

Space Weather Summary

December brought the first, tentative, intimations that cycle 24 might be on the way, with the appearance of what might turn out to be the first new cycle spot. (Confirmation was not to come until January.) In their enthusiasm to greet cycle 24 some observers omitted to note that cycle 23 has not yet officially ended; indeed old-cycle spots will probably continue for some months yet. Meanwhile, cycle 23 must be presumed to be with us still. Certainly, the month had a distinctly bottom-of-cycle feel. Solar activity was mostly very low, increasing only between the 13th and 18th, when a clutch of smallish C-class flares was reported, and on the 30th and 31st, when the month's largest flare, a C8.3, was reported. The sun was spotless on most days but, reminding us that it can surprise us even at this stage of the cycle, the solar flux crept up to 94 on the 12th. The 90-average stood at 68 on the 1st but had risen to 72 by the end of the month. It looks as if this cycle will turn out to have had a higher than average minimum. Indeed, there have only been a couple of days when the flux figure was down at its putative minimum level of 65. The X-ray flux was at its minimum A0 level on 16 days; the highest daily figure was B2.0 on the 7th.

In geomagnetic terms, it was a quiet month. The daily Ap on the 8th was a rarely seen 0, while even the most disturbed day, the 18th, had an Ap of only 18 units. The average Ap over the month was 4.8. Solar wind speeds ranged between 770km/sec on the 18th and 270km/sec on the 8th, when the maximum for the day was an exceptionally low 289km/sec.

Overall, perhaps a month in which the space weather was as kind to us as one could reasonably expect at this stage of the cycle – unless, of course, your particular interest happens to be aurora.

50MHz

50 MHz to and from Britain

Tropo

An unremarkable month with few reports of stations working beyond their normal range or noting much stronger signals than usual.

3rd 2143 EI2IP reported GB3MCB 539 compared with the usual 419

20th 0923 G3VYF(JO01) found LX0SIX above normal

26th 1741 DH6JL(JO31) worked G4OBK(IO94)

1921 G3JYF worked OZ2JFV(JO91)

27th 1648-9 DH6JL received GB3BUX 419 and GB3BAA

Aurora

No UK auroral reports were received.

Meteor Scatter

Sixteen UK operators reported 6-metre MS operations in the course of the month, though the majority of contacts came from a hard core of 'regulars'. In all, 88 QSOs with 16 countries outside the UK were notified via the web cluster, though that omits any on the 14th and 15th, when the Leonids were at their peak because the OH2AQ cluster was down for almost all of both days. In the event, the greatest number of UK ms days was the 31st, when there was no meteor shower in progress. Most QSOs were

	OH	OM	S5	SM	SP	YO	ZB	9A	HB	US0	VO1ZA
Day	26 27	26 27	2 27	3 27	3 26 27	26	27	3 26 27	26	26	26
6											
9	5 9		9	9 9	5 9				9		
12	5			2 9	9 9		9				5
15		9 9	9		9 9	5		5			9
18		9	9					9 9 9		9	
21											

then fading down to 529 (qsb) at 1541. As far as the UK was concerned, propagation appears to have favoured a fairly limited area – though it also reached some continental operators. None of the reporters suggested the propagation mode but it is hard to see what else it could have been but sporadic-E.

As the table above shows, there were no Es reports before 0900 and none after 2100, with mid-morning and late afternoon/early evening the most favoured times.

Throughout, beacon callsigns are given in full.

Eme

The following moonbounce contacts were reported on the DX cluster

15 2107 W7GJ>G5WQ -15dB
 16 1959 W7GJ>G5WQ -26dB
 17 2105 W7GJ>G5WQ -17dB
 17 2138 W7GJ>MM0AMW -20dB
 28 2257 PE1BTX>GM4WJA-23dB
 28 2320 PE1BTX>MM0AMW -22dB

Continental Europe, Africa and the Middle East

Aurora

Aurora was reported on five days, with all reports coming from high latitudes

Dec 10 2105 OH9SIX>SM2(55a) 22-2300 OH9SIX>SM2(55a) OH9SIX>LA(51a) LA7SIX>SM2(55a) JW9SIX>SM2(59a) OH0SIX>SM2(57a) 2306 OH9SIX>OH2(53a)

Dec 11 1520 OH9SIX>SM2(55a) 2042 JW7SIX>SM2(Aue) 2110-27 TF3SIX>SM3(539)

Dec 12 21-2200 OH9SIX>SM2(55a) JW5SIX>SM2(599) JW7SIX>SM2(599)

Dec 17 1540 OH9SIX>SM2

Dec 18 2058 OH9SIX>SM2(57a) 2108 JW7SIX>SM2(AuE)

Other Modes

Excepting the 14th and 15th, when the DX cluster was down, contacts were reported on every day except the 19th, when again there may have been cluster outage. Meteor scatter via JT6M was the

default mode when nothing more interesting was available. The reports below explicitly credit it on 18 days, but it probably accounted for considerably more. The substantial crop of reports for the 13th suggests that, had main Leonids data, which we regrettably do not have to hand, would have been considerable.

Meteor Scatter

Day	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
Repts	+	+	+	?	?	?	+	+	+	+	?	+	+	X	?	+	?	+		?		?	+	+	+	+		+	+	+	

Sporadic-E was more readily identified. Reports credit it on 16 days – substantially more than experienced in the UK. The Es events on the 25th and 26th each lasted over 7 hours, with large volumes of contacts being reported. (In principle, the listing notes contacts between two countries only once for each hour, though many may in fact have been made.)

Sporadic-E

Day	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
Repts			+		+	?	+	+	+	+	+	+	+	X	+	+	?	?		?	?	?	+	+	+	+		+			

The most noteworthy loggings of the month were reception of VO1ZA/b in Belgium and Germany on the 26th and of the S9SIX beacon heard by TR8CA on the 9th – the first African report for quite some time.

Dec 1 08-0900 HE6M>I5,DL,F,HB,SP6,OE5,I1 I0>I5(ms) 09-1000 HE6M>DL,HB,S5,ON 10-1100 ON>S5 HE6M>DL YO5>HB(eme -18) 11-1200 HE6M>I5(ms),I2,EI,DL,I1 1259 HE6M>I4 13-1400 HE6M>I4,F,DL,EA4 9H>DL 14-1500 HE6M>I2,EI,HB,DL 1548 HE6M>I3 1709 SM7>OY(ms) 1904 OE9>HB(jt)

Dec 2 07-0800 HE6M>SP6,I5(ms),I3,S5(tr),HB 08-0900 HE6M>F,I5,IS0(ms) OE5>S5(tr) 09-1000 OE5>DL HB>F(tr) DL>IS0 I1>SP9(jt) OE5>DL S5>OZ HE6>SP6(ms),OZ 10-1100 I1>A(jt) LX>F(tr) HE6M>F OE5>DL 11-1200 F>S5 HB>F(tr) HE6>DL 12-1300 HE6>DL HE6>LZ1(ms) HE6M>EA8,LA,HBP6 LX>DL 13-1400 HE6M>SP6(tr/ms),9A OE5>DL 14-1500 HE6M>DL 15-1600 HE6M>OZ,HB 17-1800 SM7>LA(jt)

Dec 3 00-0100 HA2>SP9(ms) 10-1100 EI0SIX>DL(Es) 11-1200 OZ7IGY>EI(Es) I0JX>CT(Es) OY6BEC>DL(Es) 12-1300 OY6BEC>OE5,DL(Es) EI0SIX>DL,HA6(Es) 13-1400 OY6BEC>DL LA>DL ON0SIX>CT(DI) 12919 I1>HA2(jt) 20-2100 LA>SP9(jt) SM7>HA2(ms)

Dec 4 1708 LZ2>Z3 1854 OY>LA(jt)

Dec 5 0830 LX0SIX>DL(tr) 20-2100 OH8>LA(jt) 21-2200 OH8>LA(jt) SM2>LA(ms) 2305 LX>LA(jt)

Dec 6 2119 OH8>LA(jt)

Dec 7 0959 I5>DL(ms) 10-1100 DL>F(ms) 1627 HB9SIX>DL(tr) 2149-56 SP9>LA(jt) OH8>LA(jt) 2254 OY>LA(jt) 2319 PA>LA(jt)

Dec 8 0849 PA>LA(jt) 1541 PA>LA(jt) 2141 SP9>LA(jt) 2234-53 PA>LA(jt) 23-2400 SO5>HA2(ms) OY>LA(ms) PA>HA2(jt)

Dec 9 0022 SO5>PA(ms) 10-1100 OY>LA(jt) 11-1200 LX>HA2(jt) LX>SP9(jt) LX>LA(ms) 13-1400 LX>LA(jt) 14-1500 LA>LX(ms) 1544 S5>DL(tr) 1642 PA>HA4(jt) 17-1800 S9SIX>TR8CA PA>HA4(jt) 1950 SM7>HA2(jt) 20-2100 SM7>LX(jt) EI>LX(ms) 21-2200 HA2>LA(jt) OZ>HA2(ms) 22-2300 HA2>SO5(jt) HA2>DL(jt)

Dec 10 1553 IQ1SP>S5(tr) 1619 TR8CA>9A7V 21-2200 PA>LA(jt) LA>HA2(jt) OZ>HA2(jt)

Dec 11 1514 I1>I5 2145 OY>LA(ms) 2220 OY>LA(jt)

Dec 12 1043 UU5SIX>DL(Es) 1129 UU5SIX,LZ1SJ>DL(Es) 12-1300 LZ1SJ,HG1BVB>OE5(Es) 1301 LZ1SJ>PA(Es) 1611 OH8>LA(jt) 19-2000 OY>LA(jt) OY>PA(jt) S5>PA(ms) 2022 9A>PA(jt) OZ>LA(jt) SM3>LA(jt) 22-2300 OK2>LA(ms) HA2>SM0(jt) SP7>SM0(jt) 2334 OK1>SM0(jt)

Dec 13 00-0100 OZ>SM0(jt) SM7>I3(ms) 1232 OE5>LA(ms) 13-1400 SM7>LA(ms) SM6>LA(jt) 17-1800 LZ2>SP9(ms) PA>SK2(ms) 18-1900 LA>LA(jt) SM3>S5 SK2>PA(jt) OZ>I1(ms) OH8>PA(jt) SM0>SP9(jt) SM3>SP9(jt) 19-2000 LA>DL(ms/599) LA>SM3(jt) OZ>SK2(jt) S5>DL(tr) PA>SK2(ms) HB9SIX>DL(tr) 20-2100 OZ>LA(jt) OZ>SP9(ms) LA>SK2(ms) LA>PA(jt) SM2>OZ(ms) SI6>S5 SP7>LA(jt) SK2>SP9(ms) SM5>LA(jt) 21-2200 SK2>PA(jt) SM7>S5 OH8>LA(jt) SM3>PA(jt) OK2>PA(jt) LA>S5 OH8>OZ(jt) SK2>LA(jt) S5>DL LY3>SK2(jt) OE5>PA(jt) SM2>LA(ms) OZ>HA2(jt) LA>PA(jt) 22-2300 OZ>PA(jt) OY>LA(ms) OZ7IGY>S5 OH7>LA(jt) OZ7IGY>EA5(ms) SM7>HA2(jt) 23-2400 SM6>HA2(jt) EA5>CT(ms) DL>EA5(ms)

Dec 14 no data

Dec 15 data incomplete 2220 LA>PA(jt)

Dec 16 1858 OZ7IGY>I9(ms)

Dec 17 2141 EA2>EA5(jt) 2218 W7GJ>HB9QQ(eme weak)

Dec 18 10-1100 OH8>LA(jt) EA2B,CS1RLA,EI0SIX>DL(Es) DL>I5(ms) 11-12200 CT0SIX>DL(Es) EAI>I1(Es) DF0ANN>CT(Es) I1>CT 12-1300 IW3FZQ,LX0SIX,F5TND,FX4SIX,IQ4AD>CT 13-1400 OZ,OH8>LA 1818 OZ7IGY>PA

Dec 19 no reports

Dec 20 0916 F>F 1422 HB9SIX>DL(tr) 1855-7 JW9SIX,JW5SIX>LA 21-2200 OZ>PA(jt) 2342 OZ>OY(jt)

Dec 21 1647 F>DL 17-1800 LX>F HB9SIX>DL

Dec 22 1027 SM3>LA(jt)

Dec 23 10-1100 OH8>LA(jt) 12-1300 EA5>PA(jt) OY6BEC>OZ PA>OY 2334 OH8>LA(jt)

Dec 24 10-1100 ON>LA(jt) OH8>LA(jt) OY>LA(jt) 12-1300 OH8>LA 1419 I1>PA(ms) 1814 EA2>EA3(jt)

Dec 25 0947 HB9SIX>DL(tr) 1204 OZ>OY(jt) 16-1700 LZ1SJ>OZ OZ7IGY>9A I7>OZ GB3BAA>HA LZ1JH,LZ2CM,HG7>DL HA8>ON,DL,PA,F(Es) SV8>OZ F>ON I0JX,I5,I4,I6,I3>LY(Es) OZ7IGY,SR2FHM>SV2 DL>HA6 SP5>I4(Es) I7>OZ(Es) HA8>PA,ON(Es) YO7>PA 17-1800

YO7>DL(Es) HA8>DL SV8>LY I6>SQ9 OZ7IGY>SV8 DL>YO9 YT1>DL,OZ(Es)
HA4,HA8>DL(Es) OZ>I7 YO7>PA,DL,F,I5 LY,SP2>I7(ES) Z3>OZ,DL SV1>OZ HA8>F,I4
SV2>OZ,PA SV9SIX>OZ I7>SP5,DL,OZ HA8>I5 LY>IS0 SV2>DL,OK1 OZ>SV8
LZ1JH,I7>ON OY>LA(jt) HB>EA1(ms) IS0>HB(jt)

Dec 26 09-1000 OZ>EB1(ms) 10-1100 DL>I4 I4>I2 OY6BEC>LA OH9SIX>DL I0>I2 OH8>LA(jt)
SM3>SP9(Es/ms) 11-1200 SM3>PA(jt) 12-1300 OH8>LA(jt) PA>SM2(ms) LA>LA(jt) LA>PA(jt)
13-1400 SM3>LA(jt) SM2>LA(jt) 1446-9 VO1ZA>ON4KST,IK5MEJ 15-1600
SK6QW>,OZ,SM3>I4(Es) OH5RAC>DL(Es) SM6>S5 SQ9>PA VO1ZA>DH6JL SM5>DL
OZ7IGY>LZ1 OH9SIX>DL SM5>I1 DL>SP3,I4(Es) 16-1700 OZ>DL OH5>I1 SP5,SQ9>PA(Es)
I1>OH8 OH5RAC>DL(Es)>I7 DL>OH8 LA>OE6 SP5>F,ON(Es)>PA(Es) OH9SIX>I8(Es)
OZ7IGY>9A,I8(Es) YT5>SM3 I5>OH6 YO5>PA(Es) OZ>9A LA>OE5 OE1,OK2>PA(Es)
OZ>I8(Es) ON>SP7 HB9SIX>DL(tr) EI>OK2 OH0,SP2,LY>F LA>I8(Es) OZ>OE5,I1,OE6
SP8>ON SM6>I7,9A LA>I1(Es) I0>OH8 I1>SP3 SP9,SP5,ES2,OH5RAC,I1,UR,SP7>DL(Es)
S5>SM3 LY>OE2 LX0SIX>SP3(Es) SM3>I7 LY0SIX>OE5(Es) SP9,SP8>PA(Es)
I4,I0,I3,OE6>SM1 SM5,SM7>I8(Es) I8>OZ SP9,SP5>PA OH5>9A,OE5 LY>I2 SM3>I4
OZ,DL>YU7(Es) SM6>YU7,OK2,I6(Es) I4>OH3 F>SP3 SP8>F SM6>I6,9A OE6>SM2
OZ>OE9 17-1800 9A>OZ,SM3 YO5>PA OH3>I1 F>DL(Es) OZ>YU7(Es) ES2>F,OE5,I1
F>SP5,SM3 LY>I1,I5,DL,ON SP8>PA,DL EI0SIX>SP3 DL>F OH5RAC>I4(Es) SM3>I1
YL2>I5,S5 OH6>I0 SP8>PA OM3>F DL>DL I4>HA8 18-1900 I3>LA,9A SM1>I2 LX0SIX>SP8
LY0SIX>DL(Es) S5,I3>SK2(Es) YL2>DL(Es) S5>SM4,SM3(Es) OZ7IGY>S5(ms)
VK7JG>PE1BTX(eme -24db) 19-2000 ZL3TY>PE1BTX(eme -24db) VK7JG>PE1BTZ(eme -
28db)

Dec 27 0307 W5UWB>PE1BTX(eme -23dB)11-1200 OH8>LA(Es) LA>DL(Es) OY>OH8
OY6BEC>OH5,LA(Es) 12-1300 OH9SIX>LA PA>HA2(jt) OY>SM3,SK2 OY6BEC>SK2
SK2>OH8(bs) OY>LA(Es) JW9SIX>LA(Es) OY6BEC>LA 13-1400 OY6BEC>OH2(Es)
OH5>OH8 1455 HB9SIX>DL 1631-58 DF0ANN>CT(Es) CS1RAL>DL(Es) HB9SIX>CT(Es)
CT1ART>DL JW9SIX,JW7SIX>LA CT0SIX>DL>LA IQ4AD,IW3FZQ,IS0>CT(Es) EA1>IS0 17-
1800 I4,I1,I5,IS0,HA5>EA1(Es) CT0SIX>9A I5.I0JX,F5TND>CT(Es) CN8IG>9A F>DL(Es)
EI0SIX>DL,CT(Es) 9A>PA OZ7IGY>OH8 F,I1>LA(Es) DL>PA 18-1900 EI>DL(Es)
F>DL,LA(Es),OZ EA1>IS0 HA8>YU7(tr) EI,EA2B>LA(Es) EI0SIX>I2 LA>EA1(Es)
OY6BEC>ON,OH I9>IS0 OZ,EI0SIX>9A F>OZ(Es) 20-2100 PA>DL(eme -23dB) LA>PA(eme -
26dB) 21-2200 LX>PA(eme -10dB) JW5SIX>OH5

Dec 28 _08-0900_PA>LA(eme -23 dB) SM0>LA(jt) HA2>HB(jt) 10-1100 W7GJ>OY(eme) F>EA
ON>F(bs) HB>LA(ms) 11-1200 PA>LA(jt) DF0ANN>DL 12-1300 SM0>PA(jt)
IT9X,CU3URA>EI SP9>SM0(jt) SM7>LA(jt) 1335 CU3URA>EI 19-2000
IW3FZQ,IQ4AD,I4,S55ZRS>CT(Es) I5>CT EA2>OZ(jt) 20-2100 OZ>EA2 HA2>SQ7(jt) 21-
2200 HA2>OZ(jt) ZL3NW>PE1BTX(eme -23dB)

Dec 29 0947 OZ>PA(eme -22 dB) 1426-49 OY>PA(jt) SM7>OY(ms) 1723 HB9SIX>DL(tr) 1809-53
OY>LA(ms) 2155-6 OE5>LA 2219 OY>LA

Dec 30 0912-49 S5>I5 W7GJ>LX(eme) 1025-45 HB9SIX>DL(tr) PA>LA(jt) 11-1200 CT>EB1(ms)
LA>PA(jt) CT>EI(Es) CS1RLA>EI(Es) 1552 S5>9A 1606-45 DL>S5 I3>SM7(ms) 17-1800
CT1ART,EA7>ZB

Dec 31 no reports

50MHz PROPAGATION REPORT FOR DECEMBER 2007 BY SV1DH

1. Data for all days (31)

All this month's reports related to Brazil (usually PY2 or PY5), apart from one report of FM5AA from PY0FF on the 12th. Unlike November, tep appears not to have extended as far south as LU,CX or ZP. Nor, at the northern end, were there contacts with Central America or the US. In short, though tep was plentiful, its geographical extent appeared to have shrunk.

Trans-Equatorial Propagation by Country

9Y<>PY	27 days 1,2 6-31	8P	3 days 9 10 12
YV>PY	13 days 1,7 9-12 14 16 18-19 21 28 29	FG	3 days 10 12 19
FY<>PY	5 days 11 14 16 23 24	P4	2 days 9 12
FM<>PY	4 days 8-9 11-12	FJ	1 day 225
V4<>PY	3 days 29-31		

As the detailed listing below shows, the month brought a marked increase in South American contacts outside the tep zone between PY, LU and CX stations. Summer season sporadic-E looks the most likely mode – but none of the reports refers to it.

North America remained outside the tep zone, but did enjoy seasonal winter sporadic-E. The detailed listings show contacts outside the US with ZF, TI, P4, 9Y, VP5, TG, C6, HR and V4, mostly from W4, but less frequently extending to W3 and W8, with one report of the TI2NA beacon in VE3 on the 11th, surely requiring a double hop. Other reports worthy of note are reception of the Venezuela beacon YV4AB by KE4WBO (FL) on the 21st(2xEs?) and, by the same station – who makes a speciality of beacon-spotting – reception of the V44KAI beacon for nearly 6 hours on the 27th. Within the US itself relatively few reports credited Es, which was probably responsible for many more contacts than specifically noted it.

A recurring difference between Europe and North America is that, in the latter, there are few of the references to ms or JT6M, which are now so commonplace in Europe.

Dec 1 00-0100 YV4AB,YV5ESN>PY2REK W3HH/4,K4HRS,W4CHA>W4 K4TQR>W4(ms) 01-0200 PR8ZIX,9Y4AT,YV4AB>PY5EW 11-1200 OH2BC>W7GJ(eme -18db) 1350 W4>W8 2251 W0MTK>W7 2322 9Y4AT>PY5HOT

Dec 2 0008 9Y4AT>PY5HOT 0140 KA0CDN>W7 02-0300 W4>W3 0348 W8>W4 04-0500 W4,W5,W0>W8 13-1400 W4,WP4O>W8 14-1500 W4,W5>W9 15-1600 W3>W3 17-1800 W3>W3 VE/W4TAA>W7GJ(eme -20db) W4>W4 18-1900 W4>W4 19-2000 W1>W1 ZF1EJ>W3,W4 20-2100 W3DOG>W4 21-2200 W4CHA,K4HRS>W3(Es) W2>W8 W3VD>W4(Es) W4,W1>W2 22-2300 K4TQR>W4(Es) W4>W3,W9 ZF1EJ>W8 W8>W4 W2,W4>W3 23-2400 W5,W4>W4 WB5LLI>W3 WP4O>W8,W9 W3DOG>W4(Es) W8IF>W4 K2ZD>W4(Es)

Dec 3 00-0100 W8IF>W5 W8,W9>W5 K0UOW3 W8>W5 01-0200 VE3>W3 W5GPM,W0>W3 W5>VE3 W0>W4,W3 ,W8(Es) W5>W9 W9>W0 02-0300 W0>W4 W8,W3>W5 W5>W9,W8 WB5LLI>W3 W4>W9,W3,W8 K5AB>W3,W9 04-0500 K5AB>W3(Es) VE7>W7 1424 K5AB>W3(Es) 23-2400 W8>W8 TI2NA>KE4WBO(Es)

Dec 4 0044 P43JB>KE4WBO 01-0200 W5GPM,W5RP,K5AB>W4(Es) 02-0300 W5GPM>W7 W8>W8,W9 0335 W4>W5 04-0500 W4>W4,W5 WZ8D>W8 D9DR/4>W3 2148 9Y4AT>N3DB

Dec 5 13-1400 K1MS>W4 14-1500 KL7GLK,NL7XM,W3VD,K2ZD,W3CCX>W4(Es) 16-1700 W1>W4(sc) 2308 CEbc(48.3)>W4

Dec 6 00-0100 W5>W9 K5AB>W9 VP5/KOOK>N4BH W7>W5 K0EC>W9 9Y4AT>PY2REK 01-0200 VP5/KOOK>WZ8D W5RP>W9 W4,W5>W0 W7>W7(tr) K5AB>W4 0256 PR8ZIX>PY9 0308 9Y4AT>PY5HOT 2340 9Y4AT>PY2REK

Dec 7 00-0100 LU5EGY>PY2 PY2MTV>YV5ESN YV5ESN>PY5HOT PR8ZX>YV5ESN 9Y4AT>PY2MTV PY2GG>YV5ESN 12-1300 W5,W9DR/4>W8 W1>W1 1545 W8>W1 1623 W1>W8(ms)

Dec 8 00-0100 9Y4AT>PY2REK(tep) W5,W7>W4 W7>W5 K5AB>W9 01-0200 W4>W8(ms) W5>W9 W4>W5 FM5AA>PY2REK W5>W5 PY4AQA,PY6LS>FM5AA 02-0300 W5>W5 YV5ESN>PY2MTV 03-0400 W3HH/4,W4CHA>W4 1234 W4>W8 14-1500 W4>W4,W8 21-2200 LU5EGY,LW3EX,LU4DMX >PY2REK 22-2300 LU6WN(Patagonia)>PY2XB LU1DA>PY2REK LW3EX>PY2RDS,PY2MTV LU3HR>PY2MTV LU4HH>PY2MTV,PY2REK LU5EGY>PY2MTV 2245-59 W8>W8 LW3EX>PY2MTV

Dec 9 00-0100 W5GPM,W0>W3 PY2MTV>YV5ESN P43A>PY2MTV XE2>XE1 W5>W8 W0>W4 8P6CC>PY2DA,PY2MTV YV5ESN>PY1ZV,PY2MTV YV4AB,9Y4AT>PY2MTV 01-0200 W4>W9 YV5ESN>PY2DA,PY1ZV PY4AQA,PY6LSYV5ESN YV5ESN>PY2REK W5>W4 XF4YW(Socorro)>XE2 YV5IAL>PY2REK FM5AA>PY2REK,PY2MTV 02-0300 PY2BN>FM5AA FM5AA>PY2XAT W5,W4>W8 PY2MTV>YV5NGU 9Y4AT>PY2MTV 1859 W4>W8 21-2200 LU5EGY>PY2REK LU>CE3SAD 23-2400 PY9MP>PY2 9Y4AT,YV5ESN>PY2MTV

Dec 10 00-0100 PY2MTV>YV5ESN 0308 W5>W5 22-2300 9Y4AT>PY5EW,PY5HOT 23-2400 9Y4AT>PY1NB,PY5EW,PY2DA,PY2MTV YV4AB>PY5EW,PY2DA,PY2MTV FG5FP>PY2MTV,PY5HOT,PY2REK ,PY2DA 9Z4F>PY5HOT 8P6CC>PY5HOT

Dec 11 00-0100 YV5ESN>PY2REK TI2NA>KE4WBO(Es) 01-0200 TG9AFX>KE4WBO PY5AIA>YV5IAL W9DR/4>P43A PY4AQA>YV5ESN 02-0300 YV5ESN>PY5HOT FY7THF,9Y4AT>PY5HOT K0KP>VE2(ms) W9DR>PY5HOT(?) TI2NA>KE4WBO FM5AA>PY2MTV,PY2REK,PY5HOT,PY2RDS P43A>KE4WBO 9Y4AT>PY2MTV 0329 TI2NA>WZ8D 0413 TI2NA>VE3SUB 0554 VE4SPT>W9(ms) 1326 W9>W8 18-1900 K5AB,WB5LLI,W5RP>W4 W5>W4 TI2NA>KE4WBO(Es) W3>W4 19-2000 WB5LLI,K4AOZ,W4WTA,W9VW,K4IDC,WZ8D>XE3 20-2100 XE3RCM>WZ8D W0,XE3>W4 W8IF>XE3 21-2200 XE3>W8 XE2,W5>W4 XE3>W0 XE3RCM>W8 23-2400 9Y4AT>PY2MTV,PY2REK(tep) LU1DA>PY2MTV,PY2DA,PY2REK LU3EE,CX5CR,CX4CR>PY2MTV

Dec 12 0000-0100 YV5ESN>PY2DA,PY2MTV 8P6CC,FG5GP.YV4AB,9Y4AT,P43A>PY2MTV CX5CR>YV5ESN FM5AA>PY0FF,PY2DA,PY2MTV,PY2REK,PY3ARZ YV5IAL>PY2MTV 9Y4AT,YV4AB,YV5ESN>PY5HOT 01-0200 W4>W3 9Y4AT>PY2REK 02-0300 9Y4AT,YV4AB>PY5HOT 02-0300 K5AB>W4(Es since 1800) 0357 W8IF>W8 10-1100 WB5LLI,W8IF,W4CHA>W4 W8>W8 1227 W4>W4 1227 VE1SMU>W4 1851 VE4VHF>W5(Es) 23-2400 FG5FP>PY2DA,PY2MTV,PY2OC YV4AB>PY2MTV,PY2OC

Dec 13 00-0100 W3>W2,W4 0203 9Y4AT>PY2REK 1453 W9>W4 2208 WZ8D>W8 23-2400 9Y4AT>PY2REK,PY2MTV YV4AB>PY2MTV 2032 W2>W4 2107 G5WQ>W7GJ(eme -15db) 23-2400 W2>W4 9Y4AT>PY2REK

Dec 14 00-0100 NOLL>W3 01-0200 WB0RMO,K0UO>W3 W4>W0 W8,VE2RCS,W1>VE2
9Y4AT>PY5HOT 02-0300 VE2>VO1 FY7THF,YV4AB>PY5HOT VO2FUN>W8,W4
W1,W3>VO1 03-0400 TI2NA>KE4WBO W5>W8 VE2>W8,W9 VE3,W8,W0>W8 04-0500
W9,VE2>W8 K0GUV,K0KP>W3 W8>W9 05-0600 W2,VE3,W3>W9 NOLL>W3 W0>W2
K0KP>W4 W0>W3 W2>W4

Dec 15 2032 W2>W4 2107 G5WQ>W7GJ(eme -15db) 2341 9Y4AT>PY2REK data incomplete

Dec 16 0050 NOLL>W3 01-0200 WB0RMO,K0UO>W3 W4>W0 W8,W1>VE2 9Y4AT>PY5HOT 02-
0300 VE2,W1,W3>VO1 FY7THF,YV4AB>PY5HOT VO2FUN>W8,W4 TI2NA>KE4WBO
W5,VE3,W8>W8 VE2>W8,W9 04-0500 aurora W9,VE2>W8 K0KP>W3 W3>W8(bs) W8>W9
05-0600 W2,VE3,W3>W9 NOLL>W3 W0>W2 K0KP>W4 14-1500 W3,W4,W2>VO1 15-1600
W5>W0(ms) W6>W0(ms) 17-1800 W5,VE3>W9 NOLL,WB0RMO>W3 W0>W4 18-1900
VE3,W3,W1>W9 W1>VE2 20-2100 W4>W9 21-2200 S51DI>W7GJ(eme -24db) W2>W5(Es)
W9>W4 W4>W2 22-2300 W8>W9 XE2>W4 W5>W4 9Y4AT>PY5EW 23-2400 XE1,W5>W4
W7,XE2>W4 W0>W3 XE3>XE1,W5 NOLL,K5AB>W4 PR8ZIX,PY0FF>PY5 XE2>W8

Dec 17 00-0100 W1>W3 K5AB>W4 CX1DDO,CX1CCC,CX5CR>LU6QI W4>W1
W2,W1,W3,W5GPM,W5HN>W4 01-0200 W4>W4 02-0300 W0>W8 W9,W0>W9 0332
VE4SPT>W9(ms) 0440 NOLL>W3 12-1300 W4,W5>W8 13-1400 W4,W2>W8 VE3>W4 21-
2200 PF3ORG>W7GJ(eme -14db) W5GPM>W9 S51DI>W7GJ(eme -25db)
WB0RMO,NOLL>W9 W4>W0 22-2300 G4IGO>W7GJ(eme -25d) 22-2300 W0>W8,W9,W4
W4>W5 23-2400 W0>W8,W5,W9,W0,VE3 W4>VE2 W7>W8,W9 W9>W4 VE4VHF>W0
9Y4AT>PY5HOT W5HN,W5GPM>W0

Dec 18 00-0100 W0>W9,W0,WE5 VE4>W5,W0(Es) W7,W5>W9 W4>W0
9Z4BM>PP5AR,PU3TZY,PY3KN W0>W7 01-0200 W0>W9,W7 C6AFP>W3.W8
W4,W2,W3,W7>W9 W5>W3 W4,W0>W0 W9>W4,W9 W4>W1 9Y4AT>PY2REK 02-0300
WB5LLI>W3 W4>W2 ,W0,W3 W5>W9,W8 W8>W3 W5,W4>W9 9Y4AT,YV4AB>PY2REK
C6AFP>W8 03-0400 W1,W3DOG,W0>W4 W4>W9 1252 W8>W4(Es) 20-2100 XE1>W0
W8>W7 21-2200 W7,W0,W5>W7 W5>W6 (Es) 23-2400 VE4VHF,VE4SPT>W7 W5>W7(eme -
21db) N0UD>W7 9Y4AT>PY5HOT,PY2REK K8EB>W7

Dec 19 00-0100 K0KP>W7 LW3EX>YV5ESN YV5ESN>PY2REK 01-0200 K8EB,VE3,W5,K0KP>W8
1317 W5>W5 1554-8 W4>W4(ms) W1>W4 21-2200 LW3EX,LU2DEK,LU8DIO,CX4AAJ,
LU5DDX,LU1DMA>PP5AR LU5EGY,LW3EX>PY3KN LU2DEK>PY2REK 22-2300
LU9AEA,LW8EMS,LU3EE,LW4DYY,LU4ABR>PP5AR 23-2400
LU1EEP,LU1DA,LU8DWR,CX2AQ,CX3AN,LU5DIT,LU3CM.LU1CGI,CX1DDO,LU1DLQ,>PP5
AR LU2EE,CX2CR>PY2REK FG5GP>PY2YW 9Y4AT>PY3KN

Dec 20 00-0100 LW5EE>PP5AR,PY2DA LU8DIO>LU7YS(Patagonia) LU3DR>PP5AR 01-0200
9Y4AT,PR8ZIX>PY5HOT 02-0200 W5RP>W8 W5>W5,W9,W0 03-0400 W5,W9>W9
C6AFP>W8 W9DR/4>W8 9Y4AT>PY2REK W0>W4 04-0500 WB0RMO,W5RP,W6>W7
K0EC>W5 W9>W6 06-0700 W6>W6 1339 W5>W8 1413 W4>W0 15-1600 C6AFP>W8
W6>W7 20-2100 C6AFP>KE4WBO KB6BKN,K6FV>W7 2146 W1>W1 22-2300
LU5EGY,LW3EX>PY2REK CX6JF LW3EX>PY2RDS 23-2400
LU8DIO,LU3CM,LW3EX>PY2MTV W4>W8 LU2EE>PY2REK,PY2MTV

Dec 21 00-0100 YV4AB>KE4WBO(Es) 9Y4AT>PY2MTV 01-0200
6Y5RC,C6AFP,TI2NA>KE4WBO(Es) 0337-9 9Y4AT.YV4AB>PY5HOT 04-0500
C6AFP,W9DR/4,NOLL>W8(ms) 12-1300 W5>W8 C6AFP>W8(ms) 13-1400 W4,W5,W0>W8
15-1600 K0KP>W4 16-1700 W0>W4 W5GPM>W2 17-1800 NOLL,WB0RMO>W2 18-1900
W5GPM,C6AFP>W4(Es) W3>W0 2116 W9DR/4>W8 2210 W4>W8

Dec 22 01-0200 9Y4AT,PR8ZIX>PY5EW 0256 YV5>YV7 1222 W2>W1 13-1400 W2,W5,W4>W8 W4>W4 14-1500 W5GPM>W2 W1>W9(sc) 15-1600 W0>W4 W2>W1 16-1700 W4,W5>W9 W8,K4IDC>W0 W5>W8 20-2100 W4>W0,W9 VE3>W0,W9(sc) 2206-22 W3>W9(ms) W8>W9 23-2400 9Y4AT>PY5EW,PY2REK

Dec 23 02-0300 W9>W4 9Y4AT>PY5EW 1241 W2>W1 17-1800 C6AFP>W8 W9DR/4>W8(Es) W2>W3 21-2200 LU5EGY>PY2REK LU4HH,LW3EX>PY2MTV W1>W1 PY5EW>LU3HY 22-2300 PY5EW>LU3 LU2FMA,LW6DC,LU6HTR,FY7THF,PY2>PY5EW PY5HOT>LU8MB

Dec 24 00-01010 9Y4AT,FY7THF>PY5EW 0112 9Y4AT>PY2REK 1059 W5>W8 13-1400 W5>W8 W4>VE1 C6AFP>W8 14-1500 W8>W1 KD4AOZ,W8IF>VE1 W2>W8 W1,VE1,W2>W9 15-1600 W9VW,W4,W8>VE1 W1>W9 17-1800 W8>VE1(sc) 1822 VE3>W8

Dec 25 0119 FJ5DX>PY3KN13-1400 W3>W8 W5,W8>W5 W9DR/4>W8 W4,VE3>W9 15-1600 W0>W9(tr 700km) W2>W9 1858 W5>W9 2206 9Y4AT>PY3KN

Dec 26 0056 W1>W3 9Y4AT>PY5HOT 1526 VE1SMU>W8 18-1900 W1>VE1 W3DOG,W9VW>W4(Es) W9DR/4>W8(Es) W4,WZ8D>W4 1926 W3DOG>W4(Es) 22-2300 K5AB>W4 C6AFP>W1 23-2400 W4>W1(Es) N3KVF/C6>W1 K2ZD,W8>W4 K5AB,W3>W9 W4>W5 W0>W9 C6AFP>W3,W2 W4>W3 W2>W4

Dec 27 00-0100 W4,W8>W8 C6AFP>W8,VE3 W4>W3,W2,W1 W9>W5 W2,W5RP,K5AB,W4>W4 W5>W5,W9 HR9BFS>WZ8D C6AGN>W8,W2,W3,W9,W4(Es) 01-0200 W9DR/4>W9 C6AGN>W1,W8,W9,W3 W4>W1 W5>W9(Es) C6AFP>W3 14-1500 W5,VE1SMU>W8 VE1>W3 15-1600 W8>VE1 W3DOG,K2ZD,K1MS>W4 W1>W1 W3>W3 17143 V44KAI>KE4WBO 18-1900 C6AFP,V44KAI>KE4WBO(Es) W5>W5 W1>W1 19-2000 W1>W8 20-2100 C6AFP>W4 21-2200 W5>W4 W1>W1 2347-51 V44KAI>KE4WBO(Es, nearly 6 hours) XE3RCM>W4(Es)

Dec 28 00-0100 XE2>W0 W5,W8>W8 YV4AB,9Y4AT>PY5HOT 02-0300 K5AB,W5RP,W4>W8 0401 W4CHA>W4 1009 OY3JE>W7GJ(eme) 1100-03 W0,W5>W8 1429 K2ZD>W7GJ(eme -24db) 15-1600 K9MRI>W7GJ(eme -28db) W9>VE1 K0KP>VE11600-08 VE3>W9 VE2>VE2 1750 C6AFP>W4 1828 WZ8D>W4(tr) 1952 W8GTX>VE3 22-2300 PY2WFG>PY5 NP3PW>W4 W8>W8,W9 2334 9Y4AT>PY5EW

Dec 29 00-0100 YY4ACU>PY5HOT,CX6JF 9Y4AT,V44KAI>PY5HOT 01-0200 9Y4PJ,9Y4AT,V44KAI,9Z5FZ,YY5LI>PY5HOT 0213 9Y4MYA>PY5HOT 0448 VE3>W8 08-0900 PC7M,OZ6ABA>W7GJ(eme) 12-1300 W5>W8 W8>W2(sc/tr) 1328 W4>W4 1525 W5>W4 1615-8 W8IF,W9VW>VE1 17-1800 KD4AOZ,W3,VE1,W5>VE1 W4>W4 TI2NA>KE4WBO 18-1900 W4WTA,W3>VE1 W1>W9 19-2000 W6>W6 HR9BFS>W4YJ TI2NA>KK4XO 20-2100 TI2NA>W1FC/4 LU4HH>PY5EW 2152 PY2WFG>PY5

Dec 30 00-0100 9Y4AT>PY5HOT W8>W8 K5AB,W5RP>W4 01-0200 9Y4AT,V44KAI>PY5HOT W4>W4 02-0300 C6AFP>W8 XE2>W5 0335 W9>W8 1349 WZ8D>W0,W4 1447 W8>W9 16-1700 VE1>W4 1902 W5>W7 2347 9Y4AT>PY5EW

Dec 31 00-0100 V44KAI,9Z4BM>PY5EW W4>W3 W5>W9,W8 W3,W0>W9 9Y4AT>PY2REK 01-0200 W5>W9,W8,W4 W3,W5,W9>W4 PY2WFG>PY5 02-0300 PY5>PY2 W9DR/4>W8 W5>W4,W9 PY5>PY2 PY2WFG>PY5 03-0400 9Y4AT,V44KAI>PY5EW 0416 9Y4AT>PY5EW 1125 PY2WFG>PY5 1346 W4>W1 14-1500 PY2WFG>PY5 W1>W1 W9DR/4>W1(ms) 1522 W0>W8 1657-9 W8,W5>W1(ms) 1741-7 W1>W1,W8 2144 W8>W8

Asia and the Pacific

Japan

Dec 1 0054 MM0AMW>JR6EXN(eme -25dB)

Dec 10 0355 V73SIX>JA1

Dec 12 0433-4 46172(VK),45.24,45.25,45.26(ZL)>JA3 0724 VK6RSX>JA2 0729 VK6RSX>JA1

Dec 18 0438 46172(VK)>JA3

Dec 220510 VK4tv>JA1 ZLtv>JA5 0530-3 ZLtv(45250,452396) >JA1

Dec 27 15-1600 K2ZD>JR6EXN(eme -21dB) W7GJ>JR6EXN(eme) N9IW>JR6EXN(eme -25dB)

Dec 28 0532 46172,46.24(VK)>JA3

Dec 29 0537 VKtv>JA5

Dec 30 0302 51250(BY)>JA8

Elsewhere

This is the most substantial tally of propagation in Oceania for many a long month, including most VK and ZL areas, FK8SIX, A35RK,3D2AG/Rotuma, AH8LG, VK9ZLH, and TV from UA0 plus Australian TV being received in the Philippines. Several reporters mention Es – this was, of course, mid-summer downunder – and reception of a ZL beacon in Western Australia seems to have involved two Es hops. The 12th was the only day when the JA<VK path is known to have opened for amateur transmissions, though television was reported on frequencies below 50MHz on several days.

Dec 1 0815 JR0YEE,JA2IGY>VK3,VK5

Dec 3 0145-50 A35RK>VK4,ZL3 0209 VK4>A35

Dec 6 0800 VK2>ZL2

Dec 12 03-0400 50740(ZL)>A35RK FK8SIX>A35 0415 VK3>VK3

Dec 13 03-0400 VK5>ZL3 07-0800 VK2>ZL1,ZL3 VK5>ZL3 1100 VK2,VK3>ZL3

Dec 15 2310 FK8SIX>A35RK

Dec 17 2321-45 55.2501(KH8),VK4RGG,VK2RSY,VK2RHV,VK5RBV(bs),VK7RST(BS)>VK3

FK8SIX>VK3(599) VK4RTL,VK8>VK3

Dec 18 00-0100 ZL2,VK4ABP>VK3 01-0200

VK6RPH,VK8RAS,VK6,FK8SIX,VK4RTL,VK4RGG,VK2RSY,VK2RHV>VK3 02-0300

ZL1,ZL3SIX>VK3 0445 46172(VK)>DU7 0502 49.7499(UA0)>VK3 0630 VK6RSX>VK3

Dec 19 0403 VK2>VK6 0759 ZL2UHF>VK6(5261km)

Dec 20 2340 A35RK>VK3

Dec 21 0230 A35RK>VK3 VK3>3D2AG/R 0245 ZL3,A35RK>3D2AG/R 0319 AH8LG>ZL32222

VK5>ZL2

Dec 22 0132 VK3>ZL3

Dec 23 0243 ZL2>VK4 2315 A35RK>VK3

Dec 26 0145 A35RK>VK3 0145 A35RK>VK3 0250 A35RK>VK3 0345 VK5>A35RK 0420 A35RK>ZL2

0824 46172(VK)>DU7 2317 3D2AG>ZL2

Dec 27 0839 VK6>VK2 2311 VK9ZLH>VK3,VK5

Dec 30 0000 3D2AG/P/R>VK3 0220 A35RK>VK3

Dec 31 0327 49750>VK4 0822 VK6RSX>VK6 1013 VK8>VK6(Es)

28 MHz

United Kingdom

A meagre crop of beacons received in the UK this month: the table speaks for itself, except to note that there were rather fewer reports than might have been expected, given that strong sporadic-E occurred on several days. It may be that operators were too busy making contacts to take notice of beacons.

Beacons Heard in the UK

	06-0900	09-1200	12-1500	15-1800	18-2100		06-0900	09-1200	12-1500	15-1800	18-2100
C3OP			3			IW3FZQ		3	3		
DK0TEN		3			3	I8EMG	3				
DL0IGI		3				OK0EG	6		6		
DM0AAB		3			3	SK0CT		3			3
F5ZWE				3		SM5HUA		3		3	

Figures above show, for each time period, the percent of days on which each beacon was heard in the UK.

Countries known to have been worked from the UK: A6 CX DL EA EI EU F I LY OE OH OZ PA RA S5 SM SP UR YU ZS 9A. In addition, during the sporadic-E event on the 27th several G<>GI and G<>GM contacts were reported.

Worldwide

The worldwide table below makes sorry reading, with its liberal sprinkling of Zero returns. There is no denying that, in a December so close to solar minimum, the band is inevitably in poor shape. Many reports from the United States – the only area where there is a substantial number of widely spread regular reporters – say ‘nothing heard’ for days at a time. Reporters elsewhere say little different, with the possible exception of Australia-New Zealand, which were enjoying a reasonably good sporadic-E season during their southern hemisphere summer, and to a lesser extent South America, for similar reasons.

The usual caveats apply: the table shows only what people report and the results are necessarily affected by activity levels, which were depressed most of the time. So the results establish a known minimum. There is in fact good reason to suspect things were not as bad as they seem here. The 8th and 9th may indeed have been the best days in the entire month; they certainly produced by far the best daily results. For example, the only reported contacts between Africa and Oceania and Asia and within Africa were on those dates and, together, these were the only period when all continents worked Africa. This was, of course, the weekend of the ARRL contest, when an exceptional number of operators were prepared to put in an exceptional effort on the band. Had a similar commitment occurred on other days the results might well have looked more cheerful. We will, of course, never know for sure.

Returning to the results as they are, rather than as one thinks they might have been, it is worth noting that, during the contest, some North American stations were able to make DX

contacts after their local midnight and, on the 30th, veteran beacon monitor WJ5O in Alabama was reporting the band open four hours after local darkfall. The US also enjoyed several sporadic-E openings, notably on the evening of the 3rd. Among the scattering of QSOs between North America and Europe was a report of N6CN (shown by QRZ.com as in Berkeley, California) and S51DI at 1722 on the 9th (Can this be true?); EA7RM and K1GQ, also on the 9th; W1CKE and EA4KE at 1703 on the 2nd, followed by KE4WBO's reception of the C30P beacon at 1942 the same day.

Almost all reports of VK/ZL stations in Europe came from south-eastern countries, as did most reports of reception of Asia. Within Europe, propagation was reported on 19 days, including strong and sustained sporadic-E during the ARRL contest and between the 25th and the 28th, coinciding with the 50MHz openings reported earlier. The NAC contest on the evening of the 6th brought increased activity, although this was largely confined to Scandinavia.

Due mainly to seasonal sporadic-E, propagation between locations in Oceania was reported on no fewer than 27 days – something of a record. Asia<->Oceania working was reported on 17 days. Propagation within North and Central America (grouped under 'NA') was reported on 29 days – the 10th and 25th being the exceptions. There were also reports of North-South America working on 20 days. However, openings strongly favoured the southern states and Puerto Rico, with northern and western stations much more likely to report blank days.

Results are in per cent of days with signals reported. Time periods: M= before 1130LT; N= 1130-1430 A=1430-1700 E=after 1700

	OC	AS	EU	AF	NA	SA
OC	73 53 30 30	00 36 23 30	00 00 00 36	00 03 06 00	06 00 00 00	03 03 00 00
AS	20 43 27 00	06 13 17 03	00 03 03 03	00 00 06 03	00 00 00 00	00 00 00 00
EU	33 00 00 00	19 00 00 00	67 50 23 30	03 23 13 10	00 00 06 06	00 00 00 10
AF	06 00 00 00	03 03 06 00	00 20 17 10	00 06 06 06	00 00 06 23	00 06 06 27
NA	00 00 10 00	00 00 00 00	06 03 03 00	17 23 00 00	67 73 67 80	06 47 30 47
SA	00 00 00 00	00 00 00 00	00 10 03 00	00 06 23 03	10 30 40 57	06 13 33 33

Filename: Dec07repfinal.doc
Directory: C:\Documents and Settings\cca96\Desktop
Template: Normal.dot
Title: 50MHz Outside Britain
Subject:
Author: Martin and Wendy Harrison
Keywords:
Comments:
Creation Date: 1/23/2008 10:15:00 AM
Change Number: 3
Last Saved On: 1/23/2008 11:40:00 AM
Last Saved By: KeeleUni
Total Editing Time: 86 Minutes
Last Printed On: 3/14/2008 12:40:00 PM
As of Last Complete Printing
Number of Pages: 14
Number of Words: 5,259 (approx.)
Number of Characters: 30,187 (approx.)