



Memorandum

To: A. R. Kerr

cc: K. Crady
S. -K. Pan
J. Webber

From: J. Effland

Date: 26 January 1999

Subject: Damage to the JT-2 Computer Motherboard

This memo discusses the sequence of events that resulted in a damaged motherboard on the computer installed in the JT-2 rack.

A 200 MHz CPU upgrade kit was ordered by Kirk Crady in September to upgrade the processor from 120 MHz to 200 MHz in the Gateway G5-120 computer, which was used in the JT-2 rack. Attachment 1 shows Kirks purchase requisition, which specifies the required part along with a recommended vendor:

Evergreen Pentium-200MMX Upgrade chip
Evergreen Technologies MFR PN 376
(www.hardwarestreet.com list \$98.51)

Attachment 2 is the packing list, received with the part from Highwave Technology, Inc, the vendor selected by NRAO purchasing. That packing list specifies the contents as:

CPU-I, P55C/200 Intel Pentium MMX 200 MHz

The packing list was the only paperwork provided with the part. (Evergreen provides installation instructions with their CPU upgrades.) The NRAO Purchase Receiver, shown in Attachment 3 specifies:

INTEL PENTIUM 200MMX UPGRADE

After this CPU was installed in the Gateway computer, the machine would hang every few days, usually at night. We also noticed that the clock speed, as reported by the shareware program *Wintune*, was 210 MHz rather than the expected 200 MHz.

In December, while investigating the cause of these occasional system hang-ups, we removed the heat sink from the CPU and determined that it was actually a normal 200-MHz Pentium MMX chip. Since the computer was operating normally most of the time, we attempted to configure the jumpers on the motherboard to the settings required for this CPU. However, in the process of selecting the proper voltage and clock speed, the motherboard somehow became damaged and no longer passes its power on self-test, even with the original 120 MHz CPU installed.

The motherboard alone cannot be easily replaced on this machine because it is an "OEM Zappa" board, manufactured by Intel exclusively for Gateway, that has a unique connector arrangement. A replacement 350-MHz Pentium II motherboard and case, from Gateway, is expected to cost about \$1080.

PURCHASE REQUISITION

REC'D BY PURCHASING 9/5/98 DATE

SUCCESSFUL VENDOR	NEED DATE	ACCOUNT NO. <u>MMA</u>	PROJECT NO. <u>19633</u>
	<u>10/15/98</u>	DELIVER TO <u>CR100</u>	LOCATION <u>IR</u>
PHONE	FAX	DELIVERY DATE	TERMS
PURCHASE ORDER NO. <u>54979</u>		F.O.B. POINT	SHIP VIA
TRANSPORTATION CHARGES			SHADED AREAS FOR BUYER USE ONLY

ITEM NO.	QUANTITY	DESCRIPTION	ESTIMATED		CONFIRMED		REMARKS
			UNIT PRICE	TOTAL PRICE	UNIT PRICE	TOTAL PRICE	
1	1	EVERGREEN PENTIUM-200MMX UPGRADE CHIP EVERGREEN TECHNOLOGIES MER PH: 376 (WWW.HARDWARESTREET.COM LIST \$98.51)	100.00	100.00			<u>54977</u> <u>Highware</u>
1	1	32MB EDU DRAM, 60NS 72-PIN SIMM		110.00			
2	2	32MB EDU DRAM, 60NS 72-PIN SIMM 9 Mx 32E 10	35.00	70.00	34.99	69.98	<u>54979</u> <u>2573723</u> <u>JDC</u>
						<u>147.98</u>	

REQUISITIONER / DATE Karl P... 9/11/98 APPROVAL / DATE John C... 9-11-98 TOTAL 170.00

NOTE: REQUISITIONER KEEP 3rd COPY

The Items Listed Are Not Available From Stock

SUGGESTED VENDORS - USE OTHER SIDE FOR JUSTIFICATION

<u>1</u>	<u>JDC</u>	

432653

NRA801

This is a PACKING LIST
Invoice will follow

National Radio Astronomy Observ.
P.O. Box 0
//Sheila Reasner
Socorro, NM 87601-0387

National Radio Astronomy Observ.
2015 IVY ROAD, STE 219
ATTN: K. CRADY
CHARLOTTESVILLE, VA 22903

09/21/98	UPS	Origin	Net 15		
54977		09/21/98	BH	None	
1	LP550/200	CPU-I.P550/200	INTEL PENTIUM MMX 200MHZ		
1		CPU-KOOLER/P54	CPU COOLING FAN FOR PENTI	0.00	0.00
1		SHIP	SHIPPING	0.00	0.00

5

2

NonTaxable Subtotal
Taxable Subtotal
Tax
Total Order

~~0.00~~
~~0.00~~

**PURCHASE
RECEIVER**

PAGE NO.	1
DATE	9/23/98
ORDER NO.	54977-000-OP
VENDOR NO.	6005081

V
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D
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R

HIGHWAVE TECHNOLOGY INC
1520 MONTAGUE EXPRESSWAY
SAN JOSE CA 95131

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ASSOCIATED UNIVERSITIES INC
NATIONAL RADIO ASTRONOMY OBS
2015 IVY ROAD
SUITE 219
CHARLOTTESVILLE VA 22903

DATE ORDERED	09/23/98	REFERENCE	
REQUIRED DELIVERY DATE	09/29/98	TAKEN BY	BEN HO

ACCOUNT#	DESCRIPTION	U/M	OPEN QUANTITY	RECEIVED	REQUISITIONER	DATE RECEIVED
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12004.3030.0107 INTEL PENTIUM 200MMX UPGRADE EA 1
K CRADY CHIP W/FAN
Confirming order. DO NOT DUPLICATE

1 K Crady 10/1

Complete

V. [Signature]
RECEIVER

10/1/98
DATE

54977-000-OP