

THE SIX AND TEN REPORT

July 2003

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Analysis of 28 MHz reports from the UK

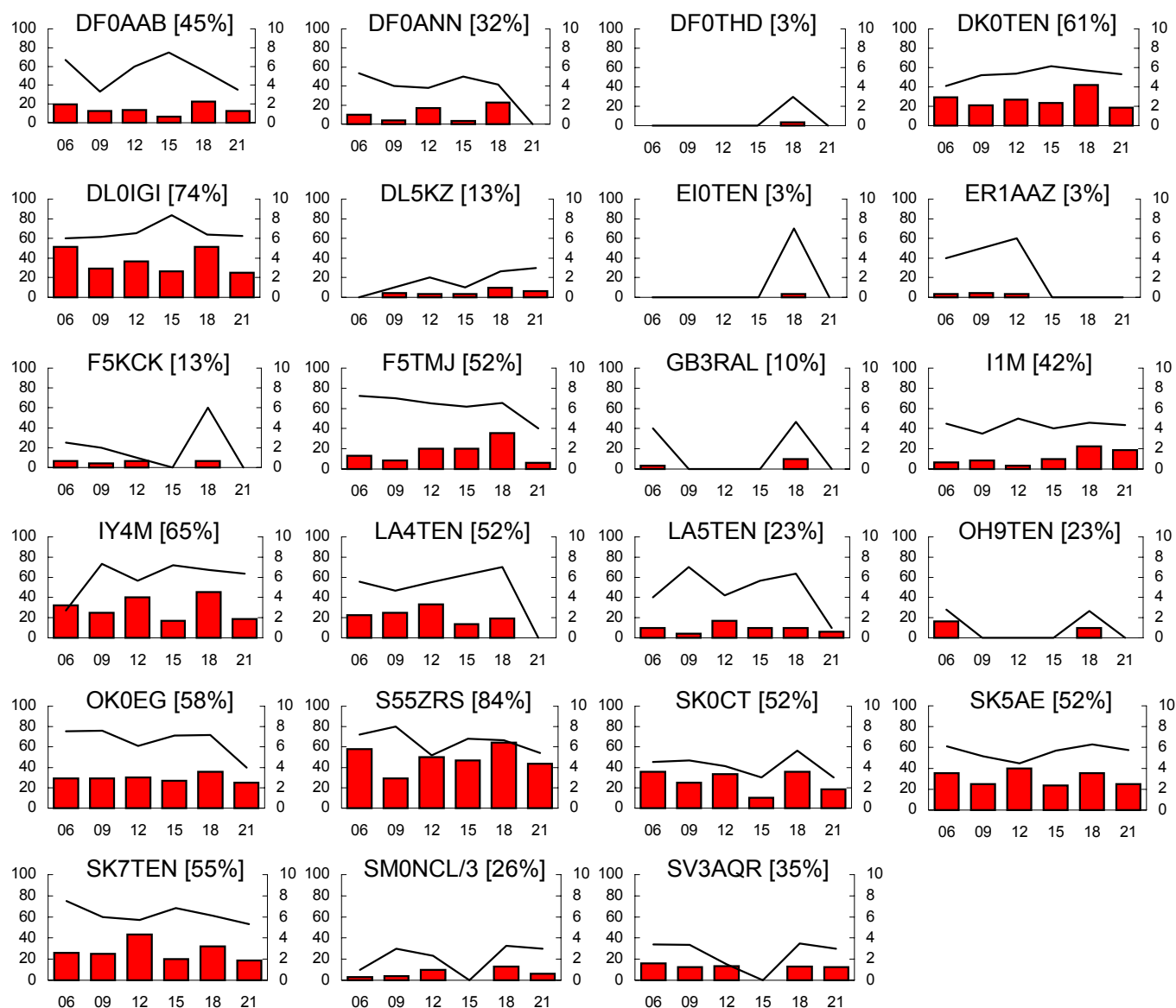
28 MHz reports and logs for July 2003 from G2AHU, G3IMW, G3USF, G4TMV, GM4WJA, G4UPS, G0AEV, G0IHF and from packet cluster reports. Compilation and commentary by G0AEV.

July on 10m proved to be a typical mid-summer month. F2 DX was rather poor being limited to propagation on generally north-south paths – mostly Africa and southern S America but VK6 and YB were also worked. Sporadic E was responsible for most of the 10m traffic, though there was slightly less of it around than in June. Rather few people on 10m seem to have been aware of the several good multi-hop Es openings to North America – 6m operators took full advantage, however!

Beacon graphs legend

Legend for all beacon graphs: - graph bars (left Y-axis): beacon reliability as the percentage of days a beacon was heard by any UK observer within each time band. Graph lines (right Y-axis): signal strength as the average of the daily maximum signal reported by any observer in each time band. Time band codes (X-axis): 6=0600-0900, 9=0900-1200, 12=1200-1500, etc. Callsigns are followed by daily reliability figures, the percentage of days per month when the beacon was reported.

European Propagation / Beacons



Propagation modes for European beacons. All beacons shown in the graphs on the previous page were heard by Sporadic E with the exception of the reception of GB3RAL (by G0AEV) via tropospheric scatter. The results include a little Es backscatter and, although not specifically identified, perhaps some auroral E. Short skip was represented by rare reception by Es of EI0TEN. No inter-European F-layer propagation is possible with the levels of ionisation prevalent at this time of the year.

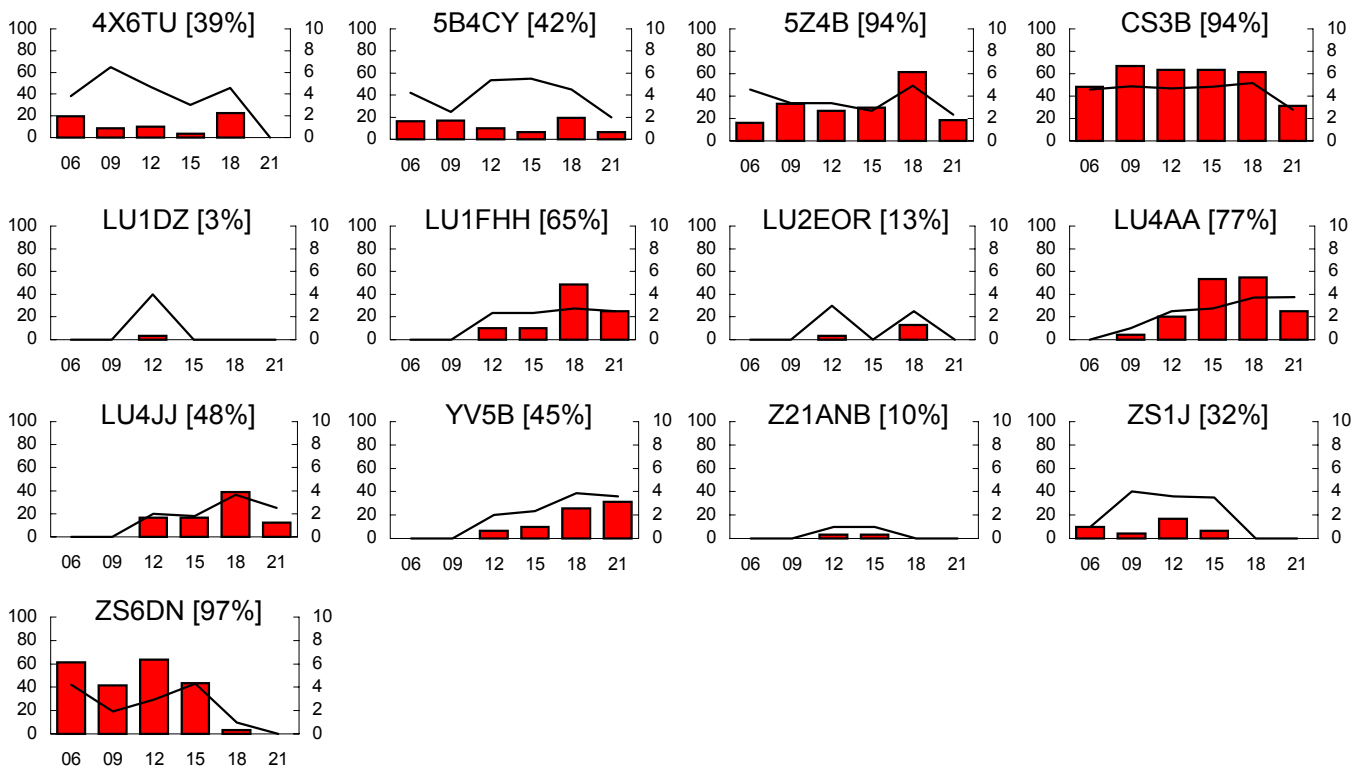
G4UPS has heard no Russian FM on 28 MHz during intense Es this summer and wonders if anyone else noted this. Ted says that Russian stations have plagued 28.885 MHz for years but no QRM of this nature was heard in June or July. Unfortunately the demise of the UA4NM beacon and the general lack of beacons in European Russia prevents any quantitative estimate of long-haul single-hop sporadic E propagation to this part of the World.

Beacon Notes. As reported last month, two “new” German beacons were reported in July: DL5KZ (28.321) and DF0THD (28.325). DL5KZ appeared, during good Es openings to DL, to be transmitting continuously but it was not reported often because it lies outside of the “normal” beacon sub band. DF0THD, similarly placed outside of the beacon sub-band, is a very rarely reported beacon. Andre DL8WX reported (HFbeacons mailing list, <http://www.explore.force9.co.uk/beacons/hfbeacons.htm>) the following information on this beacon:

“DH0THD has been in operation for about 30 years with half a watt into a ground plane from Darmstadt (near Frankfurt/Main). The identification is in A2 mode with a power of 0.1 W and a modulation frequency of 400 Hz. The low power during identification (7 seconds) makes it extremely difficult to log the beacon: only the carrier can be heard easily. The beacon will cease operation at the end of this year as the operator, DJ5BX, plans to retire.”

ER1AAZ was only reported on one day in July: I suspect it has gone off air. SM0CNL/3 (28.287) joined SK5AE, SK7TEN and SK0CT to give Sweden one of the best European countries for 10m beacon coverage. GB3RAL went QRT on 4 July and is not likely to return in the medium term - a sad loss. OH2B remains QRT after the theft of the beacon transmitter.

Propagation to Asia, Africa, Oceania, South and Central America



Suggested propagation modes. Normal F-layer propagation accounted for the bulk of DX (excluding North America) traffic. As discussed last month, both 2-hop sporadic E and 1-hop F2 propagation provide signals from 4X6TU and 5B4CY (Es > F2) and from CS3B (F2 > Es). F2 to Africa (as exemplified by 5Z4B and ZS6DN) held up well despite moderately high levels of geomagnetic activity. By comparison ZS1J was poor – perhaps the additional distance from ZS6 to ZS1 is beginning to tell. South American beacons were not as well received as last month with LU4AA, usually a good indicator, heard on 77% of days as opposed to 97% (i.e. all July days bar one) for ZS6DN.

Beacon Notes. Last month we reported a suspect logging of PY3PSA – this should have been PY3PSI and was probably a correct report – this beacon has been heard several times recently. Like many other Brazilian and Argentine beacons, PY3PSI appears to be an intermittent operation. The same is true of LU1DZ, rarely heard but logged once this month. PY3UEB on 28230 has been heard in August. OA4B is still QRT: the status of other beacons is difficult to determine. The status of NCDXF/IARU beacons can be checked at <http://www.ncdxf.org/beacon/> (usually fairly up to date).

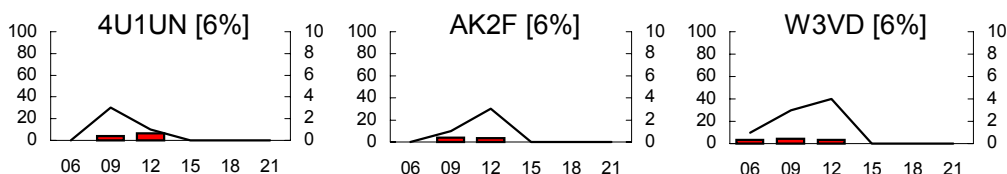
10m DX in July 2003

The following list of DX countries worked/heard in the UK (mainly from packet cluster spots with some additional data from contributor logs) shows rather meagre pickings for 10m operators. More DX countries were reported as worked in July than June, but this appears to be due at least in part to contest activity (IOTA, IARU) rather than any propagation advantages. Beacon monitoring suggests that DX openings were very similar in distribution and in frequency of occurrence in June and July.

3X, 5B, 5T, 5U, 7P, A2, CX, EA8, EA9, JY, LU, PY, PY0F, TA, V5, VK6, VP2E, VQ9, W, YB, Z2, ZS, Antarctica. Of these the following were worked by sporadic E: 5B, 5T, EA8, EA9, JY, TA, VP2E, W.

Propagation to North America

Plenty of openings to North America were identified at 6m but few of these produced reports of beacons or QSOs on 10m. The reason for this discrepancy is uncertain but may relate to the dedication of 6m operators and a lack of relevant propagation knowledge by 10m operators (a scurrilous generalisation from a predominantly 10m operator!). 6m operators are more likely to have high gain antennas at their disposal to account for some weak openings while 10m signals are from low erp beacons. This might explain observations such as that by G4UPS who reported hearing no W/VE beacons on 28mhz during 6m openings. There are no 10m beacons in the Caribbean so openings to this part of the world will be missed by beacon listeners. However, beacon monitoring did detect transatlantic openings on 3 days (6th, 21st and 22nd July) - these were, of course, by multi-hop Es.



Beacon Notes. A number of new beacons have appeared in Canada and USA during the summer while UK amateurs have had little or no chance of hearing them. Several favourite beacons have probably gone QRT too. Here's a summary of the new beacons reported by our friends in North America in July and August. Not all of these will survive for long but some will be heard from the second half of September when F2 between northern Europe and North America should return.

28.190	VA3ROR (Ontario)	28.252.5	N9AVY (Wisconsin)	28.275.5	W3SRL (Penn.)
28.222	KG4WBH (Georgia)	28.255	KI4PJ (Florida)	28.276	K4FUM (Georgia)
28.232	N2UHC (Kansas)	28.273	N4HLF (Florida)		

Note: W3SRL is destined to operate as NP2SH/B (US Virgin Is) from sometime in October.

Analysis of 50 MHz reports from the UK

UK 50 MHz reports for July 2003 from G2ADR, G2AHU, G3HBR, G3IMW, G3USF, G4UPS, GM4WJA and via packet cluster spots. Compilation and commentary by G0AEV.

Sporadic E

July sporadic E was, from the perspective of this data compiler, pretty good though not quite as extensive as that seen in June (an average of 18.3 “areas” per day in June, 15.0 in July). Some 6m Es propagation was recorded in the UK on every day except for 15, 29 and 31 July. Eric G2ADR thought the month was quite interesting – his F2 withdrawal symptoms being alleviated (“at least for the moment!”). There were a large number of openings to North America – on over half of July days if one counts all the very marginal events. Clearly this view is a consolidation of observations from across the country and individual operators will have seen a somewhat reduced picture.

G3HBR provides a useful review of 6m conditions from IO91. Brian thought the “mixed bag” that he described in June continued throughout July starting on the 1st with YA4F just audible through QRM and C6/W6JKV too weak to work. Following a brief opening to VO/VE1 on 6th, the 7th provided a “real summer opening” to North America. There was an early phase to EL98 at 13.20 than at 21.45 the band opened with loud signals from the East Coast lasting several hours. Stations could be worked “contest style”. Brian noted a curious effect of location. While he could work stations close to the USA coast, stations to the west of him were working W5 and W8, while stations east of him had poor conditions. Not what one would think! (*An example of footprint boundaries constrained by minimum skip distances? G0AEV*). There was another reasonable opening to USA on the evening of the 8th but the W7/VE7 stations heard in nearby Europe were inaudible at G3HBR. The 9th turned up an opening to W5 from 13.20 with KY5R a readable signal for several hours. The day finished with a late solo appearance of N3DB/3 at 23.44. Brian missed YA4F again on 18th but a good opening to 4X on 19th seemed to last all day and also brought contacts with 5T5SN and TF8GX. An opening to USA on 21st gave Brian signals from W1, 2, 3 and 4 in numerical order! The lone appearance of the VO1 beacon on 22nd seemed to mark the end of DX for the month and the band “just petered out”.

Sporadic E Tabulations 50 MHz compilations are presented in tables ordered alphabetically by country prefix. Percentages following the country name are the daily reliability values (the percentage of days when propagation was reported). The first row of each table labelled “D” is the day of the month, subsequent rows give the maximum signal strength reported from the UK in each of three hour time bands (“06” for the band 0600 - 0900 UTC, “09” for the band 0900 - 1200 UTC, etc.) A figure of “0” indicates that signal strength was not reported.

	4X Israel (29%)	5B Cyprus (26%)	5T (10%)	9Y Trinidad (3%)
D	1 13 16 18 19 20 21 22 23	1 5 6 13 18 19 23 28	3 5 19	1
06				
09	7 5 9	7 9 9 9	9 0	
12	5	0 9 7	0	
15	9 9 0	6		
18	4 0		5	9
21	0			5

	9H Malta (48%)	A6 (3%)	A7 (3%)	C6 Bahamas (6%)
D	1 3 5 6 8 9 12 16 18 19 21 22 26 27 28	19	19	4 6
06			0	
09	5 5 9	9	0	
12	0 9 6			5
15	9 9 7 0 5 0 0 5 3 0 5			
18	7 7 0 9 5			2 9
21	9 0			

	SM Sweden (32%)	SU (13%)	SV Greece (23%)	SV9 Crete (10%)
D	6 8 9 10 13 16 19 21 22 26	13 18 23 26	6 9 16 21 22 23 27	19 22 23
06	9 4 9 7	9 5	7	0
09	9 9 9 9	7 9	7	9
12	0 9 6 9		7 9	
15	9 0 9	6		5
18	7 9 9 0 9 0		9 5 6 9 0	7
21	7		5 7	

	TA (13%)	TF Iceland (23%)	UR Ukraine (39%)	VE3-6 (6%)
D	19 20 22	9 21 22 23 24 25 30	4 6 13 16 18 19 20 21 22 23 26 28	7 24
06	6		9 0 9	
09		0	9 5 9 5 0 9	
12	0 0	0 9	9 3	
15	9	0 9 0	1 9 5 9	7
18	4 0	9 5	9 7 6	
21		0 0 0	7 9	5

	VE1-2,VO Canada (29%)	VE8 (3%)	VP2A (3%)	W1-4 USA [CQ zone 5] (39%)
D	6 7 8 9 19 21 22 23 24	25	3	6 7 8 9 12 13 19 21 22 23 24 26
00		5		
06				
09	9 0 7			7 7 9 9
12	5 9 8 9 9		0	2 9 7 9 0 9 9 0 9 3
15	5 7 3 9			9 0 5
18	7 9 7			9 5 9
21	5 9 9 9			3 9 9 9

	VP9 (6%)	W4-5, 7-0 USA (19%)	W6/7 (6%)	YA (10%)	YO Romania (35%)
D	8 9	7 8 9 21 22 24	8 9	1 18 19	4 5 8 13 18 19 20 21 22 23 28
06				7	9 9
09		7			9 0 0
12	3	9 7 0 1	2		6 6 7 9
15		5	5	2 4	5
18	4	0 7 5			9 0
21		3 9			

	YL (10%)	YU/9A/S5/T9/Z3 Former Yugoslavia (58%)	YV (3%)	ZB (16%)
D	18 21 26	1 4 5 6 7 8 9 13 16 17 18 19 20 21 22 23 24 28	2	7 9 19 22 24
06		9 9 9 9 9 7 9 9		
09	9 0	9 9 9 9 7 0 9 5		5 7 0
12		9 6 9 9 9 6 9		1
15	9	0 9 9 9 0 7 9 9 6 9		
18		9 9 9 9 9 0 9 7 0	2	0
21		0 9 9		

Sporadic E Summary

The table on the next page presents counts of country/areas heard/worked by Es in the UK for each July day in 3-hour time bands. The counts are derived from the detailed data in the preceding section. Text is highlighted in bold indicates when 10 or more country-areas were reported. Cells with background shading are for times when the K-index for Hartland (Devon) was 5 or greater. Daily area totals are recorded in the data table reproduced in the solar and geomagnetic data section of this Report.

Es Summary (all data)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
00					2																				1						
03																		2		1		1									
06						2	2	1	7			3	10				6	5	14	11	3	11	10		1	5		2		2	
09	1		4		2	6	6	6	20	3	3	3	12				4	11	15	12	16	16	11	4		11		5			
12			6	2	9	8	7	8	11	5	2		7				4	13	12	12	12	20	7	4		5		3		1	
15	9		5	1	2	1	9	14	7	1	1	1	4			11	2	5	12	3	21	16	7	2		8	7	6			
18	7	6	1	11	3	5	9	16	15		1	4	11	1		15	1	3	14	6	16	16	14	3			6	7		2	
21	2	2		7	1	4	5	8	5					2		9			3	1	1	6	4		2			1		2	

The summary table shows clearly a period of intense sporadic E activity in the third quarter of July (especially the period 18th to 21st). Moderate to high levels of activity occurred in the first part of the month with a peak on 8th and 9th. Between these two active periods were two days (14th and 15th) with little or no sporadic E. Es activity in the final week was mixed with two “nil” days and 2 moderate days.

Table cells with shading indicating a Hartland K index of 5 or greater are mostly placed between the two periods of intense sporadic E or in the period of poor conditions in the final week of the month. This is evidence for the generally accepted view that elevated geomagnetic activity has a negative effect on sporadic E. In June there were several days when good Es conditions appeared to correlate with high values of the Hartland K index but in July only the 15z period on the 19th met these criteria. Further investigation shows that later in the day (the 19th) there was an aurora and many auroral E contacts were made within northern Europe in the 21z period. However, it is most unlikely that auroral E was responsible for the areas interpreted as heard/worked by Es in the 15z period as the countries involved are mostly to the south or east of the UK. In general one can say that geomagnetic disturbances usually have a detrimental effect on sporadic E, but this is not always the case!

Transatlantic propagation was reported on more than half of July days, a slight reduction compared to June but more than seen during summer months in most recent years. The following summary tables show the distribution with time of Es openings between the UK and Caribbean countries and between the UK and “mainland North America”. Caribbean openings were reported in the first week of July with a tail of activity in the second week. W/VE events had a quite different distribution being concentrated in two periods, 6th-9th and 21st-24th. Interestingly, these two periods lie towards the end of the intense periods of activity described for all (i.e. dominantly inter-European) sporadic E. This is suggestive of the westward drift of regions of sporadic E ionisation with time.

Es Summary for Caribbean openings

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
06																															
09																															
12				2			1																								
15				2																											
18	2	2	1	3			1		1	1				1																	
21	1	1		1																											

Data for: 9Y, C6, FG, FM, KP2, KP4, VP2 and YV

Es Summary for Northern N America openings

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
06																															
09								2	2	1											1	2									
12						1	2	5	2				1								3	3	2	1		1					
15							2	3				1									1	1	1	2							
18						1	2	3	2											2					1						
21						2	4	2	3																						

Data for: OX, VE1-2/VO, VE3-6, VE8, VP9, W1-4, W4-5/7-0, and W6/7

Sporadic E Backscatter

The following section lists contacts and SWL reports where the propagation mode was indicated as backscatter (presumably from the E-layer in all cases). Backscatter was reported throughout the month but the best period (on 24th) was coincident with a good opening to North America.

2	1906	MW1MFY > F6KHM 57	23	1727	G3FPQ > F6KHM (IN78) QTF 285
4	1507	G1IOV > IK0ZMK 59 beam 224	24	1459	EI7IX > MM0AMW 53
7	1758	EI7BMB > MW1IRW 55 "scatter"	1838	EI7IX > GM0EWX 539	
	2229	DD3DJ > G4DHF "loud via BS"	1847	G8BCG > GM0EWX 539	
8	1355	G4UPS > PA0HIP backscatter 579	1848	G8BCG > ON4GG 59 QTF 280	
	2056	G3IMW > ON4IQ51	1854	G8BCG > PE1MZS 579	
9	1944	F6FHP > G4DHF "strong BS"	1902	G4FVP > G8BCG "nice backscatter"	
	2012	G4UPS > ON4IQ 589	1903	G4FVP > PA0HIP 559 QTF 270	
14	2136	G3IBI > G8BCG/P 57 (backscatter)	1944	G8BCG > GW3MFY 579	
18	1847	G8BCG > PA7MH 549 bs from 230	27	1850	G3IBI > G1YLE "strong b/s" QTF 240
	1915	G8BCG > EI2JD 559 bs from 220	27	1850	G4UPS > EH9IC 55 (presumed b/s)
19	1116	DL1EAP > G4DEZ 55 qtf 120	30	1742	G3KOX > MW1MFY "b/s from 260"
21	1411	G25429 (IO93) hears ON4IQ "strong b/s"			

DX (F2 and TEP) Propagation

No tabulation of "DX" propagation is needed this month as it only occurred on two days with openings to Brazil – in the 18z period on the 9th (maximum reported signal strength S5) and in the 15z period on 18th (signals to S9). It is presumed that these events were due to a combination of sporadic E and F2 – there was certainly Es available for the first hop in both cases.

Tropospheric Propagation

The following are representative of the data available for tropospheric propagation. Some are indicated as tropo but may not actually be so. G0AEV's comments are in italics: make your own mind up!

5	1451	G3IBI (IO90) > EI9E/P (IO62) 59+ (<i>seems a big signal for tropo, but in a contest so...</i>)
5	1535	G4UPS > EI9E 59 in IO62QH
5	1602	DL8PM > G8SAD/P IO91 cq contest, presumed tropo
6	0625	G4UPS > GB3BUX 579
6	1600	G3IMW > GB3IOJ at 519 is "normal tropo"
8	1117	MU0FAL > GB3MCB at 599 described as "way up tropo"
9	0455	F5NLY (JN08) > GB3LER (<i>described as tropo but distance suggests an ionospheric mode</i>)
11	1941	EI3IO > GB3MCB "good tropo conditions"
14	0551	PA0OOS > GB3BUX very loud (>500km)

Meteor Scatter

The following MS instances were reported (mostly from the DX cluster). I have excluded most JT6M contacts from this list because the propagation mode is often not ms (and also not determinable).

15	0625	G4UPS > GB3RMK 449 (MS, probably)
17	1503	GM8LFB > GB3MCB "big burst then in/out weak"
27	0507	F6IRF > GB3MCB "2 minute MS burst!"

Aurora

GM4WJA describes this month as having plenty of Auroras but no major events. The following list seems to agree with John's view. The events on the 11th, 16th and perhaps 19th could be described as moderately strong – the rest are mostly of the weak "Scottish" type.

3	18z	1902	EI7IX (IO53) > GB3LER 51a
4	21z		GM4WJA (IO67) reports aurora in late evening
11	15z	1533	GM8LFB (IO88) > GB3LER/B 55a (first report of aurora on 11 th)
		1538-1634	GM8LFB > DL1EJA, LA8AJA, LC3DAT, OY6SMC 51a, OZ0JX 51a; EI7IX (IO53) > GB3LER (52a). No G<>GM in this period
		16.45-1735	GM <> G (IO90, IO93, JO02); EI3IO > G4DEZ (JO03) 55a (last in this phase)
	18z	2001	EI7IX > GB3LER "still aurora" 52a. GM4WJA says "aurora all evening"
	21z	2236	EI7IX > GB3LER "in again" 53a
12	03z	0352	G4IFX (IO91) > GB3RMK "52 Aurora plus ms" (11 th late phase continuation)
	21z		Late evening aurora at GM4WJA
14	21z		Another late evening aurora reported by GM4WJA
15	21z	2250	MM0AMW (IO75) > GB3LER 53a
16	12z	1208	EI7IX > GB3LER 41a (first report of aurora on 16 th)
		1218-1240	GM <> GM; G4OBK (IO94) > GMs 54a; GM8LFB > ES2QN 53a, OY6SMC 51a
		1457	GM8LFB > GB3LER/B 53a "now back" (after gap in aurora conditions)
	21z	2124	MM0AMW > GB3LER 55a "LA video strongly auroral"
18	21z		Late evening aurora at GM4WJA
19	21z	2212	GM4PLM > GB3LER/B 52a "increasing fast"; G4OBK > MM5AJW (IO88) 57a
		2223-2245	EI7GL > GB3LER; GM4PLM > LY2BAW 55a; MM0BQI (IO78) > G4OBK 56a
20	21z		GM4WJA reports late evening aurora in IO87
24	21z		Another late evening aurora at GM4WJA
26	18z	2025	GM4ENK (IO99) > GB3BUX 41a
	21z	2102	EI7IX > GB3LER 41a "auroral again"
28	12z	1430-1448	LA4CQ (JP20) > GB3LER 52a; GM8LFB > GB3LER 55a
	15z	1642	LA4CQ > GB3LER 53a increasing
29	12z	1435-1445	GM6VXB spots "aurora in IO97"; LA4CQ > GB3LER 55a
	15z	1719	GM8LFB > GB3LER 53a
	18z	1819	GM8LFB > OY6SMC 52a
	21z		Aurora continues into late evening at GM4WJA
30	18z		GM4WJA reports aurora in early to mid evening.
31	15z	1557	GM8LFB spots "aurora in io88" and GB3LER at 55a
	21z		Late evening phase noted by GM4WJA

Auroral E

3	21z	2240	GM8LFB > JW9SIX "in and out here" (possible auroral E)
11	18z	1821	GM8LFB > JW9SIX/B 519 "AEs"
11	21z	2111-2243	2111 GM8LFB > JW9SIX 539 "AEs"; 2242 MM0AMW > TF8GX 539
16	12z	1341	PE1MZS > GB3LER 529 "no auroral sound, qtf 330" (possible Auroral E)
19	21z	2127-2200	GM4PLM > JW9SIX 59, G0JHC > JW9SIX 579, PA0FRE > GB3LER, GM4PLM > TF3EE 59, G4KCT > TF3FK, G8BCG > OY6SMC 599, GM4PLM > LA7SP/M (JP76) 559. G1SDX > OY6SMC 55, G4IGO > LA5TFA 55
		2200-2307	G > GM, LA, OH, TF; F5JJK > GM4ENK; G4IFX > JW9SIX 539; DF0HF > GB3LER 599; GM0BQM > ES2CM 59; G4OBK > LY2BAW
28	21z	2125	LA1YCA > GB3LER 559
28		2311	GM8LFB > LA7SIX/B 579 auroral E
31	21	2203	MU0FAL > GB3RMK (weak). Possible auroral E

Solar and Geomagnetic Data for July 2003

Data supplied by G0CAS (Sun Mag) and from Internet sources. Compilation by G0AEV.

Sunspot numbers (SEC)	Mean 132.8	Max 224 (20 th)	Min 52 (26 th)
Solar Flux (28 MHz)	Mean 127.8	Max 157 (20 th)	Min 99 (30 th)

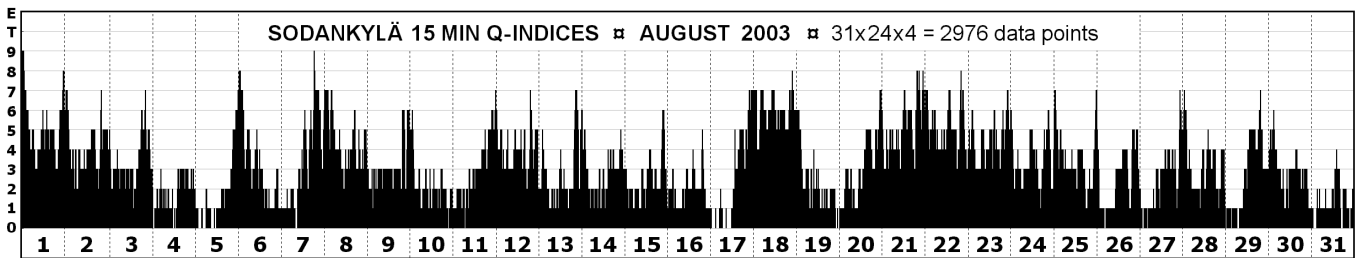
Solar data for July 2003 are presented in the table at the end of this section. Numbers in the 28 and 50 MHz columns are the total daily “areas” worked/heard from the UK, a summary of the data presented in the first sections of this Report. On 28 MHz “areas” refer to the number of beacons reported via Es and F-layer, on 50 MHz the number of countries via Es, F-layer and Aurora. F2 critical frequencies are from Chilton in Oxfordshire, SIDC spots from SIDC, and other solar data from the joint USAF/NOAA daily summaries or directly from SEC.

Energetic Events

 (Flares of M and X class).

2 nd	0706-0746	M3.0 1F	10 th	1354-1423	M3.6	30 th	0404-0412	M2.5 1B
6 th	0006-0040	M2.3 SF	12 th	1857-1913	M1.4 SF			
9 th	2159-2245	M2.0 SF	29 th	0128-0143	M1.3 1F			

Q-indices

 from Sodankylä, Finland (tnx Väinö, OH2LX)


Väinö writes “August also was a rather disturbed month with Sodankylä monthly Ak average was 37.0.

Geomagnetic indices ▫ Monthly averages			
Month	Sodankylä	Nurmijärvi	Ap
January	19.6	11.3	13
February	27.4	15.9	17
March	38.7	20.3	21
April	36.2	17.6	20
May	45.3	28.6	26
June	38.5	17.6	24
July	32.7	19.4	19

The most disturbed day was 18 Aug”. The Nurmijärvi indices were Max Ak was 144 on 18 Aug, and the Monthly Ak Mean was 23.1

The tabulation opposite shows average geomagnetic data for the two Finish observatories for 2003 to date.

K-indices K indices for July 2003 for Hartland (British Geological Survey) are presented below

1	1	2	2	1	2	3	2	1	14	11	3	4	5	4	4	5	5	4	34	21	3	2	2	1	2	1	2	0	13
2	1	2	3	2	3	4	4	2	21	12	5	5	5	4	4	3	3	3	32	22	2	1	2	2	2	2	2	0	13
3	3	3	1	2	3	4	5	3	24	13	3	3	3	3	3	4	3	2	24	23	1	2	2	1	2	3	3	2	16
4	4	3	4	4	3	4	3	3	28	14	2	2	3	1	3	4	3	4	22	24	2	2	0	0	2	2	3	4	15
5	4	3	4	2	4	3	3	2	25	15	5	4	2	5	4	2	5	4	31	25	1	1	3	2	3	2	2	1	15
6	2	1	1	2	3	3	3	2	17	16	4	4	5	5	5	4	4	5	36	26	2	2	3	3	4	5	5	4	28
7	3	2	4	2	4	3	2	1	21	17	5	3	1	2	3	3	4	4	25	27	4	3	4	3	3	4	3	1	25
8	0	0	1	1	2	2	1	0	7	18	3	4	2	1	2	4	3	5	24	28	2	1	2	2	4	4	3	3	21
9	0	2	0	1	1	1	2	1	8	19	4	2	3	3	4	5	4	5	30	29	4	5	3	3	4	4	5	4	32
10	1	2	2	1	3	2	2	3	16	20	3	2	3	3	3	3	3	4	24	30	4	4	3	4	3	4	4	4	30
																				31	4	3	3	5	4	4	4	4	31

The UK or planetary K indices reach 5 or higher (i.e. at least minor storm) on 16 days

	July 3 rd	July 4 th	July 11 th
Kp	3 3 2 3 3 4 4 4 26	4 5 3 5 4 4 3 4 32	3 5 6 5 5 4 5 5 38
Lerwick	2 2 1 1 3 3 4 3 19	3 3 3 3 4 4 2 2 24	3 3 4 3 4 5 6 6 34
Eskdale	3 3 1 2 4 4 5 3 25	3 3 4 4 4 4 3 3 28	3 4 5 4 4 5 4 4 33
Hartland	3 3 1 2 3 4 5 3 24	4 3 4 4 3 4 3 3 28	3 4 5 4 4 5 5 4 34
	July 12 th	July 15 th	July 16 th
Kp	6 7 6 4 3 3 4 3 36	5 5 3 5 3 3 4 4 32	4 5 6 6 6 4 4 5 40
Lerwick	6 6 5 3 4 3 2 3 32	4 4 2 3 2 2 4 5 26	5 3 4 4 5 3 3 5 32
Eskdale	5 5 4 3 5 3 3 3 31	4 4 2 4 3 2 4 4 27	4 3 5 4 5 3 4 5 33
Hartland	5 5 5 4 4 3 3 3 32	5 4 2 5 4 2 5 4 31	4 4 5 5 5 4 4 5 36
	July 17 th	July 18 th	July 19 th
Kp	5 4 3 3 3 3 4 4 29	3 3 2 2 2 3 3 4 22	4 3 3 4 4 4 4 5 31
Lerwick	4 3 1 2 3 2 3 2 20	3 3 1 1 2 3 2 4 19	4 2 2 3 4 4 4 6 29
Eskdale	5 3 2 2 3 2 4 3 24	3 4 1 2 3 4 3 4 24	4 2 2 3 4 5 4 4 28
Hartland	5 3 1 2 3 3 4 4 25	3 4 2 1 2 4 3 5 24	4 2 3 3 4 5 4 5 30
	July 20 th	July 26 th	July 27 th
Kp	5 4 4 3 3 3 3 3 28	3 3 3 3 4 5 5 5 31	5 4 5 4 3 3 3 2 29
Lerwick	5 3 2 2 3 3 2 3 23	2 2 1 2 4 6 6 5 28	6 4 4 3 3 3 2 2 27
Eskdale	3 2 2 3 3 3 3 4 23	2 2 1 3 5 5 5 4 27	4 3 4 3 3 3 3 1 24
Hartland	3 2 3 3 3 3 3 4 24	2 2 3 3 4 5 5 4 28	4 3 4 3 3 4 3 1 25
	July 28 th	July 29 th	July 30 th
Kp	2 2 3 4 5 4 3 3 26	4 5 4 4 5 5 5 5 37	4 4 5 5 4 4 4 4 34
Lerwick	2 1 1 2 5 4 3 3 21	3 4 2 2 5 4 5 5 30	3 3 3 3 4 4 4 4 28
Eskdale	2 1 1 3 5 4 3 3 22	3 4 3 3 4 4 5 4 30	3 4 3 4 4 4 4 4 30
Hartland	2 1 2 2 4 4 3 3 21	4 5 3 3 4 4 5 4 32	4 4 3 4 3 4 4 4 30
	July 31 st		
Kp	4 5 4 5 4 4 3 4 33		
Lerwick	4 4 2 4 4 4 4 4 30		
Eskdale	4 3 3 5 4 4 4 4 31		
Hartland	4 3 3 5 4 4 4 4 31		

July 2003	28 Areas			-- 50 Areas --			2800		- Spots -		Max		X-ray		Min foF2		-- Particle Fluences --					
	Es	F	Es	F	Es	DX	A	AE	Flux	SEC	SIDC	Kp	Ap	Aa	b.gnd	MHz	Hour	2MEV Elec	1MEV Prot	10MEV Prot		
01-Jul	9	8	14	0	0	0	0	0	131	138	100	4	13	13	B3.8	6.8	19	4.5	03	2.8E+08	3.4E+05	1.1E+04
02-Jul	1	9	7	0	0	0	0	0	135	153	97	4	15	26	B4.5	7.6	21	5.2	04	1.8E+08	2.8E+05	1.1E+04
03-Jul	5	7	10	0	1	1	0	0	132	147	80	4	17	29	B4.4	6.8	22	3.9	06	1.2E+08	6.1E+05	1.1E+04
04-Jul	8	4	17	0	0	0	0	0	140	130	67	5	26	37	B5.1	6.6	22	4.2	04	8.5E+07	1.1E+06	1.1E+04
05-Jul	1	4	13	0	0	0	0	0	142	88	56	4	17	32	B4.6	6.6	22	4.1	04	1.8E+08	1.0E+06	1.1E+04
06-Jul	16	8	17	0	0	0	0	0	130	114	63	3	12	17	B3.7	6.9	19	3.8	06	2.2E+08	6.1E+05	1.1E+04
07-Jul	12	8	21	0	0	0	0	0	133	140	85	4	14	28	B3.2	9.0	20	4.5	04	2.5E+08	1.2E+06	1.1E+04
08-Jul	15	5	24	0	0	0	0	0	131	149	89	3	5	5	B4.6	6.7	22	4.5	04	2.0E+08	5.6E+05	1.1E+04
09-Jul	17	8	30	1	0	0	0	0	126	125	90	2	6	7	B6.7	7.0	21	5.2	03	1.9E+08	9.0E+05	1.2E+04
10-Jul	11	7	7	0	0	0	0	0	123	137	74	3	8	15	B5.9	7.6	12	5.1	04	7.0E+07	9.9E+05	1.1E+04
11-Jul	2	6	4	0	6	2	0	0	122	127	61	6	46	66	B5.6	6.1	23	3.8	06	3.0E+06	5.0E+05	1.1E+04
12-Jul	0	9	6	0	1	0	0	0	122	102	68	7	46	61	B5.9	6.8	21	3.0	03	2.1E+07	1.4E+06	1.1E+04
13-Jul	17	10	22	0	0	0	0	0	127	137	96	4	14	27	B3.8	7.1	22	3.6	04	1.2E+08	7.9E+05	1.1E+04
14-Jul	2	10	2	0	0	0	0	0	127	159	96	4	15	26	B3.2	7.3	22	4.5	02	1.6E+08	8.7E+05	1.1E+04
15-Jul	0	5	0	0	1	0	0	0	126	154	105	5	27	51	B2.6	6.6	21	3.5	03	5.0E+07	1.2E+06	1.1E+04
16-Jul	11	4	19	0	5	1	0	0	133	164	105	6	48	74	B2.8	n.a.	n.a.	4.2	05	4.0E+06	1.0E+06	1.1E+04
17-Jul	12	3	8	0	0	0	0	0	139	189	112	5	22	37	B3.9	n.a.	n.a.	n.a.	n.a.	4.5E+07	1.4E+06	1.2E+04
18-Jul	13	8	23	0	0	0	0	0	140	193	121	4	14	32	B4.2	n.a.	n.a.	n.a.	n.a.	9.9E+07	5.5E+05	1.3E+04
19-Jul	18	9	39	0	4	11	0	0	146	178	128	5	26	50	B5.4	n.a.	n.a.	n.a.	n.a.	1.5E+07	3.8E+05	1.2E+04
20-Jul	18	10	20	0	0	0	0	0	157	224	161	5	19	32	B8.9	n.a.	n.a.	n.a.	n.a.	8.4E+07	1.5E+06	1.1E+04
21-Jul	16	6	32	0	0	0	0	0	156	219	146	4	12	11	B6.6	n.a.	n.a.	n.a.	n.a.	7.1E+07	3.9E+05	1.2E+04
22-Jul	19	9	34	0	0	0	0	0	153	200	123	3	9	11	B7.2	n.a.	n.a.	n.a.	n.a.	1.9E+08	5.5E+05	1.1E+04
23-Jul	14	10	31	0	0	0	0	0	144	164	100	4	11	16	B5.3	n.a.	n.a.	n.a.	n.a.	1.8E+08	7.2E+05	1.2E+04
24-Jul	8	7	11	0	0	0	0	0	125	134	78	4	10	15	B5.1	n.a.	n.a.	n.a.	n.a.	3.5E+07	3.4E+05	1.1E+04
25-Jul	3	4	4	0	0	0	0	0	112	94	43	4	11	15	B4.0	n.a.	n.a.	n.a.	n.a.	9.4E+06	4.2E+05	1.2E+04
26-Jul	13	5	21	0	2	0	0	0	103	52	28	5	26	44	B2.8	n.a.	n.a.	n.a.	n.a.	1.1E+06	2.3E+05	1.1E+04
27-Jul	2	3	8	0	0	0	0	0	102	60	91	5	24	35	B1.9	n.a.	n.a.	n.a.	n.a.	1.2E+07	1.7E+06	1.1E+04
28-Jul	3	5	15	0	2	1	0	0	103	56	50	5	17	26	B2.2	n.a.	n.a.	n.a.	n.a.	3.2E+07	8.3E+05	1.1E+04
29-Jul	1	2	0	0	3	0	0	0	100	63	43	5	36	52	B1.6	n.a.	n.a.	n.a.	n.a.	1.1E+08	8.5E+06	1.3E+04
30-Jul	5	7	7	0	0	0	0	0	99	63	38	5	29	44	B1.6	n.a.	n.a.	n.a.	n.a.	3.9E+08	6.6E+06	1.2E+04
31-Jul	2	4	0	0	1	1	0	0	102	65	42	5	32	51	B1.8	n.a.	n.a.	n.a.	n.a.	3.0E+08	5.7E+06	1.3E+04
Sum	274	204	466	1	26	17																
Average	8.8	6.6	15.0	0.0	0.8	0.5			127.8	132.8	85.0	4.4	20.2	31.8	B4.3	7.0	21	4.2	04	1.2E+08	1.4E+06	1.1E+04
Maximum	19	10	39	1	6	11			157	224	161	7	48	74	B8.9	9.0	23	5.2	06	3.9E+08	8.5E+06	1.3E+04
Minimum	0	2	0	0	0	0			99	52	28	2	5	5	B1.6	6.1	12	3.0	02	1.1E+06	2.3E+05	1.1E+04

50 MHz Outside Britain

Compilation and Commentary by G3USF

Continental Europe

Auroral-Related Propagation

As OH2LX notes, a rather disturbed month, with eight days when the Ak at Sodankyla was 50 or more, 70 being recorded on the 29th, and a daily average of 37.4. Globally, there were only four days when the Ap was in single figures. Typical of this stage in the cycle. Typical also of recent months that, although reports cover 17 days, on only three was propagation reported south of the (arbitrary) Baltic/Scotland line. These were the 11th (Ap 46) - but not the 12th, also Ap 46 (but the storm had effectively petered out by breakfast time - 16th (Ap 48) and the 19th (Ap 26). Little aurora was reported anywhere on the 29th-31st, (Ap 36, 29, 32).

Interesting contacts with W/VE after midnight on the 20th/21st are included here and in the Americas/Au section because aurora was present around the relevant times. Reports made no mention of tone A so the most likely mode was auroral-E, but this could have been multihop Es at a late but not unprecedented hour - or a combination of modes.

July 3 1902 GB3LER>EI(51a IO53) 2300-10 Au>OH5IY 2340-2400 Au>OH5

July 6 0500-20 EsFM>OH5IY 0620-0710 EsFM>OH5 0750-0830 EsFM>OH5 0910-20 EsFM>OH5

July 7 1600-10 Au>OH5

July 11 0000-30 Au>OH51238 49750>OH6(KP02) 1340-1400 Au>OH5 14-1500 OH7>SM0(JO99 57a) OH8>OH2 1410-50 AuFM>OH5 1420-1700 Au>OH5 1500-10 AuFM>OH5 15-1600 LA>OZ(56a) OJ0>OZ(59a) OJ0>SP2(59a) GB3LER>EI(IO53 52a) 1600-10 AuFM>OH5 16-1700 OH3(KP10)>DL(JO62 53a) OJ0>LY(59a) SM0>OZ ES4(KO39),OZ ES4>SM0 SP4(KO04)>OZ LA>OZ LA>SM0 OZ(JO65)>DL(JO31) OJ0>SP2 YL3>SM0 ES2>OZ YL3>DL(JO62 55a) ES6(KO27)>OZ(JO54) SM6(JO67)>DL(JO62 55a) 17-1800 ES1(KO29)>OZ(JO65 55a)

ON(JO20)>OZ(JO65 55a) ES2(KO29)>DL(JO62 55a) 1710-20 Au>OH5 1730-50 Au>OH5 18-1900 LA(JP32)>OZ(JO65 55a) SM6(JO67)>OZ SM6(JO67)>DL(JO31 52a) SM6>PA LA>PA(57a) G>OZ(56a) LA(JO58)>DL(JO62 55a) G(JO03)>EI(IO53 55a) OH3(KP10)>OZ LA>OZ 18-1900 LA>OZ OH3(KP10)>SM6(JO58 55a) 20-2100 GB3LER>EI(52a) JW9SIX>SM2(KP15 559) JW9SIX>LA(539AE) SM2>PA(AE) JW9SIX>PA OZ>SM2 ES2(KO02)>SP4(KO29 54a) JW5SIX>OH6(KP02 529AE) SM7>SM2(529) 21-2200 JW5>SM2(529) TF(HP84)>LA(JP50 mode?) JW9SIX>LA(JP50 mode?) 2120-30 Au>OH5 22-2300 LA7SIX>LA(JP50) LA(KP09)>LA(JP50) GB3LER>EI(53a) 23-2400 TF(HP94)>PA(JO22 59) TF(HP84)>PA(JO22 599) 2320-50 Au>OH5

Jul 12 0000-0140 Au>OH5 0200-10 Au>OH5 0250-0550 Au>OH5 0500-20 AuFM>OH5=

0630-40 AuFM>OH5 1000-10 AuFM>OH5

July 15 0110-20 Au>OH5 2200-30 AuFM>OH5 22-2300 Au>SM0 2240-50 AuFM>OH5 23-2400 LA(JP32)>OZ AuFM>OH5

July 16 09-1000 49750>OH6(KP02) LA7SIX>SM6(AE) OH9SIX>ES1 OZ>ES1 ES1>SM6(JO67 57a) LA(JP73)>SM6(JO67 57a) SM3(JP73)>SM6(JO67 55a) GB3LER>EI(IO53 41a) 1140-1340 AuFM>OH5 1200-10 Au>OH5 13-1400 LA(JP31)>OZ(56a)LA>OZ(JO47 57a) ES4(KO39)>DL(JO43 53a) LA(JO59)>DL(JO43 55a 015) 1340-50 Au>OH5 1400-40 Au>OH5 1450-1500 Au>OH5 1510-40 Au>OH5 1634 SM2(JP97)>DL(JO31) 1640-1700 AuFM>OH5 1740-1800 AuFM>OH5 2000-2120 AuFM>OH5 21-2200 JW9SIX>ES1(KO29 579AE) JW5SIX>ES1(KO29 599AE) 2320-50 Au>OH5

July 17 0050-0110 Au>OH5 1700-40 AuFM>OH5 1750-1810 AuFM>OH5

July 18 22-2300 JW9SIX>OZ(JO54_559) LA7SIX>OZ(JO54) LA(KQ10)>OZ(JO54) LA(JP99)>SP2(JO94_59) 23-2400 OH9SIX>OZ(JO54_539) 2320-2400 Au>OH5

July 19 0010-0110 Au>OH5 0157 OH1SIX>PA(JO21mode?) 1100-10 AuFM>OH5 1130-40 AuFM>OH5 1200-1320 AuFM>OH5 1340-50 AuFM>OH5 2150-2200 Au>OH5 2200-40 AuFM>OH5 22-2300 TF(HP84)>DL(JO30 599) SM3(JP92)>DL(JO30 599) OH9SIX>DL(JO30 559) 2230-40 Au>OH5 2250-2300 Au>OH5 23-2400 LY>DL(55a) TF>EI(IO53 mode?) ES1(KO29)>OZ SM0(KO29)>OZ 2350-2400 Au>OH5

July 20 00-0100 LA(JO59)>OZ SM0(JO89)>OZ 0000-0020 Au>OH5 22-2300 LA(JP76)>OH3(KP21 54a) 23-2400 OH9SIX>PA(JO22 AE?)

July 21 00-0100 LA7SIX>PA(mode? SP4(KO13>PA(mode?) 0000-0210 AuFM>OH5 VA2MGL>GM(mode?) OH1SIX>PA(mode?) LA(JP53)>EI(IO53 mode?) 01-0200 K1SIX>GM(mode?) VE2PEP>GM(IO75 559) LA(JP53)?PA(JO21 mode?)

July 26 17-1800 OZ7IGY>DL(55a) OY6SMC>EI(51a) SM0(JO89)>OZ 21-2200 GB3LER>EI(41a) 2320-40 Au>OH5
July 27 000-0120 Au>OH5 0030-50 AuFM>OH5 0130-0220 Au>OH5 0200-20 AuFM>OH5 0230-0300 Au>OH5 1344 OH9SIX>SM2(KP15 57a)

July 28 14-1500 49750>OH6(KP02 53a) GB3LER>LA(JP20 52a) OH8(KP44)>OH6(KP02 57a) 1420-30 Au>OH5 1500-30 Au>OH5 1643 GB3LER>LA(JP20 53a)

July 29 14-1500 GB3LER>LA(JP20 55a) OH2(KP10)>SM0(JO89 56a) OY6SMC>LA(JP20 53a) 15-1600 OH9SIX>OZ(JO55 mode?) SM2(KP15)>SM0(JO89 55a) LA>SM0(JO89 57a) SM7>SM0(JO89 55a) OH3>SM0(JO89 55a) SM2>SM0(JO89 52a) DL>SM0(JO89 52a) SM3>OZ(mode?) 1540-50 Au>OH5 SM0>OZJO65 (mode?) SM3(JP81)>OZ(JO65 53a) OH2>SM0(55a) ES6>SM0(53a) 1653 ES4(KO39)>SM0(JO89 57a) 17-1800 SM0(JO89)>SM3(JP81 59a) 18-1900 LY>SM3(JP81 57a) 22-2300 LA>SM0(JO89 57a) SM3>OZ(JO54 55a) OH3(KP11)>OZ(JO54 55a) OH3>SM0(JO89 55a) OH3(KP11)>OZ 2200-10 AuFM>OH5 2240-2300 Au>OH5 2330-40 Au>OH5

July 30 1653 OY6SMC>LA(52a) GB3LER>LA(54a)

July 31 1330-1400 Au>OH5 2010-20 Au>OH5 2330-2400 Au>OH5

Other Modes

No mention of VK this month. However, JA worked into Cyprus on the 1st and into 9A,9H,SP6,UR and Z3 on the 20th - an opening not reported from the European side! BG9BA was reported by SV1DH on the 4th, but otherwise only from JY and 5B, also on the 4th, and 5B on the 7th and 15th. Overall, though, Asia features more this month than last or last July, though there is no way of telling how far this reflects propagation and how far activity. My hunch - and it can be no more - is the former. While some openings were brief and into very limited areas, as one would expect with Es, several (eg EX on the 17th and YA on the 18th) were fairly widespread and reasonably prolonged.

Europe<>Asia

A6	1 day	19(DL,ES,F,G,I,OZ,PA)
A7	2 days	18 (EA,ES,I,I9,S5,SP,SV) 19(G,LA,OK,PA)
BG9	1 day	4(SV)
EX	4days	5(CT,EA,I) 14(SV) 17(CT,DL,ES,I,LY,OK,OZ,SM,SP,YO) 18(ES,I)
HZ	1 day	19(DL,G)
UK	1 day	17(DL,OK,SM)
YA	5 days	1(EA,G,SV) 3(CT,I) 14(SV) 18(CT,DL,F,G,HB,LY,OZ,PA,S5) 19(G)
4L	3 days	14(SV) 16(LY) 26(DL,F,OK,S5,9A)

By contrast to Asia, Africa barely features in this month's reports if one excepts CN, EA8 and CT3, in easy single-hop Es reach of much of Europe. A rarer callsign was S01HA, which attracted much attention and was fairly active but was also fairly routine in propagation terms. The same could also be said of SU1SK, who surfaced on several days, with a particularly notable opening on the 19th across much of northern Europe. But 7Q was the only signal from southern Africa, on a single day. TR, usually the most reliable of West African signals, was also reported on just one day. However, the 5T6M expedition suggested there was more propagation than might otherwise have been imagined. Openings from the Mediterranean to southern Africa were reported on only the one day, compared with 11 on 2002 and 12 in 2001. The evidence of cyclical decline was only too clear in the south. It was already present in northern Europe in 2002, with openings recorded on only two days. This year, of course, no openings were reported.

Europe<->Africa

S0 7 days 1(DL,I,ON,SP) 4(DL) 7(DL) 8(DL,I,LX,9A) 20(DL,F,G,OH,ON,OZ,PA,SP)
 21(DL,EI,ES,G,OH,OM,ON,PA,SM,SP,9A) 22(G,SP)
 SU 6 days 13(DL,F,G,I9,OK) 18(F,G,I,PA,9A) 19(DL,F,ES,F,G,HA,I,LY,ON,OZ,PA,UR)
 23(DL,G,OK) 26(DL,G,OK,SP) 30(I)
 TR 1 day 18(DL,OK,PA)
 5T 8 days 2(CT,I) 3(CT,EI,G) 4(CT,EA) 5(G,PA) 6(DL,EA,EI,OE) 7(DL,EI,G,HB,I,PA,SM)
 9(CT,G,LX)
 7Q 1 day 24(F,IS0,SV)

By contrast, paths to North America and the Caribbean, were in sparkling form. Indeed, we may well have had more days with reported openings than in any month since the peak years of cycle 22. Certainly these were the best daily results since we began plotting detailed records in 1999. The Mediterranean countries had openings on 14 days (2002 1, 2001 10), Iberia on 22 days (4 in 2002 and 15 in 2001). Northern Europe was less well-favoured, with propagation reported on 9 days (9 in 2002 and 15 in 2001), very likely a consequence of the relatively high geomagnetic activity, which would tend to privilege the 'southern route'. Scandinavia fared poorly, or perhaps it should be more poorly than usual. The total number of days with propagation between some part of Europe and the US/Canada was up from 12 in 2002 to 22. Not surprisingly, the 'nil' days tended to coincide with above-average magnetic figures: July 11(Ap 46) 15-17 (27,48,22) 26(26) 29-31(36,29,32) Note that information is incomplete for the 6th as DX Summit skipped a day.

Europe<->North America

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Med		+		+	+		+	+	+	+			+						+	+	+	+	+				+				
Iberia	+	+	+	+	+		+	+	+	+		+	+	+				+	+	+	+	+	+	+	+	+		+	+		
North					+	+	+	+	+										+		+	+	+	+	+						

On the 10th propagation began particularly early, when K1SIX reported CT0SIX at 0921, but 1130-1200 was more usual, with propagation sometimes sustained for many hours and, on occasion, fading out after UTC midnight. As is the way with multi-hop Es, the areas favoured frequently changed many times in the course of the day. As usual, the principal beneficiaries were Iberia, especially towards the southern states, while the UK and its neighbors were relatively favoured towards VE1 and W1. Costas, SV1DH, was well satisfied with openings on five days, including one exceeding 10,000km, which seems to imply at least four, probably five, hops. Other parts of the far south-eastern corner of Europe were apparently not so favoured, though UR was worked on the 21st.

Westward, however, the most striking opening was on the 8th when W7 and VE7 were widely copied. Regrettably a full account of this event is not to hand - few of the operators posted 'spots'. - but it looks as if this may have been the biggest summer opening to the West Coast to date. VE7SL alone was reported to have worked over 40 European stations. Operators in Washington State and Oregon are also known to have been involved. Ranges were =>7,000km. VE6 was reported into the UK and Ireland on the 24th. A report of IK8DYD<->KG6GN on the 9th is unconfirmed.

In the following table every effort has been made to assign US stations to their 'correct' call area.

Europe<>North America

	Mediterranean	Iberia	Northern Europe
W1	11 days 4 5 7-10 19 21-23 27	16 days 4 5 7 8-10 12-14 19 21-24 27 28	6 days 7(DL,EI,G,HB,LX) 8(EI,G,OE,PA) 9(G,PA)21(DL,EI,G,OK,ON,PA,UR,YO) 22(DL,G,ON,PA,SM,4U) 24(EI,G,ON)
W2	4 days 4 19 21 22	6 days 4 5 8 9 14 19	6 days 5(G) 7(G,ON) 8(DL,G) 9(G) 21(DL,EI,G) 22(DL,G,ON)
W3	6 days 5 8 9 19 21 22	9 days 4 8-10 13 14 22 23 27	5 days 8(DL,EI,G,ON,PA) 9(DL,LX,ON,PA) 19(G) 21(DL,G,OE,OK,ON,OZ,PA,SP) 22(ON)
W4	11 days 2 4 5 7-9 20-23 27	13 days 1-5 8 9 14 8 20 25 27 28	7 days 7(DL,EI,G,ON,PA) 8(DL,EI,G,OK,ON,PA) 9(DL,EI,G,ON) 19(G,PA) 20(G) 21(PA) 22(DL,G,ON,PA)
W5	4 days 4 8 9 21	3 days 3 9 23	4 days 8(EI,G,ON) 9(DL,G,ON) 21(G,ON) 22(PA,SP) 24(G)
W7	1 day 8		1 day 8(DL,G,PA)
W	8 2 days 4 8	5 days 9 13 14 23 28	5 days 7(G,PA) 8(G) 21(G,UR) 22(DL) 23(G)
W9	2 days 8 13	3 days 13 14 22	3 days 8(G) 9(G) 21(ON,UR) 22(OK,OM,SP)
W0		1 day 8	1 day 8(G)
VE	1 6 days 7-9 21-23	0 days 7 13	7 days 7(DL,EI,G,LX,PA) 8(DL,G,LX) 9(G) 19(G) 21(EI,ES,G) 22(DL,G,OK,ON) 23(G,ON) 24(EI,G)
VE2			1 day 21(G)
VE3	1 day 22		3 days 8(DL) 21(G) 22(DL,ON,PA,SP)
VE6			1 day 24(EI,G)
VE7	1 day 8		1 day 8(DL,PA)
VE8			1 day 25(G)
VE9	1 day 21		2 days 7(G) 24(G)
VY2	2 days 7 21	1 day 22	2 days 21(ON) 22(ON)
VO1	1 day 8	2 days 8 14	2 days 22(DL,G) 23(DL,EI,ON,PA)

The preceding and following tabulations as usual do not include French reports because France is both 'Mediterranean' and 'northern' and also borders on Iberia. Reports coming only from France: were of W3, W5, VE2,VE3 and VO1 on the 7th, W4 on the 30th and VO1 on the 27th - the only trans-Atlantic report on that day. Note how much better Iberia fared with W4 while losing out on the VEs.

Europe<>Caribbean

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Med	+	+	+	+	+	+		+										+										+			
Iberia	+	+	+	+	+			+																				+			
North	+	+	+	+	+	+		+	+					+			+	+										+			

While the Caribbean was by no means as prolific as W/VE, 2003 was again a more productive year than 2002, which had openings on only two days to this year's 13 across all regions, with northern Europe apparently the most favoured. The range of countries was also wider, in part due to expedition activity in VP9 and C6. Contrariwise, nothing was heard of countries like CO, HH, VP5, 8P or VP7, to mention but a few, which must have been workable had anyone made the effort.

Europe<>Caribbean

	Mediterranean	Iberia	Northern Europe
C6	5 days 2-6	5 days 1-5	2 days 4(G) 6(EI,G)
FG	2 days 2 4	1 days 1	3 days 2(G) 3(G) 4(DL,G)
FM	2 days 1 2	2 days 2 3	3 days 1(G) 2(DL,G) 3(ON,PA)
HI	2days 1 3	3 days 1-3	
KP2	2 days 3 18	2 days 3 4	2 days 3(G) 18(DL,PA)
KP4	3 days 3 4 18	4 days 1-4	7 days 3(G) 4(DL,G) 5(DL) 8(EI,G) 9(G)14(G) 18(DL,OM,PA)
PJ		1 day 2	
P4	1 day 8		
VP2A			1 day 3(G)
VP9	2 days 3 28	5 days 1 -4 28	3 days 8(DL,EI,G,ON) 9(G) 28(SM)
ZF		2 days 2 3	
6Y		1 day 8	
9Y	3 days 1 2 4	2 days 2 3	2 days 1(DL,G,OE) 4(DL)

July is never a good month for working South America on 50MHz. This was no exception. However PY was reported on the 9th (G), 18th (G,PA) and a substantial opening on the 20th (DL,G,LA,OZ,PA,SM). Openings to YV on the 2nd(EA,G) and 3rd (DL,F,G) were doubtless associated with the multihop Es to the Caribbean , which was notably good on those two days.

The vast majority of reported contacts were attributable to 'routine' seasonal sporadic-E. Impressionistically, it appears to have been a good month for double-hop Es within Europe. There were numerous reports of 'short' Es, implying high MUFs. Dates particularly noted were the 5th, with an indicated MUF reaching 158MHz, the 21st, when 144MHz was reached and the 22nd, when the MUF reportedly peaked at 183MHz in the course of an intense seven-hour opening.

July 1 04-0500 CN8MC>F CT0SIX>F,I1 06-0700 LZ2CC>I1 LY>SP2 YZ1>I1 07-0800 CN8MC>I5 JA5AIE>5B CT3>9A 08-0900 JA5AIE>5B I4>S5 LZ>ES1 09-1000 LZ2>OZ RN6AP>5B SP2>DL 11-200 EH7>I5 12-1300 W4SO>EA7 ZB2>I9,9H VP9/W3CMP>EA7 EH9>I9 CU1>EA7 13-1400 CU1>9H C6A/W6JKV>EA7 15-1600 C6A/W6JKV>CT FX4SIX,G>I9 CU3>CT,I4 SV9SIX,LZ3>F GW>I5 9H,CN8MC,GU>DL YA4F>5B 16-1700 I0,I8,EA5,SM7,F>DL G>I1 OZ7IGY,SP8>EA3 EH3>PA YA4F>SV1 EPtV,LZ3>PA 17-1800 PA>EA3 YO5>F GJ>YU1 YA4F>I4,I8,I5 CT>PA I6>EA3 S01HA>SP3,IS0 OM6>I1 4X>PA,DL,ON,F F>ON CT>SQ8 18-1900 YA4F>I5,EA7 EH2,EH1>DL YZ1,CT>PA G>EA7 CN8MC>EI S01HA>DL,ON 9Y4AT>9A,F,YU1,DL,OE3, S5, I1,I2 EH2>OK1 I3>EA1 EA3>DL 19-2000 9Y4AT,9Y4TL>DL,F,9A,GW,I0 EH2>DL CT>PA,LX,DL CU2>DL EH1>F PA>EA3 FM1DQ>G,I1,9A 20-2100 FM1DQ>G,9A CN8MC,EH7>LX 9Y4AT>DL,9A,G,GW,I0,I1,F CU1>I8 EH7>DL,I5 G>CN,LX CT0SIX>PA,LX FM5WE>I2 EH7>I5,EI 21-2200 HI8ROX>CT,I1 9Y4AT>GW C6A/W6JKV>EA3 W7GJ>G(eme) WP4LNY>CT 22-2300 HI8ROX>EA7 CU6>CT

July 2 10-1100 CN8MC>I0 5T6M>I2,I5 11-1200 OK2>SM0 5T6M>CN,CT 12-1300 OK1>DL EH7,CT3>I7 CT3>EA5 1327 EH8>9H 15-1600 FM5WE,FM1DQ>CT 1659 HI8ROX>EA7 17-1800 HI8ROX>CT,EA7 EH9,KP4EIT,VP9/GM4COK,VP9/W3CMP,C6A/W6JKV>EA7 SV1SIX>HB EH7>EH3 18-1900 C6A/W6JKV>EA5,S5 EH9>ON,I8,SP6,I4,I2 EH7>EA3,ON 9H>SP2 KP4EIT>EA7,F CN8MC>DL EH6>I5 SV1>F,I1,PA EH3>9A 19-2000 C6A/W6JKV,K4MM,KP4EIT,PJ2BR>EA7 SV8>I2 EH7>I2,I8 9H>DL FM5WD,FM5WE>CT,EA3 9Y4AT>CT,EH3 ON>PA F,PA>F YV4DDK>GW K4SN>IS0 20-2100 CN>I0 9Y4AT>I5 F>DL 9H>CN ZF1DC>EA5,CT I0>F C6A/W6JKV>CT,EA5 YV4DDK,YV4YC>G CN,EA7>EA2 FM5WD>CT,DL,G,EA7 FG5FR>>I9 I9>IS0 EH7>EA1,PA,F ZA1>CT IS0>I5 I2>CN 9H>OK1,OE3 K4SN>EA7 21-2200 FG5FR>I9,G,9H EH2>EH7 EH9>EA3 FM5WD>I0,I4,I9,EA3 ZA1>CT EH9>DL YU1>CT,9A CT3>EA3,LX,I5 YV4DDK>CT I9>I1 YV4YC>EA7 CT,EH9>EA5 ZA1>EA3,CT CU8>EA3,I8 C6A/W6JKV>EA7 22-2300 C6A/W6JKV>CT,EA5 EH9>EA3,HB CU8,ZA1>EA7 9H>CT CN8MC>9A CT1>CT3 23-2400 C6A/W6JKV>CT,EA7,I0

July 3 06-0700 CN8MC>DL 08-0900 CN8MC>I5,EI 09-1000 CN8MC>HB 10-1100 CN8MC>PA GB3IOJ>CT 11-1200 CN8MC>ON,PA EH7>I5 5T6M>EI,CT,GU,G,GD SV1SIX>DL 12-1300 5T6M>G UT5G>I5 ZB2>ON C6A/W6JKV,VP9/W3CMP>EA7 I9>DL 13-1400 PA,,ON KP2A,KP2BH>EA7 VP2A>G EH7>DL C6A/W6JKD>I0 14-1500 NP4N>EA7,9H N4IS,NW5E/4>EA7 KP2A>EA7,9H,I2,GW,I9 CT0SIX>PA CN8MC>9H,I5 C6A/W6JKV> EA6 15-1600 C6A/W6JKV>I4,F CN8MC>EI ZF1DC>EA7,CT WP4N>I0,F,I9 C6A/W6JKV,K9VV/4>EA7 CT>I5 ZB2>DL 16-1700 YV4DDK>DL,F,G,I5 KP2A>I0 C6A/W6JKV>F,EA5,EA3,CN VP9/W3CMP>EA7,F,EA3 WB2QLP/4>CT WP4LNY>F ZB2>I4 ZF1DC>CT,I5 CN>9H WP4N>EA5 17-1800 FM5WD>ON,CT,PA UR>DL VP9/W3CMP>I9,CT KP4EOR/4>CT,EA7 C6A/W6JKV>EA3,I9,EA6 ZB2>9H ZF1DC>EA7 HI8ROX>I0,EA7 SV9SIX>DL SV1SIX>DL,OE3 KP4EIT>CT,G UT5G>OZ I9>EA3 K4MM>EA7 YZ1>OH2 YA4F>CT,I4 LZ2>OH2 ZB2>DL UR>9A 3A>I5 18-1900 F6IKY>EI FG5FR>G VP9/W3CMP>EA7 aurora 19-2000 LZ2CC,SV1SIX, CN8MC>F Z3,SV1>I2 SV1SIX,SV9SIX>DL 20-2100 CN8MC>I0,F FM1DQ,FM5WE,6Y5/YO3YB,WP4LNY>CT CU1>EA7 KP4EIT>CT,EA7 EH6>CN VP9/GM4COK, WP4LNY,WP4NIX>EA7 CT>I0 21-2200 KP2A>CT3 HI8ROX,KP2A>EA7 VP9/GM4COK>EA5,EA7 ZF1DC>EA7,CT,CN CT3>EA6 EH8>CT3 CN8MC>EA3 CU1>I0 22-2300 9Z4BM>CT EH7>EA1 JW9SIX>OH7 C6A/W6JKV>CT3,EA7,EA1 NW5E/4,K4SN>EA7 ZF1DC>CT3 23-2400 EH8,K7BV/1>CT3

July 4 04-0500 CN8MC>F 4X4SIX,OD5SIX>YT1 0529 BG9BA>5B 06-0700 BG9BA>JY9(qtf 070) 0733 CN8MC>SV1 08-0900 SV1>EH3 09-1000 OD5SIX,4X4SIX,5B4CY>SV1 SV1SIX,JY9>EA5 11-1200 C6A/W6JKV>I8,EA7 K4RX,K7BV/1>EA7 CN>F 12-1300 5T6M>EA7 OK1>SP9 YL3>DL 13-1400 I9>SP6 5T6M>CN,EA7 YL3,YL2>DL C6A/W6JKV>EA7 W4SO>EA7 I9>SP2 14-1500 5B4CY>SP9 C6A/W6JKV> EA7,EH3,I9,I7,S5,SV1 UR>I9 EH3>OK1 KP2A>EA3 CN,ZB2>F YL3>DL DL>F PA>EA3 15-1600 W4SO>9A,S5 OZ>EA5 YL3>PA OM3>DL 16-1700 EH8>EH5 RU4>OH7 17-1800 YZ1>S5 CN>9H,I9 VP9/W3CMP>EA7,CT EH8>I9 18-1900 VP9/W3CMP>EA7 YU7>YO5 CT3>I9 C6A/W6JKV>EA7 YO2>PA YO7>DL YU7>DL,EI N3DB>EA7 ZA1>OZ,I1 4X4SIX>PA 4X>9A,PA CN>SV1 LZ3>9A I0JX>EI 19-2000 GB3MCB>SP2,DL CT3>OZ,DL

ZF1DC>EA7,CT K1SIX>S5 LA>PE3 IK5ZUL>EI S5>SM0 I1>S5 WP4LNY>EA7 T7,YU1>EI 9Y4AT>DL 20-2100
GW>9A K1SIX>EI,9A OZ>F K2MUB>I2,EI 9Y4AT>OE5,DL F>DL FG5FR>DL,F,S5,9A,G C6A/W6JKV>G,9A,S5
KP4EIT>CT,DL,F,S5 KA2LIM>I5 EH1>PA 5T6M,CT>D44 WP4KJJ>G WP4LNY>CT NW5E/4>F 21-2200 S01HA>DL
C6A/W6JKV>F,9A,EI,5B K2MUB>EA3 NL7AU/W4>F WB8TSL>I1 N3DB>F 9Y4AT>DL,F CT>ON KC2HLI>I1
K2PLF>EA5 K7BV/1>F K1SIX>F,IS0 EH9>DL S5>9A(bs) K2OVS>F K1IM>CT K1TOL>I5 CT0SIX,CN8MC>EI
LA7SIX>OH2 EH8>EA7 22-2300 C6A/W6JKV>I0,I5,EA3 LA>OZ,SM W5OZI>I8 OH9SIX>LA UR,OH9>OZ 9Y4AT>I1
OH9>LA 23-2400 LA7SIX>DL LA>PA

July 5 05-0600 YL3>JY9 4X>SP2 06-0700 5B4CY,OD5SIX,JY9>SV1 JY9>SP4,9A,I2 4X>SP6,SP2 ZA1>I2,I8 UR>4X
SV4>SP8 I9>I2 07-0800 ZA1>HB,OE3,OE5,9A,DL,I1,PA SP8>OE5 4X>F,SP8,I2 SV3,SV2>OE3 SV3>DL
5B4CY>SP9 4X>HB I9,9H>OK2 08-0900 I9>ON,PA HB0>SV1,9H ZA1>DL,PA,EA2 I9>PA EH5,CT,UR,SP9,S5>4X
4X4SIX>HB SV9SIX>PA,OE5,DL SV1>DL I0>SP9 UR>I8 SV1SIX>OE5,PA I0JX>OE5 LZ1,CN8MC>I2 ZA1B>DL,PA
I9>HB 09-1000 9H>DL 4N>I1 ZA1B>DL,SP6,ON,OK1,EA5,F,I1 LZ1>I1 SV1SIX,CN8MC,LZ1,9H>HB LZ2>EA5
4L7IG>5B,JY9,4X I0>I1 I9>SP9 5T6M>PA OE5>I9 SV1>DL 10-1100 SV1SIX>DL,SP9 ZA1B>I2,I4,I1,HB I8>I2,SP9
5B4CY>SP9 CT0SIX>EI I9,SV1SIX,9H1SIX>OE5 S5,OK1>9H I7>I1 SP7>9H I9>OM7 11-1200
I9>I2,OM7,SP9,OE3,ON,LX HB>LX 5B>DL C6A/W6JKV>EA7 IS0>EA1 ZA1B>HB SY8>OE5 NG4C,W4DR>EA7
EH8>EA7 T9>9H,EA7 9H>ON LZ1>SP9 12-1300 ZA1B>DL,EA1,ON SY8>S5 UR>I8,EA7,DL,OE3,9H I0JX>HB
9H>ON OM3>PA 4X4SIX,EH5>SP9 IS0,EH7,I9,CT>DL KP4EIT>DL 13-1400 C6A/W6JKV>I2,I4,S5,9A
UR>EA7,YO5,F,RU3 SV8,CT,T9,I9,IS0,I8,SP8,YU1>DL ZB2>I9 K1SIX>I5 K2AXX>EA7 W4SQ>EA7 OK1>,G>EA3
ZA1B>SM0 GW>I0 PI7SIX>I5 14-1500 EX8MLT>5B UR>I5 I9>I2 SY8>DL HB>EI 9A>ON PA>9A C6A/W6JKV>DL
I9>I2 G,LZ1,YZ7,UR>ON YT0>LA I8,4N,OD,I9,YT0,Z3, LZ1,ZA1>DL T7>EA5 YT1>I1 YU7>EA3 EX8MLT>5B 15-1600
I8,YU6,ZA1,T9,UR,,LZ1JH,OD,OZ>DL EX8MLT>EA7,I0,CT YU7,IS0>I3 Z3>PA YZ7>I3 LZ1>LX,ON T7>EA5 EH5>I7
YT1,YT0>LX ZA1B>OH7 16-1700 EX8MLT>EA5,EA7,CT,I0,9A,I4 UR>DL ZA1>DL,EA3,EA6 EH6>I5 K7BV/1>I9
K1SG>F W4TJ,N3DB>I9 9H>EA3 G>PA UR>9A 17-1800 RK6>DL EA1>EA5,EA7,EA6 K7BV/1>F UR>DL PA>LX
SV1>PA data for remainder of the day unavailable

July 6 0500-20 EsFM>OH5 0620-0710 EsFM>OH5 0750-0830 EsFM>OH5 0910-20 EsFM>OH5 data missing
15-1600 9H>I2,I3 SV1SIX>PA,DL I9>ON LZ2>I1 I8>DL LZ2>I1,I2,EA7 CN>F OE3>I8 16-1700 LZ2>EA1 DL>SV1
EH4,LZ2CC,ZA1>DL SP2,ER1>I7 LZ3>S5,DL SV1SUIX,SV9SIX>DL ER1>EA7,I5 ZA1>DL,OK1 17-1800 ER1>CT,I8
LX>DL LZ1>I5 5T6M>OE9,DL,EI 18-1900 C6A/W6JKV>EI 5T6M>EA5 DL>SP3 OK1>SV1
Data for remainder of the day unobtainable

July 7 07-0800 CN8MC>F 08-0900 SV9SIX>I1 BG9BA>5B CN,I9>I1 09-1000 SR9FHA>SM3 ES5>DL ZB2>I1
EH7>DL ZA>EA5 ZB2,I4>I2 CN>ON CN8MC>F 10-1100 VE1ZZ>F,EA5 VE1YX>EA5,PA,I8 4X,5B4CY>SV8
ZB2>DL,PA ZB2,CN>ON OD5SIX>SV8 CN>PA 11-1200 CN>DL NN4X>I5 VE1YX>F,9A,G VE1MR>9A
VE1ZZ>9A,GD,GU S01HA>DL 12-1300 NN4X>F,GM,G VE1ZZ>GM SV8>I2 VE1YX>EA7 K1SIX,W1JJ>EA7
K1GUN>EA5,EA7 KD4ESV>EI EH7>EI 13-1400 VE1YX>EA1,EA6 VE1ZZ>EA6 CN>EI NN4X>F,G
NW5E/4>G,GW,I4,PA G>OZ N4RFN>G ZB2>EI HV0>EI,I9,DL OZ>EA5 EI>I4 CN8MC>I9 LZ2CC>F,EI
SV1SIX,CN8MC,CT0SIX,Z3,PI7SIX,9H>EI Z3>PA GW>I8 15-1600 Z3>F,PA,ON SV1,EI>DL GB3MCB>SQ2
SV9SIX>PA I9>I1,HB,DL EI>DL,OK1 GB3LER>I2 ES6,G>HA6 F>SP2 G>OK1 1550-1620 EsFM>OH5
16-1700 G,OY6SMC>F GW>DL G,9H>OE3 G>9A,S5 EI>OK1 9H>OH2,OE3 SV1SIX>4X GM>I0
HV0>9A(t),OZ,DL,SM5 4X>F,I7 UR>DL,PA VE1YX>DL CT>I8 9H>ES1 5T6M>EI,G 17-1800
UR>PA,YO3,SP6,DL,OE3 SR9FHA>EI HV0>SM5,OH2,DL CT>EI LY>F G>SQ2 G,EI,GI>HA6 5T6M>PA,HB 4X>EA6
GM>I4 I9>PA GW>EI(sc) 18-1900 EI>EA7 GM>I1 EH3>I9 5T6M>SM7,I4,DL,CN
LZ2,IS0,9H1SIX,YU1,YU7,I9,T9,YU4,ZA>DL T9>ON I9,YO9>PA LA>EA3 ZA>EA5 SQ2>I9 4N>ON SO5>9H
EH6>SQ2 S5>I5 EH6>OZ I9>I0 19-2000 LZ3,YZ3>ON F>CN 9H,ZA,YZ1,GB3IOJ,I0,I5>DL OM9>I2 YU1,LZ3,I8>PA
F>OE3 I5,LZ3,YZ1,YU4,ZA>LX 9H>ES1FX4SIX>OZ OZ>EA6 GW>I8 20-2100 GW>OK1 LZ3,GB3MCB,EI,I5>DL
GM>EA3 9H1SIX>OE2 HB9SIX>EI EI>I4 VE1PZ>EA1 IS0>EA5 GW>I5 S55ZRS>EI NW5E/4>S5,9A,F,EI NN4X>9A
W3EP/1>9A,LX K1TOL>EA3,F,I5 VE2DCS/M>F(5 watts) K4SN>EI,ON S5>9A,EI KT1J>EA3 21-2200 GB3IOJ>9A
KT1J>F K1TOL>EA3,I5 K4SN>DL,PA K1SIX>I0,EA3,I5,HB,9A,F I2>9A(bs) W3EP/1>G,I5
VA2MGL,VE2RCS,VO1ZA,K2MUB,W1CWU>F AF1T>DL,G AA6TT/1>I4,I0 K9HUY/4>G,EI,DL NW5E/4>DL
VE1YX>DL,EA3 K1GUN>G,DL ON>9A K7BV/1>G,DL W4MYA,KB1EFS>G W4VQ>PA
NN4X,K6EID/4,W4DR,K4EA>DL 22-2300 N4RFN,N5WE/4,N4IS>DL W1QK>G N4DWK>DL K4IN>DL,G AA2DR>DL
WA2BPE>G W1JJ>DL,I4 VE1YX>EA3,EA6,EI,G VE1CSM>DL N8II>G N8CJK>PA N4DA,K4EA>F N3DB>F
WC4H,N4IS>PA VE9PLB>G KY5R>F NT1N>PA,G K1SIX>G K4DXA>EI 23-2400 K2ERG>EA7 N4DA>EA7
VE1YX>LX K4SN>G K1SIX>EA7 VE3RM>F(2355)

July 8 0002 N4OX>EA1 0657 SV1SIX>SP6 07-0800 SV1SIX>DL,I1,PA 4X4SIX>YO3 I4>HB LZ1JH,LZ2CC>SQ2
CN8MC,LZ2CM>PA SV9SIX>9A 08-0900 9H1SIX>9A LZ3>I5,DL,HB LZ1>DL 4X>I0 GB3LER>F 09-1000 LZ2CC>PA
CT0SIX>I5 I0>EA5 HB,EH5>I9 CT>I5,I0 IS0>I0,I8 CN8MC,9H1SIX>OE5 EH7>PA,OE5 CN>I5 10-1100 ZA>DL

CN,EA7>HB CN>EI EH7>ON CT0SIX>EI S01HA>I0,9A 11-1200 VE1YX>I8 ZB2>I8 W4SQ>PA,I2 12-1300 WC4N>I1,PA VO1MP>EA7,F N3DB>DL,F VP9GE>G,EI,ON W1JJ>F NG4C>EI,F,G,GM EH5>I4 K4QI>I9 WB2LQP/4>EI 13-1400 K3ZO>DL,GM,I9 OX3VHF>EA7 CT>I0 N3DB>IS0,ON,I9 NG4C>ON,DL,G K3HCT>DL F>PA(bs) VP9GE>DL K4DY,W4DR>I9 KY5R>F,ON,I9 W3UR>I9 W5OZI>GM W3TC>PA K9SM>I2 EA7>OK1,ON I7>EA1 W9GA>I9 K0FY>F 14-1500 K3KTJ>G,GM W8GG>G,I9 NG4C>I9,EA1 ZB2>I9,DL,EA3 EH5>PA,DL EH7>DL,OZ VE1YX>G OX3VHF>F KA8MN>G 15-1600 CN8MC>DL K8MN>G CT,EH1,EH2>I1 EH6>DL HB>EA3 WY0L>F CT>SQ6 K9SM>G W3TC>G VE1YX>G G>EI K8MFO>PA,EI.DL EH7>I1 W7KNT>GW W3HH>EI EH5>ON K5AB>G CN>I0 F>HB(short) K2ERG>DL KB4CRT>I1 16-1700 CN>I2,EA3 NW5E/4>EI F>HB CT>SQ6 HV>EI NG4C>I9 FX4SIX>DL (short),OK1 K4QI>I9 GD>I4 K4JAF>9H 9H>DL F>SQ6 K8MD>I9 ZA>EA5 F,IS0,LY,HV>DL W4DR>9H VE3FAS>DL T9>PA 17-1800 GU>S5 F,EH6>DL ZA>EI F,IS0>SP2 ON>OE5 CT>LY W1QT>PA VE7SL(CN88)>DL,I2,PA NG4C>I1 W7YOZ(CN87),NN7J(CN85)>DL W4MYA>I9 WX7R,K7RWT>PA G>HB,HA5 EH5,GI>OH2 GB3IOJ>OK1 18-1900 VE7SL>DL,PA,9A,I2,I5 G,GM>EA3 S5>DL,PA F>DL,EA3 3A>EI HB,S5,OE5,ZA>DL EH3>ON 9A>PA W7FI>PA,9A K7OFT>PA,I2,DL SK6,SQ8>F F>LX CT>SP1 W1JJ>I2,9A EI>I1,9A DL>ON T7>OH2 19-2000 G>OH2 EI>OE5 LZ3,FX4SIX,SQ6>DL ZA>PA ES6>LX,DL G>OE5,9A W3EP/1>I1,PA,9A,OE3 VY2RU>I5 VE1YX>DL,9A,G,I1,PA,SV1 I4>ON I4,I6>LX EH8>5B K1TOL>DL,I1,I2 W1JR,W1EN,P40LM>9A LA>HB,9A SP5>PA 9H>4X EI>OZ S5>9A VO1MP>I2 K1SG>SP8 20-2100 S01HA>LX,DL K1IM>OE5,G,EI,9A,PA,I5 W1EN>OE5 OY6SMC>F W5UN>9A OZ6VHF,HB,SP4, 9H>DL K1DAT>DL VE1YX>I4,G W3EP/1>DL,9A,9H AA6YQ/1>DL,9A K3ZO>G LA>HB KA1A,K1GUN,W1OU, W2WG,K4EA>9A KP4EIS>EI K2MUB,WA2BPE>9A OE6>PA PA>DL N3YVM>G K8ZES>CN K1SIX>OK2 K3XT>PA 21-2200 N4CH>I1 N2LT,K1SGW4GF>9A K3KTJ>9A,DL G>DL VE1CDD,N3EVW,K1SIX,KB4FQ, W4TT,W4WRL,KD2I>G VE1YX>9A,DL,I8 K1IM,NW5E/4>DL YU1>EI OX3VHF>F LA>I2 GD>HB KB4CRT,K4DLJ>9A I7,CT>DL OE3>F SK7>EA5 N3DB>F

July 9 0455 GB3LER>F(t) 0653 CN8MC>I0 07-0800 SV1SIX>OE5,F LX0SIX>I0 9H1SIX>SP6,OE5 YO5>F I9>ON 9A1CAL>ON OZ7IGY,LZ2CC>I2 I9>OE5,PA 08-0900 ZA,LA>ON F1GTU>DL G>9A OY6SMC>OZ LA>PA SM3>DL ZA>9A F>OM7 OY6SMC,GB3LER,GB3RMK>SP2 09-1000 I9,I0,GB3LER>DL LX>ON I9>EH5,DL GB3MCB,CN8MC>LA CT,EH7>I0 I5,F>PA 9H1SIX>OE5 10-1100 EH7>OE5 GB3LER,GB3RMK, OY6SMC,EH7>DL GU,EH7,GW>I4 TF>F GM>OZ 11-1200 TF>F EA5>EA1 W3JO>I8,I9 GD>S5 W1JJ>I9 GD>OE6 GM>PA N3DB>EA3 OY6SMC>DL EI>EA3 CN8MC>EI 12-1300 KN4SM,W4MYA>I9 NG4C>EH3,I4 WZ8D>EA7,EA3 K4EA,KB4FQ,K4EM,W3TC>G K4PI>G,PA KY5R>I9 W4GF>G,EA3 13-1400 W4GF,K4EA> EA3 K4PI,K5YR,K5XX,W5UN,K5AB>G GM>F K6EID/4>PA,DL SV1>OZ W5UN>I9 14-1500 S5,ZA,I9,OE3> EA3 EI>EA5 EH7>OK1,DL,I7 EH6>I8 G>EA1 W5XX,W3UUM>I9 9H>EI,EA3 15-1600 EH7>I7,PA GW>I7 EH7>DL,PA,OK1,ON CT>DL DL>SV1 I2>F EH6>OH7 EH3>OH2,OH7 EH5>OH2 ES6>PA,ON 16-1700 CT,EH4,GW>9A ZA>SP1,DL,EI,PA EH2>SP9 F>OE5,PA EH4,CT>OK1 EH2,EH3,EH7>PA F>F(short) NG6C>I8(?) I8>S5,ON LY>PA GW,EH6>OH2 F>EI EH3>ON EH5>OE5,SM0 CT>OE6 17-1800 OH1,ES2>ON ZA,EH3,YU1,YO7,EH5,LA,TF,EH1,OY6SMC>DL F>PA OH9SIX>EA7G>EH3 EH5>SM0 EH5,EH3>SM0 OY6SMC>SP9,SQ2 GB3LER>SP6 EH6>HB CN>LX,I1 TF>I2,LX CT,SM2>PA EH4>OK1 G>EH5 PA,LA>EA3 I1>S5 18-1900 SM2,TF,LA,F>PA TF>OZ,ON,EI,SP6,EA6 F>EA3 CT,LA,SM2,F>DL LA>OZ,DL,PA OZ>EA3 PA>CT EH1>SP1 OY6SMC>SP6 CN>PA,ON,DL 19-2000 F,YU7,GW(ms)>PA EH1>I7 N4DA>G,DL EI>HB GW>I1 F,EI,EH2,CN,TF>DL KY5R>G,I2,DL GW,SM3,G>F K6EID/4>G,ON F>EI EH9>HB JW>LA EI>OZ GI>OZ 20-2100 DL,EI,ON>LX K5YR>ON,I5 VO1ZA>DL,F K6EID/4,K4EA>DL PY2XB>G OE6>9A LA>F EI>EA3 W5UN>EA3,EA7 K5XX,K5CM>EA7 NG4C>DL,I2,EA5,I1,ON 9Y4AT>DL W8FR>G WP4N,WP4KJJ>DL CT3>EA5 G>ON 21-2200 NG4C>F,DL,EA3 K5XX>G,EA3,I4 W5UN>EA3,EH6,I2,EA5 N4JJ>DL W5EU>EA3,F G>ON VE1YX>G,9A,EI VE1CZ>9A K5CM>CT N3DB/3>ON,EA7,F,EA6 W4SQ>G K0AZ>CT KY5R>9A,G W3UUM>DL 22-2300 NG4C>EA3,G,ON N3DB/3>EH6,PA,GU W4VQ>EA1 KD2I>EA7 23-2400 N3DB/3>I5,G,PA EI>EA2 W3CMP>LX

July 10 00-0100 W1RA>CT 07-0800 SM2>OH6 08-0900 OH9SIX>SP8 09-1000 GB3LER>I5 UR>S5 OH6>OE5 OY6SMC>DL 10-1100 OH6>DL OY6SMC,OH9SIX>OE5 UR,SP5>SM0 G>ON,I0 EH2>EI I8>I0 OH7>OE6,DL LZ2CC,LZ1JH>OZ SM5>YO2 ES0SIX>DL 11-1200 SM0>OE3 OH1SIX>DL OH9SIX>DL,OE3,OE5 SP4,SP8,SP7>LA ES1,OH1,OH2>PA LA>SQ9 SM2>DL,OE5,9A OH9>DL YO4>HB SM3>9A DL>OH6 ZA,SP1>OZ LA>ON,PA 12-1300 LZ2CC>OZ SV9SIX>OE3 OH2>I2 SM3>DL,OE3 SM2>DL,OE3 W1NQ>I0 UR,OH5>PA OH9SIX,ZA,SM3>DL SV2>OE3 13-1400 ZA,SV2,SV4>DL T7>I4 ZA>OZ,OK1,9A EH7>ON,PA 14-1500 DL>I7 CT0SIX>PA 15-1600 EI>EA3 16-1700 SV9SIX>DL F>ON LX0SIX>DL K4MM>EA7 18-1900 ZA>9A

July 11 0927 SV1SIX>I0 1258 I1>I5 13-1400 CN8MC>PA aurora 14-1500 CN8MC>EI,F LZ2CC>DL SV1>OZ GB3LER>EA7 15-1600 LZ2CC>DL CN8MC,SV1SIX>I5 LZ2CC>DL SV9SIX>SP6 3A,9A>9H I5MXX>SV8 16-1700 SV1SIX>OK1 YU1>9H LZ2CC>LX 17-1800 SV1SIX,LZ1JH,4N0SIX,T99YVZ>F 3Ctv>9A CN8MC>EI SV1>EA6 18-1900 TR0A>F IK5ZUL,IW3FZQ>S5 aurora

July 12 0457 UR>5B 05-0600 4X>DL 0559 PA>I5 06-0700 4X4SIX>I0 5B>I0 4X>I8 07-0800 YT1,9A>EA5 IS0>YO2 I5>OZ OD5SIX>SP9 5B>IS0,I5 SV8,SV1SIX,EH7>HB 5B4CY>9A CT>I0 08-0900 LZ2>4X SV1SIX>YO8 4X>9A,SP9 EH7>HB 5B,OD5SIX,4X4SIX>9A CN8MC>I1,OE5 I9>EA5 CN>ON,OE5,EI EH7>I1 LZ2>9H SV5SIX,SV1,9A>SP9 GB3MCB,SV1SIX,9H1SIX>EA5 09-1000 5B>F,9A SV8>SV CN>EH7,I9, SV1SIX,IS0,SV8>I0 I9>EA5 EH8>I5,F,ON EH7,CN>EI,I2,EI LA>I3 OD5SIX>EA5,SV1,IS0 10-1100 9H1SIX>SV1 5B,SV8>CT SV1>I9 SV8>SV1 4X>I8 CT0SIX>EI 11-1200 5B,9H,CN8MC,SV9SIX>I8 SV8,SV3>4X SV9SIX>EA5 9H>I5 EH5>SV1 5T5SN>I0 CN8MC>SV1 12-1300 I9,SV4>9H 5T5SN>I0 I9>I0 I0>I5(t) SV9SIX>9H I0>IS0 14-1500 9H>EA5 UR>SV8 I9>I5 16-1700 I1>I5 9H>SP6,EA1 17-1800 CN8MC>I0 K1GUN>CT SV1SIX>DL 18-1900 HB,9H>F CN>9H,I9,SV1 19-2000 JW5SIX>OH7,SM2,OH6 JW9SIX>OH7,SM2 CN8MC>SV1 20-2100 K1GUN>CT JW9SIX>OH7 2233 CN>IS0

July 13 from early morning E2,E3(DL),E4(HB)>Ohtv/fmgrou 05-0600 OH9SIX,OH1SIX>OE3 OH3>F OD5SIX>I8 OH7>DL,F HB>SM2 06-0700 GB3LER>SP6,YO2 ES0SIX>HB 4X4SIX,OD5SIX,5B4CY>SV1 F,OK1,SP6>SM6 5B4CY>SV8 OH2,OH4,LY,ES1>DL OZ>YO2 OJ0>DL,I2,F YL,LY,OZ>F 07-0800 OJ0>DL,I2,YO2,F,I8,PA,I5,I3 ES2>ON I5>SM6 SP3>EI IS0>4X GB3RMK>F,SP6,S5,HA5 GB3LER>SP6,9A OZ6VHF>OE2,F LA>9A LY>PA,DL,9A ES0SIX,OH3>F LA>I3 GM>HA5,HB OH4>I2 SP8>PA 08-0900 YO7>PA GM>S5 G,SP9,Z3,SP8,LZ2,GB3RMK,SP7,LY,4X,YU1>DL OE3XLB>OZ I8>I0 SM5>S5 4X,OE5>OK1 YL,OH4>F SQ5>ON SP8>SP2 SU1SK>SV1 SM0>HB OJ0>I2 09-1000 SU1SK>DL,I9,F,OK1 Z3>OZ TA2,Z3,I7,I8,I9 GB3LER,ES1,LZ2,YO7>F CU1>EA7 DL>PA LZ2>LX Z3,G,LZ1>PA ES6>OE6 UR>PA,SQ2 Z3>ON 10-1100 UR>SQ2.SP9,,SP2,EI,DL,EI,F,I3 4X>LX S5>OE6 LY>F S5>EA1 Z3>DL SV3>PA YO5>I5 SM0>I2 OJ0>YU7 F>LY DL>I7 I9>SP2 I9>PA 11-1200 I9,OK2,G,GB3RMK,9H,UR>DL G,GW>I7 GD>S5 I9>OK1,9H SV1SIX>PA GB3MCB>SM0 12-1300 UR>SP2 GM,ON>DL I9,I5>PA HB9SIX>EI G>I7 F,GB3LER>9A YZ1,9H>ON 13-1400 W1JJ,W4SO>EA7 GW>I7 IS0>DL 9H1SIX>EA5 I6>PA LA>I2 ON0SIX>9A 14-1500 FX4SIX>SP6,SP6 F,T7,OE5>DL G,GU,T7>9A G>I2 EI>PA 15-1600 EI,G>PA GB3LER>HB OE5>DL,9A 9H>4X CN>EA6 17-1800 CT3>EA7.EA6 SO45,OJ0>SV1 Eptv>9A 18-1900 CT3>CT,EA1,SV1,EA7 OY6SMC>OH1 SV1SIX>HB 19-2000 SV1>SP9 F>9A CT3>I5,SP9 OY6SMC>F SV1>ON GB3RMK>F,9A LY,LZ1>F F>SM0 EH3,GI,EI>DL GI>SP9 EH3 SV1>ON 20-2100 I8>ON SV1>4X GI,EI>F CT3,EI,EH1,I0JX,GW,YU1>9A GM>EA3 JW9SIX>OH7 SV1SIX>DL OE6>EA5 GI>I2 SV1>EI 22-2300 9H>EA6 W1JJ>EA7 CT3>I1,CT 2251 AJ9C>EA7 2313 AJ9C>I8

July 14 0551 GB3BUX>PA 06-0700 5B4CY>I7 0759 LZ2CC>SP6 08-0900 SV9SIX>DL LZ2CC>OE5 IW5BML>I0 10-1100 LX0SIX,G>PA W1JJ,K7BV/1>CT 12-1300 WZ8D>EA7 14-1500 VO1ZA>EA7 4X4SIX>SV8 IS0>9H 15-1600 SV8,SV2>4X UR>SV8 OH3>SM0(t) 16-1700 Eptv>9A 1754 SV1>4X 18-1900 4X>SV8 G>ON 20-2100 KP4EIT>F,G CT0SIX>EI 21-2200 F>EI CN8MC>F WP4N>G NW5E/4,AC4TO>EA7 W4SO>EA7 OZ>OE5 22-2300 4X4SIX>SV8 W4SO,K4SN>EA7 23-2400 K4EA>EA1

July 15 0454 BG9BA>5B 1050-8 CN8MC,EH5>I9 12-1300 9H1SIX>EA5 13-1400 SV1SIX,SV9SIX>IS0 15-1600 EX8MLT>5B 16-1700 TU4>5B SV1>OE3 SV2,SV1SIX>DL 17-1800 SV1SIX>OE5 SV9SIX>OE5,SP9,I4 LZ1>I2 YO3KWJ,LZ2CC,YU1>4X 18-1900 LZ2>4X SV1SIX>F Eptv>9A 19-2000 I5MXX>SV8

July 16 0139 SV1SIX>F1JG 0633 5B>9A aurora 12-1300 G>PA S5>9A 14-1500 OK1>SP9 SV1SIX>F 16-700 SP8>CT YO2>ES1 OH2>F,PA OM6>ON OH1,OH5,SP8>F OH0>DL 17-1800 LA>OM7 OE3>EI OH0>SM0 OH1SIX>EI OH0>DL LX0SIX>HA5 LA,SP9>DL UR>HB,DL OZ>OM7 SM2>PA LY>I1,EI OH8>CT SO5>EI SM0>ON SM7>OE3 LA>I2 18-1900 F>ON GM,SO5,HB,LZ1>DL SP9>DL,ON GB3LER>HA1 SM6,4L7IG>LY LA,ES1,SP8,SP5,SM6>I1 YL3,LA>PA I9,GB3RMK,SV1SIX>SP6 SV8>SP2 PA>9A UR,YO5>I3 EI>OH2 F>SM0 19-2000 UR>F,I1,PA,OE3,DL I7,SV8>PA LA,T9,OY6SMC,GB3LER>F LZ2>I2 EI,SV8>ON OY6SMC,YU1EO,GB3LER,GI,5B4CY>DL I9>OM7 G>SP9 20-2100 Eptv,5B4CY>9A 9H>OH2 5B4CY>F,HB,ON UR>DL,F,ON SV1SIX>EI GI,EH5 >DL 9H,ES1>SP9 OE3>SM0 YU1>SP2 4X4SIX>HB Z3,T9>I2 IK5ZUL,I6,SP5>DL SP8,OM6>OZ OZ>SP9 9H>ON 21-2200 IS0>I0 9H,SV1>OZ OM7,UR,9H,OK1,YO5,LZ2,9A1CAL>PA PA>LZ5 SQ5,UR,ES0SIX,SP4,SV1>DL OK1>SM0 G>OM7,LZ5 UR>LX I5>SQ2 LA,G>S5 OZ,SO5>I8 5B4CY,SV1SIX>F JW5SIX,JW9SIX>I0 YU1>OZ LA>I5 G,PI7SIX>LZ5 22-2300 YT1,SV1SIX,9H1SIX,SV9SIX>OE5,PA OZ,F>LZ5 I5,I0,LZ2>OZ SV1SIX,YU1>DL 5B4CY,ES0SIX>F

July 17 04-0500 4X4SIX,LZ2CC>F 05-0600 I0JX>SP6 07-0800 GB3MCB>OE5 SP8>SP2 SV9SIX,CT0SIX>OE3 SV1SIX>OE3,HA1 OE3XLB>HA1 EH1>F F>I0 08-0900 GB3MCB>OE3 OE3XLB>EA5 CN8MC,CT>PA 09-1000 SV9SIX>I2 SV1SIX>I5 CN8MC>PA,I5 ZB2,CT0SIX>PA OE3XLB,I0JX,GB3MCB>EA5 10-1100 CN8MC,SV1SIX>4U 11-1200 9H1SIX>DI 4U>SM0 1320 CT0SIX>F 1454 LZ1>ES1 15-1600 CN8MC>F.I0 9H>DL 16-1700 UR>S5 CN8MC>4U SV1SIX>DL YL3>SV8,ES1 4U>SV1 LZ2CC>PA,DL SV1SIX,SV3>PA YU1>OE3 YU8,YZ1>DL 9H,IZ3>DL 4X,UR>9A LZ1,LZ3>CT 3Ctv>F 9H>OZ EX8MLT>ES1,I5,OK1,I1,I0 YU8>I1 T7>I5 17-1800 UR>I1 9H,9A>CT EX8MLE,EX8MLT>SM0,DL,I4,YO3,OZ,I5,LY,EA5,ES1 9H,LZ1>ON UR>SQ2,DL UK8OM>DL,SM0,OK2 SV1>HB T7>9H LZ2CC>CT,S5,ON IS0>S5 I9>DL 18-1900 EX8MLE,EX8MLT>ES1,DL,OK1 UR>DL I9,EPTV,9H>PA CN>EA6,9H 4U>HB 9H>ON SM2>SP6 EX2A>DL,LY,SM0,SQ2,ES1 EH3>I6 OH6>LY,SM2 19-2000 UR>SM2,OZ,SM0 CN>EA1 EX2A>OZ,DL,CT,F 4U>HB 20-2100 LY>I2,9H F>LY SV1SIX>DL UR>SP6 OH7>4X EH8>EA1 21-2200 4X>DL FG5FR>CT OH9SIX,OH7,SM2,ES1>LY

July 18 05-0600 SV1SIX>SP9,9A,HA1 SV9SIX>SP6,HA1 06-0700 IW3FZQ>SV8 F>SV1 JY9,4X>PA,9A UR>DL,9A,PA SV1SIX>HB A71EM>4X 9H>SP6,9A 4X>SP9 07-0800 EH5,4X>9A OD5SIX,5B4CY,4X4SIX,SV9SIX>SP9 SV1SIX>SP9,HB 4X>I0,DL,YO 9H>DL,I4 LZ1,>DL JY9>YO2 LZ1,YO6,UR>OZ YA4F>DL,HB EH5>OE3 08-0900 YA4F>F,LY,EA5,PA,CT,OZ YO7>ON 4X,9H>9A 4X>SP9,CT UR>OZ 9H>I5 SU1SK>PA,I7,F,G 5B4CY>F 4X4SIX>DL LZ2CC>EA8 GB3MCB>SP8 SV9SIX,SV1SIX>SP8 A71EM>I9 09-1000 A71EM>S5,EA8,I0,SP3,EA5,ES1 5B>I7,ON,PA ON>OK1 I8>I5 4X>OZ,DL EH5>OM7 LA,YO6>4X SV1SIX>ON,SM0 TR0A>DL,PA YU6>F LZ2CC>SM0 10-1100 9H>OZ SV2,YU6,I9,9H,YL2,YL3,ES6,LZ2CC,LZ1>ON I9>DL 9H1SIX>4U LA>4X 4U>HB ES6,OH9SIX,I9>DL I9>OK1 TR0A>OK1,PA HB>I8 11-1200 9H,I9,SV1,GI>DL 9H1SIX,LZ2CC,I9,YO7>EH3 EI,SM2>OK1 SP4>F 4U>I0 DL>ON(bs) I9>OZ TR0A>DL LZ2CC>I6 12-1300 GD,4X4SIX,SU1SK>9A GU,SM2,I8>DL 9A,EI>4X DL,OH8>I0 LA>SP9 T9,OH4,LZ1,I9>ON T9>PA EH8>CT GU>OK1 13-1400 OZ,GB3RMK>CT KP4EIT>F,DL,9A,OM7,PA,DL KP2A>F,I2,DL,PA F>OZ,OM7 9H>EA1 YU6>SP8 SV1SIX,LZ2CC>DL JY9>F,HB 14-1500 YU6>DL JY9>OZ ,LX SV1>DL,PA,SP9 CT,SV8,LZ2>DL GM>CT EH1>OZ LZ1,LZ2CC>9A LZ1>DL,OK1 YO9>DL,SP9 CT0SIX>EI 15-1600 EH2>EI LZ2.HB9SIX>DL RU4>LY2,OH7 GB3IOJ>S5 IS0>9H I5>ON UR,GU>S5 SV1SIX>OE3 16-1700 RU4,SV1SIX,SV9SIX>DL UR>OE3 CN8MC,SV8,LZ3,F>DL EH2,SV1>ON I5>PA EI>EA5 LZ1>HB G>CT EX8MLT>I0 17-1800 CT0SIX,EH4>PA EX8MLT>ES1 UR,SV9,CN,SV8,EH8>DL ON0SIX>EA1 YA4F>S5 CT>ON I5>EI 18-1900 EH8,CT>PA PY1RO>G,PA 4U>HB K4MM>EA7 19-2000 PY1RO>PA 20-2100 LY>HB UA4>ES1

July 19 0451 SP4>PA 05-0600 PA>9A(bs) ES0SIX>SP6,F GB3LER>HA1,SP6 OZ6VHF>OE5 06-0700 SP8>ON,SP2 UA4>ES1 ES1>F G>PA UR>4X 4X>9A 07-0800 RU4>ES1` 4X>ON,9A,SP9,DL,OZ,LY JY9>9A,PA LY>PA UR>HB,PA SU1SK>PA,I0,HG1,SP3,LY,OZ,I4 DL>ON LZ1,OY>DL YL3>ON 08-0900 T9,LY,UR,GB3RMK,OY6SMC>DL UR>ON,9A,I5 SV1>9A SU1SK>ON,ES1,LY,G GB3LER,T9,LZ1>ON 4X>ES1,OZ,SP2 ES1>HB UR>4X SM3>DL,I5 YL3,ES6,ES0SIX>F LY>LX GB3LER>F A71EM>G,OK1 LA>9A 09-1000 A71EM>PA,LA,HB,DL ES1>F DL>RU3 LY,ES6,I7,G,YU1,LA>4X OZ6VHF>HA1 I7>ON LY>HB 4X>PA,DL SV5>I8,OK1,9H SV5,JY9>DL SV5>I9 OH3>OM7 OM7>OE5 YL3,ES6>I2 SP9>ON 10-1100 LA,DL>4X SR9FHA>PA YO4,RU3,I9,JY9,YO5,YL3,4X,I9,UR,T9>DL OM9,I0>PA HB>SP2 SP9>ON A61AH>OZ,I1,ES1,F OZ7IGY,UR>S5 LX0SIX>SQ2 I5>LA SP7,YO5>PA SV1>SM0 9H>EA7 11-1200 UR,G,YO3,OM5,SQ9,GB3RMK>DL OZ>4X A61AH>DL,PA,G G>HA5,HA7,HA1 I8>OK1 SP8,4X,YO8,ON0SIX>LA 4X>LA,RU3 5B>ES1,LA I5>EI YU7>PA YL3>I2 OK2>LX 12-1300 JY9>LA,DL 4X,YL2,GW,SQ8,I4.4X,YO5,ES6,OE5,HB,SV5,T9>DL A61AH>PA,DL 5B4CY>LA YO6,S5,OZ,4X,OM1, OE1>PA SM7>I2 UR>ON 4X>PA,EI G>OK1 UR>OE2,I2 HZ1MD>JY9 EH9>DL SM7>9H S5>CT SV5>LA DL>OE2 I3>EA1 13-1400 HZ1MD>DL,G,GU,GD YO8>F,DL G>9A OZ,PA>EA3 5B>I0 F>EI G,ES0SIX,EH9, YL3,CT,9A,T7,EH1,GB3BUX,I1,LZ3,YU6>DL OE5,T7>ON 14-1500 SV2,EH3,T7,YO8,I2,JY9,I5,CT3, GB3MCB, GB3LER,EH9,F>DL CT3>CT ES1>I3 YU6,4X,LA>HB LZ3,SM3>F JY9>EI SM3,G,EH6>9A PA>I7 OZ>EA3 EA5>OK1 DL>I7 OM9>EA5 SM7>9H 4X>YO2 15-1600 SP4>EA3 EH5,EH2,EH7,LZ2CC,5B4CY>PA YT4>EA5 DL>I7 CN8MC,EH9,EH8,5B,I9,YU6,OY6SMC,EH7,EH2>DL HZ1MD>DL EH7>HB EH7,EH9>F LZ2CC>HB EH8>OM5 16-1700 PA>4X 9H,EH7,I0,I5>PA YU1EO,EH8,RU4,I0,CT3,TA2,OH7,SU1SK,UR>DL EH4>I7 4X>ON CT>9A,ON RU4,RU3>OH7 TA2>9H,OE1 SU1SK,UR>F EH7>I1 EH8>HB,EA7 OH9SIX>LY OH7>RK3 17-1800 UR,EH5,LZ2CM,YO7>DL EH2>OE3 SM2>RK3 TA2>I9,ON PI7SIX>EA5 OH7>OH3,RU3 4X,SO5>9H LZ1>OH3 LY>SM3 18-1900 ES1,UR>SM0 CT>PA,9A AA2DR>EH6 CN,CT3>DL 5T5SN>LX,G CT,EH2>9A SQ6>OK1 19-2000 EH8>ON CT3>9A,OK1,PA CT3,F,EH7,EH8,UR>9A SM3,CN,SM4,LA>DL EH7,LA>LX W4MYA>G WA2FGK>9H W1JJ>S5 CT3>PA K2WE>EH6 20-2100 W3ZZ>G,F N3HBX>9H W4MYA>PA CT3,SM3,LA,EH6,JW9SIX>DL EH2,UR>9A SM3>PA IS0,9H>LX K3ZO>I0 K1DG>EA5 EH5,W1OJ>F F>HB KC2HDR,K3DNE>G UR>LY EH3>F AA1A,KIGX>I8 VE1YX>G 21-2200 JW9SIX>CT,DL,SM0 JW5SIX>SM0 UR>LA OE5>DL GB3LER,JW5SIX>PA UR>OZ OY6SMC>SM0 I0JX>EA1 TA2>OZ,DL UR,LA7SIX>F TF>PA 22-2300 TF>PA TA2>DL UR>DL OH9SIX>LY,DL LA>F GB3LER>DL YM0,UR>OZ UR>SM0,DL TF>EH6,DL aurora SM3>LX G>F 23-2400 GM,TF>F OH6,UR>OE1 UR>SQ6

July 20 00-0100 0224 UR>DL 05-0600 UR>SP2 06-0700 OK1>PA EH2>DL,OE2 CT,YM0>DL UR>LY YO9,YM0>RU3 EH2>OE2,OE5 SV5>I8 UR>LA OK2>OK1 YM0>LY 07-0800 5B>S5 TA2>LY,PA,DL,ON YO8>I1 I1>EA7 UR>SP2,OE5,RU3,I1 G>HB CU1,YO8>S5 YM0>9A,ON,PA 4X>DL CT0SIX>PA GB3LER>S5 CT>F 5B>I0 OH9SIX>RU3 5B,UR>ON 08-0900 CT,4X,TA2,YM0,ES0>DL 4X,OD,TA2,5B,ES6>PA ES0,YO8>ON UR,YM0>I5 UR>LX,9A LA,OE5>OK1 EH2>HB LA>I9 YO8>I3 5B,9H,4X>RA6 GB3LER,OZ6VHF>OE3 OH7>EA7 DL>EA5 LX>OH3 LY>EA3 SM3,I3>S5 TA2>SP2 OK2>ON09-1000 CT>F LZ2CC,OH7,EH8,OH0,GB3LER>DL LA>I1,I2,YO2 ES1,UR,ES2,DL>F LZ2,UR>YO2 ES0,UR>ON EH8,UR,S5>PA LX>OH2 F>OH3,HB PA,TA2>I2 4X,OD>RA6 G,GB3RMK>OE3 OE5>PA DL>OZ EH5,9A>LX PA>I7 UR>SP2 YM0>F 10-1100 GB3RMK,GB3LER,GB3MCB>OE3 I4,EH3,CN8MC,F,S5,YU1,EH2>PA SP3>ON G>F OM7>LX OE5>ON PI7SIX,F,OE5,ES1>DL F>SP6 G>YO2 DL>HB GB3IOJ,GB3LER, GB3MCB>OE5 G>OE3 11-1200 EH2>SP3 F,SM4,LY,UR>DL CT>SP3 UR,F,4U>PA UR>RK3,RA6 GJ,PA>HB GM,SM0>HA1 GI>EA7 LA>I1 1150-1250 EsFM>OH5 12-1300 SM7,SM3>PA OY6SMC>SP2 OH8,5B>OK1 FX4SIX>SM0 TA2,I3>PA SM3,LA,UR,ES6,GB3LER,LY>DL OZ6VHF>SP8 GI>CT SM3.SM2,FX4SIX>SP9 SO5>RU3 UR>I1 13-1400 TA2>EA4,DL EH2,UR,TA2>DL OD>OM3,ON TA2,DL>OE3 URF GB3LER>F,OE3 LY,I3>PA OM5>S6 14-1500 S5>4X UR,OD>DL F>SP6 YM0>OE2,OE5,HB,OE3 TA2>I7 UR>SM0,9H,PA TA2>SP6 OD>OE5,I0 15-1600 UR>F,SV1 4X>RA6 GU>OE5 5B,9H>OE3 I3>ON I9,YM0,TA2>DL SV1>I1 ES2>I7 YM0>SP7,I2,OM7,YO8,SP8 TA2>S5,I2,OE3 17-1800 TA2>F G>I7 YM0>I3,HB UR>DL,PA 4X>H YO7,Z3>PA 1800-20 EsFM>OH5 18-1900 T9,UR,YZ1>PA S5>I3 ES6>9H SV1SIX>LX,PA YM0>F,HB,LX UR>ON,LX,DL 9A 9A1CAL,LZ1>F Z3,SV1SIX>DL OY6SMC,GB3LER>SM2 YU1>SM0 TA2>F K4RX>EA7 19-2000 UR>DL,ON,PA OH9SIX>DL,SP9,SV1,PA,SM0,SP6 YM0>HB DL>ON LA7SIX>SP9 G>IS0 EH2>PA LA7SIX>SP2,SP6,SP9 OH8>I1,OZ,PA,SV ON0SIX,OH1SIX>SP8 OY6SMC,LA7SIX>SM0 OZ7IGY>F GB3LER>I1 ES6>SV1 OM6>SP6 TF>OH7 LA>DL,PA.I5,SP9 OJ0>I1 SM2>DL CT>LX K4RX>G.S5 AC4TO>S5 G>YO2 SM2>SP2 OE9>9A OY6SMC>DL 20-2100 OH7>PA,DL OY6SMC>OH2 S5>9A SM2>I1 DL>LX OH8,OJ9SIX>DL LA7SIX>SM0 OH3>EA7 LA>DL,PA EI>I1,I2 OH9SIX>SM0,SQ2 S01HA>G,ON,PA,DL,OZ,F, OH7,SP3 TF>S5,SM3,9A PY2XB>DL PY1VOY>GM,PA OH4,OH6,SM2>EA7 EI>9A PY1RO>OZ OH8>I1,ON, PA,SQ2 CT>OK1,SP5 G>9A SM2>SQ2,PA LA>SM0,SP3 G>I8,I2 LA>I0,PA OH9SIX>SP3 CN>ON LY>F F>PA OH6>DL 21-2200 K5JP>EA8 TF>9A,DL,HB,I1,I4,ON,PA EI>I2,I0 OH9SIX>PA I5,OH6,F>ON GW>I2 GB3RMK,GB3MCB,GB3IOJ,F>9A OH7>EH6 JW9SIX>DL,PA G>HB,I8 EH1>DL F>G CT,EI>DL F,OH9>PA LA>EA7 LA7SIX,FX4SIX>SQ2 JW9SIX>SP6 F,OH8>PA EH1>LX OH7>F 5B4CY>DL 22-2300 OH9SIX, LA7SIX>SP6 4X4SIX,EH1>DL SV1SIX,SV9SIX>SP6 F>DL LZ2CC>I0 4X4SIX>OH3 aurora 23-2400 YU1>PA

July 21 aurora 05-0600 SV9SIX>SP2,9A SV1SIX>SP2,9A 5B,IK5ZUL,4X4SIX>9A I5MXX>SP2 06-0700 LZ2CC>I1 9H>RA6 I5>SP2 SV1SIX>I9 SV9SIX>HA1 UR>OE2,PA F>YO2 LZ3>F,9H UR>OE3 07-0800 F>YO2 LZ3>F 9H1SIX>OE3 YO7,LZ3,UR>ON UR,EH6>OE3 DL>I0 UR>DL OH1SIX>SP8 I9>HA1 OH9SIX>SP9 0800-20 EsFM>OH5 08-0900 OH3>SP9 OH3>ON UR,OH2,SM3,I0>SP6 OH4>SP6 UR,OH7,IK5ZUL>OE3 LZ2CC,GB3RMK>F LZ3>CT CT,I0>ON LZ1,I0>PA I0JX>OE5 UR>OZ I0>OE5,OE3 0840-50 EsFM>OH5 09-1000 YU1,GB3RMK,GB3IOJ>CT OH5>ON UR,I9,GB3LER>DL ES1,ES0,UR,SM0>PA CT0SIX,S55ZRS, OH3>EI GB3LER>DL,OZ UR>SV1 OH2,5B4CY,ES1>F I9>HB UR,S55ZRS,F>9A LZ2CC>SP6 SM0,LZ2>ON EI>OH2 10-1100 EI,F>SP6 LZ1,LZ3>DLG>CT I9>ON GB3LER>OE3 GB3RMK>9A LA,SM3>F EH5>OK1 SR9FHA,UR>SV1 EI>SM0 11-1200 GW>LA 5B4CY>SP9 K1SIX>F,I8 W1JJ>F,EI,9A W4MYA>PA VE1PZ>G W3EP/1>ON,9A,PA N3DB>ON K1SG>ON KY5R>ON W0MHK/2>F GB3LER,OY6SMC>PA 12-1300 VE1ZZ>G,ON,PA UR>9A,OE3 VE1YX>I0,ON,PA,I8 VE1PZ>GU,DL W3EP/1>I0 W1JJ>ON,DL LZ1>SP6 IS0>ON 13-1400 UR>OK1 K2MUB>DL YZ1>SP9 VE3NH>G OH0>EI ES6>OE3 VE1ZZ>ES5 GM>SM0 W3UR>G,DL,OK1 WA2BPE>EI G>OH3 W4DR>SP6 ES6,LZ1>OE6 1320-1810 EsFM>OH5 1330-2030 EsFM(TA,SV,I,LZ,YO,HA)>OHtv/fm group 14-1500 DL>SV1 K2MUB>G,DL K3TKJ>G,PA,OE3,DL,OZ W4MYA>G W3EP/1>G,I8,YO2 W1BS>EI,9A K1KI,W3JQ>I8 DL>PA UR>OZ UR,F>SP6 SP5>SM0 9H>OH7 OH0>OM7,DL SM0>HA1 UR>OH2 EI>OM7 15-1600 K5MA/1>DL,I9,IS0 W3EP/1>I1,OZ,PA,G OH0>OM3 OH2,OH0>OK1 F>9A SP4,9H,YL3>PA LA>SP9 W1IMM>OZ OH2>DL W4DR,W4MYA,W2YE>I9 K1HTV>DL N3DB>G LY,TF>ON DL,SM0>JY9 SM7>EI TF>I9,PA OK2>9A OH1>DL 16-1700 EH9>I3 N3DB>GW W1JJ,W1OU>I9 W2YE>I4 LA>DL,EI,F,ON F>HB OH0>DL K7BV/1>I4,I9 TF>PA EH7>9A G>SM3 SM3,GM>DL 17-1800 GM,OH3,LA>DL LA>F,PA,HB SV1,SP5,OM7>LA OH9SIX,OH8,JY9>9A UR,GM,LA,OH8,ES1>ON OH1SIX>S5 SM5>I1 GM>I5 K1SIX>I9 OD>OH2 SM3>F GB3RMK>HB 18-1900 LA>9A,ON,PA GM>F EH9,OH0,SM3,OZ>9A LX>CT S01HA>DL,ON,PA,OM3,SM6,9A ZB2>I4 JY9>PA LA,UR>DL 4X>ON,YO2 K9CFD>ON OH8,ES6>DL HV0>DL,ON,OZ,HB,SM6,ES1 UR>F,PA,ON,DL,4X LY>SP9 GM>ON DL>9A LA>SV1 K1SIX>I2,9A,GM,SM7,PA JY9,4X>PA OE6>ON EH9>LY,DL OH8>F W1JJ>DL SP6>DL,ON,PA JY9>ON ES0>OE3 YL2>DL 5B4CY>ON EA6>EA5 F>SM2,SP5 SM5>S5 19-2000 W1JJ>F,I4,GM,S5,SM7 S5>PA TF>I4,F,HA1,SV1,EI,PA,DL,RA3,I0,9A,EA3,ON HV0>I9 JY9>DL S01HA>ES1,GM,OH7 EH3>SV1 PA>9A K1SIX>9A OZ>HB OZ>HB CT>SP1 S5>9A,PA UR>LX,ON,PA,SP2 OK2,EI,EH5>PA K2ERG>GM LX>SM2 ES6,GI,GM,SP8>DL SV1>SM2,ES1,PA OY6SMC>DL,EI VE1YX>9H,I1 JW5SIX>EI OZ>HA9 GB3LER>EI,I4,SQ2 LY>9A ES6,SM4>DL EI,LA>S5 SP5>PA 5B>SP1 SM7>DL,SP6 CN8MC,LA>F OH3>I0 ES6>ON,PA SP4>9A EI>CT SV1>ES1 UR>ON SV8>SM0,ES1 20-2100 TF>DL,I1 YO7,Z3>SP3 UR>LX,9A,DL,EH3,F 3A,LA>LX LA,Z3,SM0,ES1,OH4>DL LA>OK1,9A SP4,F>PA I0,ES0>HB OH3>ON S01HA>EI,ES,GM,F,SP3,PA,OH3,ON PA>SP3 OY,SM7>F SM0>9A

4X>SM7,OM7 GM>EA1 YL3>CT 21-2200 SM7>I0,DL,ON,PA YM0>DL LA,GM,LX>EA1 JW5SIX>DL,I2
ES1,9H,JW9SIX,OH7,SM7 F,I4>EI 4X>SM7 UR>LX,ON LX>SP2 ES6,9A>PA JW9SIX>TF SM3>I0,DL LZ1>4X
SM5>I5 I0>SP9 OM6>F YU1>PA 22-2300 OH3,OH7,9A>ON SM7>I5 SM3>ON,PA 9H>SM0 TF>EA5 DL>LA
SQ2>S5GM>EA5 K7BV/1>F

July 22 05-0600 OE6>9A LZ2CC>SV8 LA7SIX>SP6,PA LZ1JH>F SM2>SP6 0600-2025
FM(UA,UR,TA,I,G,F,DL)>Ohtv/fm group 06-0700 SV1SIX>I0 I0>RU3 RU3,LA>DL I9>S5,I5 LA7SIX>OZ LZ1>I4
OH4>I0 ES6,OH0>9A ES5,ES6>OE3 07-0800 YU6,SV2,OH2,YL2,LA,SM2>DL YL2,LA,SM2>PA LA>OZ,OE3
OH0>OE3 ES6>ON,SQ6 ES1>OK1 EH9>HB YL2>ON LA>9A 0710-0850 EsFM>OH5 08-0900
ES5,ES6,OH4,OH5,LA>ON LA7SIX,ES5,GM,OY6SMC>DL EH7>I5 YM0,LZ2>CT 5B>I0 EH9>HB OH0>I0 OH4>OE3
LA>PA 09-1000 EH2,YL3>CT OH0>SP6 YM0>I0 LA>PA LA,J4,YM0,GM>DL J4>OM3 F>EA1 CT>I5 YM0>SP6
GB3LER>OE3 LA>SP9 3A>I5 0910-20 EsFM>OH5 1000-10 EsFM>OH5 10-1100 VE1PZ,VE1ZZ>I9 DL>ON
EH4>PA,9A GM>SP2 IK5ZUL>CT2 GM>ON,PA VE1YX>,ON,I0,9A,DL VY2RU>ON OY6SMC,LA>DL W1JJ>ON
SV2>I2 1050-1240 EsFM>OH5 11-1200 SM3>PA YU6>I2 LA>9A,PA,SP9,I8 SM0>DL K2MUB>G,DL GI>PA J4>I2
W1CWU>DL,G LA>SQ2 W3EP/1>ON GB3LER>SP9 K1BV/1>I5 K1IM>DL,G W1JJ>DL,I1 K1VV>PA EH2,VE1YX>F
12-1300 YM0,SV2>HB K1TOL>G,I5,ON K2PLF>G,9A CT>LA VE1ZZ>I0 5B>I5 OH2,TF,LA>PA NG4C>F,ON
K2ERG>EA5,EA7 YM0>OM7,I9,EA6,S5 W3EP/1>G W4DR>ON TF>ES1 13-1400 NG4C>I2 OH0,YM0>OZ
LA>DL,I7,I0 OH9SIX,LA>ON N3DB>F K2ERG>CT,F SM3,GB3LER,YM0>DL K1IM>G KG4HOT/M>G,PA
VE1YX,K3UL>F YM0>PA,OE3 W5UN>PA K9SM>CT 14-1500 GM>ON VO1ZA>G K2ERG>F VE1YX>F,9H GD>LA
SQ8,SP9>F DL>I7 UR>ON GM,TF>PA OY6SMC>DL K1TOL>9H S5>SP9 OZ>I7 15-1600 GD>OH2 OE6,SP6,LA>DL
VE1YX>I9,I0 DL>EA1 LA,SP9>PA SP5>F VE1ZZ>DL,OK1,G VE3RM>DL,PA,SP3 SM7,SP4>F W4GF>DL SM0>EA6
1540-50 EsFM>OH5 1600-1820 EsFM>OH5 16-1700 LA,GM,SP7>DL VO1ZA,W8GG>DL 9H>EA1 VE1YX>I8 PA>LA
G>I4 GB3LER>EI K3KYR>I9 SQ8>SQ2 17-1800 LA>DL,9A 7S0K>I1 ZB2>DL 4U,G>EA1 SM6,LA>I1 LA,OH7>HB
EI,SM3>PA SM6,OZ>EA3 SK4>HB,I1 SM3>S5 OH2,OZ,LA,OH6>I1 OH0>I7 OH8>EH6 SM1,7S0,OH0>4X CT>ON
OZ,TF,KG4HOT/M>PA 4U>EI GM>SP2 18-1900 I2,OE1,SM3,LY,OE3,CT>PA LA>S5,F,DL,PA ON,G>LA
SM7,LA,GW>4X 4U>DL,EI,OZ EH8,TF>DL S01HA>SP6,GM F>CT,DL SP5>F CT>LX OZ>HB CT>SQ2 OH4>EA5
1830-40 EsFM>OH5 1850-2020 EsFM>OH5 19-2000 OH6>EA5 OH7,OH20>OE3 OH0>HB 4U>DL,PA,EI EH1>OZ
OY6SMC>EA7 LZ2>LX UR>F,DL EH4>F ES0>SP3 YM0>PA LA>9A LZ2,SV8,GB3MCB>DL 20-2100 ES0,SL0>SP9
YM0>DL,ON,LX LY>ON LZ2>PA,ON OH7>DL LY>OZ OH8,UR,OH6>PA LZ2>DL,9A DL>SM2 OH3,OH1>LX
CT0SIX>EI UR>9A 21-2200 OZ>OH1 G,LA7SIX>DL G>I4,9AOH9SIX,S55ZRS,IK5ZUL,LZ1>PA GB3IOJ>9A

July 23 0430-0915 R1>OH5 06-0700 OE5,OK1,GB3BUX,GB3MCB>F ES6,GW>I1 0650-0700 EsFM>OH5 07-0800
4X,UR>PA F>ON PI7SIX,G,GM>9A F>SQ2 I4>F G,OZ6VHF>OE3 OH9>SP9 08-0900 SU1SK>DL,G,GM,OK1
GB3LER>F OE6,T9,4X>DL J4>OE5,I0,DL I3>LA OH3,OH7>I0 YL2>HB OH7>EA3 9A1CAL>PA GB3IOJ>OE3,OE5
GB3MCB,PI7SIX>OE5 5B>OK1 PA>OE3 0850--1030 EsFM>OH5 09-1000 FX4SIX>OK1 ON0SIX>OE5,OE3
LX0SIX,F,EI,EH5>CT OE2,OE5,OE6>PA GB3MCB,ES5,PA>OE3 J4>OK1,PA F,EH2,SV1SIX,OE6>DL G>9A
EH5>OE6 EH2>SP6 0915 FM(Balkan)>Ohtv/fm group 10-1100 F,4U,I5,I9>PA GM,J4,YU1>HB FX4SIX,LA,GU>DL
GB3MCB>HA1,OE3 ES0>OK2 ES0SIX>OE3,SQ9 I9,SV9SIX>OE3 UR>OZ ON0SIX>CT GU>LA 11-1200
4U>ON,PA,OZ,CT F>SP9 PA>HB I5,J4>PA OY6SMC>DL,PA F,G,LA>DL T7>EA2 LA>ON EH9>OK1 GU>OE6 12-
1300 GB3MCB>OE6 I2>PA K1SIX,K1IM,SM4ANQ>9A W3EP/1>9A,I2 F,GU>SP9 I5>I2 F>9A,PA GU,EH3,ES6>DL
I9>9A K1KI,W3EP/1>EA7 CN8MC>EH3 13-1400 K1IM>I4 SV1SIX>EI K4PI>9A ES6,GB3MCB,F>DL I4>EI
W4MYA,W1JJ>EA7 14-1500 W4GF>I4 K9SM,N3DB>EA7 K5CM>EA5,EA7 K8WW>EA7,F,GU 16-1700
SV9SIX,OE3>DL 3Ctv>G 17-1800 9H>DL,I5 VE1YX>ON,I0,I8,F,G 9H1SIX>HA1 CN8MC,OZ7IGY>EI 9H>S5 EI>DL
I8,S5,I5>EA5 GM>ON LA>F GM>PA 18-1900 LA>F GM>PA,F,ON GB3LER>LX,I1 GB3BUX>SP9 EH3>DL
CN8MC>F IS0,EH5>LX CT3>SM6 G>SV1 GM>PA,CT 19-2000 EH7,EH5>SP6 PI7SIX>EI GM>EA1 F>SP9,9A
9H>PA EH8,F>SP6 GM,F>F EH8>PA,DL GW>I8 IS0>ON 20-2100 EH8>PA ES8>ES2 21-2200 LA7SIX>SM5
JW9SIX>SM5,OZ CN8MC>I3 LA7SIX,SM7>OZ 2337 LA7SIX>SM0

July 24 05-0600 ES0SIX,SV1SIX,SV9SIX>SP6 06-0700 CN8MC,CT0SIX>I0 OE3XLB(t)>SP6,S5 OE6>S5 CT0SIX>F -
09-1000 ZB2>I1 CN8MC>EI 10-1100 5B>OE3 CT0SIX>EI 9H>4X 11-1200 9H>SP2 J4>OE3 SV1SIX>S5,ON
SV9SIX,T7>S5 I1>DL GD>OE3G>9A 12-1300 GB3LER>S5 OM3>OE3 4X>9A VO1ZA>F K1IM>EA5,EA7 W1JJ>EA7
SV9SIX>9A,13-1400 OE6>S5 SV1SIX>I0 VE1YX>F,G S5>9A 14-1500 4N1ZNI>YU1 SV9SIX>9A
SV1SIX>9A,DL,S5,I8 N1RAM,VE9DX,VE9PLB>GM GM>EI 15-1600 4X>I0 S5>9A N1RAM,VE1SMU,VE1CZ>EI
J4>9A,I9,SP6,OK1,4X,F I0,SV1>9A SV9SIX>F 9H>4X 16-1700 SV1SIX>F EA3VHF>I5 J4>F,OM3,I4 SV1SIX>HB
I9>F 17-1800 VE1YX>GM 7Q7SIX>IS0,F,SV1 EH9>I2 TF3SIX,OX3VHF>EI 1755-1800 VE6JW(DO33)>GM,EI 18-
1900 K5CM>GM VO1ZA>PA,EI,DL,ON,F GM>EI PA>ON 19-2000 G>PA W1JJ>F,ON VO1ZA>ON,PA 20-2100
VO1ZA>DL ON>PA 2231 OE3XLB>9H

July 25 0027 VE8BY>MM0AMW(559) LZ2CC>PA 06-0700 LZ2CC>SV9SIX>I0 07-0800 LZ1,ON0SIX, PI7SIX,J4>I0
8H>OE3 LX0SIX>DL J4>DL,9A SV1SIX>EA3 IOJX>LX F>9A 08-0900 JY9,9H>I0 SV1SIX>HB EH5>9A 4X>EA5

9A.EA2 YU1,LZ3>9H SV1SIX,9A>DL 09-1000 UR>OH7 9H1SIX,LX0SIX,CN8MC>DL I9>9A 10-1100 EH7>DL,I0 CT>I0,I2 11-1200 CT>EA2,EA5 12-1300 CT>EA7 ON>PA 1356 CT>EA5 14-1500 K2MUB,K4RX>EA7 CT>F,EA7 15-1600 J4>9A 16-1700 EH8>EA5 1955 LY>ON 20-2100 LY>PA SV1SIX>OK1 JW9SIX>SM2 21-2200 JW9SIX>SP2 LA7SIX,SM2,GM>PA

July 26 05-0600 UR>SP6 RU3>9A 06-0700 LA>OK1 UR>9A,SP7,RU3,DL,OH2,S5,PA,EA5 LA,>LY,DL OM3>RU3 LY>I5 4X,LA7SIX>LY 07-0800 I5MXX>LY UR>DL,9A,OK1,I4 I0>SP2 LY>9A 4X4SIX>F SP8>I1 GB3LER,UR,SP8>I2 I0>IS0 OH6>DL LA>SP6 08-0900 UR>I1,9A,DL,EA5,I3,ON ES8,LZ3>PA SM7,SV1SIX,J4,OH4,OH9.YT7,OH8,YU1>DL EH5>JY J4>I2 ES6>PA YO8>OE2 I0>I8 LA>I5 0840-0920 EsFM>OH5 09-1000 UR>PA,DL,ON OH8,GM>DL OH9>OE2 OH8>SP6,PA OY6SMC>F I0>SV1 4L3Y>DL,S5,9A,OK1,F LA>DL,SP6 SM1>F ES1>I2 1000-1020 EsFM>OH5 10-1100 ES6,SP4,OH6,YL2, SV8>DL OH2,GB3LER,ES0SIX>OE5 EH9,UR>9A I9>I2 I3>OH2 I2>OH3 ES6>ON SV8>SP2 YL3>PA EH6>I0 11-1200 LA>9H SP4>OZ YL3>SP6,DL,PA SP4>PA LA>ON OH0>I2 GU>OH2 LA,SM4,OH0>OE3 ES1>HB SM0,OY6SMC>DL 12-1300 OH3>I2 LA>YO2 HB>OH2 YL3,ES4>PA GB3LER,OY6SMC,EH9>F I9>I8LA>SP6 13-1400 OH1SIX,SM0>ON 15-1600 UR>DL,9A,I1,I8,I9 EPTv>OK1 JY9>DL,SP6,LA,OK1 YL3>JY9,4X LZ1JH>ON SM7>DL CT>F 16-1700 UR>OE6,EA1 F>F EH9,CT,I1,4X4SIX,CN8MC>DL EH9>OE6 JY9>I5,SV1,EA3 SO5>4X CT>I3,9A 17-1800 9H>F 4X>DL SU1SK>SP2,OK1,DL I9>EA3 EH8>OK1,EA4,I5 PA>I8 9H>4X aurora 1844 CN8MC>OE2 19-2000 CT>I2 EH9>ON,F CT9>CT CT,CN8MC>DL CD44>CT 20-2100 CN8MC>F LY>SM2 2150-2210 EsFM>OH5

July 27 05-0600 GB3MCB(ms),LX0SIX(t),OZ7IGY(ms)>F 08-0900 LX0SIX>DL UR>OK1,DL 09-1000 UR>9A YU1>9H 10-1100 F>LX SV9SIX>DL SV1SIX>I0,DL 11-1200 S55ZRS>I3 SV9SIX>DL 12-1300 CN8MC>F aurora 15-1600 S5>OK1,9A F>9H SV1SIX,SV9SIX>OK1 LZ1>F 16-1700 SV1SIX>DL,PA,OE5 SV9SIX>OE5 YU1EO>I2 I9>OZ CU9>CT LX0SIX>SV1 YO7>F EH9>DL 17-1800 UR>OZ,DL,LX J4>DL CN8MC>I0 SV3>OE3,DL,LX,PA,F EH9>EI,DL,F,CT CT3>CT,EI I9,I8,EH4>DL SV1>F S55ZRS>SV1 EH4,EH5,UR,S5>9A EH5>DL CT>PA 18-1900 EH9>I0,DL,LX CT3,EH5,EH6,EH7,EH1,EH3>9A I9>F,LX EH5>EI CT>DL,PA,EI,I8,LX I0>ON CU9,UR>I9 EH5>PA W4MW>EA7 EH7>EI I9>LA,DL EH7>ON 19-2000 3A>I5,SV1,I8 CT3>EA1 EH5>OZ,F CN8MC>F CT>DL,PA I9>9A,LX,I2 EH9>PA SV1SIX,CN8MC>ON JW9SIX>SM0 PA>9A(bs) 20-2100n EH1>DL EH8>DL,PA CT>I1,PA EI>I5 EH4>EI LZ3>PA LA7SIX>OH3 CU3>I0 21-2200 VO1ZA>F EH6>OK1 22-2300 SV1SIX>DL,9H K3TKJ,K1SIX,NW5E/4>EA7 K4RX>EA7,I0 9H>PA 23-2400 EH7>PA 9H>PA,EA7 KA2LIM>EA7 I0>EA4

July 28 00-0100 N8UUP>EA7 07-0800 EH9>I8,PA UR>OZ CT0SIX>PA SV9SIX>SP6 08-0900 J4>OM3,PA,OK1,9A,DL,I0 9A>4X,F EH9>DL,HB,F,9A 4X>F,ON,SM6 SV3>DL,9A SV1SIX>PA LZ2CC,LZ1JH>9H 09-1000 J4>9A,I3,OK1 9H>PA EH9>I3,DL SV3>DL F>F CN8MC>I2 10-1100 EH9>DL,F,EA5 I9>F J4>DL,I9,OE6,I8,9A SV5>9H SV1>DL 4X4SIX>YO2 4X>PA 11-1200 T9>PA SV3>I4 ON0SIX>9A J4>I8,DL SV9SIX>DI OD>F 12-1300 J4>I4 OD>F IS0,SV9SIX,LZ1>9A 9H>ON CN8MC,4X>DL UR>9H S5>OH6 13-1400 LZ2>9A YU1>9H J4>DL UU5SIX>OE5,9A I8>I7 SV1SIX>OE5,SP6 SV9SIX>OE5,SP6 YU1EO,ON0SIX>9H 9H1SIX>OE5 EH7>PA UR,SV4>9A 14-1500 UU5SIX>DL,EA1 LZ1JH>OE5 LZ1>DL UR>I8 aurora 15-1600 F>ON 16-1700 SV1SIX>ON,PA I0>OZ YU1EO>F DL>I0,EA3 UR>I8,9H LZ1>ON,PA HB>I8 LZ3>PA FX4SIX>9A 17-1800 GB3MCB>9A LZ1>DL,F SP7,YU6,LZ3>PA OK2,SQ9>I0 SM7>I5 YU6,SV1SIX,SV9SIX,OD,LZ3,EH6,EH2>DL SP4>I0 UR,LZ2CC,YU1>ON LZ3,YU1>HB OD>PA EH6>OZ 18-1900 SV2>OZ LZ2CC>PA,LA T9,J4,OD>DL 9A>SM0 OD>I0 JY9>SV5,ON,DL YU1>I1,DL I0>HA5 OD>S5,I3 SV1SIX>F J4>ON,F 19-2000 9H,CN8MC,LZ1>DL LZ2CC,LY>PA CT0SIX>9A DL>SM0 20-2100 SV1SIX>OE1 SV1SIX>DL CN8MC>I0 JW9SIX>SM0,OZ,SM6 JW5SIX>SM0 21-2200 LA7SIX>SM6,SM0 GB3LER>DL VE1ZZ,VP9/GM4COK,NW5E/4 VE1PZ>CN 22-2300 SM2>SM0>CT LA>SM0 VP9/GM4COK,KC4PX>EA7 I0>CN LA>OZ I0>CT WC4H>CN

July 29 0614 SV1SIX>HB 07-0800 SV9SIX,4X4SIX,5B>9A 08-0900 5B>I8 SV9SIX>EA7 1151 SV1SIX>DL 121-300 CN8MC>I5,SV1 13-1400 SV9SIX>SP8 I1>I4 I5>I2,I4 aurora 17-1800 I5>ON LX0SIX>SV1 SP7>9H 18-1900 SV1SIX,9H1SIX>ON I9>SP6 LA7SIX>SP8 2216 OH9SIX>OZ aurora

July 30 06-0700 4X>9A J4,SV9SIX>OE3 07-0800 CT0SIX>I2 SV9SIX,4X4SIX,5B4CY>9A SU1SK>I8 08-0900 G>DL F>SM0 GB3LER,CN8MC,EH7>I5 09-1000 UU5SIX>SM0 ON>YO2 16-1700 K4EA>F aurora 18-1900 CN8MC,3Ctv>F TR0A>EA7 EH7>IS0 19-2000 EH7>9A 20-2100 JW9SIX>SM0,LA CN8MC>I2 EH5>CT OH9SIX>LA aurora

July 31 08-0900 OZ>DL SM5>ES2 1054 OH6>DL 12-1300 SV1SIX>SP6 TR0A,3Ctv>EA7 17-1800 UU5SIX>OZ UR>DL,9A 18-1900 UR>DL,OK1 UU5SIX>DL 19-2000 LZ2CC>SM0 SM0>YO2 20-2100 YO2,YU1>SM0 EA1,DL>CT UU5SIX>SP2,I0,OZ UR>SV1,HB,OE5,I5,PA,DL SV1SIX>HB OH7>OH3,SV1 22-2300 OE1,OE3>SV1

50MHz PROPAGATION REPORT FOR JULY 2003 BY SV1DH

1. Data for all days (31), except on 19(>11z) and 26-31 Jul.
2. Relatively good days on: 1,2(+),4,5,6(+),8(+),11,13,14,18,22(+)
3. 48 MHz AF video (3C) on: NIL
4. 55 MHz AF video (5N) on: NIL
5. " to EH8 on: 4,8,12,22(2-3E)
6. " to CT3 on: 3,4,13,23,25(2-3E)
7. " to CN on: 1,2,4,5,11-13,15,22,23(2E) (R=32%)
8. " to SU on: 13
9. " to 7Q on: 24
10. " to W on:4(1500 weak),6(1245-1400 weak),8(2015-2030)
9(W5 >10000Km 1320z),22(11-12z) (R=16%)
11. " to VE on: 6(2015),8(1945-2030),22(10-12z) (R=10%)
12. " to C6 on: 2(1945-2100),4(1430+2130),6(1245-1415,9100Km
223 DXCC entity wkd)
13. " to GM/MM on: 13(GN81)
14. " to FM on: 2 (very weak)
15. " to FG on: 2 (very weak)
16. " to 5B on: 4-6,12-14,16,19,20 (R=29%)
17. " to 4X on: 1,4,5,7-9,12-16,18,20-22 (R=48%)
18. " to OD on: 4-6,12-14 (R=19%)
19. " to JY on: 5,12,19,21
20. " to A7 on: 18
21. " to YA on: 1,14(2E) 224 DXCC entity wkd
22. " to EX on: 14(3E)
23. " to UK on: 14(2E)
24. " to 4L on: 14
25. " to BG on: 4 (NEs, short)
26. " to F on: 1-4,6-9,11-13,15,16,18,20,21,23,24
27. " to I on: 1-8,11-14,16-25
28. " to IS on: 2,4,6,8,12,15,21,23
29. " to T7 on: 8
30. " to CT on: 1,2,5,12,22 (2E)
31. " to EH on: 1,2,4,6-8,11-13,15,21,25(1-2E)
32. " to EH6 on: 2,4,6-8,11
33. " to 9H on: 1,2,4,5,8,11,12
34. " to DL on: 3,5-9,10,13,15-19,21-25
35. " to HB on: 2,5,7,8,12,13,17,18,20,22,24,25
36. " to SP on: 1,3,5-8,10-13,16-25
37. " to OK on: 5-10,13,16-19,21,24,25
38. " to OM on: 1,6,16-18,21,24
39. " to HA on: 17,18
40. " to LZ on: 20,21
41. " to YO on: 12,16,20,22
42. " to YU on: 6,11,19,24
43. " to 9A on: 6,13,16,19,21,24
44. " to S5 on: 6,11,15,20-22,24,25
45. " to T9 on: 6,19
46. " to OE on: 3,5-11,15-18,21,23,24
47. " to 4U on: 17,23
48. " to LX on: 6,13,15,16,18,20
49. " to ON on: 5-8,11,13,17,18,24
50. " to PA on: 2,5,6,8,9,10,13,17,18,21

- 51. " to OZ on: 5,6,8-11,13,16-18,20-22
- 52. " to G on: 6-9,13,16,19,21,22
- 53. " to GW on: 7,8,13,21
- 54. " to GD on: 7
- 55. " to GM on: 9(IP90),22(23z) (2E)
- 56. " to EI on: 6,7,13,16,23 (2E)
- 57. " to UT on: 1,4,6,12-14,17-21
- 58. " to LY on: 5,6,11,13,16,19-21
- 59. " to ES on: 6,11,19-21
- 60. " to YL on: 5,11
- 61. " to OH on: 11,19-22
- 62. " to OH0 on: 22
- 63. " to OJ0 on: 13 (Es+Ms)
- 64. " to SM on: 8,10,13,18,19,21,22(1-2E)
- 65. " to LA on: 20-22(2E)
- 66. " to CU on: 2(3E)
- 67. " to TF on: 21(2E)
- 68. " to SV on: 14(B),20(T)
- 69. " to ZA on: 10(B)

- 70 Special events on:
- 1(0630 5B to JA) 2(0728 M3.0 flare)
 - 4(0530 5B to BG) 6(0032 M2.3 flare+0545 5B to EX)
 - 7(0815 5B to BG+1000-1400 SW EU to W+VE early)
 - 8(Very extended opening >11z from W EU to W+VE, incl. W6,W7,VE7, NIL in SV)
 - 9(2238 M2.0 flare)
 - 10(0915 CT to W1 very early+1230 IO to W1 short+1330 LA video 2Es)
 - 11(1500-1530 LA video JO38 Aurora sound, no tone at all)
 - 12(1130 SV1 to C+EH7+CT 2Es, 9H+IT 1Es west, OD+4X+5B 1Es east)
 - 14(1015 CT to W1 early+1200~2100 48+49Mhz Asian+ME video of specific txs)
 - 15(0500+0800 5B to BG) 17(0800 UR to BG)
 - 18(0630 YA to UK+BG+JA 6000Km east+0815 YA to CT+EH+G 6200Km west!
+ 0700 9H to BG+1845 PA to PY1)
 - 20(R=224!+1930 SM3 to PY1+S5 to W4+OH7 to TF simult.)
 - 21(12-17z W+VE to N+W EU) 22(0945 CT to W1 early)
 - 23(12-14z W+VE to W EU) 24(12-15z W+VE to N+W EU) 25(0830 LZ to JA)

71. DXCC entities heard/worked during JULY 2003 : 64! on 4 cont

72. DXCC entities heard/worked on 22nd JULY 2003 : 19 on 4 cont 73 COSTAS

The Americas

Auroral-Related Propagation

July 4 03-0400 VE4VHF>W9(EN44 51a) N8PUM>W9(EN44 51a/t)

July 11 W1(FN31)>W3(EM99) 23-2400 W0(EN33)>W0(55a) N0UD>W0(DN70 53a) W8(EN84)>W0(55a)
N8PUM>W1(55a)

July 12 0049 W7(CN87)>W7(DN41 53a) W7(DN41)>W7(DN76) 03-0400 K0KP>W9(55a) W0(EN33)>W0) W8>W1 04-
0500 W0(EN33)>VE6(DO33 55a) VE9BY>VE6(DO33 529a) VE6(DO33)>W9(EN44 51a) KL7/KG0VL>W9(EN44 529
au/AE) VE6>W9(EN44 59) W2(FN34)>VE2(FN35 59a) 05-0600 W0(EN34)>VE6(DO33 59 AE) N8PUM>VE6(59a)
VE6(DO33)>VE2(FN35 57a) W1(FN44)>VE6(DO33 59 AE) KL7NO>W9(EN44 mode?) VE6EMU>W9(EN44 529
au/AE) 0613 KL7NO>VE6(DO33 519)

July 15 0444 VE4ARM>VE6 21`30 W8(EN84)>W9 55a)

July 16 0014 W9(EM13)>W0(EN65 41a)

July 17 2258 VE4ARM>W9(51a)

July 19 01-0200 W0(EN10)>W9(EN44 53a) VE4ARM>W9(EN44 53a) 22-2300 W1>W2 VE9(FN75)>W2 W1>W1 W3>W1 23-2400 W3(FM19)>W3(mode?) W0(EN03)>W8(EN61 59a) W0(EN34)>W8(EM79 55a) W3(FM08)>W2
July 21 01-0200 MM0AMW(IO75)>W1(FN43) mode? MM0AMW>VE1ZZ mode?
July 26 1714 LATv>W0(DN70) 1724 OH9SIX>W0(DN70)1836 LATv>W0(DN70) 20-2100 VE4ARM>W9(52a) N8PUM>W9(51a) 22-2300 CY9A>W3 23-2400 CY9A>VY2 N8PUM>W2(31a) VE9>W2(53a) W1>VE9 VE3>W1
July 27 01-0200 W1>W1 0233 W7>VE7 0626 W0(EN18)>W9(EN44 55a) 0645 W0(EN36)>W8(EN61 55a)
July 29 0849 VE4ARM>W9(EN44 56a) 2252 W9>W9 2303 W9(EN44)>W0(EM39 53a)

Other Modes

The main long-haul interest in North America of course lay across the Atlantic. However, at generally somewhat shorter range there were many openings into the Caribbean, shown in the detailed listings. They also show many contacts within North America attributable to double-hop sporadic-E. The 4th of July is one case in point, or the 8th, when good propagation within North America mingled with the trans-Atlantic DX. KL7 was worked from the continental US on the 8th (VE6), 9th (W6), 10th(W7,W0), 22nd (W0) and 25th (W6,W7,W0,VE6). Multihop Es also brought propagation to YV on the 2nd (W5) and 28th (W4,W5); HK on the 2nd(W5,W8) and to HP on the 3rd (W5) 4th (W4), 5th(W6,W7) 6th(W1,W4,W5,W7,W9) 8th(E4,W8,W9,W0) 11th W4), and 13th (W0).

There were openings to CT3 (4th (W4,W8) and 19th (W2); CN 3rd (W4), 4th (W1,W2,W3,W4,W8,VE1); 5th (W1,W8); 13th (W1,W3); 14th (W1), 19th (W3,W0,VE3); 28th (W3,W4) and 29th (W4); EA8 on July 3(W1,W4,W5), 4(W1,W3,W4,W9,W0,VE2,VE3) 5(W4) 19(W3,W9) 20(W4), 28 (W3,W4,VE3), 5T was worked on the 4th(W1,W2,W4,W5,W8,W9) and 5th (W1,W9). 5T6M was worked on the 4th (W1,W2,W4,W8,W9) and 5th (W1,W9). Incidentally, the first five days of the month appear to have produced good propagation almost everywhere in the northern hemisphere. They were geomagnetically slightly unsettled, with Ap ranging between 13 and 25, and flux levels of 131 to 142)

July 1 01-0200 W3>W3 W6,W9>W4 02-0300 W4>W6 W7>W8 03-0400 W7,VE7>W0 12-1300 W2>W3 EH7KW>W4 1430 CO8LY>W4 2317 W5SIX>W5

July 2 00-0100 W5,NOLL>W5 W7,W9>W5 01-0200 W7,W0>W1 W6>W5 VE#>W4 W1>W3 02-0300 W8>W4 NOLL,W5VAS>VE3 W5>W6 W0>W2,W4 W5VAS,W4,W1,W8>W0 0332 W0>W7 1114 W2>W3 14-1500 ZF1DC>W4 VP9/W3CMP>ZF 15-1600 W7>W5 W4>W0 C6A/W6JKV>W2 KP4>W1 VP9/GM4COK>zf VP9/W3CMP>W5 16-1700 W5>W7 W4CHA>W0 KP4>W3 17-1800 KP4>W3,ZF W8,W4>KP4 W2>W1 C6A/W6JKV>W1 YV4GMG,HI8ROX>W9 18-1900 C6A/W6JKV>W1,W3 KP4>W9 9Y4AT>W3 PJ2BR>W1 YV4DDK>W4 ZF1DC>W5 VP9/W3CMP>W4 V31PC>W0 19-2000 W4>W1 PJ2BR,ZF1DC>W5 FM56WD>W2 9Y4AT>W8,W5,W2 YV4YC>VE3,W5 FY1FV>W9 KP4>W5 20-2100 9Y4AT,9Y4TL>W8,W2 YV4GMG>W9 IS0GQX>W4 HK3JRL>W5,W8 C6A/W6JKV>W5,W9 KP4,YV4EWW>W5 ZF1DC,KP4>W2 21-2200 EH9AI>VE9 C6A/W6JKV>W3,W1 HI8ROX,9Y4AT>W1 VP9ID,W9>W4 W4>W8 KP4>W5 TG9NX>W2 TG9SO>W1 22-2300 KP4>W6 HI8ROX>W1,W4 KP2BH>W4 9Y4AT>W1 NOLL>W2 W1,W4,W5>KP4 V44KAI>W5 VE2>W4 K4TQR>W1 8P9HW>W5 23-2400 KP2BH>W4 VY0>VE9 C6A/WJKV>W4,W5

July 3 00-0100 W6>W5 C6A/W6JKV>W4,W5,W0,W8,W7 W5,W7,XE2>W5 W5AKU>HP2 01-0200 XE2>W3 W6>W5 VP9/W3CMP>W1,W3 KD4HLG,K0KP>ZF W0>W8 VE3>W5 02-0300 W0>W3,W4,W6 W2>W8 K2ZD,W1>W0 W5>W3,W8 W7>W6 VP9/GM4COK,VP9/W3CMP>VE3 W9>W5 W4>W9 03-0400 W1,XE2, W0>W3 XE2>W7 W5>W6 04-0500 W0>W1,W3 05-0600 W7>W7 W8>W1 11-1200 W0>W1 12-1300 VP9/W3CMP,KP4,VE2>W4 C6A/W6JKV>W4,W8,W1,W0 VE3>W4 W1,W4>W1,W3 W1>W8 13-1400 W4,W1>W1 C6A/W6JKV>W3,W9 VE2,W9>W5 W4>W0 W5GPM>W3 14-1500 VP9/W3CMP>W4,W9,W0 CT1DYX,EH7KW>W5 EH7KW,EH7RM>W4 W0>W5 CN8MC>W4 C6A/W6JKV>W2 W7>W7 W4>W6 15-1600 C6A/W6JKV>W1,W0 W0>W4,W5 HI9/K8WK>W7,W4 W5,VP9/GM4COK>W4 EH8BYR>W4,W5 EH5FX, EH7CD>W4 W0>W5 ZF1DC>W4,W0 VP9/W3CMP>W2 17-1800 C6A/W6JKV>W4 F5NLY>KP4 1953 W0>W5 20-2100 6Y5/YO3YB>W4 W7>W5 CT3HF>KP4 21-2200 EH7KW>KP4 21-2200 CU1CB>W1 EH8BPX>W4,W1 W7>W5 22-2300 ZF1DC>W4 9Z4BM>W1 6Y5/YO3YB>W4 HI8ROX,PJ2MI,CU1CB,HH7PV>W1 VP9/GM4COK,CO8DM,9Y4TL>W4 EH5AAJ>W4 23-2400 PJ2MI>W1 HI8ROX>W1,W9,W0 C6A/WJKV,W1,VE3>W1 FG5FR>W2

July 4 00-0100 W5>VE2,W3 W9,W1>W5 HI8ROX,ZF1DC>W9 VP9/W3CMP>W9 KP4>W9,W0 W0>W4 W8>KP4 01-0200 VP9/W3CMP>W4 W2,W3HH,W7,VE3>W5 W0>W4,W8 K0UO>W2 02-0300 W0>W7 W7>W5 03-0400 VE3>W8,W5 W0>W6 W5>W7 05-0600 W9>W0,W4 W4>W0 09-1000 W3HH,K8PLF>VY2 10-1100 K8UK>VY2 VR2>W3 CTtv>W8 VE3>W2 VP9/GM4COK>W4,W1 5T6M>W1,W8 VP9/W3CMP>W2 11-1200 KP4>W1VE9>W3 VP9/W3CMP>W9,W1,W2 5T6M>W4,W8,W1,W9 C6A/W6JKV>W1 12-1300 5T6M>W8,W9 TI2NA>W3 TI5KD>W1,W2,W3,W4,W8,W9 CT3>W1,W8 VE1>W8,W3 C6A/W6JKV>W8 CO8LY>W4 13-1400 W4>W3 5T6M>W1,W2,W8 TI5KD>W9 CO8LY>W1 KP4>W5 C6A/W6JKV>W1,W3,W9 KP4>W1,W2,W9 CN8CM>W8 W1>W0 VE1,W1>W3 14-1500 TI5KD>W4 EH8>W4,W1,W9,W3,W0 VE3,W1,VE9>W3 TG9AFX>W3 C6A/W6JKV,VE1>W1 W1>W4,W0,W1 VA2MGL>W1 15-1600 VE1,VE9>W1 CO8DM>W4,W8 C6A/W6JKV>W4,W5 W1,W3VD>W0 VE9>W2 W9>W9,W1 VE2,CU3>W2 W3>W8 VE2>W3 EH8>W1,W2 16-1700 W1>W8 VE2,VE3>W2 5T6M>W1,W2,W4 VE2,VE3>W1 VE9>W8,W9 C6A/W6JKV>W4 EH8>W1,W3,W9 W4>VE9 XE1>W4 W4>W5 VE1>W9 CN8MC>W3 VE9>W8 W3.W5 17-1800 VE2>W2 EH8>W1 VE9>W8 CN8MC>W1 W6>W3 5T6M>W2 EH7AJR>W4,W3 VP9/GM4COK>W4 CU1>W1,W4,W3 EH8>VE2,W1 CT1EAT>W1 EH7RM>W4 CN8MC,CN8UN>W1 EH7KW>W1,W2,W4 EH7AH>W1 CT1EPS>W2 VO1>W3 VE9>W9 CT3>I9 18-1900 CN8UN>W1,W2,W4 W0>W5 CU3EM,CU1CB,VO1>W2 VO1ZA>W1,W2 CT3BM>W4 W4CHA>W5 EH8>W1 19-2000 EH8>W1 CN8UN>W2,W4 CUCB>W8 VE3,VE8BY>VE9 CN8MC,VO1>W1 CU8DO>W8 9A1Z>W1 XE1KK>W7 KP4>W4,W1 20-2100 CN8UN>VE1 CU8AO>W2 5T6M>W1 ZF1DC>W4 VE3>W8 C6A/W6JKV>W7 EH8>VE3 VP9/W3CMP>W4,W9 21-2200 5T6M>W1,W2,W4 IK5RPL,IZ8DPL>W2 CU8>W3,W4 F5JJK>W4 KP4>W5 CO8DM>W4,W5 HI8ROX>W5 VE9>W3 IZ5ZUL>W4 IK8DYD>KG6GN 22-2300 K8WK/HI9 EH8>W2 EUtv>VE3 HI8ROX>W4,W5 EH3AR>W2 XE1>W5 C6A/W6JKV>W1 CU1CB>W1,W2 23-2400 PJ2BVU>W4 HI8ROX>W4,W5 W4>W7 TI5KD>W5 C6A/W6JKV,K4QI>HP2 XE2>W7 W3>W3

July 5 00-0100 XE1>W4,W5 HI8ROX>W5 W5RP>W6 01-0200 XE2>W4,W0 XE1KK,W5VAS>W5 W5>W6 XE1>W0 02-0300 WA7CJO,K6ODV>HP2 XE1,XE2>W0 W5>W5 HP2CWB>W5 03-0400 XE2,XE1>W0 NR5O,K7ICW,W7UT,WX7M>HP2 W6,W7>W5 W7>W7 04-0500 W7,XE2>W7 05-0600 XE2>W6 11-1200 C6A/W6JKV>W1 VE3>W1,W3,W4 VP9/W3CMP>W1 CN8MC>W1 12-1300 VE3>W3,W1 VP9/W3CMP>VY2, W1,W2 VO1ZA>W1 CTtv>W8 C6A/W6JKV>W1 VO1>W2 W0>W3 CN8MC>W8 13-1400 VE3>W4 VP9/W3CMP>W4 EAtv>W4 EH5VQ>W1 IT9RZR>W4 14-1500 EH5VQ>W1 VE3>W8,W1 W1>W4 EH5FX>W4 5T6M>W9 15-1600 EH7RM>W1 W1>W4 XE1KK>W7 16-1700 EH8>W4 5T6M>W1 W4CHA>W1 W0>W5 IT9IPQ,F5DE,F5GTR>W1 XE1>W5 C6A/W6JKV>W8 W1>W3 XE1>W0 W3VD>W4

July 6 14-1500 HP2CWB>W4 HI8ROX>W0 15-1600 W4>W2 6Y5/YO3YB>W4 HI9/K8WK>W4 HP2CWB>W4, W9 C6A/W6JKV>W8,W9 HP3XUG>W1 TI2NA>W9,W0 TI5BX>W9,W4 VE9>W4 N5PU>HP2 HI9/K8WK>W5 VP9GE>W1 16-1700 W4,CO8DM>W7 V31MD>W4,W5,VE9,W2 W3>W0 W1>W4 TI5RVV>W4 W5>W7 W5VAS>VE6 C6A/W6JKV>W0 TI2ALF>W0 6Y5/YO3YB>W4 W3>W HP3XUG>W4 N0LL,AC3A>VE6 17-1800 TI4DJ>W9 KY1V,W5AJX,WA7CJO>HP2 TI2NA>W1,W5 V31MD>W1,W2 XE1>W7 VY2>W5 CO8DM>W1,W4 XE1KK>W7 18-1900 C6A/W6JKV>W1,W3 6Y5/YO3YB>W4

July 7 00-0100 W5,VO1>W3 W0>W1 0157 VA7SIX>W7 02-0300 K0UO,WR9L>W6 N0UD,W7>W5 W5GPM,W6>VE6 VE4VHF>W7 0957 IW9GSC>VE1 10-1100 IK5ZUL,IK4ADE>VE1 11-1200 GB3MCB,GD0TEP>VE1 IW5BML/P>VY2 GD0TEP>W4 VP9GE>W4 12-1300 KP4>W1,W3 FM5WD>W3,W4 FG5FR>W4 EH7KW>W1 13-1400 EH7RM,EH5AX>W1 14-1500 I2NFW>VE1 W4>W5 W4>W2 15-1600 W4CHA>W9 9Y4AT>W0 16-1700 ON4IQ>W4 W5>W7 W2>W8 17-1800 W7>W0 W5>W7,W6 WB0RMO>W0 EAtv,CTtv>W0 W5>W6 18-1900 W3>W3,W6 W7>W6 W6>W5 W2>W6,W7 19-2000 W3>W3 W9>W7 W7,W6>W4 20-2100 YU1EU>W4 OX3VHF>VY2 21-2200 VE1>W4,W8 F5DE>VE3 W4>W0 EI3EBB>VE1 ON7TL>W4 22-2300 OX3VHF,VO2,PJ2MI,G3KMA,G3VOF,F5DE,ON4IQ,G4WJS>W1 EI7IX>W1,W9 G3KMA,G4DBL>W3 VO2>W2 23-2400 ON4IQ,VO1>W1 M0DDT,G3ZVW,G4FUF>W2 ON5TN>W2,W4 ON4IQ,EI5FK>W4 VO1>W5 OX3VHF,VO1>W1 W3UR>YV1 W4>W1,W8,W0 FG5FR>W9 W5>W8 V31MD>W0

July 8 00-0100 VE3,W4>W5 W5>W8 V31MD>W5 VE8BY,OX3VHF>W1 W4TJ>TI4DJ K0HA,W9IU,AA0F,W8FHF,N4LI,AJ9C,N4OX,WA4NJP,NW5E/4>HP2 TI2NA>W2 V31MD>W0 ZLtv>W1 HP2CWB,W4>W0 W4>W9 01-0200 N0UR,K4EA,K9MU,WB2QLP/4,K0VUY,K0MN>HP2 V31MD>W4 W5>VE9,W3 W1>W0 TI2NA>W0 XE1>W0,W3,W4,W5,W9 W0>VE9 W4,VE9>W9 VO2>VE3 AA0F>TI4DJ W4,W5>W3 VE4VHF>W1,W2 KL7/KG0VL>VE6 02-0300 VE1SMU>W0 VE9>VE3,W8 VE3,W1>W1 W7>W5 Ehtv>W1 W1>W5 W5,VO2>W8 W8,W4>W3 VE4ARM>VE3 VE2>W6,W8,W9 W0>W3 VO2,VE3,W1,W4>W9 W9>VE9 W2,VE1,W0>W0 03-0400 W5>W9 VE2>W0,W9 W0>W2,VE9,W3 W6>W2 W6>W2,W3 W7>W6 W1>W5 VE4VHF>W2,W8 VE4ARM>W8 K0KP>W2 W9>W0 W0>W3 04-0500 W0,W6>W3 W1>W9 W7>W5 W5>W6 W0>W1 1037 LX0SIX>VE1 11-1200 CT1DIZ,9H1AW,EH5AX,CT0SIX>W1 GW3LEW>W4 12-1300 9H1AW>W3 9H1XT>W1 CT1DDW>VY2,W4 CT1DIZ>W2,W3 VP9GE>VY2,W1 F5BZB>W4 IH9/I2AND>W1,W8 MW1MFY,GW3LEW>W4 CO8LY>W4

13-1400 GW3JXN>W8 MM0AMW,F8DBF,IS0GQX>W4 GM4PLM>W3 MU0FAL>W3,W9 W0>W7 14-1500 MU0FAL>W8,W9 MW1MFY>W9,W0 IS0GQX,F5JJK,EI6IZ>W5 GW3JXN>W2 GI6ATZ>VE1,W3 15-1600 GW3MFY,GW3LEW>W5 W9>W5 VE7>W2,W3 G4FUF>W7 EI6IZ,GI6ATZ>W3 PA0LSB>W0 16-1700 IW5DHN,PA7MM>W0 I22AAJ>W5,W4 9H1TX>W4 I4EAT>W8,W7(Oregon) 18-1900 VO1ZA>W2,W4 IW5DHN>W1 19-2000 I5MXX,DL3DXX,IK4DRY>W1 VO1>W2 SP6GZZ>W2 20-2100 I5MXX>W2 MM0AMW>W2 G8BCG/P,PA0LSB,G4DHF>W4 W3>W4 ON4IQ>W2,W4 21-2200 DL8YHR,PA5DD,IK0FTA>W2 T99C,CT1ILT,I25YZI>W1 9A8A>W4 22-2300 I5MXX,IW5DHN,I0WTD,EH7RM>W1 F6HRP,G8BCG/P,I25EME,MM0AMW,YU1DG>W2 I0WTD>VE1 EH1YV>W4 23-2400 K0KP.W8>W5 FP5BU,EH7RM,CT1DYX,DL8PM,GW3MFY>W1 CT1DYX>W3,VE1 MU0FAL>VE1

July 9 00-0100 W7>W4,W5 CT1DYX>W1,W2 W8,W4>W4 VE9>W9 VE2>W5,W8 W5>W7,W8 W7>W6 W0>W2 01-0200 N7LT>W6 VE1,VE9>W8,W0 W7,W6,W0>W2 W0,VE1>W4 W7>W0 VE1>W5,W0 W5,W6,W8,W7>W3 W1,W7>W5 W6>VE9,VE6 VE3>W0 02-0300 W7,VO1,VE1,W0>W0 W8>W4 W0>W2,W5 VE9,W9,W0>W4 W7>W5,W6,W3 W5,W7>W8 W4>W1 VE3,W8,W3,W8,W1>W6 W4>W2 W9>W9 W1>W6,W7,W0 W6,W7>W5 W0>W3 03-0400 W2,W3,W4,W8,VE3,W0>W6 VE9>W3,W0 W6,W0>W3 W7>W1,W2,W3 VE4>W9 VE1,W6>W0 W4>W7 W4CHA>W5 04-0500 K0UO>W6 W2>W6 XE2>W0 W8,W9>VE2 W6>W9 05=600 W9>VE2 W6>W0 VE7SIX>W6 VE3UBL,W3HH>VY2 10-1100 W1,W2>VE9 11-1200 IK8DYD>W1 9H1AW,9H1XT>W4 12-1300 F5BZB,CT1ILT,IH9/I2AND,G4DEZ,G4FUF,EH3CUU,VE9>W4 13-1400 G4FUF>W9 G4DEZ,G0JHC>W4 G3FPQ>W4,W3 W4>W2 VP9/GM4COK,XE1>W8 VE1>W4 EI2JD>W4 GW3LEW>W3 XE1,VO1,G4DEZ>W5 W4>W8 GW0GEI,PA9KT>W1 14-1500 VE1,W3>W5 W3>W9 GW3MFY>W2 W4,W5,9H1XT>W4 IT9RZR>W4,W5 9H1TX>W1 15-1600 W4,VE7>W4 ZF1DC>W5 K0KP>VE2,W2 16-1700 VE3>W6 W4>W4 17-1800 XE2HWB>W7 NOLL,K0UO>W6 19-2000 W6>W6 W6>KL7 ON4IQ>W3,W4 KP4>W5 W3,W8>W4 20-2100 W9,W0>W4 VP9/GM4COK,W5>W1 W7>W6 21-2200 W9>W4,W3 G3SED>W5 EH7RM>W3 22-2300 VE1>W5 W4>W1 23-2400 VE1>W9,W2,W4 G8WXU>W3 VE9>W5 W9,F2CT>W1 W5>W6

July 10 00-0100 VE9,VE1,VE3>W5 VE2,W0>W4 W6,VE5>W3 W1>W8 VE5>W4 VE9>W0,W8 W1>W8 W6>W3 VE2,W3>W0 W4>W9 W1>W5,W6 01-0200 W1,VE3,W3,W4>W5 W4>W0 W1,W2,W3,VE3,W7>W6 W4>W8 W5VAS,W8,NOLL>VE6 W5,W6,W0>W8 W8>W9 W5>VE9 W7>W2,W0 W0>W2 02-0300 W0,W4>W6 VE3,VE9>W5 W6>W8 VP9GE>W8,W2 W7>W3,W8 W1,W0,W6,VE9>W4 W5>W1,W3,W4 W6,W8>W7 VE7FG>W0 03-0400 W4,W5>W6 W1>W4 W5,W6,W7>W7 Uatv>W0 W1,W3,W4,W5,W9>W5 W0,WR7V>VE6 04-0500 W6>W9 XE2>W7 W4>W6,W7 AC3A,W5,W6>W5 XE1>W0 KLORG>W7 06-0700 NL7Z>W0 JR2HCB>W7 07-0800 JA1>W7 0921 CT0SIX>K1SIX VO1ZA>W1 1048 EUtv>W1 13-1400W5>W5 K0UO>W3 14-1500 W4,W0>VE9 W7>W5 XE2>W0 W0>W4 15-1600 W1>W4 XE2>W0 VE6>W6 W7>W8,W5 K0KP>W0 W0>W7 16-1700 V31MD>W6,W5 W7>W5 W1>W6 W0>W8 17-1800 W5,W6,K0UO>W1 18-1900 W6,W0>W2 VE4VHF,W4,W5>VE2 W6>W1 VE3>W7 19-2000 W6>W7 KQ4E>W1 KP4>W9 21-2200 VE6EMU>W9 HI8ROX>W3,W4 WB0RMO,W4CGHA>W5 VP5JM>W3,W0 22-2300 VP5JM>W4,W2,W3 W5>W4 KP4>W4 23-2400 W7GZ>VE6 VE4VHF,VE4ARM>W7

July 11 00-0100 Uatv,KA7BGR>W0 W5>W5 W6,N8PUM>VE6 HI3/KB2MS,W5VASD>W4 01-0200 W7>W7,W6 W5>W3 UA0tv>W7 0318 W0>W7 1159 WZ8D>W8 aurora 13-1400 CO8DM>W2,W4,W8 W4,KP4>W2 W4CGA>W0 15-1600 TI2ALF,CO8DM,TI2CDA,TI5KD>W1 HP3XUG,K0ETC.CO8DM,K2ZD>W4 CO8LY>W3 TI2CDA>W2 ZF1DC>W5,W4 16-1700 W4>W4 17-1800 W4>W4 NOLL>W7 20-2100 W4>VE3 CTtv>W4 21-2200 W3>VE3 VE3,W8,W1,W4,W9,W3>W4 2254 W0>W5

July 12 00-0100 W3>W0 W3>W3 14-1500 W5RP>W0 15-1600 W5SIX,W7,W4>W0 W2>W1 16-1700 W0>W0,W5 VE1,W1>W1 W9>W5 17-1800 W0>W4 W9,W7>W5 W5>W0 18-1900 W0>W8 W7,W0>W5 XE2>W7 19-2000 W0MTK,XE,W5,W6>W7 20-2100 XE2>W7 CTtv,Eatv>W1 W7>W7 Eatv,CTtv>W4 W3>W1 22-2300 W3>W5,W0 K0ETC>W4 W4,W5>W8 W1>W1 23-2400 W4CHA,W5,W7>W0 VO1ZA>W3 W5>W4

July 13 00-0100 VE4VHF>W7 K0HA>HP2 TI4DJ>W0 01-0200 W0,VE6>W7 W5>W9 W0>W4,W6 VE3UBL>W4 02-0300 VE7,W0>W7 W7>W6 03-0400 W7>W6,W7 04-0500 W7>W6,W7 11-1200 W4CHA>W1 W4>W4 12-1300 W1,W2,W4,CTtv,CO8DM>W4 13-1400 W4>W2 W8,KP2A>W4 14-1500 TG9NX>W3 15-1600 CT1DIZ,EH7KW>VE1 CT1FOH>W1 16-1700 EH7KW>W3 CT1DIZ>W1 1802 V44KAI>HP2 2152 EH1OW>W1 22-2300 EH7KW>W1,W8 CN8MC>W1,W3 N8PUM,W9>W1 VA2MGL>W8 W1>W4,W0 EH7RM>W9 23-2400 W1>W9 VP5VAC>W2 VE2>W4

July 14 00-0100 W8>W4 1031-52 CT0SIX,CN8MC>W1 11-1200 Eatv>W4 CT0SIX>W1 12-1300 W5>VE2 CT1ILT>W2,W8 CT0SIX>W8 EH7RM>VE1,W3,W4 13-1400 EH7RM>W2,W3 EH7RM>W9 W8>W2 W8>VE2 14-1500 VE9>W9 W4CHA>W4 W5,W2,W3>W5 EH7RM>W7 15-1600 EH7RM>W9 K2ZD>W4 W9,W0>W2 16-1700 XE1KK,VE1>W4 1848 W4CHA>W1 19-2000 WZ8D,KD4HLG>W1 21-2200 W1,W0>W4 WR9L>W7 EH7RM>W4,W1 W4CHA>W0 KP4>W1 VP5JM>W1,W2 22-2300 VP5JM>W1,W2 W0>W2 NOLL,W4>W8 VE9>W4 23-2400 W2,K8UK,VER3UBL>W4 W4>W9 W7>W5 Eatv,CTtv>W4

July 15 00-0100 W4>W3 W5>W2,W7 W1>W4 01-0200 TI2ALF>W4 W0>W6 XE1>W4,W0 112-1200 K0KP>W3 12-1300 W4>W1 KP4>W4 W3>W5 13-1400 FG5FR>W1,W2,W3,W4 KD4HLG>W1 14-1500 K4AHO>W4 VP9GE>W3,W4,W5 FG5FR>W3 W5>W4 V44KAI>W3 15-1600 W4>VE2,W2 16-1700 W4>W1 18-1900 ZF1DC>W4 K8PLF>VE9 KP4>W4 W5>XE1 1951-5 W5>W4,W8

July 16 00-0100 W0>W4 01-0200 W5>W5,W7,W4,W0 02-0300 XE2,W7>W5 03-0400 W5>W6 04-0500 W0>W6,W3 W1>W0 05-0600 W1,W2>W3 W8>W0 W1,W3>W9 15-1600 W4>W5 17-1800 CO8LY>W4 W5RP>W4 18-1900 W5>W4 19-2000 W5>W4 W4>W0 20-2100 W5>W4 W4>W9 21-2200 W5>W3

July 17 00-0100 W2>W3,W6 02-0300 W8,W3>W0 0319 CO8DM>W4 13-1400 K2ZD>W3 CTtv,EAtv>W4 2038 EAtv,YV4AB>ZF

July 18 00-0100 W5,VP9GE>W4 0132 K6FV>W0 0209-11 KA7BGR,KQ4E>W0 11-1200 EAtv>W4 12-1300 KP4>W1 13-1400 KP4>W3 CTtv,E7Atv>W4 N8PUM>W4 KP2A>W4 W9>W0 14-1500 K0KP>W4 15-1600 CO8LY>W4 VP9GE>ZF,W2 W4>W9 K0ETC,K0UO>W2 16-1700 9Y4AT>W1 W9>W2 FY1FL>W4 KP4>W4 W0>W3 17-1800 HI3TEJ>W4,W9,W3 W3>W0 W5>W1 K0UO>W3 18-1900 CO8DM>W3 W9>W2 EH7KW>W4 VE4VHF>W0 19-2000 KP4,W5,W4>W1 W3>W0 W5>W8 20-2100 W4>W8 W6>W7 21-2200 K6FV>W0 VE1>W2 22-2300 VE1>W9 23-2400 VE1,W3>W4

July 19 13-1400 CTtv,WA1OJB,K2ZD>W4 14-1500 W3>W8 W5VAS,K4AHO>W2 15-1600 W4>W1,W4 W3CCX,W3VD,VE3UBL,WA1OJB>W4 16-1700 CU1CB>W1 W4>W1,W3 VE9DX>W4 W1>W1 W5>W6 17-1800 W4>W1,W8 EH8BYR,CN8MC>W3 W4>W3 W2>W4 18-1900 W5>W3 CT3FQ>W2 CU1CB>W3 EH8BPX>W9 CT3DL>W2 W8>W5 VE1>W0,W8 CT1FJC,EH6DD>W2 K2ZD>W0 W3>W8 19-2000 W4>W8 VE1>W1 VE9,IK0FTA,I2NFW,I4YSS,IK1YWB>W2 20-2100 CN8KD,VE1>W2 IS0GQX,EH7RM,I4YSS,ON4IQ,F1GTU>W2 CN8MC>W0 F5FLN,IK0FTA,I0TWD,9A2AE,IT9AF,F8RZ>W1 W4>W5 21-2200 F5DE>W1 F5JMI>W2 aurora 2319 W4>W4

July 20 0133 W3>W3 02-0300 W3>W2 W7,W0>W6 W7>W7 03-0400 W5>W6 XE2,W7>W7 W8>W4 04-0500 XE2>W0 W4>W8 W7>W6 05-0600 VE4VHF,VE4ARM,W3>W8 11-1200 W3>W8,W3 W8>W4 12-1300 W4>W4 W2,W3,W9>W1 13-1400 W4>W1,VE9 W8>W3 W1>W1 W4>W8 V31MD,W3>W4,W3 W5>W2 14-1500 W4>W8,W1,W3,W9,W5 W1>W2 V44KAI>HP2 W2>W8 W5,V31MD>W4 W8>W3,W8,W2 W5>W5 TG9NX>W2 15-1600 TG9NX>W3,W1 W4,V31MD>W8 W2,TI2NA,W4>W0 W8>W5 W4>W8,W4,W5 W3>W1 EH8BPX>W4 16-1700 V31MD>W4,W5,W9 W4,EH8BPX>W4 TG9NX>W4 W9>W5 17-1800 W2,W3,W4>W2 18-1900 W2,W4>W2 W0>W5 WP4NEG>HP2 19-2000 W4>W9 W6>W5 W5>W4 SM3BIU>PY1 20-2100 W5>W0 W4>W9 W1,W3,W4,W8>W5 W4>W8 LA8PV>PY1 21-2200 W4>W5 W5>W2 22-2300 PJ2BVU,YV4AB,YV1DIG>HP2 aurora

July 21 02-0300 W7,W0,VE7>W6 NOLL,WB0RMO>W5 03-0400 W9,W0>W7 W6>VE6 04-0500 N0UD,WR7V>VE6 05-0600 W7>W61040 CTtv>W4 11-1200 ON4IQ>W1,W3,W4 F5CWU>W3 PA2VST,IK8BIZ>W1 12-1300 VO1>VE3 VE1>W9 VO1ZA>W1 K0KP,ON4IQ,IK0FTA,ON5PU>VY2 IS0GXY>VE1 13-1400 IS0GXY>W8 G1HHQ>VE1 VE1>W2,VE3 OK1>W3 14-1500 VE1SMU>W8 ON4IQ>W1 W9>VE2 E15FK,G3FPQ>W1 GW4OWA,G4OBK,9A2OM,IK5RLP,G4DEZ>W2 UXOFF(KN45)>W8,W9 15-1600 UXOFF,OK1ZW>W1 G8BCG>VE3,W8 MW1MFY>W2 S57RR>W2,W3 16-1700 S57RR,IW9FBS,I5KTE>W1 W9,W0>VE2 17-1800 ON4IQ>W1 18-1900 ON4IQ>W2 W7>VY2 W9>VE1 SP2GWB>W2 XE2>W7 UR7TO,UT1PA>W1 19-2000 S59A>W2 VE4ARM>VE3 VE4VHF>W2 K0KP>VE1 9H1AW>W1,VE9 VE4VHF>VE3,W8 VE4ARM>W8 VO1ZA>VE1,W2 S57RR>W5 W8>VY2 20-2100 VE4>VE3 XE2>W7 VO1>W1,W2 21-2200 VO1ZA>W2,VE9 22-2300 F6GEX>W1 23-2400 F6GEX>W3 K8UK>VY2 F5NNI>W1 W5RP>VE3 GM0EWX>W1

July 22 00-0100 W9,VE3,W4>W5 VE4VHF,K0KP>W2 K0GUV,F1NNI>W1(0024) VA2MGL>W9,W0 W0>VE3 VE2RCS>W0 VO1>W2,W3 W0,VE1,W4>W3 01-0200 VO1>W3 VE1>VE3,W3,W8,W0 VE9>W4,W9,W0,W8 W1,W9>W8 VE2>W0,W8 VE2>W4 W8>W0 VE4>W8 02-0300 W8,W0>W9 OX3VHF>W0 W0>W1 K0KP,N8PUM>W2 VE4VHF>W2,W4 VE2,VE1SMU,VE8BY>W0 W7>W1,W2 VE6>W1 VE7>W2,W9 VE6>W3,W9 VE2>W9 WOMTK>W5 03-0400 W1,W7>W8 W0,VE4,VE5>W9 VE6>W8 W0>VE9,W8,W2,W3,W1 VE5>W2,W1 VE5>W3 W1>W1 04-0500 VE4,VE5,VE6>W0 W0,VE5,VE6>W8 VE4ARM,VE3>W9 KL7NO>W0 05-0600 VE4,VE5,VE6,VE7,W0,KL7NO>W0 VE6>VE5,W9 W7>W8 06-0700 W1>W0 W7>W8 11-1200 PE1GUR,PA3PAP,DL1EJA>W1 IK5EZV,I5TAT>VE1 12-1300 F1JG>W2 ON7XT>W1,W3 ON5NT,M3CVN,G0HVQ,YU1DK,G4EAT,ON5LW,MU0FAL>W2 CT1DIZ>VY2 EH7RM>W9 GW3FMY>W4,W1 VY2>W9 13-1400 MU0FAL>W2 VY1,GW3LEW>W9 I2NFW>W4 EH2LU>W9 VE9MW1MFY>W8 14-1500 CT4NH,F5JKK>W3 F5DE>W9 G3RDC>W4 W4>VE2 MU0FAL>W1 15-1600 W4>VE2 MW1MFY,F6GEX>VE1 OK1KOK,OM3EY>W9 9H1TX>VE3 GD0TEP,GW3JXN,I2NFW>W4 EH3AR,4U1ITU>W1

16-1700 VE3>W5 SM7FJE,4U1ITU>W1 F1BKM>VE2 SP6GZZ>W9 ON4IQ>VE3,W4,W5 F5JJK>VE3 17-1800 SP6GWB>W5 2146 Latv>W7

July 23 00-0100 W1>W1 VE8BY>VE3,VE1 OX3VHF>VE3,W1 OX3SIX>VE3 01-0200 W5VAS>W0 W5>VE6 02-0300 W0,WR7V>VE6 W3VD>W0,W3 0504 VO1ZA>VE2 12-1300 VO1ZA,IW0GXY,EH7RM>W1 S58J,I5IAR>W4 W3>W3 13-1400 F6KHM>VE9,W1,W4 OX3VHF>W3 F5JJK,F6GEX>W4 EH7AJR,CT0SIX>W3 CT1FJC>W8 F1TDF,EH5AX>VE1 EH7RM 14-1500 EH7AJR>W9 W4>VE3 W9>W4 W4>VE9 EH7RM>W1,W3 W9>W3 WR9L,K0ETC>W3 F6CHT,F6KHM>W4 W3CCX>W3 W8>W4 15-1600 VE2RCS,VA2MGL,WA1OQB,W2,W8>W4 16-1700 W9>W2 VE3>W3 W6>W6 F6KHM>W1 17-1800 F6KHM>W5 18-1900 W9,N8PUM>W1 VA2MGL>W9 W0>W2

July 24 0133 KQ4E>W1 02-0300 XE2>W0 VE8BY>W9 03-0400 OX3VHF>W2 VE6EMU,VE5>W9 VE4>W0 05-0600 VE6ARC,VE6EMU>W9 0609 VE7>W9 10-1100 OX3VHF>VE1 12-1300 EA7RM,CT0SIX,VE8BY>W1 13-1400 VE8BY,VO1ZA,CT0SIX,EH5EB>W1 14-1500 MM0AMW,GM7OIN>VE9 15-1600 WB0RMO>W7 16-1700 K0KP,W0MTK,N8PUM>W5 W9>W0 W6>W3 W9>W6,W5 17-1800 W9>W7 18-1900 F6BKI,MM0AMW>W1 GM0EWX>W5 VE4VHF>W0 19-2000 N0UD>W0 20-2100 W6>W8 WA1OJB>W4 22-2300 W5,W0>W8 WR9L>W0 W3VD>ZF 23-2400 ZF1DC>W3,W4 W0,W9>W0 Eatv>W4

July 25 00-0100 W4>W3 K0EC>W9,W0 W7>W9 01-0200 W5>W9 W0>W5 02-0300 KL7NO>W6,W7,W0 KL7HBK>W0 03-0400 W7>W7 NL7Z,KL0RG,KL7/KG0VL>VE6 W0>W6 05-0600 W1>W7 VE4VHF>W3 11-1200 W3/KL7GLK>W3 13-1400 Eatv,W2>W4 14-1500 EUtv>W1 EH7RM>W4 W3VD>W4 VE1SMU>W1 VO1BK>W2,W4 15-1600 W8,VE3>W4 W0>W2 2055 W4>W1,W2 22-2300 W7>W9 W9,W8,W4,N0LL>W4 VE7>W8 W4>W1 23-2400 W8,W9,W4,VE9,VE3UBL,VE4VHF>W4 VE9>W9 W0>W3 VE1SMU,W1>W0 W7>W3

July 26 00-0100 W7>W3 W1,VE1SMU>W0 VE3,CY9>W4 W7>W2 W4>W5 W9>W3,W4 W2>W0,W5 C6ANY,V44KAI>W8 01-0200 W7>W1,W3,W5,W4,W2,W8,W5,VE1 VP2MJR>W8 W9>W4 UA0tv,VE9>W0 VE4VHF,VE5>W4 VE3,XE2,XE1>W5 W2,W9,W0>W2 W1>W7 W0>W3,W9,W4 02-0300 W5>VE1,W2 W7>W3,W4,W1 XE1>W9,W0 VE1>W0 W6>W3 XE2>W4,W0 VE6,W0,W5>W1 VE2,VE3,VE4>W5 VE5,VE6,W6>W4 W0>W8 03-0400 VE5>W4,W5 W0,W6,W1>W9 W7>W1 W1>W0 W5>W3 04-0500 W0>W4 W6>W2 W5,WR9L>W9 0554 W0>W7 06-0700 VE4VHF>W7 13-1400 VE3UBL,W3HH>W4 W9>W9 VP2MX>W0,W4,W1 FS/N3OC>W4 14-1500 FS/N3OC>W4,W5 VP2MX>W2,W0 CO2OJ,CO8DM>W3,W4,W8, W9 K0KP,VE4VHF>W9 KP4>W4 VP2MLE>W4,W5,W9 VE3>W0 K0UO>W1 FM5WD>W9 FG5FR>W4,W9,W0 15-1600 KP4>W4,W1 FG5FR>W3,W9 W0>W0 VP2MLE>W2,W4 W1,CY9A>W1 VP2MNS>W3,W5 W4CHA>W8 N0LL>W8 HI3/ON4IQ>W4,W1,W0,W2,W9 K0ETC>W9 16-1700 HI3/ON4IQ>W5,W4,W9,W2 W5>W4,W6 W7>W4 VE4VHF>W1 Eatv>W0 17-1800 W1>W1 K0UO>W4 CY9A>W3 HI3/ON4IQ>W4 W0>W5,VE3 aurora VE5>W0 VE3>W4 18-1900 W0>VE3 19-2000 HI3/ON4IQ>W4 VE7,WB0RMO,VE4VHF, W7>W3 CY9A>VE1 W8>W3 W1>VE3 20-2100 VE4VHF>W8 HU3/ON4IQ>W4 21-2200 HI3/ON4IQ>W4

July 27 00-0100 CU9X>KP4 01-0200 VP2MPF>W2 10-1100 CY9A>W1,VY2,K2(ms) 11-1200 CY9A>VY2,W3,W1 WA1OJB,W3CCX>W4 12-1300 W2>W8(t) W8>W5 1344 K4AHO>W5 1442 Eatv>W1 17-1800 CY9A>W4 18-1900 VE9>W4 CY9A>W4 CT0SIX>W3 19-2000 CY9A>W4 CT1DYX>W3 CY9A>W1 21-2200 CY9A>W5 Eatv>W4 KQ4E>W6 22-2300 EH1YV>W4 EH7KW>W1 23-2400 CY9A,9H1AW,9H1TM,EH9IB>W1 CY9>W4,W2,W3,W6 I0JX>W4,VE1 VO1>W3

July 28 00-0100 CY9A>W4,W2,W3 VO1>W8 W1>W1 01-0200 XE1,W3>W5 W5>W6 02-0300 CY9A>W8,W9,W4,W5 W4>W9 03-0400 CY9A>VE3 VE8BY>W5 04-0500 VE4VHF>W5 05-0600 N0LL,WB0RMO>VE3 1117 KL7GLK/3>W3 1256 W5>W4 13-1400 CY9A>W2,W5 14-1500 W5VAS>W0 CO8DM>W4 K0KP,WB0RMO>W5 15-1600 W5VAS>W8,VE3 W9>W0 CY9A>W5 VP5JM>W4,W9 16-1700 YV4AB>W5 CY9A>VY2 KP4>W4 YV4GMG>W4 17-1800 W9>W6 W7>W0 18-1900 W5RP>W4 CY9A>W3,W1 W5>W9 19-2000 XE1>W5 21-2200 EH8BPX>W3,W4 CY9A>VE1 CT1DYX>W1 22-2300 EH8BPX>VE3 VP9/GM4COK>W4 CN8KD>W3,W4 CTDYX,CT1FJC,CT1FOH>W4 W4>W1 W7>W5 FS/N3OC>W4,W8,W9 VP2MLE>W4 K4AHO>VE3 23-2400 VP2MLE>W1,VE3,W4 W4>VE3 CN8KD>W4 K4AHO,KP2A,CY9A>W1 CO8LY>W3 CY9A>W4

July 29 00-0100 CY9A>W5,W4 W4>W3 W0,W4>W4 W4>W8 K4AHO>W6 01-0200 W4>VE3,W2 0204 VP2MJR>WZ8D 1141 W3VD>W5 12-1300 VP2MLE,VP2MX>W9,VE3,W2,W1 CY9A>W4 13-1400 VP2MX>W4,W2,W9,W5 C6ASB>VE3 V44KAI>W3 CTtv>W0 CN8MC>W4 14-1500 C6ASB>W3 VP2MX,VP2MLE>W4,W0,W1,W2,W3 KP4>W4,W8 C6ASB>W4 15-1600 NP3S>W0 VP2MX>W4,W3,W5 6Y5/YO3YB-W3,W0,W4 9Y4AT>W3,W4 V44KAI,FM5WD>W1 TG9NX>W4 16-1700 ZF1DC>W4 FM5WD>W2,W1,W4 VP2MX>W4 KP4>W4 17-1800 KP4>W4 18-1900 V44KAI>ZF 9Z4BM>W3 ZF1DC>W4 19-2000 9Y4AT>W1 2028 FM5WD>W3 22-2300 P43JB,PJ4/PA2VST>ZF aurora 2334 CY9A>W1(ms)

July 30 11-1200 CY9A>W3 EAtv>W4 12-1300 VE2>W4 W4>VE1 W4AHO>VE3 CY9A>W9 13-1400 CY9A>W2,W4 W8>W1,W2 W4,W9>W2 14-1500 W4,W9>W2 CY9A>W3,W9 W1>W4 KD4HLG>W0 15-1600 W1>W5 W3>W0 CY9A>VE3,W4 FP/K9OT>W3 1736 CY9A>W4 18-1900 VO1ZA>W3,W1 FP/K9OT>W1,W3 aurora

July 31 10-1100 CTY9A>VE1 12-1300 CO8LY,W5,W4>W3 13-1400 W4>W3 14-1500 CY9A>VY2 KQ4E,W3VD>W4 1501 W3VD>W4 16-1700 W5>W9 CY9A>W1 19-2000 K0ETC,K0UO>W4 W9>W0 2157 W6>W5 22-2300 KP4>VE3 W9,W0>W4 W5,W3>VE3 23-2400 W5VAS>W0 W5>W4,W3

Asia/Pacific

6m DX results in JA during July

A generally quiet month punctuated by good openings to the US on the 6th(W5,W7), 7th (W6,W7), 22nd (W6), 23rd(W6) and 24th(W5), none of them reported from the American side, and the opening to Europe on 20th, similarly unreported here! VK6 was reported on the 11th, 16th and 29th and VK8 on the 16th - not surprisingly a poorer result than last year. All but one of the reports was of VK beacons. Where were the VK operators? Hatsuo's compilation shows a healthy range of activity in Asia, with XV, YA, KG6, JT, UA0 and YB, and increasing activity from the Chinese mainland. But no input whatsoever from VK or ZL.

Report from JA1VOK

DATE	TIME	STATIONS
7/ 1	0020-1430	BG2LD,BG7IFT,BG9BA, HL, JD1YAB, VR2XMT,XZK 0738-0810 5B4FL (JA5) 2320-0800 DU1EV/B,N7ET/DU7, DS4DBF, JD1YAB/b, VR2PX,SIX/b
2	1000-1030	JD1YAB/b (JA8)
3	0200-0210	DS4DBF 1030-1500 BW0IR, DS5JQK, VR2XMT 2315-1200 BD2LH,BG9BA, DU1EV/B, HL, KG6DX, VR2XMT
4	0805-0830	JT1CO
5	0005-0740	BG7IFT,BG9BA, BV2NT,3FQ, HL5BMX, JD1YAB, VR2BG,XXMQ 1230-1250 UA0SC (OO06/JA4-6) 2300-0700 BD4ABC, BV6QM,BW0IR, DU1EV/B, HL, VR2DXA,XMT,XZK, XV3AA
6	0136-0200	BV8CM (2m) 0610-0800 K6FV/B, W6QUV,WA6JRA,KR7O,K7SS,KB7WW (JA1-2,7) 2330-0200 BG9BA, AF6O,K6ODV,N6CA,N6EQ,N6RV,N6XQ,N6RMJ,W6PMT,WA6JRA,K7JA
7	0559-0700	AA6S,AD6XI,K6FV,K6QG,K6KLY,K6QXY,N6AJ,N6JV,W6KBX,W6QUV,AA7A, KR7O,K7RZU 0710-0800 HL, KG6DX 2254-0000 HL
9	0015-1100	BG9BA, DS1CCU, UA0CQ 0713-0830 JT1DA 1425-1450 UA0SC 2349-1300 BG9BA, HL, UA0CQ,UA0SC, YB35AR
11	0900-0930	VK6RSX/b
12	0040-1200	BG9BA, BV2AP,2NT, HL, VR2BG,UV 0855-1130 HL (2m) 1140-1200 UA0SC (JA3-6)
13	0000-0710	BG9BA, BV8DE/5, HL, KG6DX, UA0CQ,UA0SC 2347-0000 UA0SC
14	0014-1400	BV2NT,2OL,4VJ, DU1EV/B, VR2UW,HAM,XMT 2200-2250 KH7R,KH6HME/B,NH7RO
15	0215-0300	DU1EV/B 1340-1400 BG9BA 2352-0100 BG9BA, JT1CO
16	1200-1330	VK6RSX/b,8MS 2344-0030 VR2UW,SIX/b

17 0430-1100 BG9BA, DU1EV/B, DS1CCU
0554-0645 UA0SC (JA3-6)

18 0118-1100 BG8AIB,9BA, HL, JD1YAB, VR2XMT
0630-0744 YA4F (JA1-6,9-0)

19 0140-1000 BD2LH, HL, JD1BKZ,JD1YAB
2242-2300 KH7R (JA8)

20 0315-0525 RN0JJ,RZ0CQ,UA0FL (2m)
0730-0740 BD2LH, UA0CQ
0745-0940 9A2DS, 9H1GB,9H1XT, SP6GWB, UT1FA,UX0FF, Z32ZM (JA1,7,0)
0800-0900 UA0SC
1337-1600 UA0SC

21 0200-0230 BV2/JA3AQM
0330-0900 BD2LH, HL, UA0CQ
1204-1230 UA0SC, VR2XMT
2340-0010 K6QXY,N6JV

22 0129-0140 JT1CO
0435-0510 K6FV/B,K6KLY,K6QXY,W6BYA,N9JIM/6

23 0025-0040 K6FV/B,W6YLL
0053-0300 BG9BA, HL3IUA

23 0046-0051 W5OZI (JA1-2)
0220-1300 BD6RAV,BG9BA, BV2/JA3AQM,BV4VJ,8BC, HL, VR2XMT
0810-0820 HL1LTC (2m/JA7)
1207-1430 UA0SC

25 0104-0430 BG9BA, BV2/JA3AQM,BV8BC, DS1CCU
2225-0930 BG9BA, BV2/BV9W,BV8YB, HL, JR8XXQ/JD1_M

26 0110-0130 RW0SJ (OO06)
0836-0845 UA0CQ
2257-0930 BG9BA, BV2/BV9W,BV8YB, JD1YAB, JR8XXQ/JD1_M, UA0CQ

27 0530-0930 UA0SC

29 0727-0830 KG6DX, VK6JQ,6RSX/b

30 0620-0630 DU1EV/B (JA8)

31 0150-0800 HL5BMX,DS5FHH

Elsewhere

July 2 0213 JE7YNQ>HL1

July 3 0044 JA6YBR>HL1 0339 JE7YNQ,JH8ZND>HL1 2303 BV2AP>VR2

July 8 1132 JA8>HL1

July 10 0117 JA6>DS1 0208 UA0>DS1

July 12 0144 JA8>DS1 0232 VR2>UA0,HL4 08-0900 DS1>DS4 HL1>HL4

July 17 0538 JA6YBR>UA0SC

July 18 0658 BG9BA>YA4F 0734 YA4F>DS1 0819 JD1YAB>HL2

July 19 0425 JA1>DS1

July 20 0209 JA8>DS1 0710 JA6YBR>UA0

July 21 0144 JA2>DS1 02-0300 JA2>DS1

July 24 0110 JH8ZND>HL1

July 25 0026 JA2>HL10234 JA2>HL1

July 26 0051-9 JH8ZND,JA2>HL1

July 2708-0900 JA0,JA5,JA1>UA0SC

July 28 1243 YC1MH>VR2 13-1400 YB1SI>VR2

July 29 0902 JE7YNQ>HL1 1010 JA8>HL1

July 30 0450 JH8ZND>HL1 0659 JA7>HL1

July 31 0023 JA1ZYK>HL1 2359 JA6YBR>UA0

Beacon News and 28 MHz Worldwide

Compilation and Commentary by G3USF

Beacon News

3650	ZL3JE	Parcora low power beacon for propagation tests.
28190.4	VA3ROR	New beacon in Orillia ON (FN04EQ) 5w erp Vertical antenna 24/7. Transmits 20 seconds every 2.5 minutes with ID in AM voice (A3) and A2 MCW. Beacon Keeper is Bob Cooke VE3BDB (ve3bdb@mail.encode.com (VE3BDB)
28258	WN4OAA	Gray TN (EM86) runs 500mw to GP 24/7 (WN4OAA)
50015	9Y4AT	Moved here from 50030 but may be irregular.
50038	C21SIX	Now runs fsk 25 watts to east-west dipole
50057	VK8VF	Has been QRT for a long period but may return when constructor returns from C21 and repairs it.
50058	IQ4AD	New beacon by Parma ARI Radio Club (JN54DT) runs 8 watts to GP 50m asl 24/7 (IK4CIE)
50070	EA3VHF	Returned to operation in JN01

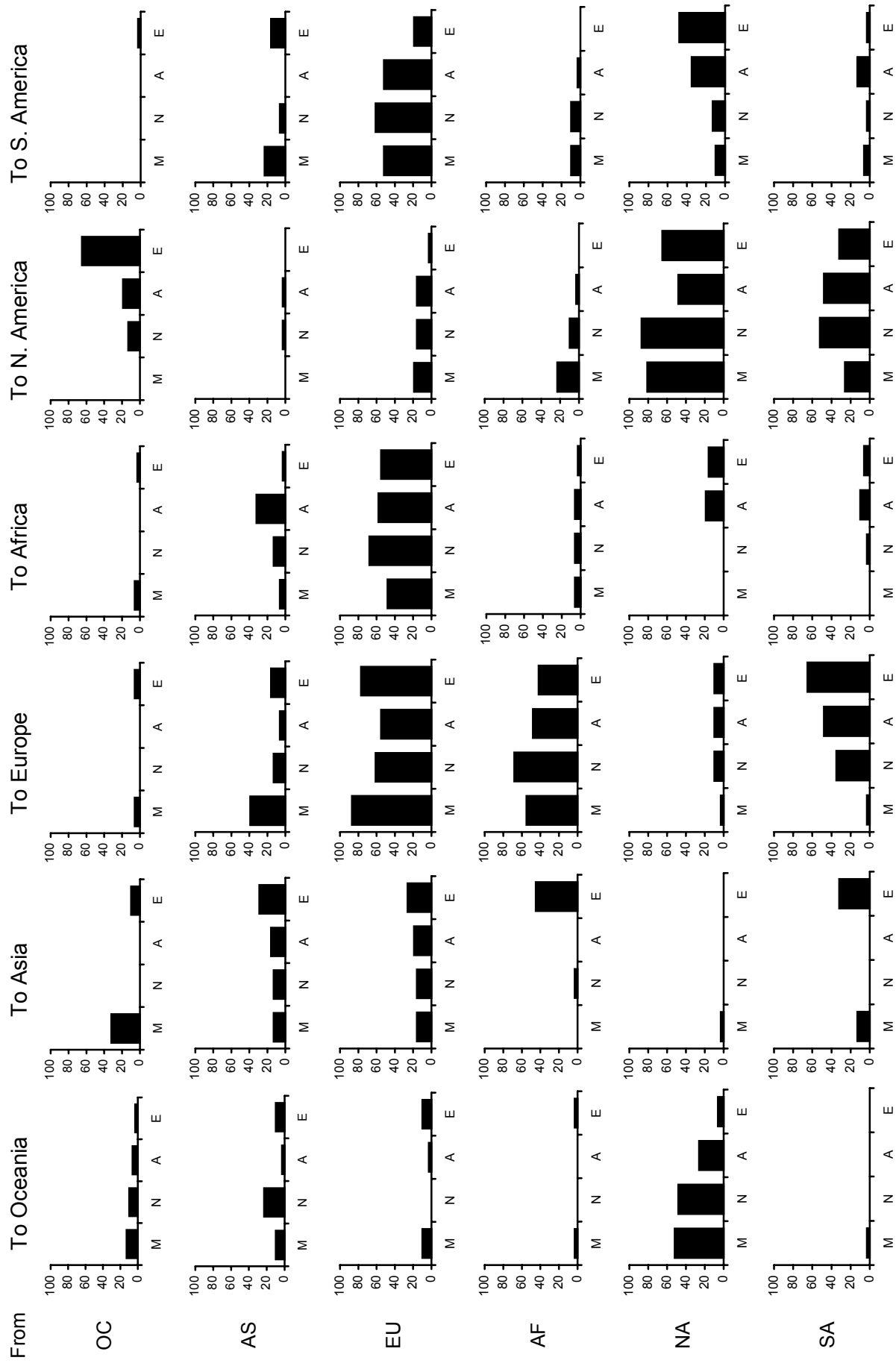
28 MHz Worldwide

July has never been noted for east-west propagation at 28MHz. So it is scarcely surprising that there were only 14 days when North America was received in Europe, significantly down on last year. Asia<->Europe held up better, with propagation on 16 days, but this again was below last year's level. However, cyclical decline was most marked with Africa, where there had been openings on 70 per cent of days during all four time periods, though there were still only four days without reports this year, the 5th and 6th, for which data was incomplete, and the 15th (again incomplete) and the 29th.

Propagation within Europe was buoyed up by sporadic-E, and was reported on all days except the 15th. North America<->Asia was reported on only one day - the 24th. The band opened for contacts within North America every day, and South America was reported workable on 24 days, though the results for the individual time periods were well down. By contrast, although Oceania was reported less frequently for most of the day, the band opened in the evening on 20 days, only a fraction down on last year.

There were only a handful of contacts that looked less than routine: JG2TKH worked CX4AS at 1429 on the 5th, rather later than usual for long path, while K9YO reported RI1CGR at 0146 on the 25th. LA7DFA reported OH0TEN 539/A at 2041 on the 16th.

28 MHz Worldwide - July 2003



Time bands: M=Morning, N=Noon, A=Afternoon, E=Evening - used for the "To" continent