 52.5785	04 07 20.958	65	58	
B1202+057	J1205+0527	12 05 18.7067	05 27 48.551	145	135	
B1203+011	J1205+0053	12 05 48.4916	00 53 43.882	84	84	
B1204+057	J1206+0529	12 06 58.0281	05 29 52.266	312	288	weak sec 0.7″ pa8°
B1204+124	J1207+1211	12 07 12.6245	12 11 45.885	328	329	
B1205+011	J1208+0054	12 08 33.6548	00 54 21.927	180	170	
B1207+184	J1209+1810	12 09 51.7616	18 10 06.790	142	136	
B1208+186	J1211+1820	12 11 06.6864	18 20 34.257	282	272	
B1210+197	J1212+1925	12 12 56.0950	19 25 46.997	343	296	weak ext pa-90°
B1212+087	J1214+0829	12 14 59.9140	08 29 22.531	254	260	
B1212+171	J1215+1654	12 15 03.9781	16 54 37.936	424	395	
B1212+177	J1215+1730	12 15 14.7215	17 30 02.249	251	216	ext pa-120°
B1215+013	J1218+0102	12 18 27.7781	01 02 37.340	86	79	
B1215+113	J1218+1105	12 18 26.0941	11 05 05.268	164	172	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B1217+023	J1220+0203	12 20 11.8851	02 03 42.221	345	336	
B1219+044	J1222+0413	12 22 22.5501	04 13 15.780	1003	1008	
B1219+054	J1221+0510	12 21 52.3345	05 10 16.072	168	170	
B1221+071	J1223+0650	12 23 54.6251	06 50 02.589	206	207	
B1222+037	J1224+0330	12 24 52.4222	03 30 50.293	788	784	vlbi
B1226+023	J1229+0203	12 29 06.6998	02 03 08.596	41319	40307	3C273 check
B1228+045	J1231+0418	12 31 27.5863	04 18 01.895	294	292	
B1229+184	J1232+1809	12 32 13.8092	18 09 26.415	120	132	
B1235+076	J1238+0723	12 38 02.4464	07 23 21.833	406	392	
B1235+196	J1237+1924	12 37 36.4220	19 24 40.635	337	338	sli res
B1237+049	J1239+0443	12 39 32.7554	04 43 05.215	299	288	
B1247+139	J1250+1343	12 50 28.2181	13 43 40.388	152	156	
B1247+166	J1250+1621	12 50 09.2277	16 21 21.457	168	175	
B1252+119	J1254+1141	12 54 38.2558	11 41 05.894	650	646	vlbi image
B1252+028	J1254+0233	12 54 45.4650	02 33 28.956	120	113	
B1253+185	J1255+1817	12 55 31.7614	18 17 50.924	497	487	image
B1257+123	J1300+1206	13 00 01.9395	12 06 22.117	262	258	
B1258+087	J1300+0828	13 00 36.4388	08 28 02.858	134	128	weak ext pa-165°
B1258+145	J1300+1417	13 00 41.0380	14 17 29.419	136	149	
B1303+115	J1306+1113	13 06 19.2476	11 13 39.792	76	66	weak jet pa-125°
B1307+010	J1310+0044	13 10 28.5027	00 44 08.870	245	221	
B1307+121	J1309+1154	13 09 33.9327	11 54 24.559	787	785	
B1308+145	J1311+1417	13 11 07.8250	14 17 46.659	252	254	
B1308+172	J1311+1658	13 11 23.8204	16 58 44.213	232	231	
B1312+126	J1315+1220	13 15 01.8531	12 20 52.635	197	191	
B1329+063	J1331+0608	13 31 53.8968	06 08 23.386	195	190	
B1331+170	J1333+1649	13 33 35.7838	16 49 04.033	473	483	
B1339+129	J1342+1242	13 42 04.6391	12 42 49.975	103	106	
B1343+073	J1345+0706	13 45 49.3155	07 06 31.112	141	144	
B1345+188	J1347+1835	13 47 23.4892	18 35 37.581	391	352	
B1347+099	J1350+0940	13 50 22.1348	09 40 10.632	261	243	
B1350+148	J1353+1435	13 53 22.8397	14 35 39.260	194	165	weak ext pa45°
B1354+195	J1357+1919	13 57 04.4369	19 19 07.372	1080	1030	vlbi image
B1356+022	J1359+0159	13 59 27.1478	01 59 54.543	490	487	weak sec 1″ pa-60°
B1358+046	J1400+0425	14 00 48.4434	04 25 30.874	158	154	weak jet pa-60°
B1401+000	J1404−0013	14 04 12.1242	00 13 25.129	456	429	
B1402+044	J1405+0415	14 05 01.1203	04 15 35.806	858	859	image
B1403+192	J1406+1859	14 06 06.5791	18 59 31.268	109	101	
B1407+022	J1410+0203	14 10 04.6563	02 03 06.883	180	174	image
B1408+077	J1410+0731	14 10 35.0752	07 31 21.476	332	331	
B1410+138	J1412+1334	14 12 36.3728	13 34 38.166	242	270	
B1411+153	J1413+1509	14 13 41.6589	15 09 39.524	170	188	
B1412+196	J1414+1922	14 14 29.5016	19 22 18.414	123	122	
B1413+135	J1415+1320	14 15 58.8188	13 20 23.714	1553	1529	
B1414+147	J1416+1430	14 16 37.2486	14 30 44.279	98	95	
B1417+172	J1420+1703	14 20 20.8917	17 03 29.199	218	242	
B1421+048	J1424+0434	14 24 09.5017	04 34 52.059	144	143	
B1421+122	J1423+1159	14 23 30.1028	11 59 51.244	241	221	image
B1422+128	J1425+1239	14 25 18.6078	12 39 27.026	98	103	
B1423+146	J1425+1424	14 25 49.0184	14 24 56.921	560	581	
B1424+119	J1427+1142	14 27 17.2508	11 42 52.995	70	73	
B1427+109	J1430+1043	14 30 09.7394	10 43 26.861	822	806	res?
B1436+114	J1439+1117	14 39 12.0438	11 17 40.563	100	97	
B1436+128	J1438+1235	14 38 37.7993	12 35 34.242	107	107	
B1442+002	J1445+0004	14 45 31.4843	00 04 35.388	66	67	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B1442+101	J1445+0958	14 45 16.4655	09 58 36.073	717	710	vlbi OQ172
B1442+117	J1444+1131	14 44 50.7362	11 31 56.397	140	131	
B1444+063	J1446+0608	14 46 32.7088	06 08 06.135	102	98	
B1444+175	J1446+1721	14 46 35.3476	17 21 07.598	686	707	
B1446+042	J1448+0402	14 48 50.3606	04 02 19.878	313	280	
B1448+093	J1450+0910	14 50 31.1692	09 10 27.953	492	495	
B1449+139	J1451+1343	14 51 31.4913	13 43 24.014	220	218	
B1450+066	J1452+0627	14 52 39.3867	06 27 38.154	121	101	
B1451+106	J1453+1025	14 53 44.2414	10 25 57.568	197	188	
B1455+080	J1457+0749	14 57 38.1292	07 49 54.717	432	414	
B1455+098	J1457+0938	14 57 52.5323	09 38 16.547	121	130	
B1456+044	J1458+0416	14 58 59.3558	04 16 13.813	600	588	
B1457+091	J1500+0855	15 00 13.4063	08 55 25.708	138	133	image
B1458+088	J1500+0839	15 00 34.0042	08 39 41.810	143	138	
B1500+045	J1503+0419	15 03 28.8869	04 19 48.979	174	168	
B1500+094	J1503+0917	15 03 00.8998	09 17 58.978	191	193	
B1502+106	J1504+1029	15 04 24.9801	10 29 39.200	1713	1711	vlbi
B1502+036	J1505+0326	15 05 06.4760	03 26 30.806	876	866	
B1504+105	J1507+1018	15 07 21.8815	10 18 44.988	155	138	sli res pa95°
B1504+128	J1507+1236	15 07 21.7584	12 36 29.079	154	154	
B1505+044	J1507+0415	15 07 59.7320	04 15 11.978	169	150	
B1505+190	J1508+1852	15 08 05.1400	18 52 43.249	135	133	
B1506+163	J1509+1611	15 09 10.1126	16 11 27.755	94	94	
B1507+059	J1509+0545	15 09 47.5539	05 45 31.764	68	64	ext pa-165°
B1509+054	J1511+0518	15 11 41.2652	05 18 09.264	502	447	
B1512+030	J1514+0252	15 14 34.7340	02 52 48.493	151	141	
B1513+055	J1516+0524	15 16 18.0107	05 24 33.979	142	132	
B1514+004	J1516+0015	15 16 40.2181	00 15 01.893	1006	980	weak jet pa-35°
B1514+197	J1516+1932	15 16 56.7976	19 32 13.019	606	606	
B1518+045	J1521+0420	15 21 22.5432	04 20 30.120	219	210	
B1518+170	J1521+1654	15 21 16.5539	16 54 02.973	97	97	
B1518+181	J1521+1756	15 21 17.5806	17 56 01.085	123	130	
B1522+112	J1525+1107	15 25 02.9360	11 07 44.090	302	252	res pa15°
B1522+155	J1524+1521	15 24 41.6121	15 21 21.056	340	333	
B1525+155	J1527+1521	15 27 40.0017	15 21 56.911	107	100	image
B1531+070	J1533+0652	15 33 55.9558	06 52 55.015	58	62	
B1532+016	J1534+0131	15 34 52.4536	01 31 04.208	897	897	vlbi image
B1535+004	J1538+0019	15 38 15.9554	00 19 05.317	425	421	
B1535+012	J1538+0108	15 38 12.7447	01 08 23.577	90	89	
B1535+149	J1538+1444	15 38 03.4254	14 44 07.543	150	161	
B1536+046	J1539+0430	15 39 10.1047	04 30 51.243	106	98	
B1537+162	J1539+1604	15 39 25.1000	16 04 00.343	303	334	
B1538+149	J1540+1447	15 40 49.4924	14 47 45.895	896	806	image check
B1541+189	J1543+1847	15 43 43.8060	18 47 19.791	188	161	image
B1542+042	J1544+0407	15 44 59.4281	04 07 46.361	361	344	weak sec 1.3″ pa85°
B1543+005	J1546+0026	15 46 09.5312	00 26 24.615	909	893	
B1546+027	J1549+0237	15 49 29.4371	02 37 01.164	947	939	vlbi
B1548+056	J1550+0527	15 50 35.2697	05 27 10.467	1695	1608	check
B1548+115	J1550+1120	15 50 43.5949	11 20 47.447	176	174	
B1551+130	J1553+1256	15 53 32.6980	12 56 51.731	414	398	weak jet pa-95°
B1551+180	J1553+1754	15 53 20.8074	17 54 27.506	94	99	
B1553+113	J1555+1111	15 55 43.0443	11 11 24.377	515	502	
B1554+126	J1556+1230	15 56 50.7817	12 30 35.652	112	109	
B1554+185	J1556+1825	15 56 54.8177	18 25 13.605	148	145	
B1555+001	J1557−0001	15 57 51.4342	00 01 50.413	1547	1547	vlbi

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B1556+032	J1559+0304	15 59 30.9735	03 04 48.258	410	412	
B1557+043	J1600+0412	16 00 02.5383	04 12 57.842	130	130	
B1557+165	J1559+1624	15 59 25.0690	16 24 40.891	114	112	
B1558+187	J1600+1838	16 00 16.9846	18 38 30.041	77	88	
B1600+026	J1603+0231	16 03 14.8520	02 31 36.247	88	90	
B1601+112	J1603+1105	16 03 41.9302	11 05 48.678	357	358	
B1601+160	J1603+1554	16 03 38.0633	15 54 02.370	262	256	
B1602+195	J1604+1926	16 04 49.9947	19 26 20.969	138	140	
B1604+134	J1606+1319	16 06 54.6459	13 19 33.921	84	85	
B1604+183	J1606+1814	16 06 16.0283	18 14 59.828	191	176	ext pa145°
B1606+106	J1608+1029	16 08 46.2035	10 29 07.776	1816	1804	vlbi
B1609+190	J1611+1856	16 11 49.0481	18 56 38.137	321	303	
B1614+042	J1617+0408	16 17 13.5894	04 08 41.674	147	125	image
B1614+051	J1616+0459	16 16 37.5572	04 59 32.721	693	675	check
B1615+028	J1617+0246	16 17 49.9082	02 46 43.087	792	776	
B1616+063	J1619+0613	16 19 03.6875	06 13 02.234	566	531	image
B1617+025	J1619+0228	16 19 51.1562	02 28 58.602	99	94	
B1618+007	J1620+0036	16 20 47.9588	00 36 53.165	114	110	
B1620+145	J1622+1426	16 22 33.9971	14 26 20.600	75	76	
B1621+013	J1623+0115	16 23 43.2529	01 15 16.596	159	158	
B1621+058	J1624+0543	16 24 07.7339	05 43 24.230	121	124	
B1621+078	J1623+0741	16 23 58.2523	07 41 30.541	215	215	
B1625+123	J1627+1216	16 27 37.0320	12 16 07.114	150	150	
B1626+165	J1628+1627	16 28 19.9729	16 27 07.464	56	68	
B1627+151	J1629+1500	16 29 44.7996	15 00 18.617	104	117	
B1628+109	J1631+1052	16 31 18.7777	10 52 02.460	72	81	
B1633+186	J1635+1831	16 35 39.1588	18 31 03.723	175	158	
B1636+118	J1639+1144	16 39 06.4733	11 44 08.684	113	114	ext pa10°
B1637+166	J1639+1632	16 39 42.1377	16 32 21.778	166	161	
B1641+074	J1644+0720	16 44 16.3304	07 20 33.765	225	211	
B1641+076	J1643+0732	16 43 47.0959	07 32 17.398	181	184	
B1642+183	J1644+1813	16 44 52.4339	18 13 17.271	202	202	
B1643+007	J1646+0042	16 46 06.9720	00 42 27.283	130	122	
B1646+042	J1649+0412	16 49 27.6788	04 12 03.979	340	331	
B1647+065	J1649+0626	16 49 50.4911	06 26 53.444	246	249	
B1648+015	J1651+0129	16 51 03.6620	01 29 23.448	680	681	
B1648+084	J1650+0824	16 50 37.5622	08 24 52.241	212	204	
B1649+064	J1652+0618	16 52 01.3998	06 18 55.345	339	323	
B1653+198	J1655+1948	16 55 43.5676	19 48 47.117	91	91	
B1654+185	J1656+1826	16 56 34.0885	18 26 26.345	275	253	
B1655+077	J1658+0741	16 58 09.0114	07 41 27.542	898	867	vlbi image
B1656+053	J1658+0515	16 58 33.4473	05 15 16.445	1334	1311	weak sec 2″ pa110 check
B1657+022	J1659+0213	16 59 44.9970	02 13 07.035	204	197	
B1657+054	J1700+0522	17 00 23.9556	05 22 44.088	147	150	
B1658+037	J1701+0338	17 01 21.3780	03 38 51.164	113	108	
B1700+151	J1702+1502	17 02 21.7189	15 02 06.087	261	253	weak sec 1.8″ pa-150°
B1703+122	J1706+1208	17 06 20.4981	12 08 59.813	172	162	
B1704+099	J1706+0953	17 06 36.7273	09 53 59.637	184	186	
B1705+018	J1707+0148	17 07 34.4146	01 48 45.675	479	477	
B1705+135	J1707+1331	17 07 45.6364	13 31 05.215	483	474	
B1705+141	J1708+1402	17 08 01.6045	14 02 34.028	144	140	
B1705+188	J1707+1846	17 07 53.7476	18 46 39.028	196	192	
B1706+006	J1708+0035	17 08 44.6472	00 35 09.500	402	367	image
B1714+193	J1717+1917	17 17 01.1658	19 17 40.666	124	137	
B1716+070	J1719+0658	17 19 10.9335	06 58 15.745	107	107	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B1717+178	J1719+1745	17 19 13.0487	17 45 06.439	6012	6002	vlbi
B1717+083	J1719+0817	17 19 52.2054	08 17 03.536	622	603	
B1720+102	J1722+1013	17 22 44.5823	10 13 35.767	203	194	
B1724+067	J1726+0639	17 26 44.9455	06 39 18.503	200	182	
B1725+044	J1728+0427	17 28 24.9515	04 27 04.897	617	626	
B1725+123	J1728+1215	17 28 07.0511	12 15 39.476	391	373	
B1727+004	J1730+0024	17 30 34.9985	00 24 38.673	126	122	
B1732+094	J1734+0926	17 34 58.3773	09 26 58.274	534	515	
B1734+063	J1737+0621	17 37 13.7290	06 21 03.567	556	544	
B1738+032	J1740+0311	17 40 37.1981	03 11 47.836	159	155	
B1738+197	J1740+1943	17 40 26.9718	19 43 19.699	148	152	
B1739+191	J1742+1904	17 42 05.1090	19 04 36.990	199	195	weak sec 3.3″ pa150°
B1741+196	J1743+1935	17 43 57.8338	19 35 09.028	180	168	ext pa80°
B1743+173	J1745+1720	17 45 35.2085	17 20 01.424	791	785	vlbi
B1743+169	J1745+1655	17 45 23.3332	16 55 04.254	95	88	
B1743+182	J1745+1814	17 45 55.9275	18 14 50.423	326	300	image
B1745+085	J1748+0832	17 48 06.2607	08 32 19.282	186	183	
B1746+197	J1749+1944	17 49 05.4745	19 44 08.851	247	250	
B1749+061	J1752+0611	17 52 14.6686	06 11 48.141	123	122	
B1749+096	J1751+0939	17 51 32.8189	09 39 00.731	2058	2047	vlbi
B1750+175	J1752+1734	17 52 46.0035	17 34 20.343	416	422	
B1752+119	J1754+1156	17 54 45.9293	11 56 49.342	127	133	
B1753+049	J1755+0454	17 55 51.1535	04 54 52.566	128	122	sli res pa105°
B1753+183	J1755+1820	17 55 59.7827	18 20 17.663	116	121	
B1754+159	J1756+1553	17 56 33.7254	15 53 43.835	466	452	image
B1758+046	J1801+0438	18 01 04.2420	04 38 18.194	210	190	
B1800+175	J1802+1735	18 02 20.1962	17 35 38.989	184	191	
B1801+010	J1804+0101	18 04 15.9848	01 01 32.386	1007	990	
B1801+036	J1803+0341	18 03 56.2829	03 41 07.575	110	96	image
B1801+095	J1803+0934	18 03 33.6521	09 34 25.910	211	202	
B1804+119	J1807+1159	18 07 01.6523	11 59 53.424	82	78	
B1806+012	J1809+0114	18 09 28.5645	01 14 04.481	70	78	
B1809+170	J1811+1704	18 11 43.1843	17 04 57.279	184	188	
B1811+062	J1813+0615	18 13 33.4119	06 15 42.025	260	265	
B1813+031	J1816+0309	18 16 05.2046	03 09 08.659	139	149	
B1816+066	J1819+0640	18 19 20.5956	06 40 22.321	105	102	
B1819+159	J1822+1600	18 22 09.9694	16 00 14.854	345	343	weak jet pa-175°
B1821+107	J1824+1044	18 24 02.8555	10 44 23.776	727	725	vlbi
B1821+114	J1824+1127	18 24 03.9476	11 27 37.698	168	168	
B1822+012	J1824+0119	18 24 48.1427	01 19 34.171	170	150	
B1822+033	J1824+0322	18 24 32.0655	03 22 05.908	124	121	
B1822+062	J1824+0613	18 24 59.0805	06 13 50.581	105	100	
B1824+184	J1826+1831	18 26 17.7118	18 31 52.915	332	323	
B1825+051	J1828+0508	18 28 10.8653	05 08 34.591	126	120	
B1826+052	J1829+0518	18 29 21.2601	05 18 13.133	202	187	sli res
B1827+062	J1830+0619	18 30 05.9397	06 19 15.941	478	460	
B1830+012	J1832+0118	18 32 38.5492	01 18 21.722	361	349	
B1830+075	J1832+0731	18 32 41.9891	07 31 55.120	336	334	
B1830+139	J1832+1357	18 32 43.4721	13 57 44.410	806	830	
B1831+050	J1834+0506	18 34 27.3120	05 06 03.956	172	153	
B1833+087	J1836+0846	18 36 11.7241	08 46 18.271	98	99	
B1835+064	J1838+0628	18 38 22.9114	06 28 08.693	232	227	
B1836+040	J1838+0404	18 38 48.8289	04 04 24.637	319	282	image
B1836+094	J1838+0927	18 38 54.8357	09 27 27.897	100	101	
B1841+116	J1844+1140	18 44 18.0188	11 40 24.418	168	177	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B1841+131	J1844+1312	18 44 07.2636	13 12 28.044	210	211	
B1844+081	J1847+0810	18 47 12.6613	08 10 35.377	244	224	
B1850+143	J1852+1426	18 52 50.5812	14 26 39.704	151	168	
B1855+163	J1857+1624	18 57 25.5959	16 24 55.846	164	144	
B1901+155	J1904+1636	19 04 14.3609	15 36 38.448	387	350	
B1902+159	J1904+1603	19 04 46.2574	16 03 15.048	92	92	
B1903+168	J1905+1654	19 05 21.6775	16 54 48.594	143	121	
B1903+196	J1905+1943	19 05 36.4726	19 43 08.054	127	125	
B1904+013	J1907+0127	19 07 11.9969	01 27 08.974	327	315	sli res pa55°
B1909+161	J1911+1611	19 11 58.2576	16 11 46.861	249	243	
B1912+165	J1914+1636	19 14 14.4597	16 36 39.022	159	146	weak ext pa-145°
B1916+062	J1919+0619	19 19 17.3514	06 19 42.768	111	99	ext pa180°
B1919+086	J1922+0841	19 22 18.6340	08 41 57.392	114	108	
B1920+154	J1922+1530	19 22 34.6995	15 30 10.024	745	705	
B1922+155	J1924+1540	19 24 39.4562	15 40 43.931	413	396	
B1926+050	J1929+0507	19 29 19.9475	05 07 57.596	220	211	
B1932+074	J1934+0731	19 34 40.6780	07 31 24.812	158	143	
B1933+016	J1936+0142	19 36 30.3268	01 42 52.345	120	118	
B1934+123	J1937+1228	19 37 00.3940	12 28 58.180	84	87	
B1936+046	J1938+0448	19 38 30.6690	04 48 11.621	392	329	image
B1936+095	J1938+0942	19 38 43.6069	09 42 20.095	155	153	
B1942+097	J1945+0952	19 45 15.9229	09 52 59.576	227	232	
B1945+126	J1947+1248	19 47 19.5271	12 48 55.441	261	255	weak sec 2.6″ pa80°
B1947+079	J1950+0807	19 50 05.5402	08 07 13.981	746	740	vlbi
B1948+095	J1951+0939	19 51 06.7066	09 39 39.026	130	131	
B1952+138	J1955+1358	19 55 11.5717	13 58 16.267	313	323	
B1958+103	J2001+1027	20 01 10.6440	10 27 58.124	250	247	
B1959+067	J2002+0651	20 02 09.5745	06 51 15.397	131	138	
B2000+148	J2002+1501	20 02 41.9996	15 01 14.603	331	333	image
B2001+133	J2003+1332	20 03 36.9289	13 32 23.277	65	68	
B2002+182	J2005+1825	20 05 08.4033	18 25 34.455	157	157	image
B2004+064	J2007+0636	20 07 11.9152	06 36 44.596	301	300	
B2007+131	J2009+1318	20 09 27.2209	13 18 14.458	136	152	
B2007+150	J2010+1513	20 10 08.1999	15 13 58.838	124	112	
B2011+064	J2014+0634	20 14 14.9441	06 34 37.222	72	67	
B2013+163	J2016+1632	20 16 13.8611	16 32 34.148	613	610	
B2013+172	J2015+1727	20 15 44.9006	17 27 06.867	137	152	
B2015+083	J2018+0831	20 18 11.3122	08 31 54.553	375	381	
B2019+050	J2021+0515	20 21 35.2802	05 15 04.770	454	417	
B2021+003	J2024+0027	20 24 22.7137	00 27 53.075	124	114	
B2022+031	J2025+0316	20 25 09.6313	03 16 44.493	406	375	
B2022+171	J2024+1718	20 24 56.5638	17 18 13.208	568	546	
B2025+120	J2027+1213	20 27 39.1097	12 13 55.230	123	125	
B2025+176	J2028+1750	20 28 12.7283	17 50 10.132	103	93	weak ext pa-135°
B2029+121	J2031+1219	20 31 54.9946	12 19 41.343	1187	1164	vlbi
B2032+107	J2035+1056	20 35 22.3340	10 56 06.785	467	456	
B2032+117	J2034+1154	20 34 37.1103	11 54 31.388	219	212	weak sec 4.8″ pa-15°
B2039+037	J2042+0356	20 42 14.5015	03 56 13.932	100	104	
B2040+127	J2043+1255	20 43 10.2093	12 55 13.576	227	232	
B2041+070	J2044+0713	20 44 08.4221	07 13 20.652	121	105	ext pa-50°
B2043+156	J2045+1547	20 45 45.4946	15 47 27.345	144	148	
B2046+124	J2048+1239	20 48 58.3231	12 39 11.220	65	61	
B2047+039	J2050+0407	20 50 06.2400	04 07 48.880	451	447	
B2047+098	J2049+1003	20 49 45.8650	10 03 14.399	878	867	
B2047+181	J2049+1822	20 49 18.6485	18 22 06.942	116	126	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B2049+175	J2051+1743	20 51 35.5834	17 43 36.914	416	422	
B2050+161	J2052+1619	20 52 43.6206	16 19 48.833	258	263	weak ext pa-5°
B2052+005	J2054+0041	20 54 49.6115	00 41 53.028	179	179	
B2059+034	J2101+0341	21 01 38.8343	03 41 31.332	760	743	
B2105+135	J2107+1347	21 07 30.7768	13 47 38.725	141	138	
B2106+143	J2108+1430	21 08 41.0339	14 30 27.038	375	370	ext pa-150°
B2107+160	J2109+1614	21 09 28.9913	16 14 19.508	164	159	
B2112+100	J2114+1018	21 14 41.3473	10 18 10.626	109	104	image
B2112+170	J2114+1714	21 14 40.6414	17 14 22.366	192	188	
B2113+035	J2115+0342	21 15 41.0361	03 42 53.156	87	84	
B2114+048	J2117+0503	21 17 20.7575	05 03 04.114	293	294	
B2114+053	J2116+0536	21 16 36.6354	05 36 17.055	110	111	
B2114+065	J2116+0644	21 16 58.2948	06 44 33.505	123	108	
B2116+199	J2118+2007	21 18 26.2912	20 07 34.222	75	75	
B2118+053	J2120+0533	21 20 41.1823	05 33 45.009	190	193	
B2118+188	J2121+1901	21 21 00.6072	19 01 28.300	312	304	
B2120+016	J2123+0154	21 23 29.0954	01 54 46.557	77	77	
B2120+099	J2123+1007	21 23 13.3594	10 07 54.961	316	323	
B2121+053	J2123+0535	21 23 44.5177	05 35 22.096	1446	1438	vlbi
B2122+044	J2125+0441	21 25 29.2554	04 41 35.526	268	260	
B2125+024	J2128+0238	21 28 08.2522	02 38 24.792	144	143	
B2127+034	J2130+0339	21 30 10.4992	03 39 54.856	109	114	
B2127+085	J2130+0843	21 30 16.2495	08 43 55.913	142	143	
B2127+165	J2130+1643	21 30 22.3685	16 43 25.633	130	125	
B2128+048	J2130+0502	21 30 32.8777	05 02 17.461	1276	1201	check
B2131+145	J2133+1443	21 33 37.3893	14 43 46.471	189	188	
B2134+004	J2136+0041	21 36 38.5859	00 41 54.201	7202	7142	
B2136+141	J2139+1423	21 39 01.3097	14 23 35.995	2412	2381	vlbi
B2137+011	J2139+0122	21 39 42.5082	01 22 27.146	266	258	
B2137+130	J2139+1316	21 39 38.1410	13 16 13.066	158	154	
B2137+170	J2139+1718	21 39 37.1474	17 18 26.071	109	103	
B2142+110	J2145+1115	21 45 18.7756	11 15 27.297	393	384	weak ext pa165°
B2144+092	J2147+0929	21 47 10.1634	09 29 46.675	1058	1044	vlbi image
B2144+169	J2146+1713	21 46 37.1446	17 13 39.114	64	62	
B2145+067	J2148+0657	21 48 05.4590	06 57 38.607	7397	7337	vlbi
B2145+075	J2148+0749	21 48 18.0363	07 49 22.548	94	95	
B2145+082	J2147+0830	21 47 55.2202	08 30 11.902	224	225	
B2146+019	J2148+0211	21 48 39.8762	02 11 26.830	206	187	
B2147+031	J2149+0322	21 49 41.8697	03 22 51.432	85	82	
B2147+077	J2149+0756	21 49 35.2640	07 56 25.355	284	260	image
B2149+056	J2151+0552	21 51 37.8757	05 52 12.957	618	610	check
B2149+069	J2151+0709	21 51 31.4296	07 09 26.793	830	826	
B2150+124	J2153+1241	21 53 04.6587	12 41 05.211	184	166	image
B2150+173	J2152+1734	21 52 24.8198	17 34 37.799	605	606	vlbi
B2151+174	J2153+1741	21 53 36.8267	17 41 43.726	129	129	
B2152+172	J2154+1727	21 54 40.9018	17 27 50.824	225	251	
B2154+100	J2157+1014	21 57 12.8616	10 14 24.801	339	334	
B2157+102	J2200+1030	22 00 07.9335	10 30 07.903	199	192	weak sec 1.4″ pa45°
B2158+029	J2201+0312	22 01 27.5079	03 12 15.142	257	251	
B2201+098	J2203+1007	22 03 30.9534	10 07 42.584	235	230	
B2201+171	J2203+1725	22 03 26.8950	17 25 48.268	990	1133	
B2202+010	J2205+0117	22 05 00.9306	01 17 55.056	71	68	
B2202+031	J2205+0321	22 05 05.3246	03 21 27.549	132	124	
B2205+166	J2207+1652	22 07 52.8674	16 52 17.837	280	285	
B2206+178	J2208+1808	22 08 24.1924	18 08 26.873	105	112	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B2207+087	J2210+0857	22 10 06.0512	08 57 29.548	138	139	
B2210+065	J2212+0646	22 12 50.8400	06 46 08.720	222	221	
B2210+085	J2213+0847	22 13 21.7373	08 47 29.951	146	145	
B2211+069	J2214+0711	22 14 08.8626	07 11 42.382	289	299	
B2213+035	J2215+0348	22 15 55.9951	03 48 14.549	91	84	
B2215+020	J2217+0220	22 17 48.2382	02 20 10.693	558	506	image
B2216+178	J2219+1806	22 19 14.0946	18 06 35.615	357	366	
B2216+193	J2218+1938	22 18 54.5853	19 38 41.381	59	62	
B2220+119	J2222+1213	22 22 52.9906	12 13 49.825	280	283	
B2224+006	J2226+0052	22 26 46.5368	00 52 11.305	518	465	weak ext pa165°
B2227+009	J2229+0114	22 29 51.8023	01 14 56.708	207	186	
B2230+114	J2232+1143	22 32 36.4086	11 43 50.891	3032	2923	CTA102 check image
B2231+098	J2233+1008	22 33 58.4503	10 08 52.101	287	266	
B2236+124	J2238+1242	22 38 34.6048	12 42 50.775	239	228	
B2239+096	J2241+0953	22 41 49.7173	09 53 52.428	626	602	
B2240+174	J2242+1741	22 42 47.9565	17 41 44.176	139	141	
B2242+031	J2245+0324	22 45 28.2846	03 24 08.863	624	606	
B2243+047	J2245+0500	22 45 53.6546	05 00 56.963	350	330	weak ext pa-160°
B2245+029	J2247+0310	22 47 58.6820	03 10 42.347	796	780	
B2248+143	J2251+1436	22 51 19.8323	14 36 23.538	83	84	
B2250+023	J2253+0236	22 53 21.1052	02 36 13.041	196	188	
B2250+194	J2253+1942	22 53 07.3703	19 42 34.639	355	358	
B2251+006	J2254+0054	22 54 04.4071	00 54 20.965	344	332	
B2251+158	J2253+1608	22 53 57.7483	16 08 53.563	10503	10321	vlbi weak sec 5.7″ pa-48°
B2254+024	J2257+0243	22 57 17.5639	02 43 17.513	273	262	check
B2254+074	J2257+0743	22 57 17.3039	07 43 12.320	284	283	check day2
B2254+074	J2257+0743	22 57 17.3035	07 43 12.306	288	290	vlbi day1
B2255+050	J2258+0516	22 58 24.6039	05 16 39.183	117	116	
B2256+017	J2258+0203	22 58 57.7541	02 03 42.293	210	208	weak ext pa150°
B2258+033	J2300+0337	23 00 40.8860	03 37 10.846	312	300	
B2258+123	J2300+1235	23 00 44.0380	12 35 59.061	121	117	
B2259+058	J2301+0609	23 01 53.4620	06 09 12.841	206	205	
B2301+060	J2304+0620	23 04 28.2915	06 20 08.319	317	307	
B2305+145	J2307+1450	23 07 34.0024	14 50 17.967	265	224	
B2305+198	J2308+2008	23 08 11.6369	20 08 42.205	232	239	
B2306+094	J2308+0946	23 08 44.1712	09 46 26.096	120	120	
B2308+176	J2311+1752	23 11 17.4199	17 52 55.025	150	154	
B2309+159	J2312+1615	23 12 16.9626	16 15 08.332	87	85	
B2313+020	J2316+0221	23 16 07.7119	02 21 19.681	126	128	
B2314+160	J2316+1618	23 16 39.6987	16 18 06.743	208	194	
B2315+189	J2318+1914	23 18 22.9093	19 14 52.186	143	139	
B2318+049	J2320+0513	23 20 44.8570	05 13 49.955	387	383	vlbi
B2318+182	J2320+1829	23 20 46.7767	18 29 25.777	184	189	
B2319+184	J2322+1843	23 22 28.5702	18 43 24.902	330	320	image
B2320+079	J2322+0812	23 22 36.0905	08 12 01.602	592	586	
B2323+009	J2326+0112	23 26 25.6437	01 12 08.681	214	211	
B2324+148	J2326+1507	23 26 52.8926	15 07 39.730	192	190	image
B2324+151	J2327+1524	23 27 21.9669	15 24 37.333	241	256	
B2325+093	J2327+0940	23 27 33.5808	09 40 09.460	736	675	
B2325+192	J2328+1929	23 28 24.8758	19 29 58.067	138	180	
B2326+082	J2329+0834	23 29 05.7862	08 34 15.846	216	204	
B2328+107	J2330+1100	23 30 40.8526	11 00 18.712	945	940	vlbi aka B2328+105
B2329+068	J2331+0705	23 31 55.5244	07 05 42.072	201	197	
B2330+083	J2332+0838	23 32 57.5966	08 38 10.418	283	278	weak ext pa90°
B2331+073	J2334+0736	23 34 12.8280	07 36 27.544	971	967	

Table 2 – *continued*

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B2337+097	J2340+0959	23 40 07.2628	09 59 58.989	62	58	
B2338+000	J2341+0018	23 41 06.9102	00 18 33.305	218	219	
B2338+191	J2341+1928	23 41 18.7971	19 28 05.505	205	235	
B2344+068	J2346+0705	23 46 39.9335	07 05 06.835	217	213	weak ext pa-65°
B2344+092	J2346+0930	23 46 36.8389	09 30 45.507	1403	1351	
B2345+113	J2347+1135	23 47 36.4062	11 35 17.893	153	136	sli res
B2346+053	J2349+0534	23 49 21.0519	05 34 39.849	259	222	image
B2347+079	J2350+0812	23 50 10.0801	08 12 55.260	169	169	
B2347+108	J2350+1106	23 50 02.0312	11 06 36.706	258	264	sli res
B2356+196	J2358+1955	23 58 46.0859	19 55 20.313	516	588	
B2358+189	J0001+1914	00 01 08.6226	19 14 33.816	387	526	

(peak < 50 mJy per beam, coded with comment 'weak') and/or have too much structure (ratio of total-to-peak flux density > 1.2, coded with comment 'str'). The columns of both Table 2 and Table 3 are organized as follows.

Column 1. Source name derived from B1950 coordinates.
Column 2. Source name derived from J2000 coordinates.
Column 3. Right ascension (hours, minutes, seconds) in J2000.
Column 4. Declination (degrees, arcmin, arcsec) in J2000.
Column 5. Total flux density in mJy at 8.4 GHz.
Column 6. Peak flux density in mJy per beam at 8.4 GHz.
Column 7. Comments about the source, mainly regarding structure. Terms have the following meanings:

weak – weak;
str – structure;
ext – extension;
sec – secondary component;
pa – position angle in degrees with separation in arcsec;
res – resolved;
sli – slightly;
dou – double;
vlbi – quoted position is from the VLBI catalogues of Ma et al. (1990) and Russell et al. (1991), with additional source positions provided by Dr J. L. Russell;
check – used to check *absolute* positional accuracy (see Section 4);
image – map presented in this paper (see Fig. A1 and Table A1 in Appendix A).

We note that Tables 2 and 3 do *not* constitute a sample of flat-spectrum sources statistically complete to 200 mJy at 5 GHz. This is because: (1) a variety of spectral data were used in the target selection; (2) the VLA missed observing nine target sources (see Section 3.1); (3) 50 targets observed with the VLA were not detected; (4) 35 sources were excluded because of a > 40 arcsec offset between the VLA pointing position and the derived position; and (5) the same name was used for two close targets, so the data from one of the two targets were discarded.

The best check on our *absolute* positional accuracy, as opposed to internal consistency, is obtained by comparing our positions for the 31 target sources in the present survey area which are also listed in the most up-to-date Jet Propulsion Laboratory (JPL) catalogue of VLBI astrometric positions (Sovers et al. 1988 plus supplements supplied by the JPL group). These 31 sources were observed and the data treated in an identical way to our other target sources. The rms difference between our position measurements and the catalogue values is ∼7 mas in RA and ∼12 mas in Dec. Because the Sovers et al. VLBI positions are believed to be accurate to ∼1 mas, we conclude that our *absolute* position accuracy, combining the RA and Dec. errors in quadrature, is about 14 mas rms. This absolute accuracy is derived from both day-time and night-time observations, and with throws to calibrators typical of target sources.

We have investigated the *repeatability* of our positions by repeating observations of sources with VLBI astrometric positions near RA 16 h on two days. It should be noted that these observations were made in the early afternoon – not the best time of day for atmospheric phase stability. Comparing the 15 positions measured on successive days we find that the rms difference in RA is 11 mas and that in Dec. 9 mas, giving a repeatability of 8 mas in RA and 6 mas in Dec. These values are quite consistent with the values obtained above for the absolute position accuracy. We note, however, that the offset between the measured and the known position depends systematically on both the sign and the magnitude of the throw to the calibration source. The size of this error is ∼ 2 mas per degree of throw. Although it would be possible to remove these systematic effects empirically from our data, we choose not to because we do not fully understand their origins.

Our estimates of the positional accuracy are similar to the estimates for the sources in Paper I. The quality of those JVAS positions has recently been independently confirmed by VLBA observations of 60 sources from Paper I (Dr A. Beasley, private communication). Since the VLBA positions are determined to ∼ 1 mas, the rms differences between them and the JVAS positions (∼ 10 mas in both RA and Dec.) represent the accuracy of the JVAS positions.

5 CONCLUSIONS

We have produced the second instalment of the JVAS catalogue containing 781 sources in the region $0^\circ \leq \delta_{B1950} \leq +20^\circ$ that are suitable for use as phase calibrators for MERLIN and other interferometer arrays. All have a peak flux density at 8.4 GHz ≥50 mJy per beam, have ≥80 per cent of the total flux density in a compact component, and (now) have positions known to an rms accuracy of about 14 mas. Our published and unpublished source lists are available from MPI, NRAO and Jodrell Bank. The contact

Table 3. Sources unsuitable as phase calibrators.

B1950 name	J2000 name	RA (J2000)	Dec (J2000)	Total (mJy)	Peak (mJy)	Notes
B0030+196	J0032+1953	00 32 38.3283	19 53 53.785	522	383	sli res pa80° str
B0035+121	J0038+1227	00 38 18.0173	12 27 31.252	436	297	image str
B0036+030	J0039+0319	00 39 18.5821	03 19 52.552	48	49	weak
B0108+131	J0111+1324	01 11 36.5693	13 24 37.568	160	66	str
B0127+145	J0129+1446	01 29 55.3484	14 46 47.843	362	297	ext pa35° str
B0128+039	J0131+0410	01 31 07.0615	04 10 15.038	123	54	image str
B0130+198	J0133+2006	01 33 37.7131	20 06 00.476	187	156	weak sec 1" pa-40° str
B0157+011	J0200+0125	02 00 03.9364	01 25 12.009	112	34	weak
B0225+187	J0227+1901	02 27 53.3347	19 01 14.082	105	78	ext pa120° str
B0253+041	J0255+0419	02 55 55.4349	04 19 40.588	132	56	image str
B0319+150	J0322+1513	03 22 37.0709	15 13 51.118	50	43	weak
B0411+054	J0414+0534	04 14 37.7685	05 34 42.352	569	260	image str MIT
B0418+148	J0420+1459	04 20 51.0857	14 59 15.634	150	123	res pa-75° str
B0456+179	J0459+1758	04 59 09.0511	17 58 39.100	93	70	str
B0514+109	J0516+1057	05 16 46.6463	10 57 54.773	722	531	image str
B0739+177	J0742+1736	07 42 18.4415	17 36 55.975	90	53	str
B0813+020	J0815+0155	08 15 58.6371	01 55 55.820	155	106	image str
B0819+082	J0822+0804	08 22 33.1537	08 04 53.523	108	78	ext pa-160° str
B0826+180	J0829+1754	08 29 04.8290	17 54 15.857	132	102	image str
B0939+140	J0942+1351	09 42 08.4797	13 51 54.229	210	79	image str
B0940+023	J0943+0208	09 43 26.9622	02 08 49.391	75	32	image str weak
B1003+174	J1006+1713	10 06 31.7650	17 13 17.105	246	201	ext pa-35° str
B1028+038	J1030+0334	10 30 38.9688	03 34 32.801	90	65	image str
B1041+169	J1043+1641	10 43 47.3176	16 41 07.646	36	39	weak
B1106+023	J1108+0202	11 08 45.4889	02 02 40.908	192	157	image str (see note)
B1115+132	J1118+1256	11 18 04.3897	12 56 28.064	72	38	weak
B1118+000	J1121−0013	11 21 19.4234	00 13 16.473	88	72	ext pa155° str
B1155+186	J1158+1821	11 58 20.2860	18 21 49.269	105	71	image str
B1210+133	J1213+1307	12 13 32.1412	13 07 20.373	487	247	image str
B1223+099	J1226+0940	12 26 25.4693	09 40 04.432	116	73	image str
B1250+050	J1252+0448	12 52 40.8959	04 48 27.422	62	49	weak
B1317+019	J1320+0140	13 20 26.7938	01 40 36.786	560	464	image str
B1317+199	J1319+1941	13 19 52.0736	19 41 35.481	232	132	str
B1331+094	J1334+0912	13 34 19.5624	09 12 00.365	157	121	image str
B1418+070	J1420+0650	14 20 40.0675	06 50 59.501	44	40	weak
B1439+136	J1442+1329	14 42 04.0423	13 29 16.067	207	116	image str
B1518+046	J1521+0430	15 21 14.4198	04 30 21.671	542	347	res pa20° str
B1524+101	J1526+0959	15 26 46.3484	09 59 10.538	145	106	image str
B1527+060	J1530+0555	15 30 28.4444	05 55 13.030	166	130	image str
B1541+050	J1543+0452	15 43 33.9273	04 52 19.300	249	193	image str
B1601+173	J1603+1711	16 03 32.0843	17 11 55.321	54	45	weak
B1604+159	J1607+1551	16 07 06.4309	15 51 34.503	288	220	image str
B1629+120	J1631+1156	16 31 45.2469	11 56 02.991	481	124	image str
B1638+118	J1640+1144	16 40 58.8918	11 44 04.233	185	120	image str
B1638+124	J1640+1220	16 40 47.9384	12 20 02.108	783	627	res pa-45° str
B1642+053	J1644+0518	16 44 56.0829	05 18 37.064	192	131	image str
B1643+113	J1645+1113	16 45 54.6751	11 13 52.637	204	158	image str
B1821+050	J1824+0506	18 24 15.2000	05 06 17.547	183	146	image str
B1851+147	J1854+1447	18 54 03.4841	14 47 18.127	102	83	res pa-160° str
B2114+022	J2116+0225	21 16 50.7443	02 25 46.258	116	61	image str
B2117+025	J2120+0246	21 20 28.5296	02 46 34.298	48	47	weak
B2142+188	J2144+1905	21 44 57.7115	19 05 18.945	116	96	str
B2144+042	J2146+0427	21 46 55.1915	04 27 25.477	147	113	str
B2201+044	J2204+0440	22 04 17.6522	04 40 02.007	345	299	image str
B2247+132	J2249+1331	22 49 44.9456	13 31 09.480	458	381	res pa115° str
B2247+140	J2250+1419	22 50 25.3435	14 19 52.044	811	551	res pa-145° str
B2307+106	J2310+1055	23 10 28.5175	10 55 30.685	356	276	str
B2327+121	J2330+1228	23 30 09.9523	12 28 28.596	96	75	image str

Note. Image of B1106+023 shows two sources, a western compact one (see table entries) and an eastern extended one (total flux density 204 mJy and peak flux density 41 mJy per beam).

electronic mail addresses from which to request these lists are (apatnaik@mpifr-bonn.mpg.de), (jwrobel@aoc.nrao.edu) and (iwb@jb.man.ac.uk).

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REFERENCES

Baars J. M. W., Genzel R., Pauliny-Toth I. I. K., Witzel A., 1977, A&A, 61, 99
Condon J. J., Broderick J. J., 1985, AJ, 90, 2540
Condon J. J., Broderick J. J., 1986, AJ, 91, 1051
Condon J. J., Broderick J. J., Seielstad G. A., 1989, AJ, 97, 1064
Douglas J. N., Bash F. N., Bozyan F. A., Torrence G. W., Wolfe C., 1996, AJ, 111, 1945
Gregory P. C., Condon J. J., 1991, ApJS, 75, 1011
Henstock D. R., Browne I. W. A., Wilkinson P. N., Taylor G. B., Vermeulen R. C., Pearson T. J., Readhead A. C. S., 1995, ApJS, 100, 1
Ma C., Shaffer D. B., de Vegt C., Johnston K. J., Russell J. L., 1990, AJ, 99, 1284
Napier P. J., Thompson A. R., Ekers R. D., 1983, Proc. IEEE, 71, 1295
Patnaik A. R., Browne I. W. A., Wilkinson P. N., Wrobel J. M., 1992a, MNRAS, 254, 655 (Paper I)
Patnaik A. R., Browne I. W. A., Walsh D., Chaffee F. H., Foltz C. B., 1992b, MNRAS, 259, 1P
Patnaik A. R., Browne I. W. A., King L. J., Muxlow T. W. B., Walsh D., Wilkinson P. N., 1993, MNRAS, 261, 435
Russell J. L., Johnston K. J., Ma C., Shaffer D. B., de Vegt C., 1991, AJ, 101, 2266
Sovers O. J., Edwards C. D., Jacobs C. S., Lanyi G. E., Liewer K. M., Treuhaft R. N., 1988, AJ, 95, 1647
Sramek R. A., 1990, in Baldwin J. E., Shouguan W., eds, URSI/IAU Symp., Radio Astronomical Seeing. Pergamon Press, Oxford, p. 21
Thompson A. R., Clark B. G., Wade C. M., Napier P. J., 1980, ApJS, 44, 151

APPENDIX A: REGION III IMAGES

Table A1 lists the names of sources, from Table 2 or 3, for which images appear in Fig. A1. Columns 1 and 2 give the J2000 and B1950 source names, respectively, and column 3 gives an estimate of three times the rms noise in the image in mJy per beam. The contour levels in Fig. A1 are multiples (−2, −1, 1, 2, 4, 8, 16, 32, 64, 128, 256, 512) of the bottom contour level, which is set at the value given in column 3.

Table A1. Bottom contours for sources in Fig. A1. Columns 1: B1950 name; columns 2: J2000 name; columns 3: 3σ noise level in mJy per beam.

1	2	3	1	2	3
B0009+081	J0011+0823	0.50	B1527+060	J1530+0555	0.40
B0035+121	J0038+1227	2.00	B1532+016	J1534+0131	0.30
B0128+039	J0131+0410	0.25	B1538+149	J1540+1447	1.00
B0250+178	J0253+1805	0.60	B1541+050	J1543+0452	0.50
B0253+041	J0255+0419	0.40	B1541+189	J1543+1847	0.60
B0411+054	J0414+0534	0.60	B1604+159	J1607+1551	0.60
B0429+174	J0431+1731	0.60	B1614+042	J1617+0408	0.80
B0514+109	J0516+1057	1.00	B1616+063	J1619+0613	0.80
B0751+095	J0753+0924	0.60	B1629+120	J1631+1156	1.00
B0813+020	J0815+0156	0.40	B1638+118	J1640+1144	0.50
B0826+180	J0829+1754	0.35	B1642+053	J1644+0518	0.40
B0939+140	J0942+1351	0.50	B1643+113	J1645+1113	0.60
B0940+023	J0943+0208	0.40	B1655+077	J1658+0741	0.60
B1028+038	J1030+0334	0.50	B1706+006	J1708+0035	1.00
B1030+074	J1033+0711	0.30	B1743+182	J1745+1814	0.50
B1042+071	J1044+0655	0.80	B1754+159	J1756+1553	0.60
B1042+178	J1045+1735	0.80	B1801+036	J1803+0341	0.60
B1106+023	J1108+0202	1.00	B1821+050	J1824+0506	0.80
B1116+128	J1118+1234	1.00	B1836+040	J1838+0404	0.80
B1142+052	J1145+0455	0.80	B1936+046	J1938+0448	0.80
B1155+186	J1158+1821	0.60	B2000+148	J2002+1501	1.00
B1210+133	J1213+1307	1.50	B2002+182	J2005+1825	0.80
B1223+099	J1226+0940	0.50	B2112+100	J2114+1018	0.50
B1252+119	J1254+1141	0.40	B2114+022	J2116+0225	0.30
B1253+185	J1255+1817	1.00	B2144+092	J2147+0929	0.80
B1317+019	J1320+0140	1.00	B2147+077	J2149+0756	0.30
B1331+094	J1334+0912	0.40	B2150+124	J2153+1241	0.60
B1354+195	J1357+1919	1.20	B2201+044	J2204+0440	0.40
B1402+044	J1405+0415	1.50	B2215+020	J2217+0220	0.60
B1407+022	J1410+0203	0.50	B2230+114	J2232+1143	2.40
B1421+122	J1423+1159	0.50	B2319+184	J2322+1843	0.75
B1439+136	J1442+1329	0.50	B2324+148	J2326+1507	0.60
B1457+091	J1500+0855	0.35	B2327+121	J2330+1228	0.75
B1524+101	J1526+0959	0.40	B2346+053	J2349+0534	0.80
B1525+155	J1527+1521	0.40			

APPENDIX B: PAPER I CORRECTIONS

We point out the following errors in table 2 of Paper I.

(i) The position quoted for B0256+424 is in error by ∼1 arcmin. The following position is quoted by Henstock et al. (1995):

α(J2000) = $02^{h}59^{m}37\overset{s}{.}6753$

δ(J2000) = $42°35'49\overset{''}{.}908$

(ii) Source B1547+507 was missed from table 2. It was used as a calibration source and has the following coordinates (Russell et al. 1991):

α(J2000) = $15^{h}49^{m}17\overset{s}{.}4688$
δ(J2000) = $50°38'05\overset{''}{.}789$

(iii) There is a typographical error in the entry for the source B1705+456. The correct entry is

B1705+456

J1707+456

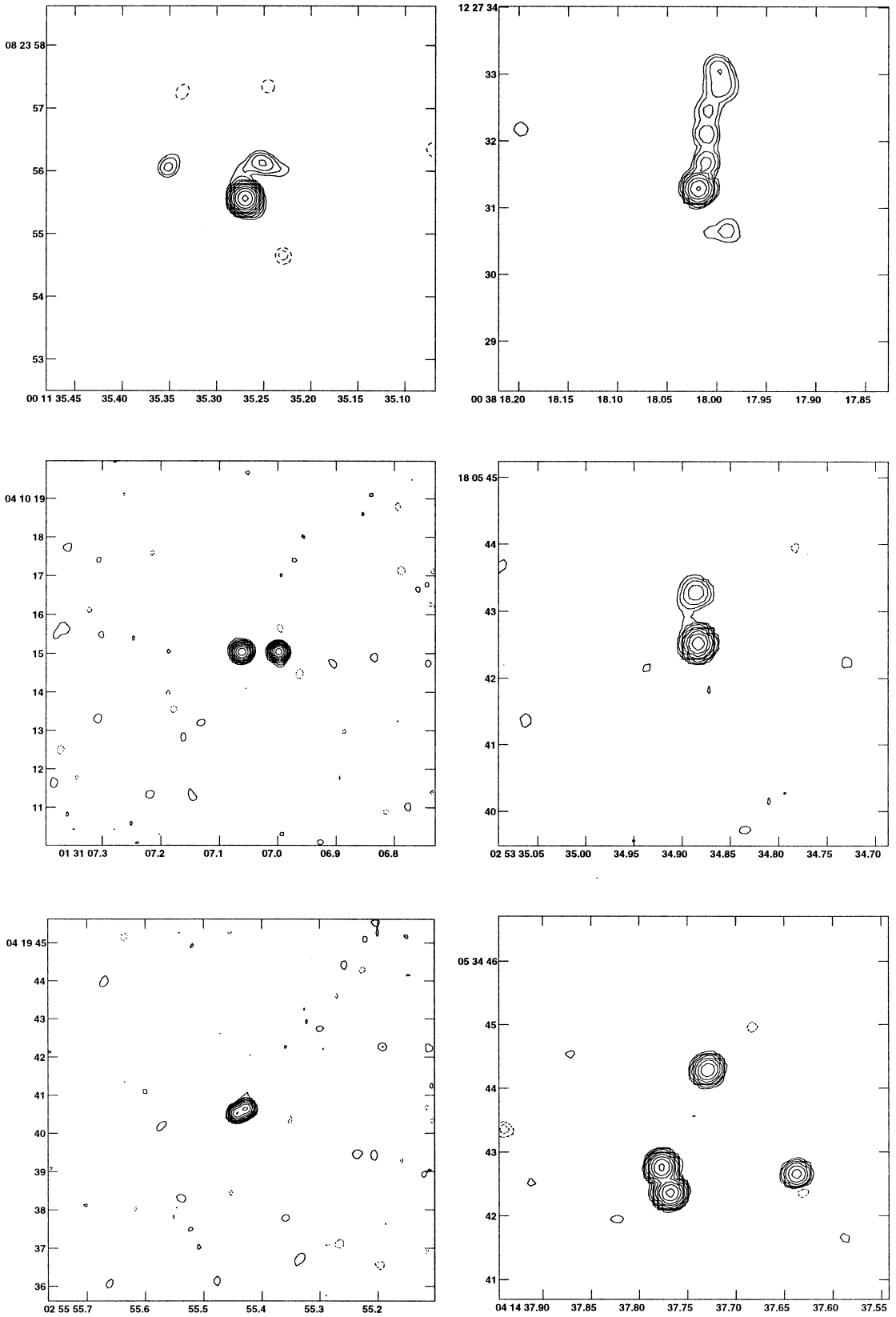

Figure A1. Contour maps of sources with structure found in the survey. The minimum contour level, given in Table A1, is about three times the rms noise in the image. The contour levels are multiples (−2, −1, 1, 2, 4, 8, 16, 32, 64, 128, 256, 512) of the minimum contour level.

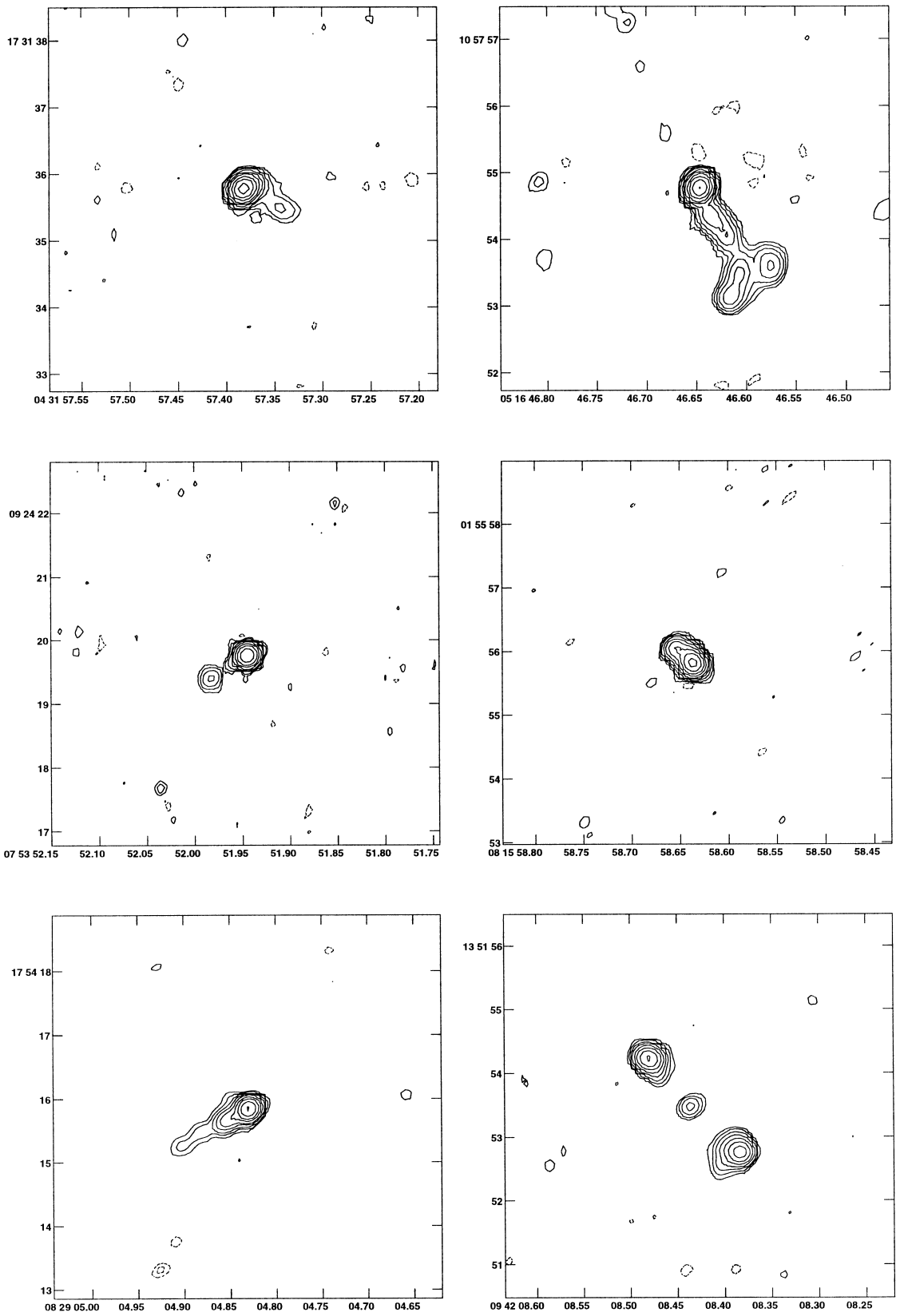

Figure A1 – *continued*

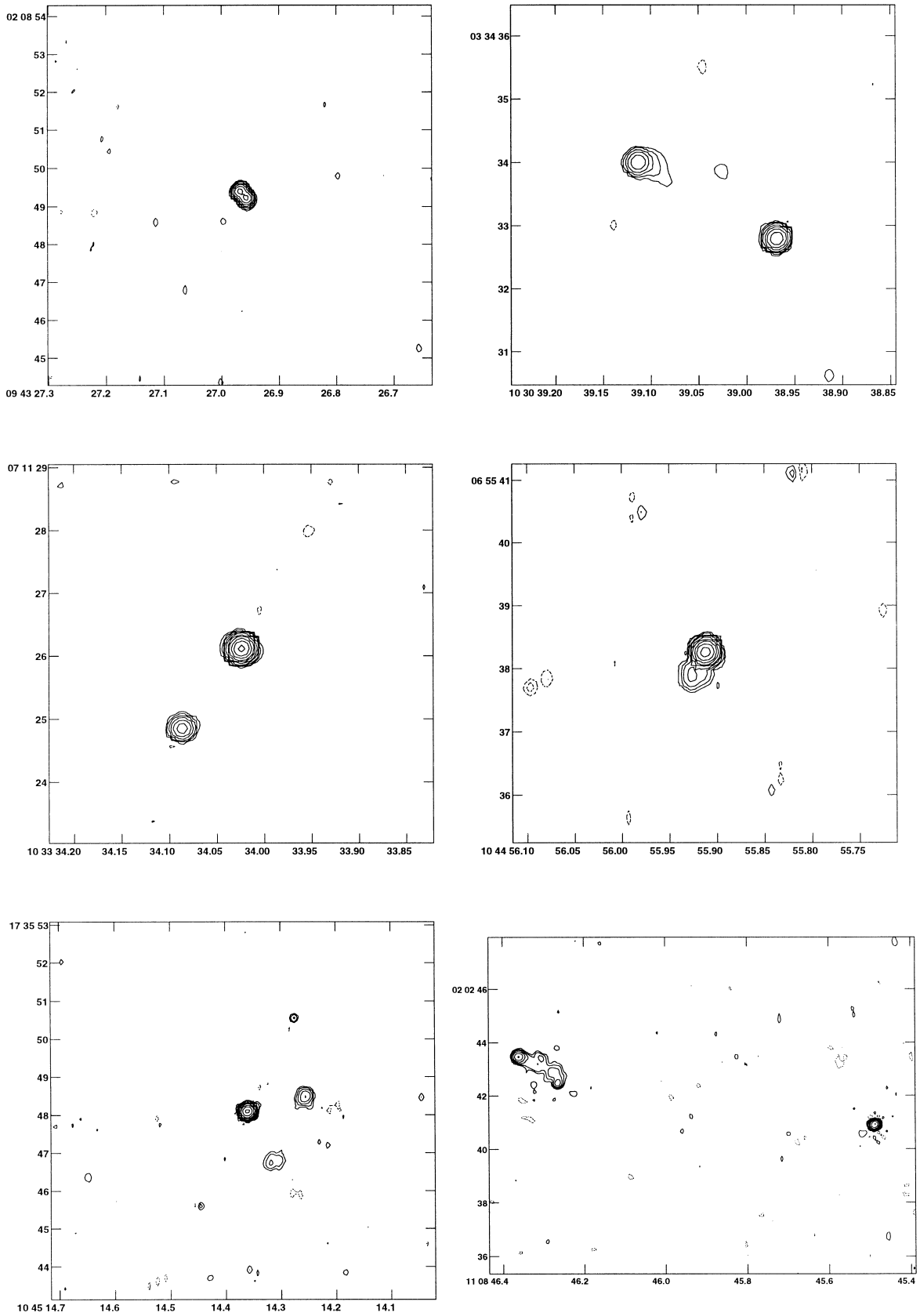

Figure A1 – *continued*

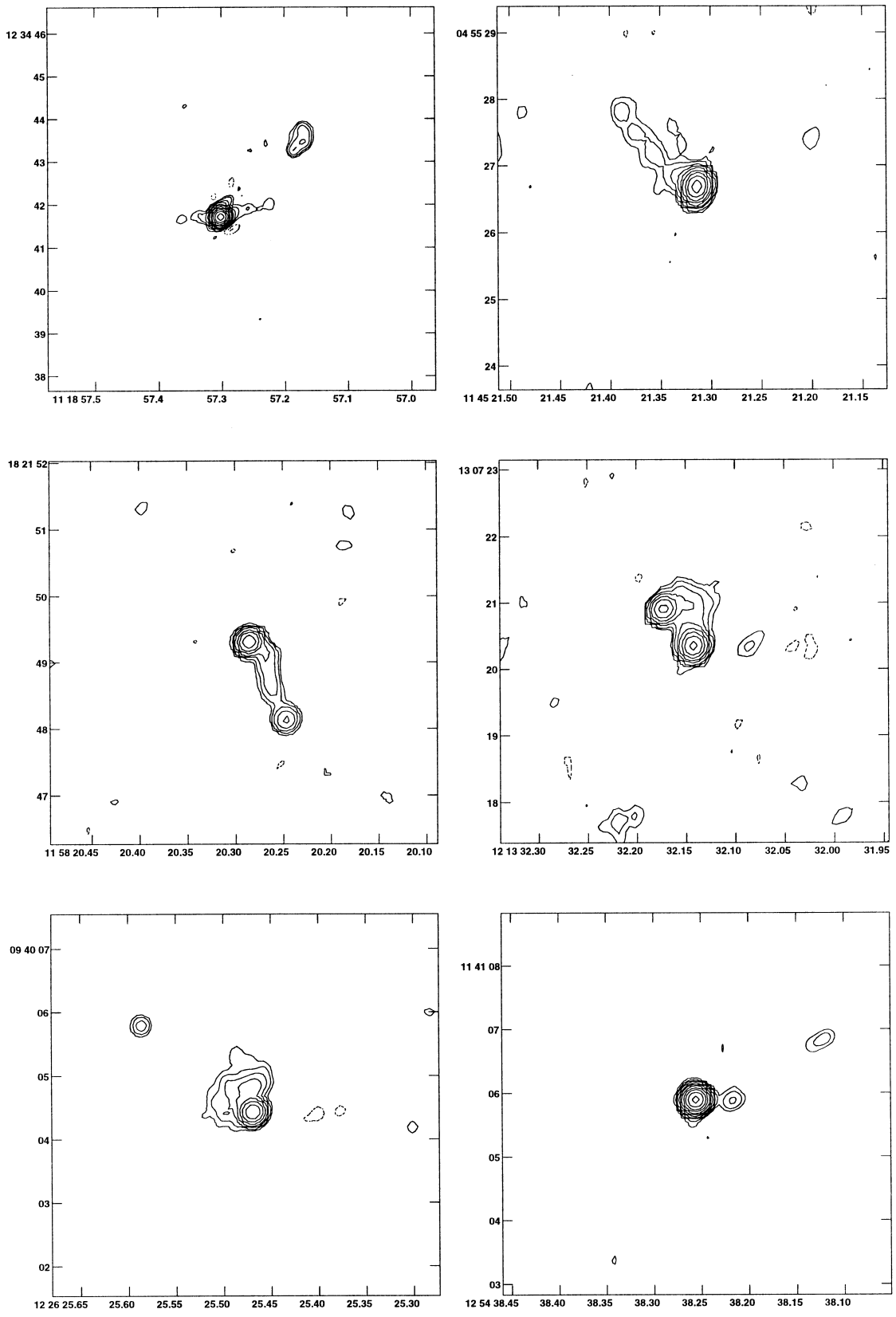

Figure A1 – *continued*

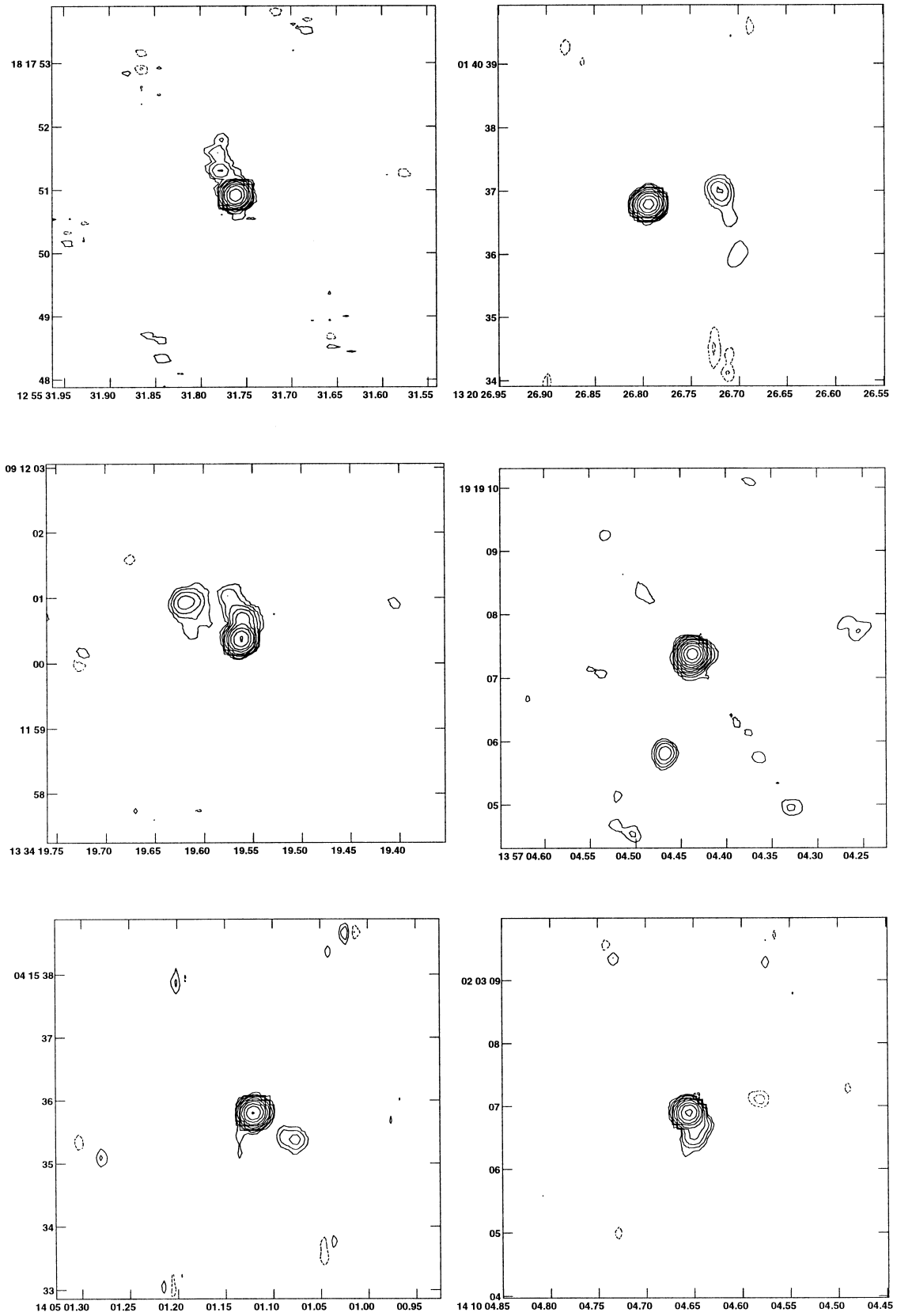

Figure A1 – *continued*

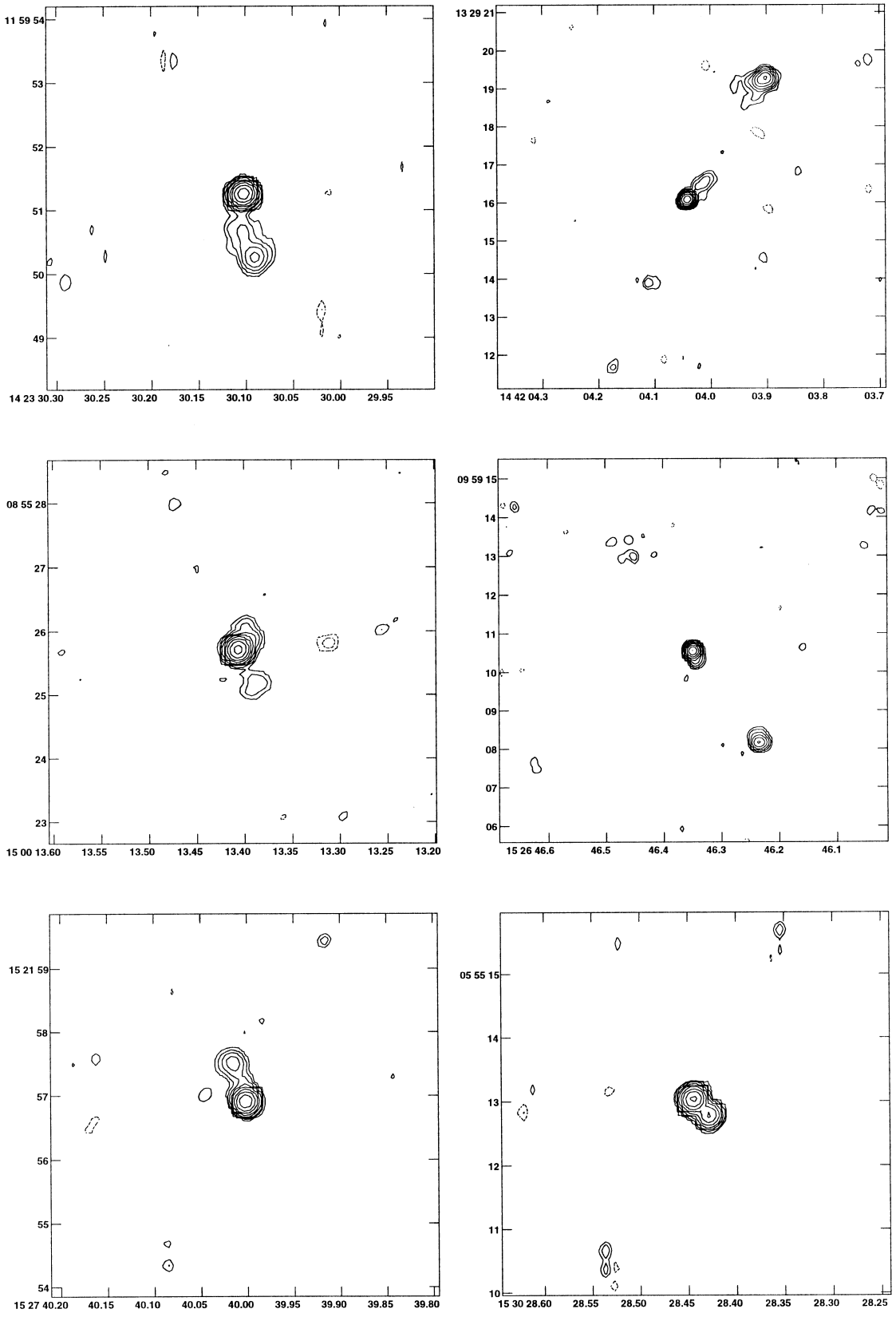

Figure A1 – *continued*

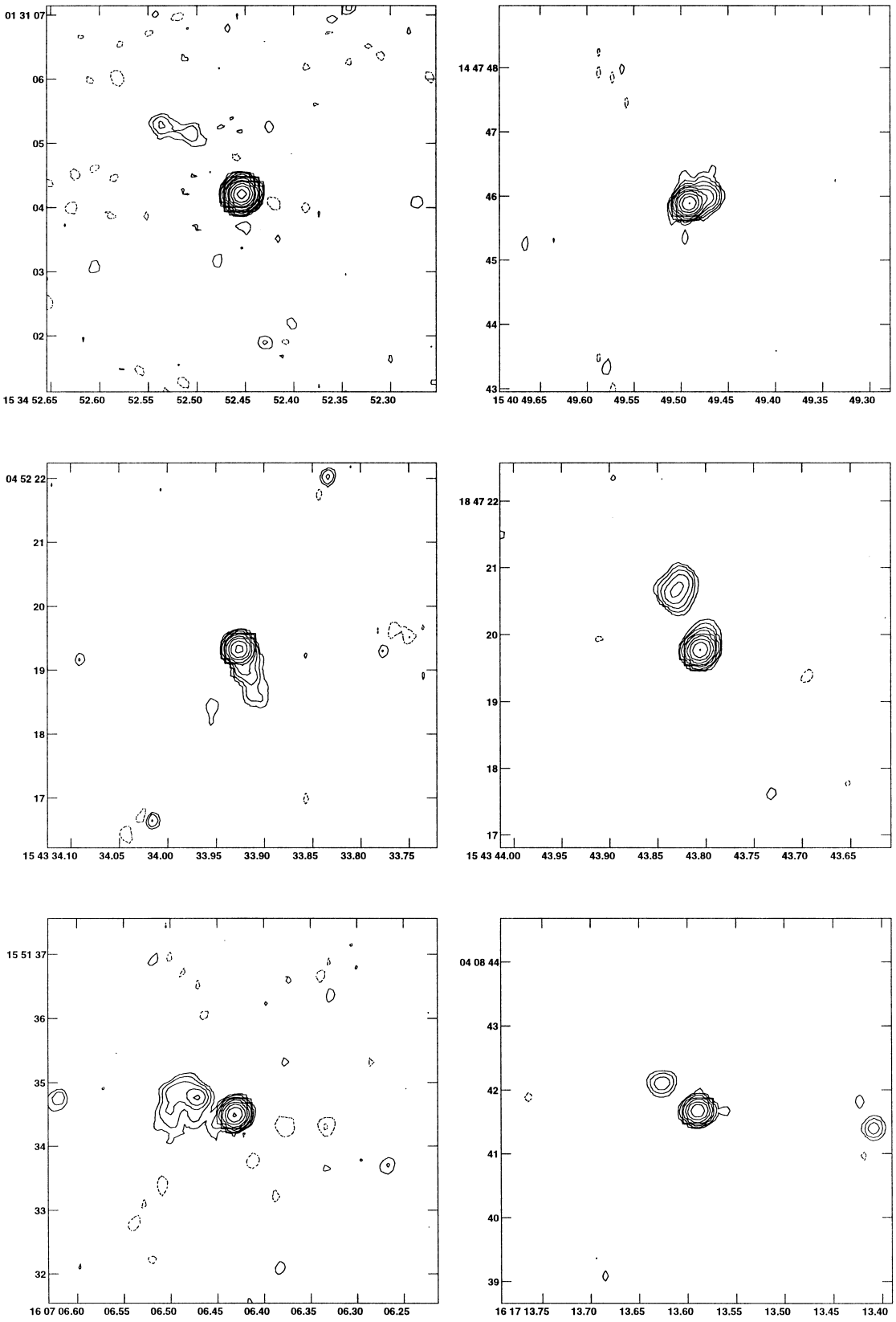

Figure A1 – *continued*

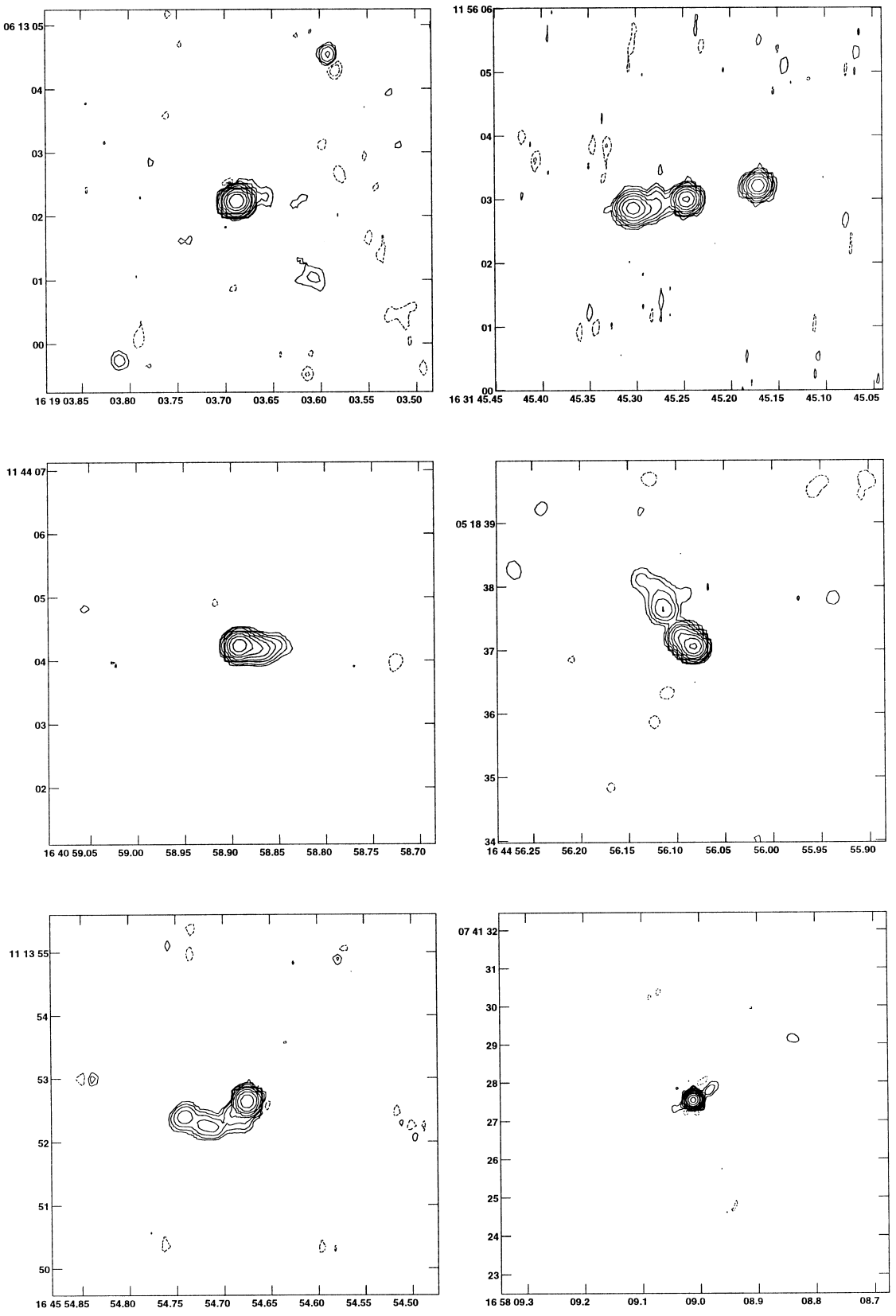

Figure A1 – *continued*

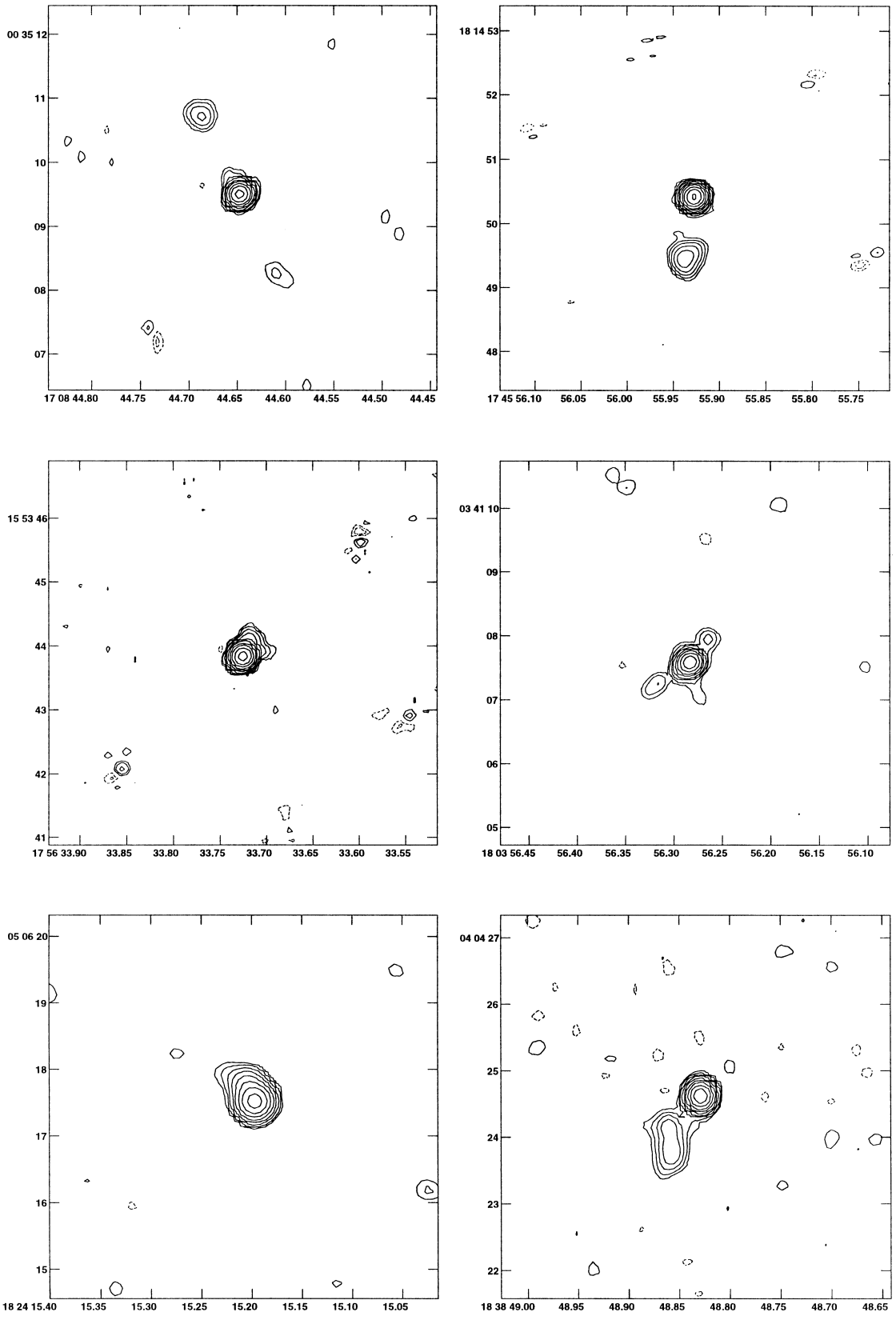

Figure A1 – *continued*

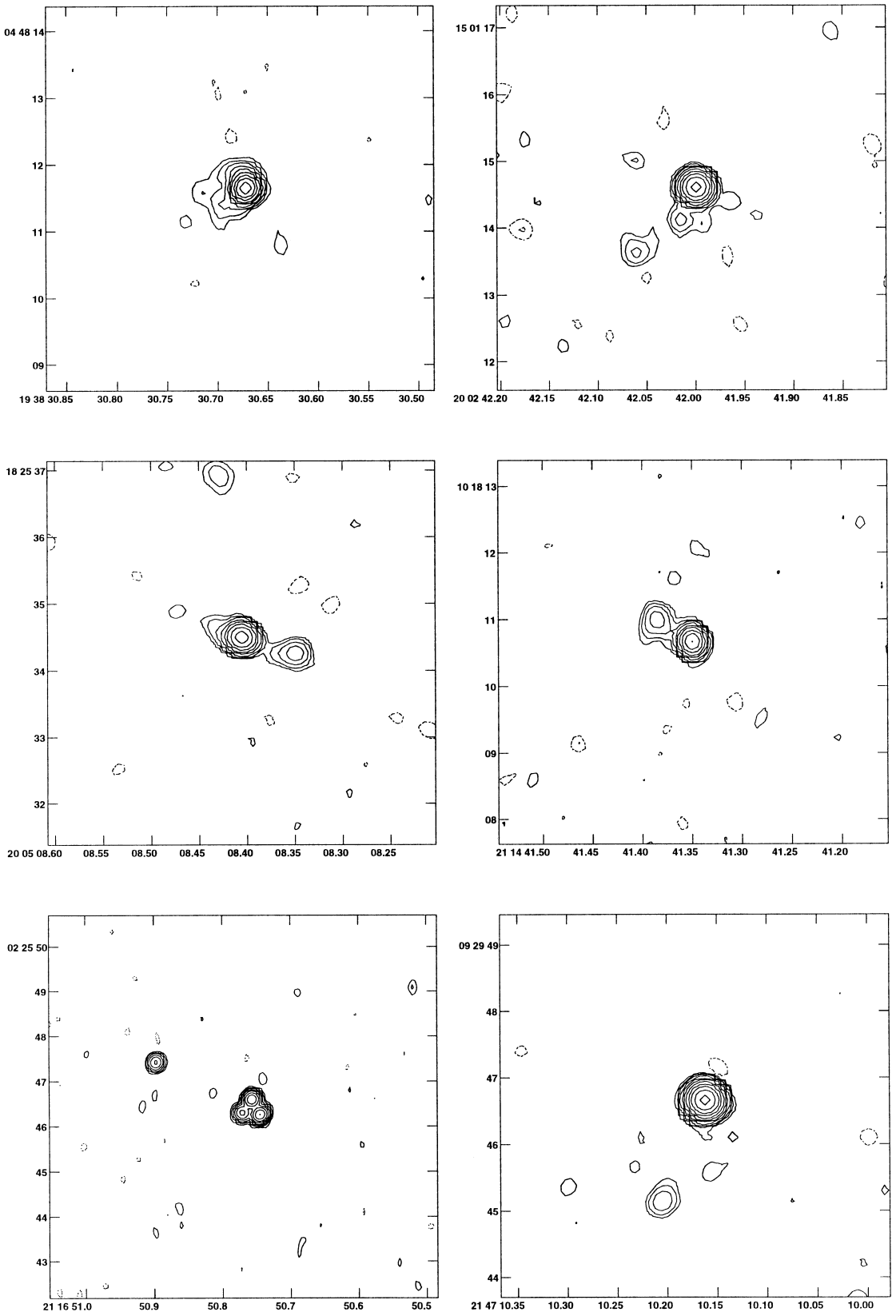

Figure A1 – *continued*

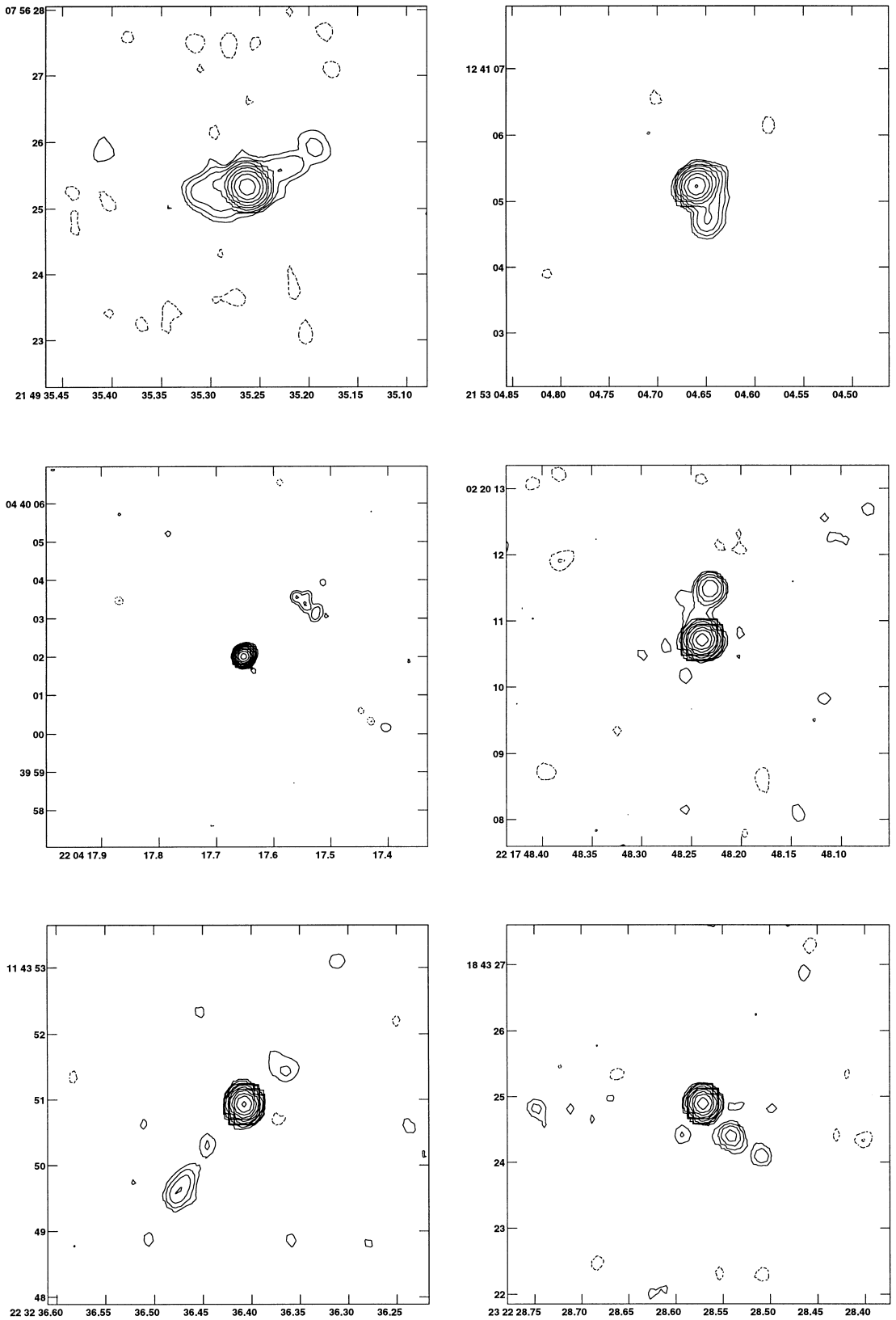

Figure A1 – *continued*

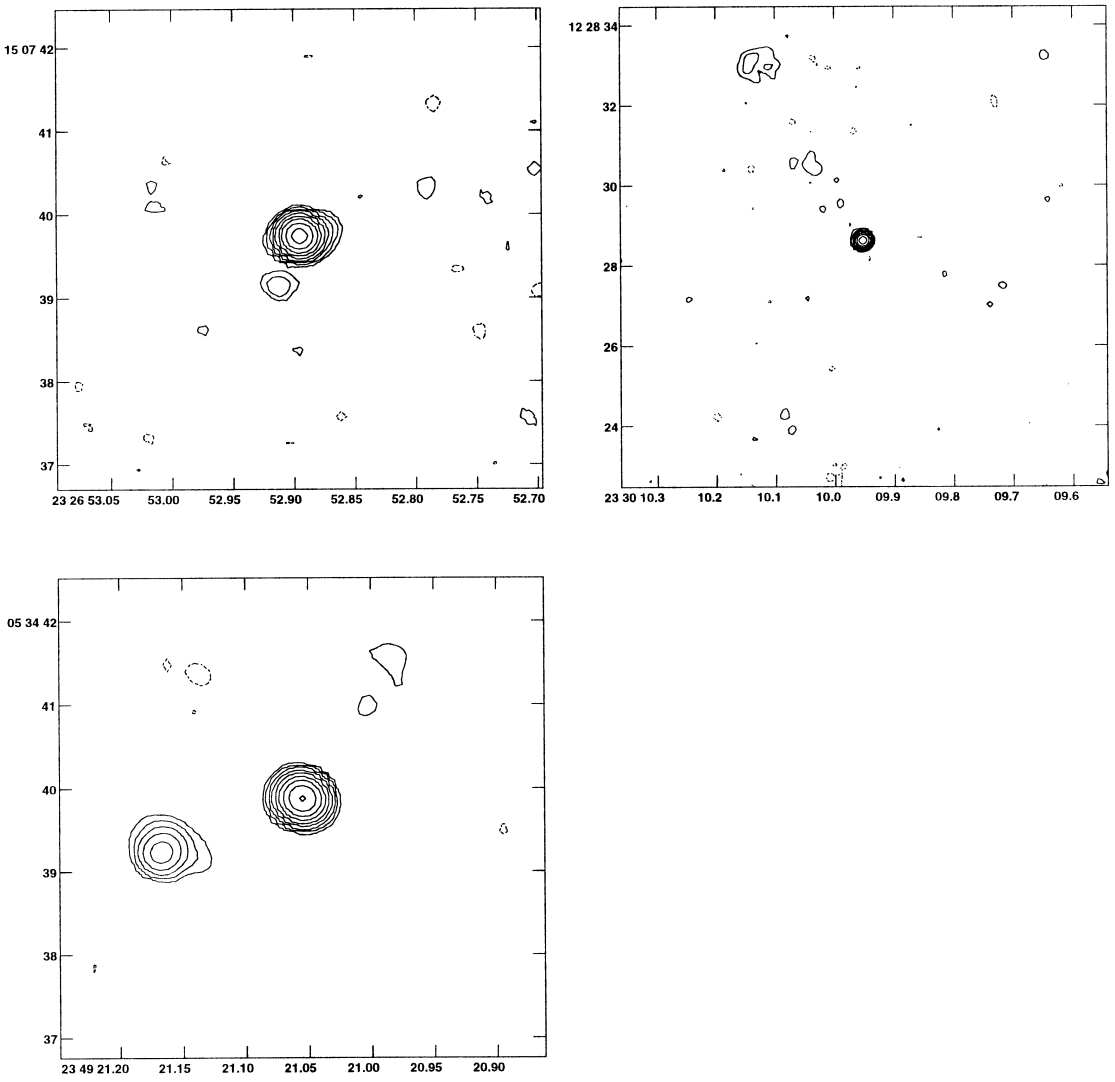

Figure A1 – *continued*

α(J2000) = $17^{h}07^{m}17\overset{s}{.}753\,83$

δ(J2000) = $45°36'10\overset{''}{.}5622$

(iv) There is a typographical error in the entry for source B1817+502. The correct entry is

B1817+502

J1818+512

α(J2000) = $18^{h}18^{m}30\overset{s}{.}519\,47$

δ(J2000) = $51°17'19\overset{''}{.}7402$

This paper has been typeset from a T_EX/L^AT_EX file prepared by the author.