23. LOCAL MEMORY CHIP CHARTS

The most common cause of hardware problems in Maxc is failure of the storage chips used in the processor's local memories (LM, RM, IM, SM, DM, and MAP). Once the addresses and bit number(s) of the failures have been determined (by means of the micro-diagnostics DGRL or DGIML/DGIMH), the chips may be located by means of the information in this section.

The chips used in LM and RM are either Intel 3101A or TI 74S289, which are 16-word by 4-bit memories. They are located on the three ALUA boards, each one of which provides a 12-bit slice of the 36-bit Maxc ALU. In the following table, the top three rows show the card slot number as a function of the machine and bit number, and the main matrix below it yields the chip position on that card as a function of the memory name and address within the memory.

	Maxc1 Card Slot	Bits			**Maxc2** Card Slot	Bits		
	2/25	0-3	4-7	8-11	2/23	0-3	4-7	8-11
Memory &	2/21	12-15	16-19	20-23	2/21	12-15	16-19	20-23
Address	2/17	24-27	28-31	32-35	2/19	24-27	28-31	32-35
LM 0-17		25	26	27		44	24	64
LM 20-37		37	38	39		45	25	65
RM 0-17		1	2	3		55	35	75
RM 20-37		13	14	15		54	34	74

Figures 1, **2** & **3** in the **Appendix**, prepared by Ron Weaver, show the storage chip layouts for the old and new bipolar memory cards used in the microprocessor. Old bipolar cards are used in all positions in Maxc1 but in only the MAP slot in Maxc2; new bipolar cards are used in all other positions in Maxc2. Note that the bits on the old bipolar cards are arranged differently for Maxc1 and Maxc2.

If it is necessary to replace an entire card, one should be aware that not all the bipolar cards are directly interchangeable. In particular, old bipolar cards in four of the IM slots have had pullup resistors removed and cannot be interchanged with cards in the other slots. New bipolar cards used in IM slots have different pullup resistor chips (680 ohms) than are used in SM/DM slots (330 ohms); these must be changed if cards are substituted.