digital equipment corporation
MAYNARD, MASSACHUSETTS
TWinoaks 7-8822 TWX MAYN 816

December 2, 1963

Mr. Richard Mills
Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge, Massachusetts

Dear Dick,

Please be advised of the following addition to the Programmed Data Processor-6 Price List.

Core Memory
2 microsecond cycle - 16,384 words $126,000.

Yours very truly,

R L Lane

R. L. Lane
Computer Applications
Engineer

RLL/pam

digital equipment corporation
MAYNARD, MASSACHUSETTS
TWinoaks 7-8822 TWX MAYN 816

March 16, 1964

Mr. Richard Mills, Assistant Director of Administration
Massachusetts Institute of Technology
Project MAC, Technology Square
545 Main Street - 9th Floor
Cambridge 39, Massachusetts

Dear Mr. Mills:

Digital Equipment Corporation is pleased to offer the following special trade of your PDP-1 computer for a new PDP-6 computer as outlined below.

The part of the PDP-1 configuration originally ordered and delivered in September 1963 which is eligible for this trade is the following:

	Original Purchase Price	Special Trade-In Allowance Toward PDP-6
PDP-1 Computer Including: 16,384 Word Core Memory	$160,000	$160,000
Type 19 High Speed Channel	9,000	9,000
Type 131 Data Control	10,500	10,500
Type 550 Micro Tape Control	9,500	9,400
Total Trade-In Value of PDP-1		$188,900

The proposed PDP-6 configuration is the following:

Type 166 Arithmetic Processor (without 16 word 0.5 μ second memory)	$156,100
Type 760 Paper Tape Reader 400 cps.	9,000
Type 761 Paper Tape Punch 63.3 cps.	5,500
Type 551 Micro Tape Control Unit	14,000
Type 136 Data Control	10,000
	$194,600

The above trade leaves a net cost to Project MAC of $5,700.

In addition to the basic trade described above there are several areas including the memory and peripheral equipment which are discussed below.

1. Memory – Digital Equipment Corporation is willing to loan to Project MAC an 8,192 word 5 μsec. Core Memory suitable for use with the above configuration for a period of one year following delivery at no cost or obligation to you.

2. Connection to IBM 7094 – Knowing of your plan to connect the PDP-1 computer to your IBM 7094 computer, we have made a comparison of the technical and cost aspects of a PDP-6 connection and a PDP-1 connection.

   The Type 136 Data Control would be used with the PDP-6. This unit has twice the buffering of the Type 131 Data Control of the PDP-1. In addition, it has 36 bit buffers, thus no external 36 bit registers would be required. The Type 131 needs an extra 36 bit register since it is an 18 bit unit.

   The Type 136 Data Control of the PDP-6 can serve a very important secondary function also. This is to provide an automatic block transfer of information to and from Micro Tape while computing is in process. The Type 131 Data Control has no secondary use with the PDP-1 Micro Tape system.

   The cost of the PDP-1 components necessary for 7094 connection are:

Type 19 High Speed Channel		$ 9,000	
Type 131 Data Control		10,500	
Special 36 bit buffer register		1,500	Approximately
	Total	$20,000	

   The cost of the PDP-6 components necessary for the 7094 connection are:

Type 136 Data Control		$10,000
	Total	$10,000

   Both of these approaches would require the same additional cost for 36 signal converter circuits which are not included in the prices shown above.

The 36 bit words of the Type 136 Data Control for the PDP-6 provide a less expensive connection to the 7094 and provides a secondary benefit in the Micro Tape performance.

3. CRT Display – Your PDP-1 configuration now has a Type 30E CRT Display. There are two alternatives available for this unit. First, it could be traded toward a Type 340 Display. Second, a "black box" could be added to it so that it could be used on the PDP-6 In/Out Bus.

The trade-in value of the Type 30E Display and accessories is as shown below:

Type 30E CRT Display		$14,300
Intensity Feature		250
Type 32 Light Pen		1,300
Type 33 Symbol Generator		4,900
	Total	$20,750

The price of a Type 340 Display and its options is as follows:

Type 340 Display (Including Increment Mode and Vector Mode)		$28,600
Fibre Optics Light Pen		1,625
Character Generator (64 characters)		7,700
PDP-6 Interface		2,075
	Total	$40,000

The technical comparison between these two units is as follows. The speed of the Type 340 is 2μ seconds per point in the increment or vector mode. The 30E does not have this mode. The random point plotting time of the Type 340 is 35μ sec. compared to the Type 30E time of 50μ sec. The character generator of the Type 340 will complete a character in 35μ sec. while the Type 33 requires 140μ sec. Also the information formats for characters for the Type 340 require significantly less computer memory for a given number of characters and fewer memory references per character.

4. Special Input-Output Buffer for PDP-1 – The special Input-Output Buffer Unit for the PDP-1 Computer (MIT P.O.#GP 90910) at a price of $6,720 can also be traded in as part of the PDP-1 system at its full purchase price. In view of the fact it has not been delivered yet it could also be cancelled if you so desire. The value of this item has not been included in the total PDP-1 trade-in shown above.

5. Dataphone Connection – The special dataphone system for the PDP-1 could be modified to work on the PDP-6 In-Out Bus at an additional cost of $1,500 if you so desire.

In addition DEC will allow the continued use of the PDP-1 configuration until the PDP-6 is delivered. Assuming that this trade is authorized by Project MAC and your sponsors within the next two weeks, the PDP-6 would be delivered by August 31, 1964.

In the meantime, reasonable amounts of PDP-6 computer time may be used by Project MAC personnel on the DEC prototype machine in Maynard. This time should prove useful in preparing computer programs anticipating delivery.

The technical advantages of the PDP-6 over the PDP-1 for this application of course are many. A few of these are listed below:

The PDP-6 does the present task better. It will allow rapid response experiments in time sharing to be carried out at computing speeds 2 to 5 times faster than the PDP-1. This is true because it has 36 bit words, a more elaborate instruction code, multiple accumulators and index registers. Also the handling of In-Out is considerably more flexible than the PDP-1.

The expansion possibilities of the PDP-6 include memory size (262,144 words), memory speed, overlapping memory, multi-processing, etc. These represent an excellent hedge against future requirements.

The software for the PDP-6 will include Fortran II, a time sharing monitor system, MACRO-6, editing, etc.

I would like to take this opportunity to express our enthusiasm for the work being carried out and planned at Project MAC and to mention that this trade-in offer is without precedent at DEC and is an indication of our support and interest in Project MAC.

Please let me know at your earliest convenience if you wish to take advantage of this opportunity.

Sincerely,

Harlan E. Anderson
Vice President

HEA:mcs
cc: Prof. Fano