H. ANDERSON

dec INTEROFFICE MEMORANDUM

DATE December 27, 1963

SUBJECT DEC Loan Procedures

TO All Sales Personnel, Engineering & Administration

FROM Nick Mazzarese

The attached form has been devised so that we may keep an accurate record of all DEC computers, systems and optional equipment to be loaned to customers or potential customers. As of this date, no equipment will be loaned unless Stan Olsen's or Harlan Anderson's approval is indicated through their signature on the Loan Record form.

The specific length of time the equipment is to be loaned must also be indicated on the form. The completed form must then be returned to Al Fortin before a loan will be initiated.

LOAN RECORD

CUSTOMER _____ Date _____

Computers, Systems, and Optional Equipment Being Loaned

Item	Quant.	Name	Mfg	Model	Time Loaned	
					From	To

REASON FOR LOAN:

_____

_____

_____

_____

Transacted by _____ Approved by _____

dec INTEROFFICE MEMORANDUM

DATE December 6, 1963

SUBJECT **MODULE CATALOG DISTRIBUTION**

TO Kenneth Olsen
Harlan Anderson
Stanley Olsen
Russell Doane

FROM Jack Atwood

I would like to suggest a method of distributing the new module catalog which will accomplish two important objectives:

1. It will attach the same significance to the catalog as a price tag would.

2. It will yield marketing information that will repay the cost of the catalog several times over.

The plan is very simple. Each catalog would be a so-called "registered copy;" i.e., it would have a serial number which would appear both in the book and on a registration reply card. The registration procedure ostensibly guarantees that each catalog holder would automatically receive future inserts as they are published. In practice, this would be accomplished by a simple coding operation on our present mailing list cards.

In order to obtain a copy of the catalog, the would-be recipient would have to fill out a qualification form, somewhat similar to that required of persons desiring to receive controlled circulation publication. This form would include, in addition to the questions already on our business reply cards, such questions as these:

1. What digital-type equipment are you presently using or specifying?

2. What digital-type equipment do you expect to be using or specifying?

3. What present applications do you have for ☐ modules, ☐ computers or ☐ systems?

4. What future applications do you expect to have for ☐ modules, ☐ computers or ☐ systems?

5. Will the catalog be used for instruction in digital techniques? If so, how?

6. What other persons in your organization should receive catalog qualification forms?

These qualification forms could be sent out to the general mailing list, given out at trade shows, and mailed with literature sent in response to reader inquiries. They could also be distributed rather liberally by members of the sales force. In addition, the forms could be used to answer any reader inquiries which might come in as a result of the inclusion of the catalog in new literature listings by any of the trade publications.

The catalogs could be delivered by hand or mailed, depending on the circumstances. If the information on the qualification form indicates a "hot" prospect, hand delivery would provide the ideal door-opener. If the request seems routine, we could mail the catalog with a cover letter inviting further contacts.

I think it would be more than reasonable for us to require the completion of a qualification form when we are distributing such an expensive piece of literature, and this concept ties in very nicely with the idea of registered copies. No one who is seriously interested in our products should object.

The advantages to us are obvious. Besides providing some measure of control over the distribution of the catalogs, this form would supply us with invaluable marketing information. It would give us a good line on equipment already in the field and what new equipment people are looking for. It would tell us in detail where this equipment market is located. It would provide detailed information on present and future applications for equipment of our type. It would uncover new markets for our educational modules. It would provide us with names of additional prospects not yet on our mailing list.

This kind of information would be extremely helpful to us in our product planning. It would be equally valuable in the formulation of marketing plans and in determining what kinds of sales promotion material would be most useful. Finally, it would help us to pinpoint our sales calls and our special mailings. If we consider the cost of the average sales call to be in the neighborhood of $30.00, it is easy to see that a call in response to a catalog request, as compared with a cold call, would usually more than repay the cost of the catalog just in terms of effective sales effort.

INTEROFFICE MEMORANDUM

DATE 12-24-63

SUBJECT PDP-5 SALES (POSSIBLE)

TO K. H. Olsen

FROM Dave Denniston
NYO

Bob Hughes stopped in today and among other things gave us a letter of commitment for five (5) PDP-5's. This is pretty much speculation, but with a fair amount of confidence on two of the machines.

Bob mentioned an upcoming Request For Quotation from the State Department on a switching center to replace existing Phillips equipment in Washington, D.C., (Not connected with the Paris system) and wondered if we would be interested in bidding as prime contractor at this time. I think he would appreciate a 'phone call.

DBD:BMP

CC: H. Anderson
S. Olsen
N. Mazzerese

DATA TRENDS INC

R. W. HUGHES
PRESIDENT

DATA TRENDS, INC.

1259 RT. 46, PARSIPPANY, N. J. TEL 201-334-1515

24 December 1963

Mr. David Denniston
Digital Equipment Corporation
1259 Route 46
Parsippany, New Jersey

Dear Dave:

Data Trends, Inc. intends to order five (5) PDP-5 machines during the next 12 months.

As discussed, we request delivery of the first PDP-5 on or before February 24, 1964. Basically, the configuration is the standard machine but with the 4,096 word core storage. Final details on the configuration will be forwarded separately.

For the remaining four machines the requested delivery schedule is:

April 1, 1964
June 1, 1964
August 1, 1964
October 1, 1964

This order is based on our understanding that we may cancel any or all deliveries up to thirty (30) days before the specified delivery date.

With best regards,

R. W. Hughes

RWH:jag

Andy

INTEROFFICE MEMORANDUM

DATE December 23, 1963

SUBJECT U. of Michigan PDP-5 Discount

TO Computer Guidance Committee FROM George Rice

Professor William Uttal (Prof. of Psychology) is interested in buying the following configuration.

PDP-5 with 4K	$ 27,000
Oscilloscope Display Type 34 . . .	$ 3,000
Light Pen	$ 1,625
Extra Cabinet	$ 600

He has written the enclosed letter to me explaining his request for an educational discount and he has also told me the following.

1) He must have the PDP-5 by March 1, 1964 since he will use it in a course he is teaching next semester.

2) NSF has implied he will get his funds around February.

3) He will place a letter of intent for a March 1 delivery immediately if we can give a discount and give a March 1 delivery.

4) His NSF funds will be for $31,300. Therefore, a $1,000 discount is all that is required.

5) Professor Uttal recently left IBM. He is a good computer man. He has bought a number of our modules and built ADC's etc. He is sold on the PDP-5 and says there is nothing that can touch it in its price range.

6) Professor Uttal may soon be appointed head of the University's Mental Health Research Labs. (a sizable lab.)

7) Dr. Uttal, Ward Edwards (PDP-1 user) and another group are very interested in our PDP-6 for real time simulation. They are working on a joint venture to purchase a large machine.

THE UNIVERSITY OF MICHIGAN
ANN ARBOR

MENTAL HEALTH RESEARCH INSTITUTE
JAMES G. MILLER, M.D., DIRECTOR

DEPARTMENT OF PSYCHIATRY
RAYMOND W. WAGGONER, M.D., CHAIRMAN

November 26, 1963

Mr. George Rice
Applications Engineer
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Rice

I am writing to ask about what sort of educational discount may be granted on a PDP-5 computer which we at the University of Michigan are considering as a possible automation element in our laboratory.

We have made a proposal to the National Science Foundation for funds for this machine which is to be used for a program of basic research to be supported by other grants from various federal agencies. The program of research planned on this machine will include studies of the psychophysiology of sensation and some computer teaching machine work studying how one would tutor arithmetic to young or retarded children. We have already received tentative approval of the psychophysiological proposal and expect to submit shortly the teaching machine proposal. We do not plan any contract research with industry or the Department of Defense at the present time. The machine will be used primarily by those students and fellows associated with my planned program of research. This will include graduate students and post doctoral fellows primarily but also might include some undergraduate research assistants. Their training and development in the automatic data processing field will be an important part of my teaching responsibilities. I have enclosed an announcement of a course I will be teaching periodically at the University of Michigan as another illustration of that role.

I would very much appreciate some indication from your organization regarding such an academic discount. The importance of such a factor in the final selection of an appropriate system for our laboratory is, of course, considerable.

Sincerely,

W. R. Uttal

W. R. Uttal
Associate Professor of Psychology
Research Psychologist

/WRU/kjm

Enc.

COURSE ASSIGNMENT FOR SPRING 1967

Computer Applications in Psychology

Psychology 72%

INSTRUCTOR: W. Uttal

Telephone: 03-7-37

This course will be concerned with modern developments in non-numerical uses of data processing machines. Particular emphasis will be placed on the real-time laboratory applications of digital computers. The course will not deal with statistical computation nor programming, in general, but rather will be concerned with the problems involved in automating a laboratory. Specific attention will be paid to system requirements, special programming skills, and specific applications in experimental psychology and psychophysiology. The course will also include discussions of those engineering techniques necessary for real-time utilization of computers as well as the mathematical basis of signal detection and analysis.

H Anderson

INTEROFFICE MEMORANDUM

DATE December 23, 1963

SUBJECT December 10, 1963
35th Meeting of the
Test Equipment Committee

TO Richard L. Best

FROM Russell Doane

Members of the Committee:

Robert Hughes, Chairman
Russell Doane, Secretary
George Gerelds
Bill Titelbaum
Dick Tringale
Jim Cudmore
Steve Lambert
Larry White
Ed Harwood
Jack Shields

1. Bill Titelbaum is a new member of the committee replacing Dave Dubay from Test Equipment Service.

2. After some discussion, we decided that current probes capable of Tektronix 580 series oscilloscopes rise times are not required in Field Service.

3. The local Tektronix representative reports that baseline curvature on Tektronix dual beam oscilloscopes cannot be eliminated and said the best he can do is have tubes especially selected to reduce it to a minimum.

4. The high voltage probe originally signed out to John Duffy cannot be found, so we are ordering another (for use with Triplett 630 NA multimeters).

5. The Tektronix type D differential low level plug-in unit has been received.

6. Lavoie type 545 and Hewlett Packard 140A light-weight oscilloscopes will be demonstrated soon.

7. Tektronix makes a logarithmic adaptor for their type 0 operational plug-in unit which we decided to buy for $75. With it we can qualitatively observe remnants of noise after large transients in digital to analog converters, without being blind to the main transient as we are on the new Adage preamp. This will complement the Adage's superior accuracy.

8. The committee discussed at length the problem of providing 50-cycle power for power supply for computer checkout. Jim Cudmore and Jack Shields are a subcommittee to report at the next meeting their proposed solution.

9. We decided to order four Tektronix 581 oscilloscopes with type 82 dual trace plug-in units. Two of these will go to serve three new engineers in circuit design and two will go to Ed Harwood for computer checkout. Any or all of these users may actually use 543 oscilloscopes but the committee feels that the faster 581's are much less likely to be obsolete in a short time than the new 543's would be.

10. The committee noted that circuit engineering is short of engineer's test setups but decided that engineering should order its own test setups and make all necessary arrangements. Several new 10 Mc burst generators with co-axial pulse outputs and fast level outputs from 8104s at 50 ohms are being built.

11. The committee discussed recent difficulties in getting orders placed fast and decided to take steps to speed the ordering process.

12. Tektronix has new current probes for which data sheets are appended to this memo so you can get acquainted with them.

13. At present we have no current probes which will give ringing free operation with our type 580 series Tektronix oscilloscopes. We decided to order two type CT-2 probes which do not clip on but which do provide high fidelity displays.

14. The committee discussed Calibration Standards Corporation's new DC reference voltmeters and the feeling was that very likely we will order one of these instead of a Fluke meter the next time such a need arises.

15. Our special Adage fast-recovery preamp and our type D preamp have arrived.

The next meeting of the test equipment committee will be on Tuesday, January 14, in Bob Hughes' office at 1:30 P.M.

Enc.

CT-2 $17 $12 $37.75 total

50 Ω

Type CT-2 CURRENT TRANSFORMER & P6041 PROBE

TYPICAL APPLICATIONS

CURRENT MONITORING—One, or several Type CT-2 Transformers can monitor critical points in a circuit. One or more P6041 Probes can then be used to feed the resultant voltages to the oscilloscope, or the CT-2 Transformers can be connected to convenient test jacks.

The compact size of the transformers makes them easy to use in crowded circuits, and a number of them can be placed in a small area. They can be mounted in any position, and their insulated cases eliminate the possibility of shorting out adjacent components or wiring.

CIRCUIT DESIGN—As active components in a circuit, the Type CT-2 Transformers provide a convenient means for coupling a signal from one circuit to another. When not in use, they can be left in a circuit without loads connected, since they have internal terminations.

SPECIFICATIONS

Type CT-2 Current Transformer

Sensitivity

1 mv/ma into 50-Ω load.

Pulse Response

Risetime—approximately 0.5 nsec.

Accuracy—better than ±3%.

Decay—the L/R time constant of 125 μsecs is approximated by 0.8 t% for t less than 25 μsec, ie., 1% decay when t is 1.25 μsec.

Aberrations—less than ±2% in 100-Mc system, typically ±20% in 1000-Mc system during first 4 nsec.

Frequency Response

Low end—1.2 kc (30%-down point).

High end—200 Mc (7%-down point, non gaussian above 200 Mc).

Insertion Impedance and Circuit Loading

With 50-Ω termination—0.04 Ω shunted by approximately 5 μh.

Without 50-Ω termination—0.08 Ω shunted by approximately 5 μh.

Capacitance added to a wire passing through the Type CT-2:

#20 bare wire—typically 0.7 pf.

#16 bare wire—typically 2.1 pf.

Maximum Voltage

1000 v dc is the maximum amount that can safely be applied to a bare wire passing through the CT-2.

Maximum Current

RMS current—2.5 amps.

Pulse current—100 amps peak.

Amp-Sec Product—50 amp-μsec, product in excess reduces time constant.

Effect of Direct Current

Applied dc current reduces the L/R time constant. Reduction is by a factor of two at 0.5 amp.

Signal Delay

Approximately 0.3 nsec. $17

Type P6041 Probe

The P6041 Probe is used as an inter-connecting cable for the Type CT-2. The plug-on feature provides a quick means for connecting to the CT-2. While any number of CT-2 Transformers can be used in a circuit, only one P6041 Probe is required to monitor the output of a selected CT-2.

The P6041 can also be used with test-point connectors such as Amphenol series 27 Sub-Minax connectors or Selectro Sub-Miniature RF connectors.

Attenuation—1X.

Pulse Response—Risetime—0.15 nsec.

Impedance—50 Ω.

Signal Delay—Approximately 5.5 nsec.

Output Connector—BNC: must be terminated in 50 ohms when connected to a high input impedance oscilloscope.

Cable Length—42"; where longer cable is needed, 50-Ω cable such as RG8/U or RG58A/U is recommended to preserve the high-frequency response.

Voltage Rating—500 v dc.

Please check with your Tektronix Field Engineer for price and availability.

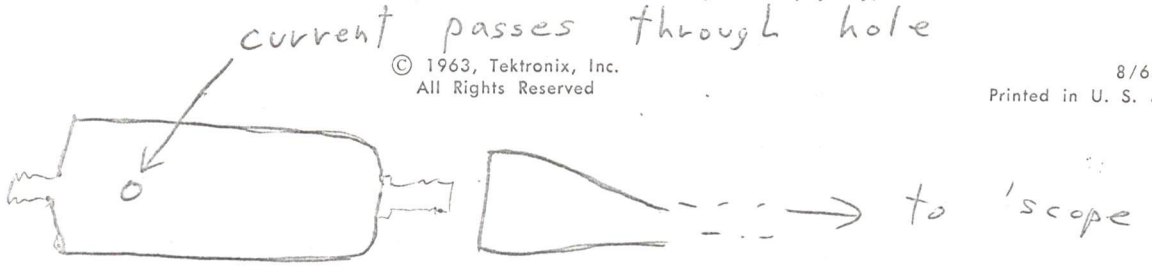
$12 for probe, $8.75 for termination

Tektronix, Inc. / P. O. BOX 500 · BEAVERTON, OREGON 97005 / Phone (Area Code 503) MItchell 4-0161 · Telex: 036-691 · TWX: 503-291-6805 · Cable: TEKTRONIX · OVERSEAS DISTRIBUTORS IN 27 COUNTRIES

Tektronix Field Offices: in principal cities in the United States. Consult Telephone Directory • Tektronix Limited, Guernsey, Channel Islands
Tektronix Canada Ltd.: Montreal, Quebec • Toronto (Willowdale), Ontario • Tektronix Australia Pty. Limited, Sydney, New South Wales

A-2182

8/63
Printed in U. S. A.



INTEROFFICE MEMORANDUM

DATE December 23, 1963

SUBJECT PB440

TO S. Olsen
H. Anderson
N. Mazzarese
G. Bell
D. Mills
R. Beckman

FROM Pat Murphy

Attached is the price list for the PB440 Computer and Peripheral Equipment.

PRICE LIST •

PB440 COMPUTER AND PERIPHERAL EQUIPMENT

MODEL	CATALOG NO.	DESCRIPTION	SALE PRICE	LEASE RATE / MONTH 1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR	3 YEAR RATE
PB440-01		Central Processor including 256 words of logic memory and 4096 of main memory	110,000	3214	3128	3041	2961	2961
PB440-02		Central Processor including 256 words of logic memory, 4096 words of main memory and a Selectric typewriter	115,000	3360	3270	3180	3095	3095
PB440-03		Central Processor including 256 words of logic memory, 4096 words of main memory, Selectric typewriter, 500-character per second paper tape reader, 110-character per second paper tape punch and paper tape spoolers	130,000	3800	3700	3600	3500	3500
CLM-440-01		Logic Memory Module of 256 words	19,400	570	555	540	525	525
CMM-440-01		Main Memory Module of 4096 words	30,000	875	850	830	810	810
CMM-440-03		Main Memory Module of 12288 words	78,000	2278	2223	2161	2098	2098
CMM-440-04		Main Memory Module of 16384 words	102,000	2978	2907	2825	2744	2744
CMM-440-05		Main Memory Module of 20480 words	125,000	3650	3563	3463	3363	3363
CMM-440-06		Main Memory Module of 24576 words	147,000	4292	4190	4072	3954	3954
CMM-440-07		Main Memory Module of 28416 words	168,000	4906	4788	4653	4519	4519
CMT-440-10		Single Magnetic Tape Unit - Does not include the switching electronics to enable use of a second magnetic tape unit. Tape Speed: 45 ips Tape Densities: 200 cpi and 556 cpi Transfer Rates: 9.0 KC at 200 cpi 25.0 KC at 556 cpi	20,000	585	570	555	540	540
CMT-440-11		Magnetic Tape and Control Unit (Master) - Magnetic tape unit includes controller for 3 additional magnetic tape (slave) units. Tape Speed: 45 ips Tape Densities: 200 cpi and 556 cpi Transfer Rates: 9.0 KC at 200 cpi 25.0 KC at 556 cpi	25,000	735	715	695	675	675
CMT-440-12		Magnetic Tape Unit (Slave) - For use with CMT-440-11 Tape Speed: 45 ips Tape Densities: 200 cpi and 556 cpi Transfer Rates: 9.0 KC at 200 cpi 25.0 KC at 556 cpi	9,700	284	276	268	260	260

MODEL	CATALOG NO.	DESCRIPTION	LEASE RATE / MONTH					
			SALE PRICE	1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR	3 YEAR RATE
CMT-440-21		Magnetic Tape and Control Unit (Master) - Magnetic tape unit includes controller for 7 additional magnetic tape units. Tape Speed: 75 ips Tape Densities: 200 cpi and 556 cpi Transfer Rates: 15 KC at 200 cpi 41.7 KC at 556 cpi	39,500	1157	1125	1094	1062	1062
CMT-440-22		Magnetic Tape Unit (Slave) - For use with CMT-440-21 Tape Speed: 75 ips Tape Densities: 200 cpi and 556 cpi Transfer Rates: 15 KC at 200 cpi 41.7 KC at 556 cpi.	21,000	615	598	582	565	565
CMT-440-31		Magnetic Tape Unit and Controller - Magnetic tape unit controller is capable of controlling 3 additional magnetic tape units. Tape Speeds: 112.5 ips or 150 ips (as ordered) Tape Densities: 200 cpi and 556 cpi Transfer Rates: 22.5 KC (112.5 cpi at 200 cpi) 62.5 KC (112.5 ips at 556 cpi) 30.0 KC (150 ips at 200 cpi) 83.4 KC (150 ips at 556 cpi)	49,000	1430	1396	1357	1318	1318
CMT-440-32		Magnetic Tape Unit - For use with CMT-440-31 Tape Speeds: 112.5 ips or 150 ips (as ordered) Tape Densities: 200 cpi and 556 cpi Transfer Rates: 22.5 KC (112.5 ips at 200 cpi) 62.5 KC (112.5 ips at 556 cpi) 30.0 KC (150 ips at 200 cpi) 83.4 KC (150 ips at 556 cpi)	36,000	1051	1026	997	968	968
CRP-440-01		Card Read/Punch Station 800 per minute in; 250 per minute out	30,000	550	550	550	550	550
CCU-440-01		Card Control Unit(For one CRP-440-01	6,900	200	195	190	185	185
CLP-440-01		Line Printer including Controller - 80 column, 1000 L/Min. (64 characters per column)	32,000	938	912	886	860	860
CLP-440-02		Line Printer including Controller - 120 column, 1000 L/Min. (64 characters per column)	50,250	1472	1432	1391	1352	1352
CLP-440-03		Line Printer including Controller - 132 column, 1000 L/ Min. (64 characters per column)	53,625	1571	1528	1485	1442	1442
CHR-440-01		High Speed Paper Tape Reader - 500 characters per second with Spooler	10,000	290	285	280	270	270

MODEL	CATALOG NO.	DESCRIPTION	SALE PRICE	LEASE RATE / MONTH 1ST YEAR	2ND YEAR	3RD YEAR	4TH YEAR	3 YEAR RATE
CHP-440-01		High Speed Paper Tape Punch with Spooler 110 characters per second	5,000	150	145	140	135	135
CTW-440-01		Selectric Typewriter - (8-1/2" Writing Line)	5,000	146	142	139	134	134
CTW-440-02		Selectric Typewriter - (13" Writing Line)	5,200	152	148	144	140	140
CTP-440-01		Tape Preparation Unit	7,500	220	214	208	202	202
CCR-440-01		Tape Preparation Unit Chair	45	-	-	-	-	-
CMI-440-01		Memory Interchange	7,800	228	222	216	210	210
CIA-440-01		Memory Interchange I/O Adapter	13,000	380	370	360	350	350
CCL-440-01		Data and Control Lines	650	19	18.50	18	17.50	17.50

Prices subject to change without notice.

QUANTITY DISCOUNT:

Quantity (PB440 Units)	Discount
1 - 2	No Discount
3 - 5	5% Discount
6 or more	10% Discount

These quantity discounts apply when multiple computers are ordered on a single purchase order.

* Lease rates apply as follows:

1. Customer may lease on minimum one year contract and thereafter on month to month basis at "1st year rate".
2. Customer may lease on a minimum one year contract and renew for an additional one year period 30 days prior to the conclusion of the first year. The "1st year" and "2nd year" rates would then apply respectively to the 1st and 2nd years. This can be renewed again for a 3rd year 30 days prior to the end of the 2nd year to qualify for the "3rd year" rate. Renewal for the 4th year qualifies for the "4th year" rate which will apply thereafter.
3. The customer may initially sign a noncancellable 3 year lease at the "3 year rate" or he may convert to a noncancellable 3 year lease at any time.
4. Regular PBC maintenance service will be included in the lease at no extra cost.

The Card Read/Punch Station will be available on lease from another company. Packard Bell will arrange this lease for the customer.

PURCHASE OPTION:

If the purchase option for an item of equipment is exercised during the first year of the Lease, 70% of the total lease amount paid for rental of that item of equipment may be deducted from the then current sale price of that item.

If the purchase option for an item of equipment is exercised during the second year of the Lease, 50% of the total Lease amount paid for rental of that item of equipment during the first and second years may be deducted from the then current sale price of that item.

If the purchase option for an item of equipment is exercised during the third or succeeding years of the Lease, 40% of the total Lease amount paid for rental of that item of equipment during the first, second, third, and succeeding years may be deducted from the then current sale price of that item.

The maximum amount, computed from the above schedule, that may be applied against the then current sale price for each item of equipment may not exceed 65% of the then current sale price of that item.

pb Packard Bell Computer
A DIVISION OF PACKARD BELL ELECTRONICS

1905 ARMACOST AVENUE
LOS ANGELES 25, CALIFORNIA
GRANITE 8-0051 • TWX WLA 6626 • CABLE: PACKCOMP

Form for recommending Production Capacity.

12/25/63
HEG.

PRODUCTION CAPACITY EVALUATION

Date: _____

	External	Computers	Systems	Other		Total
Average Order Rate:					=	
1. Desired Inventory Level (F.G. & Test) (12 Wks AOR)					=	
Actual Inventory (F.G. & Test)					=	
Inventory Difference						
2. Desired WIP Inventory (2½ AOR)					=	
Actual WIP Inventory					=	
WIP Inventory Difference						
3. Desired Backlog					=	
Actual Backlog					=	
Backlog Difference						
4. Differences Total: (1 & 2 - 3)					=	
5. Target Production Rate (AOR + $\frac{\text{Diff. Total}}{24}$)					=	

REMARKS:

DECISION:

INTEROFFICE MEMORANDUM

DATE December 19, 1963

SUBJECT PERT Lectures

TO K. Olsen
H. Anderson
S. Olsen
R. Best
N. Mazzarese
J. Hastings
E. Harwood

FROM Win Hindle

The IEEE Winter Lecture Series subject is PERT and PERT/COST. There are four sessions on consecutive Thursdays in January - January 9, 16, 23 and 30 - starting at 7:30 P.M. in Knight Auditorium at Babson Institute in Wellesley. Ken suggested we all attend in order to decide how DEC might improve on scheduling engineering projects and computer systems. The company will pay the registration fee for the lectures, plus any transportation expenses for you to get to Wellesley.

I will send in registrations for those attending, so will you let me know by December 27 whether you will attend.

INTEROFFICE MEMORANDUM

SUBJECT: JOB ALLOCATION, MECHANICAL DESIGN DATE: December 18, 1963

TO: All Engineers
K. Olsen
S. Olsen
H. Anderson
N. Mazzarese
M. Sandler
J. Smith
R. Maxcy
R. Maroney
K. Peirce
H. Crouse
B. Brackett
W. Hindle

FROM: Loren Prentice

To better acquaint all engineers and management with job responsibility within the mechanical design department, a memo will be issued periodically as required.

ENGINEER	JOB NUMBER OR EN NUMBER	DESCRIPTION	% COMPLETE
Loren Prentice	1136	555 Tape Unit E.C.O.'s	95%
	1065	Large Display	10%
	1000	Building layout	75%
	1196	Tape transport type 570	95%
	1072	Engineering standards	0.5%
	1237	555-A tape unit Solid State Dev.	20%
	2609	Micro Tape 555	85%
	1252	Security	
	2791	PDP-5	90%
Phil Backholm	1196	M3000 tape transport Prototype type 570	95%
	1185	Automatic silk screen	10%
	1191	PDP-5 Prototype	80%

ENGINEER	JOB NUMBER OR EN NUMBER	DESCRIPTION	% COMPLETE
Ken FitzGerald	1023	Additional assembly jig for 1914 mounting panels	75%
	1000	Paint adhesion on steel components	30%
	1053	Welding jigs for standard computer cabinets	99%
	1253	Sheet metal, cabinet assembly and carpenter shop supervision and administration	--
	1254	Machine shop supervision and administration	--
	1178	PDP-6 console mechanical design and prototype fabrication	95%
	1208	DEC paper tape reader (Stepping motor drive)	30%
	1000	"Plastic" doors and end panel research	0%
	1254	Programming tape controlled milling machine	--
	1097	Automated module production	15%
	2740	Mechanical parts for "Havoc" computer	95%
Scott Miller	1022	Power Supply Design	75%
	1022	Power Supply Labels	50%
	1023	Tiltable mounting panel	85%
	1023	1906 redesign	5%
	1088	Package design - module	75%
	1178	PDP-6 Indicator panel, redo	10%
	1211	Light pen 320	75%
	1236	Display 340 Indicator panel, redo	25%

ENGINEER	JOB NUMBER OR EN NUMBER	DESCRIPTION	% COMPLETE
Ron Cajolet	1178	PDP-6	90%
	1236	Display 340	95%
	1027	Stability test stand	50%
	2667	PDP-1-D	85%
	1180	Camera Mount	5%
	1023	Mounting panel development	--
	1177	PDP-5	--
	1000	Plastic cover panels	--
	1249	2 msec memory	60%

JOBS PENDING - UNASSIGNED		ASSIGNED ELECTRONIC ENG
151	Large Tape Storage - Hold	T. Stockebrand
1165	Projection display	R. Savell
1181	Camera Equipment for 31 Display	R. Savell
1182	Electrostatic display development	R. Savell
1086	Holley printer	R. Savell
1064	Eye-ball unit	R. Savell

dec INTEROFFICE MEMORANDUM

DATE December 18, 1963

SUBJECT TRAINING CLASS FOR WRITERS

TO K. H. Olsen FROM J. L. Atwood

CC H. E. Anderson
S. C. Olsen

We have started the training class for writers which you suggested. At the first session yesterday afternoon, we determined the needs to be met by the course and agreed on the approach we will take. At the next session tomorrow afternoon, we get to work.

Bob Beckman will supervise the course and will lead many of the classroom and laboratory sessions. He will also arrange for other instructors as required by course content or work schedules.

There will be two sessions a week, whenever possible, and the sessions will last about an hour - give or take a half-hour. The course will include both classroom instruction and laboratory assignments.

The scope of the course will be quite wide. It will start with an explanation of basic logic and will cover the design and utilization of each product line. When one or more students have reached the point where it is practical and beneficial to provide more specialized instruction, they will be assigned to some of the other courses presently available, such as Don White's circuit class, Jack Shield's logic class or the computer maintenance and programming classes.

While there is a wide variance in the amount of applicable knowledge which the members of the class already possess, we do not expect this to be a handicap. We will encourage active participation on the part of the students, so that those who are better informed on a given subject can share their knowledge with the others.

The Tech Pubs personnel who have been invited to participate in the class are:

Jack Atwood	Joe Mangle	Alex Stephens	Paul Barber	Trudy Karr
Stu Grover	Bob Buyer	Bob Clark	Don Watson	Bob Graham

Incidentally, we hope that the course will have an important side benefit. We will take careful notes and will tape the sessions with the aim of obtaining sufficient documentation to put together a standard course of instruction for use elsewhere, inside and outside the company.

INTEROFFICE MEMORANDUM

DATE

December 18, 1963

SUBJECT

Teletype Page Printer

TO

K. Olsen
H. Anderson
S. Olsen
N. Mazzarese
A. Kotok
G. Bell
R. Savell
J. Koudela
D. Smith
H. Crouse

FROM

D. Kuyamjian

Teletype Corporation has quoted price and delivery for Page Printers as per attached sheet.

	MODEL 33			MODEL 35			MODEL 32		
	ASR	KSR	RO	ASR	KSR	RO	ASR	KSR	RO
Friction Feed Without Dial	$582.00*	$445.00*	$417.00*	$2223.00*	$1387.00*	NA	$561.00	$427.00	$370.00
Friction Feed With Dial	$746.00	$556.00	NA	$2437.00	$1600.00	NA	$645.00	$448.00	NA
Sproket Feed Without Dial	NA	NA	NA	$2313.00*	$1476.00*	$1277.00*	NA	NA	NA
Sprocket Feed With Dial	NA	NA	NA	$2557.00	$1720.00	NA	NA	NA	NA

Delivery within three months.
*Not available until May, 1964.
NA - Not Available.
All others lead time is three months.

INTEROFFICE MEMORANDUM

DATE December 17, 1963

SUBJECT Overdue Computer Systems and Options.

TO K. Olsen
H. Anderson
S. Olsen
G. O'Dea
W. Hindle
D. Best
D. Mills
M. Sandler
R. Beckman
R. Sevell
B. Stephenson
E. Harwood
J. Shields
J. McKalip
J. Smith
S. Lambert
T. Stockebrand
J. Rutschman
P. Greene

FROM H. Mazzarese

The following is a list of overdue computer systems and options. The engineer responsible for the project's completion is indicated in each case.

Customer	Item	Quantity	EM#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
AEC Princeton University	16K Memory	1	2554	6/30/63	Shipped and being installed.	12/20/63	B. Beckman
AECL	Mul. & Div. 10	1	2610	8/15/63	Installed not accepted. Contingent upon micro-tape.	1/10/64	B. Beckman
AECL	Micro Tape 555	3	2611	8/15/63	Contingent upon EM# 2612. Micro Tape 550.	1/10/64	T. Stockebrand
AECL	Micro Tape 550	1	2612	8/15/63	PDP-1 Programming incomplete.	1/10/64	T. Stockebrand
AECL	16 Channel	1	2613	8/15/63	Installed not accepted. Contingent upon micro-tape.	1/10/64	B. Beckman
AEC Harvard Univ.	16K Memory	1	2655	9/15/63	Engineering difficulties.	1/3/64	J. Shields
BB&N	PDP-1C-45	1	2649	12/1/63	Delivered and being installed.	1/15/64	G. Moore

Customer	Item	Quantity	ESN	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
BB&N	16K Word Core Module Model 2650	1	2650	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	4K Word Expandable Memory Modules	2	2651	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	Memory Controls	3	2652	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	32 Field Drum System	1	2653	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	16 Line Teletype Interface Modules	2	2654	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	16 Channel Sequence Break System Model 120	1	2665	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	Modification to Memory Extension Control	1	2667	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	Special Instructions for Control Processor.	1	2668	12/1/63	Delivered and being installed.	1/15/64	G. Moore

Customer	Item	Quantity	EW#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
BB&N	32 MS & 1 Minute Clock	1	2769	12/10/63	Delivered and being installed.	1/15/64	G. Moore
DEC (Customer Relations)	Data Channel 131	1	2586	7/1/63	Being modified for 570.	1/15/64	J. Shields
DEC (Customer Relations)	Tape Control 510	1	2587	7/1/63	Being modified for 570.	1/15/64	J. Shields
DEC (Sales)	Micro-Tape Control 550	1	2638	9/1/63	Order unknown to Engineer.	Undetermined	T. Stockebrand
DEC (Sales)	Micro-Tape Unit 555	1	2639	9/1/63	Order unknown to Engineer	Undetermined	T. Stockebrand
DEC PDP-4 Prototype	Micro-Tape Control 550	1	2719	10/14/63	Engineering hold while prints are being updated.	1/20/64	T. Stockebrand
DEC PDP-4 Prototype	Micro-Tape Transports 555	3	2720	10/14/63	Complete contingent upon Micro Tape Control 550 EW#2719.	1/20/64	T. Stockebrand

Customer	Item	Quantity	EM#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
DEC (Production)	Micro-Tape Transport 555	1	2755	12/10/63	Complete contingent on Micro-Tape Control 550 EM#2756.	2/1/64	T. Stockebrand
DEC (Production)	Micro-Tape Control 550	1	2756	12/10/63	Design noise problems.	2/1/64	T. Stockebrand
Ft. Meade	Holly Line Printer	1	2498	6/15/63	Original printer did not work.	12/30/63	B. Savell
Ft. Meade	Micro-Tape Control 550	1	2604	8/15/63	Programming incomplete.	1/17/64	T. Stockebrand
Ft. Meade	Micro-Tape Transport 555	1	2609	8/15/63	Completed delivery contingent on Micro-Tape 550 EM#2604.	1/17/64	T. Stockebrand
MIT - Project MAC	Light Pen Type 32	1	2475	11/1/63	Awaiting logic change to allow light pen to work with symbol generator display.	12/30/63	J. Shields

Customer	Item	Quantity	PDP#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
MIT - Project MAC	16K Memory for PDP-1C-40	1	2540	11/1/63	Previous Design Problems.	Late Dec.	J. Shields
MIT - Project MAC	High Speed Channel Control Type 10	1	2727	11/1/63	Delivered contingent on system acceptance.	Late Dec.	J. Shields
MIT - Project MAC	Data Control Type 131	1	2730	11/1/63	Delivered contingent on system acceptance.	Late Dec.	J. Shields
MIT - Project MAC	Micro-Tape Control Type 550	1	2731	11/1/63	Programming incomplete	2/1/64	T. Stockebrand
MIT - Project MAC	Micro-Tape Transport 555	1	2732	11/1/63	Programming incomplete.	2/1/64	T. Stockebrand
MIT - Project MAC	CRT Display Type 30E	1	2774	11/1/63	Delivered Contingent on System Acceptance.	Late Dec.	J. Shields

INTEROFFICE MEMORANDUM

DATE December 17, 1963

SUBJECT DELIVERY OF PDP-5 TO CHECKOUT

TO K. Olsen
H. Anderson
S. Olsen
R. Best
N. Mazzarese

FROM J. Smith

PDP-5-8	12/3/63
PDP-5-9	12/3/63
PDP-5-10	12/5/63
PDP-5-11	12/6/63
PDP-5-12	12/11/63
PDP-5-13	12/17/63
PDP-5-14	12/17/63

INTEROFFICE MEMORANDUM

DATE December 17, 1963

SUBJECT Overdue Computer Systems and Options.

TO K. Olsen
H. Anderson
S. Olsen
G. O'Dea
W. Hindle
D. Best
D. Mills
M. Sandler
R. Beckman
R. Savell
B. Stephenson
E. Harwood
J. Shields
J. McKalip
J. Smith
S. Lambert

T. Stockebrand
J. Rutschman
P. Greene

FROM M. Mazzarese

The following is a list of overdue computer systems and options. The engineer responsible for the project's completion is indicated in each case.

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AECL	Micro Tape 550	1	2612	8/15/63	PDP-1 Programming incomplete.	1/10/64	T. Stockebrand
AECL	16 Channel	1	2613	8/15/63	Installed not accepted. Contingent upon micro-tape.	1/10/64	B. Beckman
AEC Harvard Univ.	16K Memory	1	2655	9/15/63	Engineering difficulties.	1/3/64	J. Shields
BB&N	PDP-1C-45	1	2649	12/1/63	Delivered and being installed.	1/15/64	G. Moore

Customer	Item	Quantity	PO#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
BB&N	16K Word Core Module Model 2650	1	2650	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	4K Word Expandable Memory Modules	2	2651	12/1/63	Delivered and being installed.	1/16/64	G. Moore
BB&N	Memory Controls	3	2652	12/1/63	Delivered and being installed.	1/15/64	G. Moore
BB&N	32 Field Drum System	1	2653	12/1/63	Delivered and being installed.	1/15/64	G. Moore
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BB&N	16 Channel Sequence Break System Model 120	1	2665	12/1/63	Delivered and being installed.	1/15/64	G. Moore
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DEC PDP-4 Prototype	Micro-Tape Control 550	1	2719	10/14/63	Engineering held while prints are being updated.	1/20/64	T. Stockebrand
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Customer	Item	Quantity	EM#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
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DEC (Production)	Micro-Tape Control 550	1	2756	12/10/63	Design noise problems.	2/1/64	T. Stockebrand
Ft. Meade	Holly Line Printer	1	2498	6/15/63	Original printer did not work.	12/30/63	B. Savell
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MIT - Project MAC	Light Pen Type 32	1	2475	11/1/63	Awaiting logic change to allow light pen to work with symbol generator display.	12/30/63	J. Shields

Customer	Item	Quantity	[illegible]	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
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MIT - Project MAC	Micro-Tape Transport 555	1	2732	11/1/63	Programming incomplete.	2/1/64	T. Stockebrand
MIT - Project MAC	CRT Display Type 30E	1	2774	11/1/63	Delivered Contingent on System Acceptance.	Late Dec.	J. Shields

INTEROFFICE MEMORANDUM

DATE December 13, 1963

SUBJECT PDP-5

TO K. Olsen
H. Anderson
S. Olsen
R. Best
N. Mazzarese

FROM J. Smith

Since the decision of a week ago to increase to eight (8) PDP-5s per month, five (5) PDP-5s have been delivered to Test.

Machines	Delivered to Checkout
PDP-5-8	12/3/63
PDP-5-9	12/3/63
PDP-5-10	12/5/63
PDP-5-11	12/6/63
PDP-5-12	12/11/63

These five (5) machines will act as a quick start on our way to eight (8) machines per month.

Interoffice Memorandum

To: H. Morse
L. Hantman
J. Shields
F. MacLean
T. Whalen
Jean Hanson
H. Anderson

PDP-4 Prototype Users

From: Arthur Hall

December 13, 1963

Subject: PDP-4 Prototype Scheduling

Summary:

Do-it-yourself scheduling for current work.

2 hrs. max. time allowed 10:00 a.m. to 7:00 p.m.

8:15 - 12 Monday, 8:15 - 10 Tuesday-Friday for preventative maintenance.

Emergency repair maintenance has top priority.

Routine repair maintenance to be scheduled.

Effective Monday, 12/16/63, persons wishing to schedule computer time during a current week may write in the time on the schedule themselves, call the Service Center (382) and ask the person using the computer to enter the time on the schedule or if there is no one on the computer, call 314 and ask Jean Hanson to enter the time on the schedule. Persons should de-schedule themselves just as soon as they realize that they will not be using the time. Lack of a log entry covering the period scheduled will be considered prima-facie evidence that the time was not used.

The schedule will be hung on a post adjacent to the computer on a clip board. The telephone (382) will be placed on another adjacent post where it can be reached without leaving the console.

Scheduling for time outside the current week (12:01 a.m. Monday - 12:00 Sunday) may be done by calling Jean Hanson (314). Computer time which will be needed

on a regular basis and at a certain time should be scheduled no later than the second week following the current week.

Users may not reserve more than 2 consecutive hours on the computer between the completion of preventative maintenance and 7:00 p.m., Mondays through Fridays. In general no exceptions will be made to this rule. Special emergency cases should be discussed with Arthur Hall. Other hours may be scheduled without restriction. A person requiring time already scheduled should call the person first in line and try to arrange a new schedule. Arthur Hall will arbitrate when agreement cannot be reached.

The hours from 8:15 to 12 a.m. on Monday and from 8:15 to 10 a.m., Tuesdays through Fridays are reserved for preventative maintenance by Field Service until further notice. (If it should be found that all this time is not required, maintenance time will be reduced) Preventative maintenance will be completed by the time specified and persons signed up for time following preventative maintenance will be able to start promptly.

If the central processor, memory, extended arithmetic unit, reader, punch, or teleprinter, tape control, tape units and card reader and control or card punch and control are down, the repair of these units by Field Service will take precedence over all other use of the computer. Field Service will repair these units at their earliest possible opportunity. They will notify Jean Hanson (314) of the amount of time and specific hours required and ask her to notify all users scheduled during that time that they must reschedule. Time pre-empted by Field Service for emergency repair maintenance is lost.

Repair maintenance of less urgency (eg. replacement of units revealed by marginal check to be weak, etc.) should be scheduled in a normal manner. Any number of consecutive hours may be scheduled for this purpose and ample time should be allowed to avoid running into later schedules.

Persons not working for DEC should schedule time through Arthur Hall. Their name, address and telephone number should be entered on the back of the scheduling sheet.

Schedules should be returned to Arthur Hall when the current week is over.

INTEROFFICE MEMORANDUM

DATE 12/13/63

SUBJECT Foxboro PDP-4 Discount Status

TO A. Hall
H. Anderson
S. Olsen
R. Mills
J. Myers

FROM N. Mazzarese

A. History Review

1. On 11/30/62 Foxboro placed an order for the purchase of five PDP-4's. One of these was specified as firm and the other four as optional.

2. On 1/24/63 Foxboro exercised its option with a firm configuration for its second machine.

3. On 11/21/63 Foxboro again exercised its option with a firm configuration for its third machine.

B. Foxboro PDP-4 Status

1. As Foxboro has ordered three machines at a 24% discount, and they only qualify for a 12% discount the difference is now payable to DEC.

2. Should Foxboro place a PDP-4 order before 1/24/64, the following discount table will apply for all machines for which a firm delivery and configuration are specified. (In no case can delivery be requested later than 1/24/65.)

Quantity	Discount
1	12%
2	18%
3 or more	24%

3. Should Foxboro place a PDP-4 order after 1/24/64 and before 11/15/64, the following discount table will apply for all machines for which a firm delivery and configuration are specified. (In no case can delivery be requested later than 11/15/65.)

Quantity	Discount
1	6%
2	12%
3	18%
4 or more	24%

NM/jr

H. Anderson

INTEROFFICE MEMORANDUM

DATE December 12, 1963

SUBJECT Placement of Sales' Computers.

TO All Sales Personnel, Engineering & Administration

FROM Nick J. Mazzarese

We have recently developed a system for keeping track of all DEC Sales' Computers. Before making any commitments for any of the below listed machines, please notify A. L. Fortin who is presently keeping a record of the placement of these machines.

PDP-1C-34
PDP-4-6
PDP-5-3
PDP-5-4
PDP-5-6

N. Anderson

1964 PROPOSED EXHIBITS SCHEDULE

Show	Place	Dates	Booth	Exhibiting
Physics Show	Statler Hilton, N.Y.C.	Jan. 22-25	10'	PDP-5 PHA
ARD Annual Meeting	Boston	March	20'	
IEEE	Coliseum, N.Y.C.	March 23-26	20'	PDP-5 Modules
Conference on Non-Linear Magnetics	Shoreham Hotel Washington, D.C.	April 6-8	no exhibit-hotel suite	
Fed. of American Societies for Experimental Biology	Conrad Hilton Chicago	April 13-17	20'	
SJCC	Sheraton-Park Hotel Washington, D.C.	April 21-23	40'	PDP-6
Hanover Fair	Hanover, W. Germany	April 26-May 5		
Canadian Assoc. of Physics	Dalhousie University Halifax, Nova Scotia	June		PDP-5 PHA
Joint Automatic Control Conf.	Stanford University	June 24-26	no exhibit-possibly a demonstration at Palo Alto	
WESCON	Los Angeles	Aug. 25-28	20'	Modules
ACM	Philadelphia	Aug. 25-28	20'	

1964 PROPOSED EXHIBITS SCHEDULE

Show	Place	Dates	Booth	Exhibiting
Canadian Symposium on Communications	Queen Elizabeth Hotel Montreal	Sept. 25-26		
ISA	Coliseum, N.Y.C.	Oct. 12-15	20'	
NEC	McCormick Place Chicago	Oct. 19-21	20'	
FJCC	Brooks Hall San Francisco	Oct. 27-29	40'	
NEREM	Commonwealth Armory Boston	Nov. 4-6	20'	
Conf. on Magnetism & Magnetic Materials	Minneapolis	Nov. 16-19	10'	
American Institute of Chemical Engineers Annual Meeting	Statler, Boston	Dec. 6-10		

-TENTATIVE-

Design Engineering Show	McCormick Place Chicago	May 11-14		
Conf. on Engineering in Medicine and Biology	Sheraton-Cleveland Cleveland, Ohio	Nov. 16-18		

dec INTEROFFICE MEMORANDUM

DATE 12/9/63

SUBJECT

TO T. Johnson

FROM N. Mazzarese

cc: H. Anderson
G. Bell

John Gilmore of Adams Associates called and requested a quote for the 38×10^6 bit drum on a PDP-4.

1. Will we quote it?

2. Specifications--Price?

NM/jr

INTEROFFICE MEMORANDUM

DATE December 9, 1963

SUBJECT COMPETITIVE PRODUCT SURVEY

TO Lists A, B, C and D

FROM Jack Atwood

We have begun a continuing survey ot the competitive standing of our various product lines in cooperation with the Sales Department and other interested parties. Information will be collected from all available sources, digested and packaged for dissemination in whatever form seems most appropriate to the particular products.

The objectives and benefits of this undertaking are obvious. For example, it will help us to:

1. Establish the parameters of our promotional efforts on each product line.

2. Forecast more accurately our requirements for technical and promotional information projects.

3. Produce promotional material which capitalizes on the advantages of our products over competitive equipment.

4. Provide for members of the sales force more adequate product information, both on our own equipment and on competitive products.

5. Reappraise on a regular basis the design features of our products, particularly as they affect our ability to hold our own in the market place.

What other use we make of the survey will depend on the completeness and accuracy of the data collected. If the project works out the way we hope it will, it could become an important factor in the formulation and implementation of our engineering, manufacturing and marketing plans.

Attached to this memorandum are a draft version of the survey data collection form and a first, fast pass at a survey report.* The amount of information in the report falls far short of the amount called for on the form, since the report was compiled on a day's notice from a few readily available sources to meet a particular deadline requirement. It is being distributed now only to elicit comments and suggestions.

A revised and expanded report must be completed before the end of the month. We would like you to note in your copy of the initial report any additional information you consider appropriate, any specific items you want to see covered in future reports and any indication of your reaction to the project itself. We would also appreciate having your evaluation of the suggested product data form.

Please return your marked-up copy of the report no later than Monday, December 16. The schedule allows us only five work days to assemble and publish the next report, so we will not be able to consider data or comments received after the deadline.

*We have tried not to duplicate the report distribution made at the sales meeting. If you have not received a report or if you have received two, please let me know.

PRODUCT		TYPE NO.
AVAILABLE (DATE)	CATALOG ITEM YES ☐ NO ☐	UNIT PRICE
UNIT SALES FORECAST	PROJECT ENGINEER	SALES ENGINEER

MANAGEMENT OBJECTIVES

GEOGRAPHICAL MARKETS

PROSPECT ORGANIZATIONS

SPECIFIERS & AUTHORIZERS

PURPOSE OF PRODUCT

PRODUCT SUPERSEDES

PRODUCT USED WITH

DESIGN FEATURES

CONSTRUCTION FEATURES

PERFORMANCE FEATURES

COMPETITIVE
PRODUCTS

COMPETITIVE
ADVANTAGES

TYPICAL
CUSTOMERS

SALES LITERATURE		PRODUCED				REQUIRED		
		BULLETIN NO.	QUANTITY	DATE		BULLETIN NO.	QUANTITY	DATE
REPLACEMENT SCHEMATIC								
ENGINEERING BULLETIN								
PRODUCT BULLETIN								
CATALOG INSERT								
CATALOG PAGE								
CATALOG PAGE CHANGE								
CIRCUIT DESCRIPTION								
MANUAL								
APPLICATION NOTE								
OTHER:								

COMPILED BY	DATE	REVISED BY	DATE

A. Anderson

CONFIDENTIAL

SUMMARY OF SALES PROSPECTS FOLLOWING NOV. 11 - DEC. 9, 1963

VISIT TO EUROPE

J. LENG

This is a resumé of sales reports which I have prepared, but does not cover all the activity during that period. No doubt John Fadiman and Ted Johnson will have both additions, and subtractions!

FRANCE

After a slow start we attracted a considerable number of interested people to our MESCORA stand. This was partly due to an increased number of people attending the show in the latter half but a fair number came as the result of the word of our existance getting around. Existing customers (College de France) were encouraged by our attendance but stressed the need for a Paris office to relieve them of as many red tape problems as possible. Existing prospective customers, apparently, were also encouraged by our attendance.

The only side trip I made in France was to Saclay, the center for nuclear studies near Paris. John Fadiman and I spoke to a group of about 20 physicists there, on the use of on-line computers for experimental physics. This aroused a reasonable amount of interest and three or four of the people, from the group, turned up at the stand later, plus one or two others from Saclay. Also a large number of people from Saclay were at the subsequent Nuclear Electronics Conference and heard about the use of our computers in several physics applications.

The big problem with france is that it is clogged with red tape, taxes and political patronage. There are undoubtedly, what are considered honourable ways around many of these problems, but a DEC office there is essential if we are to crack what could be a reasonable market.

Potential sales in the next 12 months:

Saclay - two PDP-5's
Others - two PDP-5's plus modules

Approximate total $150,000

GERMANY

I made day trips to the Max Planck Institute at Heidelberg and to the Kernreaktor station at Karlsruhe.

The group at Heidelberg were concerned with experimental nuclear physics and is one of several such Max Planck institutes across the country. If we get one machine in there, then it will lead to at least one more. The PDP-5 Pulse Height Analyzer is now located there for a demonstration.

Karlsruhe is the equivalent of one of the national labs in the U.S. and in the long run could be a good customer. They employ several thousand people and are growing. They are also a group to which other centres, large and small, look to for guidance. A system is being proposed for the cyclotron group.

In both of these visits I was impressed by the sincere friendliness of the people and their outward looking viewpoints. They are concerned with getting the best equipment possible provided the price is not out of their reach.

Potential sales in the next 12 months:

Heidelberg - one PDP-5, one PDP-1
Karlsruhe - Display equipment, one PDP-4

Approximate total $240,000

SWITZERLAND

Again, the attitude here was similar to Germany. They are, of course, already customers and the demonstration of the PDP-5 there encouraged them and I think stimulated a great deal of interest in possible applications. People, such as Pizer the electronics head, were very happy to see us and sat down and played with the computer. The talk I gave was also reasonably well received and I think the visit in total increased our chances from around 5% to even on our present PDP-4 quote.

(Incidentally they intend to buy a CDC 6600.)

Potential sales in the next 12 months:

Cern - one PDP-5, one PDP-4, plus modules

Approximate total $120,000

ENGLAND

This was by far the most stimulating (from a sales point of view) part of the trip. Everyone was happy to hear about us and treated us in a manner "salesmen" hardly expect and deserve.

There is no doubt that potential sales here are as large, if not larger, than any other country in Europe. However, the competition here could be really tough. Britain has the most highly developed computer industry in Europe and come reasonably close to matching us machine for machine.

I spent several days at the Harwell & Rutherford labs with Ted, Gunther and Gordon. We demonstrated the PDP-5 and took part in a small conference which was organized to coincide with our visit.

I lead off with a talk on the Chalk River system and our experience there; Gordon followed up with a resume of our computers, and this was followed by a very good discussion. We got involved in proposing a system for the Linear accelerator and we are making a further such proposal for the tandem Van de Graaff. University people were also there and a system is being proposed for Oxford.

A magnetic tape system has also been proposed for attachment to the Rutherford ORION computer.

I visited two industrial concerns, Elliott & Solartron, the former being a module customer of ours and a computer manufacturer of some note. They both are potential PDP-5 customers.

In addition, ICI will likely be asking us to quote on a PDP-4.

Liverpool University are quite excited about our PDP-6, it is being compared to an Elliott 503, an IBM 4070! and possibly a Ferranti machine. We are also proposing a smaller system for their tandem Van de Graaff.

The National Physical lab expressed interest in our products.

Potential sales in the next 12 months:

Harwell & Rutherford	- two PDP-5's, two PDP-4's tape system, and modules
Oxford	- one PDP-5
Liverpool	- one PDP-4, one PDP-6
Industry (ICI, Elliott and Solartron)	- one PDP-4, one PDP-5 and modules
N.P.L.	- Display equipment

Approximate total $750,000

Conclusion

The above potential sales total $1,260,000 and represents what with a concentrated effort, we could quote on at all of the places mentioned. However, how much of this business we acquire depends on the number of staff in Europe able to closely follow these leads up, and whether we establish subsidiaries in each of the countries concerned. I have virtually promised our potential customers an office in the U.K., from which they will be able to get service and engineering assistance. It boils down to the fact that people won't buy computers there unless they have such service.

The potential sales figures for France don't sound too exciting but with a subsidiary established there, staffed by French speaking people, there is no doubt in my mind that this figure could be much higher. It would also serve as a good base from which to sell into Belgium, Luxembourg, Spain, Portugal and Italy. The German office could then be a centre for Holland, Denmark, Switzerland and Austria and a British office could handle Ireland, Iceland, Norway, Sweden and Finland.

These groupings, agreed, cut across recently formed economic lines but I've a feeling that language and other forces are still quite prevalent in Europe.

DIGITAL EQUIPMENT CORPORATION
INTEROFFICE MEMORANDUM

DATE December 6, 1963

SUBJECT 16K MEMORY CONSTRUCTION

TO K. Olsen
H. Anderson
S. Olsen
R. Best
N. Mazzarese
R. Beckman
J. Shields
J. McKalip

FROM J. Smith

CUSTOMER	WIRING	STOCK	MODULES MISSING	OFF-LINE TESTS	INSTALLATION	ACCEPTANCE
Princeton	OK	OK	OK	12/9/63	12/16/63	12/23/63
M.I.T.	OK	OK	64 - 1020 20 - 1987 1 - 4527	12/10/63	12/16/63	12/23/63
B.B.N.	OK	OK	16 - 1020 8 - 1987 1 - 1991 3 - 1993 1 - 4527 13 - 4552	12/12/63	12/13/63	1/3/64
Harvard	OK	OK	64 - 1020 20 - 1987 2 - 1991 3 - 1992 1 - 4527 18 - 4552	12/17/63	12/23/63	12/27/63
A.E.C.L.	OK	OK	32 - 1020 12 - 1987 2 - 1991 3 - 1992 3 - 1994 1 - 4527 18 - 4552	12/20/63	1/20/63	2/7/64
Stanford	OK	OK		12/26/63	2/15/64	2/21/64

digital MEMO

DATE December 6, 1963

TO K. H. Olsen
H. E. Anderson
N. J. Mazzarese
S. C. Olsen

FROM J. Smith

PDP-5-11 was delivered to Checkout today with a full complement of modules. This is the fourth of five machines to be delivered by Monday, December 9, 1963.

digital MEMO

DATE December 5, 1963

TO K. H. Olsen
H. E. Anderson
N. J. Mazzarese
S. C. Olsen

FROM J. Smith

PDP-5-10 was delivered to Checkout today with a full complement of modules.

This is the third machine of five to be delivered by Monday, December 9, 1963.

INTEROFFICE MEMORANDUM

DATE December 5, 1963

SUBJECT Review of CRT Product Line Performance, 1961 - 1963

TO Works Committee

FROM Bob Savell

General History

We got into the display business primarily because of the backgrounds of Ben Gurley and some of the other original people here at DEC who had display experience at Lincoln Laboratory, and because of a belief that a display was a basic tool necessary in man-machine communication in which these people were interested.

Past Performance

Attached, you will find a detailed product line Profit and Loss Statement by individual type of CRT's down to the net profit after taxes for the period 1961 through October 1963. This report covers every CRT that has been shipped since the first prototype to the present.

Looking at the Profit and Loss Statement attached is only one measure of whether or not we should have entered the display business. The other measure is the ratio of displays to computers, PDP-1 and PDP-4, presently in the field. Out of a total of approximately 50 PDP-1's and PDP-4's which have been produced, there are approximately 35 displays installed. I think that this indicates unquestionably that offering displays for sale was a worthwhile venture. In fact, a few of the computer sales have been a direct result of interest in the display equipment.

Present Competition

Since we have been in the business of supplying displays primarily as output devices for our computers rather than selling displays to the open market as a separate product item, we have not felt a great deal of competition from other display manufacturers. The only ones that come to mind are Data Display, Inc., in the case of Stanford University, and Burroughs Michigan Laboratories, again in the case of Stanford University and the University of Michigan. University of Michigan has since decided to purchase one of ours, Stanford is still undecided whose to purchase, but probably will not purchase ours as they need a faster character rate than we can supply.

Both of these competitors offer products that are in the same general price range as our equipment. DDI's equipment has been primarily oriented toward character display at a rapid rate of speed. They use electrostatic deflection which enables them to achieve a higher speed than our system of magnetic deflection. However, the quality of their display is not as good as ours.

Data Display recently produced a model DD80 which was their first attempt to build a high resolution display. This has been installed at Lawrence Radiation Laboratory

and sells for approximately $120,000. It uses an electrostatic tube and so again is faster than our Type 31, but with quite a bit less resolution. It's designed primarily for film recording and not for film reading. In film reading, we would have the edge as far as resolution and stability are concerned.

Only two other computer manufacturers, to the best of my knowledge, presently offer displays as part of their computer option line. They are Control Data Corporation and IBM. Control Data Corporation uses Data Display, Inc. displays. IBM has been using an old clunker that they built ten years ago, but has recently announced a new data display sub-system, DDS. I do not have any price information on this display as yet. Control Data Corporation recently acquired the Digigraphic Laboratories from Itek Corporation. They, therefore, now have possession of our Type 30B Display and may decide to copy all or part of it. They are not serious competition at present, but I believe that within a year to two years they could be quite serious competition for us.

Current Development

The number one project at present is the Type 340 Display. This is a display that uses the same Cathode Ray Tube as was used in the Type 30's and is designed as a visual display as the Type 30 was, but with advanced logic capabilities which enable us to achieve a speed when drawing line segments almost equivalent to that achieved by electrostatic displays, but with all the high quality inherent in magnetically deflected display systems. I believe that in random point plotting, vector plotting and line drawing in the increment mode, we can quite successfully meet any competition with this display. The area in which it is weak is in the pseed of character plotting, which probably at best will be 25 microseconds per character and could possibly, depending upon the generating scheme used, get up into the 50 to 60 microsecond per character region. This speed compares quite unfavorably with the electrostatic systems as they are capable of approximately 5 - 10 microseconds per character. For this reason, I believe that our generator must have some unique feature to offer which offsets the disadvantage existing in the speed of character plotting. We hope that the Type 340 will replace the present Type 30 as the best selling display.

The only development under way on Type 30 Displays at present consists of a mechanical device to allow us to measure stability, development of a mounting assembly to hold a camera for both the Type 30 and Type 340, general supervisory work on the product line and trouble shooting on occasional engineering bugs. The attached development cost figures, though, are quite horrifying to me, as they indicate a current rate for '63, '64 of approximately $2,500 per month going into what I think is Type 30 development. It is not obvious from a cursory examination of the figures that this is true, but indicates that a further investigation is necessary to determine whether this is really the case. If so, steps must be taken to cut this figure down to almost zero.

The only development work being done on Type 31 Display at present, consists of attempting to improve the speed of the 1708 CRT Protection Module and completing alignment of the CRT 31 which we have installed in the Computer Room for our own use. No further development will be done on the Type 31 Display unless a customer order is received which warrants the expenditure of more money.

The only work currently being done on color display is the alignment of the display presently installed in the Computer Room for our own use.

Sales Picture

We, at present, have no sales in prospect for the color display.

We also, at present, have no serious prospects for a Type 31 sale, although we have had interest expressed in the 31 by a number of people. I intend to contact all those who have expressed interest to find out for what reason they decided not to purchase a Type 31.

Sales of Display Type 30 continue at a rate of approximately two per month and, so far, show no definite signs of slackening due to the introduction of the Type 340.

We, at present, have orders coming through for a Display 340 for Bell Laboratories, one which looks 90% solid for NSA, another which looks quite solid for MIT. We also have a Type 340 order which is about 80% certain from University of Michigan. There was a tremendous amount of interest expressed in the 340 at the Western Joint Computer Conference at Las Vegas, however it is too early to tell whether this interest is truly serious and will result in sales.

Type 34 Displays which have not been mentioned heretofore looked as if they will enjoy a large number of sales on the PDP-5, especially for pulse height analyzer work.

Literature which was put off because of pressing requirements for the WJCC on our display adapter for attaching Type 30 Displays to CDC 160A computers is now being processed. Mailing will be made to our entire mailing list. We no longer have any serious immediate prospects on tap for this unit, however, so we are eagerly awaiting the results of the mailing.

We are installing a Type 30 Display on a 7090 computer at MIT next week. Literature will also be mailed out describing this display adapter upon successful completion of the installation. This was designed before IBM announced their new display system, as a result, the new system may effect sales of this product.

Both of the above display adapters are being looked at to determine whether they can easily be used with our new Type 340 Display.

Future Products

At present, except for development projects previously mentioned, we have no future work specifically scheduled. There are a number of items that we have discussed for some time, such as systems for film reading, line and curved generators for computer aided design and projection displays for computer aided design, but no decisions have been made as to how to proceed on any of these.

In conclusion, I would like to point out that this paper has been prepared on extremely short notice and presents only the barest description of each subject.

INTEROFFICE MEMORANDUM

DATE 4 December 1963

SUBJECT PDP-1 Course Convening 2 December 1963

TO K. Olsen
H. Anderson
S. Olsen
N. Mazzarese
R. Beckman
R. Wilson
All Sales Personnel
District Offices

FROM R. Bernier

The following individuals are scheduled to attend a two week PDP-1 Maintenance Course convening 2 December 1963:

NAME	COMPANY
B. Clark	Digital Equip. Corp.
J. Richardson	Digital Equip. Corp.
A. Roberts	Digital Equip. Corp.
H. Schneider	Atomic Energy of Canada

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DEC INTEROFFICE MEMORANDUM

DATE December 3, 1963

SUBJECT Europe trip November 10 - 21, 1963

TO Ken Olsen
Harlan Anderson
Stan Olsen

FROM Jon Fadiman

On Monday, November 11, I visited the Philips plant in Eindhoven, Netherlands. I spent the time with Mr. Béla Csonth who is at present in charge of memory test equipment at Philips. Our system is working well except that the 5Ω General Radio potentiometers need to be replaced by 5Ω Claristat potentiometers. In addition, the switches on the units and tenths position of the level discriminators are weak. In general however, they have had very little maintenance on this machine. Mr. Csonth has since designed a memory tester of his own, which he calls the Philidec, of which he is installing the first at the Philips plant in Evreux near Paris. He is also suggesting that he would like to install a similar machine at the Philips plant in England which is Mullard. This is an almost direct copy of our machine except that he has designed new circuits, uses silicon control rectifier switches for the X and Y axes and reed relays for the Z axis and sense switches. All of the ideas of the memory tester are taken from our 1516. I saw the prototype machine in operation and it does look very good. Mr. Csonth seems to have done an excellent job. Philips is going to go into the computer business and make small computers in the future, which might be competition for our PDP-5 and PDP-4. However, Mr. Csonth does not seem to think that Philips will do very well since they are such a slow moving conservative outfit, and that by the time they bring out a computer it will be very outdated.

I spent all of Sunday evening with Béla Csonth at his home. He is definitely interested in coming to work for us as the Manager of a European office. I think that he is an excellent man and that we should consider hiring him. Both Win Hindle and I have his resumé on file. His background is in Mechanical Engineering and the Machine Tool Industry in Hungary. Since then he has worked as an Electrical Engineer at Philips, designing first variacs and then responsible for memory test equipment. He has done a considerable amount of circuit design and systems design. He is an extremely adaptable person, learns fast, and speaks French, English and German fluently as well as Dutch, Hungarian and some Italian. Ted Johnson will be seeing him again in the near future.

I do not think that there is much chance of selling very much additional equipment to Philips, in as much as they seem to wish to make everything themselves. Of course it is Béla Csonth who has done all the making, and therefore hiring him might change the situation slightly.

The rest of my visit was spent in Paris. On November 14, Guenter Huewe and I visited M. Llop at the Societié d'Optique et Mechanique, 125 Boulevard Davout, Paris 20, France. These people have the job of making an entire SMP (Scanning Measuring Projector) for CERN and other customers. They are mechanical people and are doing the mechanical job of the actual measuring table and optics. Since they have the entire systems responsibility they must purchase the rest of the system, i.e., the electronics from someone else. CERN has suggested us as the logical supplier for the electronics. This job has already been done by Lawrence Radiation Laboratory at the University of California and I have all of the block schematics of the LRL system here in my office. Guenter and I decided to make a bid on the entire system which we submitted on November 15. The price for the first system is $23,000. not including some additional power supplies which we would have to buy and add on. The company asked for a bid of up to twenty systems. Most of the system consists of reversable counters and other logic which we can very easily realize with our system plug-in units. They would want the first of these systems delivered by about the end of May, 1964. I think the chances of our getting at least one of these systems is very good, probably about 80%.

I spent a considerable amount of time at Cofelec installing the Memory Tester 1516. I worked mostly with M. Eusbio who works for M. Dufour. The Memory Tester was installed without any difficulty whatsoever and everything worked perfectly. Cofelec was extremely well impressed with this machine. Indeed, I talked with them about buying a Semi-Automatic Core Tester, Model 2108 and they asked me to write a quotation immediately. I did so and the next day they gave us a purchase order for this machine. No one in this company speaks any English so it is a bit difficult for Guenter to work there. However he did spend some time there doing some very thorough checkout work of the Memory Tester to make sure that everything was operating properly. M. Eusbio seems to understand the operation of the machine very well.

On Tuesday, November 19, John Leng and I visited Saclay which is outside Paris. This is the Atomic Energy Commission of France. We were supposed to have an appointment with Dr. Y. Amram. However, he was sick that day so we spoke with M. Mugel. He explained to us how the Pulse Height Analyzers at Saclay work and we explained to him how the PDP-5 worked as a Pulse Height Analyzer. He was considerably impressed. He spoke no English so I had to translate everything between John Leng and him, which made things a bit difficult. John Leng and I then gave a talk to about 20 physicists on the general structure of the PDP-5 Computer, the PDP-5 used as a Pulse Height Analyzer, and some major details on the PDP-1 and PDP-4 Computers. The talk was very well received. There were a lot of very intelligent questions, which showed that the physicists did understand the use of the PDP-5 as a Pulse Height Analyzer and appreciated it. The talk was given completely in French and no one understood any English. After the talk, many of the physicists came to our booth at the Mesucora show to see the equipment in use. Many other people at Saclay had already heard about it and came to the booth; thus I felt that this was an extremely valuable visit.

The first few days of the Mesucora show were very slow but after that, the booth was crowded most of the time. There was very great interest from Saclay who would probably be our best customer in France, other customers associated with Saclay such as College de France, and Ecole Polytechique. People from the Electricité de France and Gaz de France were also very interested in the PDP-5 as a control system. I feel that the French market is expanding rapidly and we should definitely take advantage of it at this time.

At the show I spent a considerable amount of time with M. P. Lantieri from Le Materiel Electrique, S.W. This company was introduced to me by Mr. Arnaud de Vitry and he was with me at some of the conversations. Actually they are a group who are interested in doing process control work with full system responsibility. They have their own computer, the PSP77, which they are developing for a price somewhere between $20,000. and $40,000. This would compete with either our PDP-5 or PDP-4. So far, although they say they have sold some, there are none in operation, and the computer on display at the show was not operating. This company says they are interested in working with us to represent us but what they really want is for us to license them to build our computer. This would not be very attractive for us. I suggested that we could sell computers to them which they could use in their control system. However, this did not interest M. Lantieri very much. I feel that they are primarily a competitor and not a customer. There address is 36 Quai National, Puteaux (Seine) France. Telephone number LON2235.

I also visited Jean Lebel at the Centre Lebel d'Études Scientifiques (CLES). He has already bought some of our system plug-in units and is about to purchase a considerable amount more of our A-D equipment and possibly sample and hold circuitry. He is using this in systems which he is designing for seismographic work. M. Lebel has indicated that he would try to be of help to us if we wish to establish a Paris office. He feels very strongly that we should establish a Paris office as soon as possible to take advantage of the French market. It is essential to have a European in Paris who speaks French. It is not possible to do business in France in either English or German. Possibly Jean Lebel himself would be interested in working for us but if so, he did not give any hint to me of this. He would of course be an excellent man. At least he will help us to find an office in Paris. His Engineer, M. Gouyet will visit DEC on December 17 to talk with myself, Barbera Stephenson, Dick Best and others concerning the use of DEC equipment in his work.

Ted Johnson has been doing a fine job in Europe and has made many important contacts with customers in France, England, Germany and Sweden. Guenter Huewe is becoming more sales oriented, has learned a little French so that he is at least able to understand without translation, and is in general a bit more adapted to the ways of a sales office than he was in the beginning. He will never of course be a really first rate salesman and I don't think we should expect him to be. However, he is a top technical man and systems designer and extremely thorough. Although he and Ted Johnson sometimes clash, the net result is beginning to show results in Europe.

My feelings on the French market in general are as follows: It is certainly more difficult to do business in France than in either England, Germany or Holland. This is due mostly to the greater amount of paper work involved and the red tape in importing the equipment into France. The French custom officials are notoriously slow (for example it took sixteen days to get the Memory Tester through customs in France while it took one day to do the same job in Germany). French engineers in general speak only French which makes it very difficult for Ted Johnson or Guenter Huewe to do a large amount of business in France. However, the business is certainly there. Saclay has money to spend and is willing to spend it for foreign equipment. Utility companies are interested in automation in a big way and are certainly in the market for control computers. There is much system design work to be done. In order to do this business we must open a French office with a French speaking person in charge somewhere in Paris. I spent some time with M. de Vitry discussing this subject, and he is also of the opinion that we must do this now.

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digital MEMO

DATE December 3, 1963

TO K. H. Olsen
H. E. Anderson
S. C. Olsen
N. J. Mazzarese

FROM J. Smith

PDP-5-8 and PDP-5-9 were delivered to Checkout today complete with modules. PDP-5-10, PDP-5-11 and PDP-5-12 will be delivered by Monday, December 9th.

dec INTEROFFICE MEMORANDUM

DATE December 3, 1963

SUBJECT 1964 EXHIBITS SCHEDULE

TO Ken Olsen
H. Anderson
Stan Olsen
Nick Mazzarese
Jack Atwood

FROM H. O. Painter

There will be a meeting at 2 P.M. on Friday, December 6, to discuss the 1964 Exhibits Schedule.

The meeting will be held in Stan's office.

INTEROFFICE MEMORANDUM

DATE December 3, 1963

SUBJECT

TO
N. Mazzarese
R. Beckman
J. Shields
J. Smith
R. Grey
J. Sullivan
H. Godfrey
B. Dill
E. DeCastro

FROM Robert E. Savell

cc: K. Olsen
H. Anderson
R. L. Best

On October 23, 1963 you were all sent a memo requesting trouble reports on every trouble occurring on all pieces of peripheral equipment whether in-house or in the field. A copy of this memo is attached.

Since that date, I have received no trouble reports concerning the Teletype 33. Prior to that date, I had received two trouble reports; one dated September 6th, the other dated September 18th. The only assumption that I can make, therefore, is that the Teletype 33's are working perfectly, never break down, and require absolutely no maintenance of any kind. What a wonderful piece of equipment!

Now, we all know that filling out trouble reports is no guarantee that all the problems we are having will be solved, but not filling out the reports is a guarantee that:

1. If the problems are solved it will probably take longer to solve them.

2. It may result in us sticking with the Teletype 33's as a device much longer than we should, simply due to the lack of information about the problems.

3. I will not be responsible for any Teletype 33's except those used on the PDP-6 if I don't receive information.

Bud Dill is having forms printed for in-house use, but use Field Service forms in the meantime.

RES/lal

File

INTEROFFICE MEMORANDUM

DATE October 23, 1963

SUBJECT

TO K. Olsen, H. Anderson, R. L. Best, G. Bell, N. Mazzarese, A. Kotok, S. Olsen, H. Morse, J. Jones, R. Beckman, J. Shields, E. DeCastro

FROM Bob Savell

Nick Mazzarese expressed concern the other day about the problems that have been arising with Model 33 Teletypewriters on the PDP-5 since he estimates that we will have a dozen PDP-5's in the field by the end of this year and will produce approximately 100 next year. This memo contains my opinion of what we should do about the problem, and will do unless anyone has objections or better ideas.

1. I feel that Teletype will solve the problems that exist, but it may take six months to a year until things really settle down. This feeling is based on our experiences with the Model 28 and the BRPE-11 punch.

2. I may be wrong, however, so I feel it is necessary to keep extremely good track of all troubles that occur and to communicate with Teletype every two weeks to make sure they are aware of the problems and also to make sure that the problem occurrence rate decreases with time. If the problems do not abate we must select another device.

3. Two new Model 33 ASR's will be put on a life test that will check their readers, punches, and printers as soon as we can get our hands on the units.

4. Model 35's will also be tested both on and off line as soon as they are received.

I do not believe the company should commit itself to the use of the Model 33 in any other applications than console use on PDP-5 and PDP-6 at present.

INTEROFFICE MEMORANDUM

DATE December 2, 1963

SUBJECT PROGRESS OF COLUMBIA PDP-4

TO K. Olsen
H. Anderson
S. Olsen
N. Mazzarese
A. Ross

FROM J. Smith

Central Processor was delivered to Checkout 10/25/63, (minus new model 8K memory).

8K memory installed complete with modules Tuesday, 11/26/63.

Options:

Extended Arithmetic Element	-	installed 11/20/63, complete
Data Interrupt Multiplexer	-	installed 11/26/63, complete
57A machine plugs	-	installed 11/27/63

57A-520 are currently being modified. All modifications will be completed by the end of today. A full set of modules are available and off-line checkout will commence tomorrow morning. Tie-on to the machine should take place 12/9/63.

File

INTEROFFICE MEMORANDUM

DATE November 28, 1963.

SUBJECT

TO Harlan Anderson FROM D. J. Doyle

I tried to contact you on my way out of the building the other day but you and Ken were both out. I also missed Jack Smith but did talk to Maynard Sandler, Dick Mills and Ed Simeone on various aspects of PDP-5 assembly.

My comments are as follows:

1. From the PDP-5 cost figures which I have seen, it appears that PDP-5 assembly must be accompanied by a small module assembly as well in order to get a Canadian content of 50%. The list price on the modules is approximately $14,000 so in order to allow us to import some of the other key components such as memory stacks, you would have to sell us those modules for about $8,000.

2. Fortunately, I think we can concentrate on a narrow line (about 10 different modules) in the 4000 series. This group will include many of our best sellers in Canada and the production of these is justified anyway.

3. I am now personally convinced of the need to manufacture in Canada - I think it is the only way of breaking into the non-government market.

4. I expect a lot of information from Jack Smith on manufacturing details and from Dick Mills on costing. John will then be able to:

   a) Decide on the module line to be manufactured
   b) Break down the PDP-5 into imported and Canadian built parts
   c) Negotiate with Canadian customs on tariff rulings
   d) Negotiate with Canadian suppliers.

The above information is vital to us immediately.

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INTEROFFICE MEMORANDUM

DATE November 28, 1963.

SUBJECT PAGE 2

TO Harlan Anderson FROM D. J. Doyle

5. A 6 month growth pattern and our capitalization requirements should be drawn up by John and I.

6. I plan on recruiting a capable service technician immediately - he will be trained in servicing but he will undoubtedly end up by assisting in setting up the assembly facility.

Denny

(Extra copy enclosed)

INTEROFFICE MEMORANDUM

October 29, 1963
34th Meeting of the
SUBJECT Test Equipment Committee

DATE November 27, 1963

TO Richard L. Best

FROM Russell Doane

Members of the Committee:

Robert Hughes, Chairman
Russell Doane, Secretary
George Gerelds
Dave Dubay
Dick Tringale
Jim Cudmore
Steve Lambert
Larry White
Ed Harwood
Jack Shields

1. All the equipment reported as having been ordered in the last minutes is on hand.

2. The new Standards Laboratory in the small room off the transistor test area has been completed and our primary standards are now there.

3. All of the modification kits for Tektronix 581 and 585 oscilloscopes are on hand and being installed.

4. We have borrowed a dual trace plug-in-unit for the Hewlett Packard 175A scope for which a four-trace plug-in-unit has been ordered.

5. We discussed the possibility of publishing a list of available test equipment with its major characteristics. Arthur Hall is preparing such a list since he has strong feelings about what it should include. Copies of this list are included with the minutes.

6. Two elapsed time meters of the Electrochemical type that we have been discussing for use on test equipment have been ordered too for evaluation.

7. We have ordered spare manuals for the thermocouple plotters that engineering has.

8. We decided to ask Tektronix how to use a standard current probe with 580-series oscilloscopes, but their recommendation was to use the new 5 nsec risetime non-clipon probe.

9. We will buy a Boonton 95A (microvoltmeter and picoammeter) to augment our present one, which is in constant shortage.

10. It was asked whether we have made our Sept. 1 quarterly intercomparison of accurate voltage standards, and the committee asked that test equipment service catch up the schedule if it has lagged behind. This quarterly intercomparison on March 1, June 1, Sept. 1, and Dec. 1 is for the purpose of insuring that the Kintell power supply, the 5 John Fluke potentiometric voltmeters, and the three standard cells and whatever other accurate voltage measure equipment we purchase all agree with one another within their own rated inaccuracies.

11. $600 is being spent to order 8 CRT's for type 543 oscilloscopes whose phosphors have been severely burned, primarily in computer checkout. The committee reminds technicians that they are responsible for the condition of oscilloscopes signed out to them, and any scopes whose intensities are turned up high to make short fast transients visible must be carefully watched to avoid destruction of the phosphor.

12. Jack Shields reported he needed to make 10 KV meter measurements so he ordered a probe. John Duffy's broken probe will be repaired.

13. We will ask Tektronix how to correct the base-line curvature on our dual beam scopes.

14. We have ordered 1 Type D plug-in-unit for 540 series Tektronix scopes to increase our ability to do experiments and tests on micro-tapes and other low-level signal devices.

15. We have ordered a special preamp made by Adage for 540 series Tektronix scopes made by Adage. It has no perceptible recovery problem for extreme inputs and has sufficient speed to allow accuracy measurements on A-D and D-A equipment. It can measure the time taken to recover to within millivolts after a 10 volt transient. This preamp will be the only means we will have for measuring the accuracy of such systems in the way that customers find most meaningful.

16. The new Hewlett-Packard 140 A oscilloscope's lightness makes it attractive as a sales demonstration instrument, and its 20 Mc bandwidth and built-in signal delay should satisfy most needs.

17. The committee reminds readers that manuals available from the library on most Tektronix and Hewlett-Packard 'scopes as well as on many other pieces of test equipment can be a great help in using the equipment and may in many cases both save time and also make sure that measurements really mean what they seem to mean.

The next meeting of the Test Equipment Committee will be on Tuesday, December 10 in Bob Hughes' office at 1:30 P.M.

cc: H. Anderson
B. Beckman
W. Hindle
N. Mazzarese
R. Mills
J. O'Connell
G. O'Dea
K. Olsen
S. Olsen
H. Painter
G. Rice
M. Sandler
Engineers

GM

WU1 DL PD WUX KINGSTON NY NOV 26

DIGITAL EQUIP CORP MAYNARD MASS

MR HARLAND E ANDERSON THIS IS TO ADVISE THAT ON THIS DATE THE IBM CORP AND DIGITAL EQUIPMENT CORPORATION CONCLUDED NEGOTIATIONS ON A DISCLOSURE AGREEMENT COVERING INFORMATION REQUIRED FOR TRAINING AND MAINTENANCE OF THE PDP-1 AS USED WITH THE XD-1A FORMAL AGREEMENT IS BEING PREPARED FOR EXECUTION

A G CURRIE 806 IBM CORP KINGSTON NY

930A

dec INTEROFFICE MEMORANDUM

DATE November 26, 1963

SUBJECT

TO K. Olsen
H. Anderson
N. Mazzarese
R. Beckman
J. Shields
E. Harwood
E. DeCastro
J. Sullivan
H. Crouse
D. Adams

FROM Robert E. Savell

On Tuesday, November 12, Mr. Harold Weir from Teletype Corporation spent a little better than half a day with Ed DeCastro, Harold Godfrey, Dave Adams, Mel Arsenault, and myself discussing various problems connected with the Model 33 Teletype units.

Various pieces of information picked up were as follows:

1. The model without the dial will be available approximately in February. It will be designated 33TA.

2. A parallel in-out unit will also be available approximately in February.

3. The parts in the Teletype 33 are not heat treated, so motor heat will have some effect on them, and this in general is a possible source of trouble if you operate the device for many hours continuously.

4. They have 50 cycle motors about ready for release.

5. The 35 is a much more reliable piece of equipment. They have had many troubles with the punch on the Model 33 and the 33 in general has caused them quite a bit of trouble.

6. The engineering hold that is in force right now is for the purpose of modifying the distributor clutch and also the type wheel.

Ed DeCastro detailed all the problems which he has had with the 33. These problems I have noted as follows:

1. Punch

When punching all holes and no holes alternately using non-oil tape the punch pins stick in the block and cause hold-overs so that some holes are punched where there should be no holes.

2. Tape jams occur when the machines are first received and these are cleared up by a diddling process of the punch adjustments.

3. Reader

   a. It tears tape or elongates the code holes. It looks to me as if this is probably due to the feed ratchet trying to feed two spaces instead of one.

   b. After shutting off the Reader in the middle of a tape, it sometimes re-reads the same character it stopped on.

4. Keyboard

   a. The tips break off the distributor trip lever.

   b. The adjustment of this lever is very tricky.

   c. The contacts in the past have become oxidized due to the fact that we have not passed enough current through them. A recent modification has been made so that now we are passing about 30 milliamps through them. Ed states that this has cleared up almost all the troubles.

The meeting was somewhat unsatisfactory as far as I was concerned because of the fact that the man from Teletype could do little except say "gee whiz, I never heard of that problem before" and offer little in the way of assistance in solving the problems. He did, however, chronicle these problems and promised to turn them over to the proper people at Teletype. His telephone number is OR6-1000 extension 62291.

RES/lal

INTEROFFICE MEMORANDUM

DATE 26 November 63

SUBJECT Salaried Employees Evaluation Form

TO Win Hindle FROM Robert Beckman

cc: Ken Olsen
Harlan Anderson
Stan Olsen

I have very strong feelings about the preparation, use, and importance of these forms. I would like to suggest changes in the form and make some comments about their preparation.

I feel that the point score definitions from five down to zero are rather misleading and tend to restrict the actual usefulness of the ten-point range. I try to be very hard-nosed in doing something like this, but I didn't use anything below a six, and I doubt very much if anyone in the company did. In making an evaluation such as this it has to be kept within the context of the job and the company. Consideration of similar jobs in other companies should not enter into it. I think we all recognize that one of DEC's greatest strengths is the consistently high caliber of the people in the company. Whether it's true or not, we all feel that the average DEC employee is a cut above the average in other similar concerns. The point is that such an average does exist and the people we must evaluate will fall on, above, or below that average.

I suggest that the point value 5 be defined as Average, 4 as Below Average, 3 as Fair, 2 as Poor, 1 as Very Poor, and 0 as Instant Fire. Along with this, of course, the evaluators themselves must understand that "average" represents the hypothetical average DEC employee. When conscientiously applied, such a system will allow greater definition and at the same time leave room for indicating the very small percentage of people who are truly "outstanding" and "really unusual". I am sure that this was the original intent of the form, but the choice of words and the lack of amplifying guide lines tend to crowd most evaluations into the upper area.

I would also like to suggest some possible addition to the list of evaluation bases. For example, the ability to supervise the work of others is an important consideration for many of the people being evaluated. Equally important, in some cases, is the ability to manage time, money, and materials. There would be many cases where these two bases could not be observed due to the nature of the job of the person being evaluated. In such situations the form could be marked "not observed", but having them on the form would remind the evaluator that they were important considerations and that such traits must be looked for and developed in people long before they must actually be used.

Finally, in the past I've found it extremely valuable for a person to be able to examine evaluations such as this. It can often give a person a clearer insight into what his supervisor considers his strengths and weaknesses.

****

INTEROFFICE MEMORANDUM

DATE November 21, 1963

SUBJECT DECUS "Publicity"

TO Elsa Newman
H. Anderson
G. Bell
B. Beckman

FROM Harrison R. Morse III

The communications of the ACM has a section called "News and Notices", which could be well used by DECUS (as it is by others) to publicly announce forthcoming events, such as the annual meetings and special symposia.

There is also a subsection called "Cooperative Users Groups" which might be used to summarize such meetings, as well as announce them.

DECUS, as shown by the number of well-known people attending or giving papers at the annual meeting, may be coming to have a somewhat greater than zero effect on the non-DEC world. Let's help this along.

The editor of "News and Notices" is Guy Dobbs, SDC, Santa Monica, California.

A duplicate copy should be sent to

C. C. Gotlieb
Editor in Chief, CACM
University of Toronto
Toronto, Canada

HRM/nbh

HARLAN ANDERSON

dec

INTEROFFICE MEMORANDUM

DATE November 21, 1963

SUBJECT PDP-5 Discount to University of Minnesota

TO Ken Olsen
Harlan Anderson
Stan Olsen
Nick Mazzarese
Gerry Moore

FROM George Rice

Otto Schmitt from the University of Minnesota sent a RFQ to me at my request. The RFQ was for a special system to convert analog signals to IBM compatible tape. I estimate from my many discussions with him that he was given about 30 - 40K from the U. S. Public Health Service to get this system. He was given this money to develop a general laboratory device for the Biophysics field. Twelve companies bid the RFQ and only three were at all acceptable by Dr. Schmitt. Myself and one other company bid a small computer and the third company bid a special system. The two computer bids were of course substantially above the 30 - 40K range and the third system was right in the proper range.

From the content of the enclosed letter and from my discussions with Dr. Schmitt it looks like he would like to get our system. Below is a breakdown of what I bid and it is obvious that he hasn't the money for the complete system. His lab. is also funded to some extent by the Navy for basic research and I think that he has some extra funds to supplement his Public Health money.

This man is well known in his field and he has played a major roll in the development of electronic instruments for the medical and related fields. He is of course the originator of the Schmitt Trigger which we sell.

PDP-5 with 4K	$27,000
Type 57A Tape Control	$18,000
Type 50 Transport	$18,000
Type 138 ADC	$ 5,000
Type 139 Multiplex Control	$ 3,600
1578, 4 modules	$ 1,700
Amplifiers and misc.	$ 1,200
TOTAL	$74,500

18,000
(.8)(56,500) =
45,200

If we gave him a contribution of 50% I feel certain we would get the P.O. If we give 20% or less I believe we are beyond his available funds. Somewhere in between is the grey area. He might attempt to go after the complete system except the transport with his Public Health money and our contribution, then get the Transport with other funds either at the same time or later.

I think this sale may stimulate many additional sales to the non-renegotiable market plus Dr. Schmitt would certainly be a good name to add to our users' list.

INTEROFFICE MEMORANDUM

DATE November 21, 1963

SUBJECT PDP-4 Programming System

TO S. Olsen
N. Mazzarese
H. Anderson
G. Bell
H. Painter
D. Fellows
J. Jones

FROM Harrison R. Morse III

This memo refers to the PDP-4 Programming System described in the similarly titled document dated Nov. 18.

The tentative gross schedule is:

1) Specs and a final schedule firm by Jan. 1.
2) Announcement of the system at the SJCC (April 21, 1964) including literature.
3) Complete System demonstration at DEC by April 1. (April 2 actually, who would have faith in a system demonstrated April 1).

If it is at all possible, without committing DEC to an extra Type 57A Tape Control, we should arrange to have a machine on which the system can be demonstrated at the SJCC April 21-23. For example, if a PDP-4 with the proper configuration (8K - 57A - 2 type 50's) were scheduled for delivery about that time, it would be advantageous to try and bugger the schedule enough to permit the machine to go to the show.

As for demonstrability, the system will allow a visitor to prepare and run his own FORTRAN Program, with no paper tape handling - both fun and an impressive demonstration.

HRM/nbh

INTEROFFICE MEMORANDUM

DATE November 20, 1963

SUBJECT Technical Publications for PDP-6

TO
H. Anderson
J. Atwood
R. Beckman
R. Boisvert
S. Grover
A. Kotok
R. Lane
J. McKalip
H. Morse
J. Nangle
R. Savell
VERICON

FROM Gordon Bell

There has been some misunderstanding as to who was to write, edit, and handle the liaison for various PDP-6 literature.

Stu Grover will be responsible for all PDP-6 literature.

Norman Hirst has the responsibility for supplying raw data, or text, for the programmer's manuals. He will also handle the program library write-ups for manual form, and hopefully do some programming too.

Bob Beckman has the responsibility for supplying raw data and/or edited text etc. for the description of the processor, memory, and most I/O maintenance.

Data Control 136, Microtape Control 551, Tape Control 516, Display Type 340 maintenance details are yet to be resolved. These will be included in F63 (I/O).

The literature currently planned or available:

F61	System Description (available)
F63 (166)	Arithmetic Processor (available)
F63 (170)	Memory Options
F63 (I/O)	I/O System and I/O Equipment
F63 (167/236)	Drum
F64	Prog. Techniques
F64 MON	Monitor
F64 MAS	Assemble
F64 FT	Fortran
F64 DB	Debug
F65 (Memy)	Memory Systems Maintenance -- 1st chapter general, each chapter describes a different memory system.
F65 (166)	166 Processor Maintenance
F65 (I/O)	IO Equipment Maintenance -- 1st chapter general, each chapter describes a device.

We are off to quite a good start on Manuals F63 (166) and F61. Let us keep things going in the same direction.

GB/II

INTEROFFICE MEMORANDUM

DATE November 20, 1963

SUBJECT MICROTAPE: ITS FEATURES AND APPLICATIONS

TO K Olsen
S Olsen
H Anderson
W Hindle
N Mazzarese
J Atwood
A Stevens
A Titcomb

FROM L M Hantman

Enclosed is copy of the memo on the above as presented at the DECUS meeting this week.

LMH:ASJ
ENCL

H. Anderson

Stephen Lambert
November 19, 1963

516 Magnetic Tape Control for PDP-6

This memorandum serves as a preliminary proposal indicating the possible capabilities of the 516 Mag. Tape Control.

The 516 operates with the 136 Data Control and 520, 521, or 522 transport interfaces. The 516 Control and interfaces provides IBM compatible tape input or output. Operating through the 520 series interfaces, the 516 will control a maximum of 8 transports.

Tape may be written or read at 200, 556, or 800 densities, controlled by two crystal clocks, depending on the type of transport connected.

All tape functions are transmitted via the PDP-6 I/O Buss to the 516 Control. Functions transmitted to the Control are placed in a hold register until the previous function has been completed. If the same function is given before the previous one is completed, the Control acts as if it had been placed in a Continue or Proceed mode. This mode of operation terminates as soon as a different function is given or the previous command completes before a new function is transmitted to the 516.

If a new command is given before the old has been completed and an error condition exists, the new command will not be accepted unless it is a Space Back or Rewind command.

An exception to the above statement would be the following sequence of commands: Read, Space, Read Compare. Due to the fact that basically these are all read commands in the forward direction, the transport would stay in the continuous mode of operation as long as the Command Hold Register was filled.

The functions defined are:

REWIND

The selected transport rewinds tape to load point and stops.

REWIND/UNLOAD

Tape is wound off the take up reel of the selected transport.

WRITE

N characters may be written from consecutive or non-consecutive locations of memory into one record. Binary (odd) or BCD (even) parity may be selec. By specifying a bit when the Write function is given, all BCD characters 00_8 will automatically be

changed to 12_8. Otherwise, BCD 00_8 will be written as blank tape and cannot be detected within a record except for the fact that a status flag will indicate a missed character read while writing. All characters are read and checked for parity while writing. The LPCC (Longitudinal Parity Check Character) that is written is compared when it is read. Separate status flags are provided for both types of possible parity errors.

GATHER WRITE

Gather Write is accomplished by selecting a Write function in the 516 Control. The programmer has the option to transfer from non-consecutive memory locations by immediately following a BLTO instruction (PDP-6), that causes a Word Count Overflow, with anotherBLTO instruction.

Word counting and addressing are controlled within the PDP-6. All data transfers are executed through the 136 Data Control. The 136 signals the 516 when data transfers from the PDP-6 have been completed.

WRITE END OF FILE

Write EOF is an automatic instruction and does not require the use of the 136 Data Control. The end-of-file mark is written 17_8 BCD. It is automatically detected during a read or space instruction.

WRITE BLANK TAPE

To Write three inches of blank tape, the programmer gives a Write EOF command and then a Space Back command, In either case, the 136 Data Control is not needed.

READ

N characters may be read in either parity mode. By specifying a bit when the Read function is given, all BCD characters 12_8 will automatically be changed to a 00_8. An additional read buffer is incorporated into the 516 design for generating a longitudinal check sum that is compared with the check character when it is read.

Regardless of the function given, the programmer can examine the status register whenever he pleases. A flag called ERF (End of Record) is supplied to the programmer through the 7 channel priority interrupt system. The flag may cause an interrupt to any one of the 7 channels. The flag is also available in the status register.

Whenever the specified word count is exceeded in the PDP-6, the 136 Control is disconnected from the 516 but the 516 may not finish its function until ERF is seen and the proper shut down delays have completed. If the word count has not overflowed before the ERF is seen, then the transport is shut down unless the Command Hold Register contains another command. If so, the word count may overflow within the next record. This implies gather reading or read continuous.

If a record ends containing a character count, not a factor of six, then the remaining characters will be transferred from the 136 Data Control to the PDP-6 when the ERF signal appears.

SCATTER READ

Scatter Read is similar to Gather Write in that the programmer controls the operation. The Read function is selected initially. This operation may be performed within one or a group of records. At the end of a record or within a record, the programmer may terminate reading by not servicing the data interrupt requests. Scatter Reading means, reading data from a record into non-consecutive memory locations. The programmer uses the BLTI instruction instead of the BLTO instruction mentioned in Gather Write.

READ COMPARE

N characters are read and compared character by character with words stored in the PDP-6 memory. The 136 Data Control sends characters to the 516 where the comparison takes place. The comparison is performed in the LPCC Read Buffer. In this case, the LPCC is not read or compared. This function combines the capabilities of the Read and Write functions. Gather/Scatter Read Compare may be performed as indicated under Gather Write and Scatter Read. An inequality sets the Read Compare Error status flag.

SPACE FORWARD OR BACKWARD

All spacing is done without the use of the 136 Data Control. Spacing forward or backward one record is automatic. If a bit is specified tape is spaced until a file mark is read. Spacing continuously in one direction is achieved by loading the Command Hold Register before the previous space command has been completed.

The CONO instruction bits (PDP-6 to 516 via I/O Buss) are:

33-35	Sets the Priority Interrupt Channel (1-7, 0=no Interrupt
30-32	Unit Selection (0-7)
26,27-29	Tape Control Function Encoded
0 0	no operation
0 1	Rewind selected transport
1 1	Rewind/Unload Transport
0 2	Write Unload Transport
1 2	Write BCD only converting 00_8 to 12_8
0 3	Write End-of-file mark
0 4	Read Compare
1 4	Read Compare BCD converting 00_8 to $+2_8$
0 5	Read
1 5	Read BCD converting 12_8 to 00_8
0 6	Space Forward one record
1 6	Space Forward until file mark
0 7	Space Backward one record
1 7	Space Backward until file mark
24,25	Density select
0 0	200 bpi
0 1	556 bpi
1 0	800 bpi
1 1	556 bpi
23	Parity (0=BCD, even 1=Binary, odd)
22	Slice (0=high sense level 1=low sense level)
21	Interrupt Enable the End of Record Flag

The following flags may be sensed by the instructions coni, consz, or conso.

I/O Buss	Status
36	Tape Control Free
35	Tape Transport Ready
34	End of Record Flag Set
33	Tape Parity Error Lateral
32	Tape Parity Error Longitudinal
31	Read Compare Error
30	Tape Missed Character
29	File Protect Ri Out
28	End of File Flag Set
27	Tape Near Load Point (520 interface) B Control using transport (521 interface) Write Echo Not ok (522 interface)
26	Tape Near End Point (520 interface) Last Operation Write (521 & 522 interface)
25	Tape at Load Point
24	Tape at End Point
23	Transport Rewinding
22	Command Hold Buffer Full
21	Motion Delay in Progress

INTEROFFICE MEMORANDUM

DATE November 19, 1963

SUBJECT

TO K. Olsen
H. Anderson
S. Olsen
N. Mazzarese

FROM J. Smith

PDP-5-8 for Bell Tel. Labs was delivered to Checkout today, complete with all modules. Delivery date to Customer 12/15/63.

dec INTEROFFICE MEMORANDUM

DATE November 19, 1963

SUBJECT Re-Design of PDP-1 and PDP-4

TO Computer Guidance Committee
E Harwood

FROM A Kotok

The time has come when the PDP-1 and -4 no longer hold a technical lead in the digital computer field. Our competition has machines which can out-perform these computers, at a lower price. If we wish to stay in the lower-medium size computer market, one or both of these machines should be re-designed, or alternatively, a new machine in the $100,000 class should be designed. The following tabulation may be of some help to the committee.

Re-design PDP-1

Advantages	Disadvantages
1. Well known (and loved) by customers	1. No Fortran
2. Extensive program library	2. Addresses only 4K
3. Good assembler	3. Order code not extremely well designed
4. 16 Channel interrupt	

Re-design PDP-4

Advantages	Disadvantages
1. Basically well designed system	1. Small op-code
2. In-house Fortran	2. Messy shifting and only 1 active register unless EAE is standard.
	3. Addresses only 8K

Design New Machine

Advantages	Disadvantages
1. Can avoid mistakes made in previous machines	1. Maximizes engineering
2. Can address larger memory	2. Unless design is radical, looks as if we're following competition

The course to take is not clear. It seems evident to me that if we "soup-up" just one of our current machines, the other one will die. Should we decide to re-work our current machines, I think the maximum gain for the least work would be had by simply re-packaging existing logic, rather than re-designing from scratch. If we want to put the effort in to redesign from scratch, then it should probably be a new machine.

AK/dhw

H. Anderson

INTEROFFICE MEMORANDUM

DATE November 19, 1963

SUBJECT Development of a PDP-4 Programming System

TO Computer Guidance Committee
cc. Dave Fellows

FROM Harrison R. Morse III

Over the past year and one half we have developed a number of programs for the PDP-4, including FORTRAN, at significant expense to DEC in both people time and money.

However, the result is just a collection of programs, which, while necessary and useable, does not come close to fulfilling its potential utility to the user, not its potential sales effect for DEC.

The reason for this, I have concluded, is that while the programs are justly designed to work on a minimum (4K PDP-4, no tapes) system, there has been no effort to:

1) Specify a USEFUL hardware configuration.

2) Develop a Programming System for that configuration.

3) Demonstrate its utility.

4) Advertise the availability and utility of the system.

5) Recommend the system to customers who need or can use the increased usefullness.

I, therefore, propose that the following configuration be specified as the minimum configuration on which the "PDP-4 Programming System" will work (note that all the programs will still work individually on a minimum machine):

1	- 8K PDP-4	80K
1	- Type 57A tape control	18K
2	Type 50 tape transport	36K
		134K

With the following optional equipment readily useable by the system:

1	300 lpm printer	28.9K
1	200 cpm card reader	14.9K
1	Extended Arithmetic element	6.3K

The basic configuration mentioned above, with the programming system to be developed for it, is easily the least expensive USEFUL computer system on the market, realizing that the system includes an excellent FORTRAN, a good Assembler and debugging facility.

Our policy in the past has been to restrict program development to those programs which work on minimum configuration machines. This is both a disservice to DEC and its customers.

The customers suffer because there is no programming system provided which will take advantage of any optional machine features or equipment. In addition, there are no guide lines as to what optional equipment to purchase to increase the useability of the computer.

DEC suffers for many reasons. The main one is that we do not encourage the sale of equipment (a terrible thing) by providing programming systems which use that equipment. This also results in our software appearing considerably less useable than it potentially is, and lessens the sale effect such things as FORTRAN for PDP-4 should have. Perhaps the crushing blow is that demonstrating a system, such as FORTRAN on a paper tape machine, has a negative effect on a potential customer, primarily due to the time consumed handling and reading paper tapes. It is for just this reason I have refused to demonstrate FORTRAN at any show.

On the other hand, we have recently gained some experience using a simple mag tape system on the PDP-4 Prototype. All the console programs are on tape, and may be recovered by typing the name of the desired program.

Consequently, loading a program such as the Assembler takes only a few seconds, rather than almost a minute. The process of running a FORTRAN program, which, on a minimum system requires the user load the FORTRAN Compiler, the Assembler, the Linking Loader, the FORTRAN Operating System, possibly a library tape, and handle three different versions of the FORTRAN program, is reduced to handling only the three versions of the program itself,

and possibly a library tape in the system now on the prototype, and would be further reduced to handling only the original version of the FORTRAN program in the proposed system.

The amount of time to develop the system would be four months (of Dave Fellows time), since the programs themselves all exist, and the major portion of the effort would be spent in incorporating the programs into the system, and in documentation.

In conclusion, developing such a system for PDP-4 would increase the utility of the machine by about a factor of ten (my estimate based on experience with the PDP-4 Prototype), would result in a unique computer system (for that price) which could be advertised and demonstrated to DEC's great advantage.

HRM/nbh

dec INTEROFFICE MEMORANDUM

DATE November 18, 1963

SUBJECT PDP-4 Prototype and Is This Typical of Other Installations?

TO H. Anderson
R. L. Best
J. Hastings
R. Beckman
J. Shields
H. Morse
L. Hantman

FROM Gordon Bell

Summary

Enclosed is the maintenance log for a two week period November 1-15, 1963. During this time at least 167 meter hours were recorded. The logged time breaks up:

	Hrs.	Percent
Preventative Maintenance	7.5	4.3
Maintenance	8.0	4.6
Bad Time	16.0	9.2
Questionable Time	44.	25.2
Good Time	99.	56.8
	174.5	

The Installation

On Saturday November 16, 1963 I recall the following:

1. The card reader feed throat adjustment screws are jimmied so as not to be adjustable. (Probably using allen wrench incorrectly or bad wrench)
2. Chad is in paper tape punch mechanism.
3. One fan in tape unit not operating.
4. A ground wire pair on head of "M" tape unit dangling.
5. No evidence of preventative maintenance (margins)
6. Printer still spaces bad after 2 weeks.
7. Paper tape reader dirty.

8. No record of cleaning mag tape heads

9. Incomplete sign-ups in the log.

10. No evidence of any procedure for keeping the equipment running ie. rules such as:

    (a) No smoking within 20 feet of tape units.

    (b) Tape unit doors must be kept closed.

    (c) Tape must not touch floor when loading.

    (d) Tape units and tape must be kept in humidity controlled, temperature controlled environment.

    (e) Clean tape heads after every X hours of use and record in log.

    (f) Tape labelling procedure lacking, or ignored, allowing tapes to be destroyed, etc.

11. No tape diagnositcs.

12. No tape developer

Programmer's Responsibility

1. Log comments could be more descriptive.

2. Comments on inoperative equipment is useful, but analysis of faulty operation would be more helpful.

3. Completely ineffectual about accomplishing any improvement in operation of computer.

4. Programmers must stay with engineers, and field servicemen until the trouble is found each time a failure occurs.

Field Service Responsibility

1. The service personnel must describe what goes on during routine or forced maintenance.

2. Routine maintenance must occur (after being specified)

3. When a fault occurs no matter who is to blame (eg. lack of knowledge regarding program), the trouble must be found.

4. More F. S. forms filled out, and fed back to project engineer.

5. Analyze all equipment failures over last three years.

Engineering Responsibility

1. Rarely does an Engineering Department have the opportunity to see the results of their work at such close range.

2. No maintenance programs provided for tape system.

3. A running time meter on mechanical units for tape use might be useful.

4. Tapes are used at 556 bpi. This is permissible according to specs of ours, but how about Potter's?

5. Install longitudional parity check on all tape controls in future.

6. Preventative maintenance must be specified.

7. Operating care and procedures must be specified (eg. don't let tape on floor, don't leave tape on reels overnight.)

Improvement Procedures

1. Someone who knows or has ideas of how an installation should run must be placed in charge of it. Field Service should then operate on the equipment as if it were a Field Installation.

2. Air conditioning, etc. necessary for tape?

3. A general tape to line printer program has been written to analyze tape.

4. The log for each week will be reviewed by the Computer Guidance Committee. On Tuesday evenings, I will make a decision about who will make the report on the operation of the system.

5. For each forced field service call, someone from the Engineering Department might be present. On a tape fault, the installation will be shut down until the cause for error is found. In fact, on any fault the equipment must be declared inoperative, and will not be used again until the trouble is found.

6. Tape diagnostic programs are needed.

7. Better communication on problems.

8. A status blackboard which shows whether equipment is ok or not might be put up.

PDP LOG

POWER	TIME ON					DATE
	TIME OFF					Nov 1 63

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
MacLean	8:00	9:30	Either Printer or Reader Dropping digits Print Posit. .63 Dropping 1.5 NOT quite sure About gap on card Reader, open too far.	
MORSE	9:30	10:30	Tape to Printer [illegible]	
Kit Corp - J. Abel	12:40		Problems - Printer Sometimes skips pages when Restarting	
J.R. Abeng	EB	2:00		
Morse	2:08			
Senior Bausch	3:30	4:30	Maint on Printer	
MORSE	200	745		
Tellum	7:45	[illegible]:00	PRINTER NO Got Form TAPE !! Where is it?	

MAINTENANCE RECORD

Changed printer ribbon and adjusted the format assembly to work better, we are ordering new brushes.

K. Senior

PDP LOG

POWER	TIME ON						DATE
	TIME OFF						Nov 2, 63

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
B. Cathum	8 30	16 10	Using Tapes 1 M & R on high density Lin Printer & Card Rdr.	?
			Card Reader knives were off by some large amount — we readjusted knives & ran a deck of app 8000 cards with not a single hitch.	
			Since this is a deck of mixed cards — several types of cards and since new some will need it is suggested that any immediate complaints of bad checks should not be blamed on C.R.	
			Picked up two one ch noise records on unit "2"	
Dillon	7 15	2 50	OK.	

PDP LOG

POWER						DATE
	TIME ON					11-3
	TIME OFF					

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
Morse	1205		there is:	
			1) No paper tape	
			2) No paper supply here!	
Dennis [illegible]				
Dan Bowers			Time Meter OK.	00305
Morse	1330		Much trouble with tapes	
			cleaned all heads & contacts, resulting	
			in better operation. This should	
			be done regularly as part	
			of preventative maintenance!	
H_3 OFF		1830		

PDP LOG

POWER						DATE
	TIME ON					11-4 ~~cont~~
	TIME OFF					

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
McLean	8:00	8:30	Card not stacking correcting inconsistant line printer feed check on card read D. Did not use MAG tapes	
Horse + Hurley	1000	1230	Cleaned the tape transports	
Jac + Nancy	1230	200	ERNK	
Horse	200	330		
Tom + Nancy	345		Can't write (read?) EOF on Tape unit L	
Fellows	700	1045	OK.	17.8

PDP LOG

POWER						DATE
	TIME ON					11/5/63
	TIME OFF					

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
Mac [illegible]	8:00	9:00	Line Print illegible	
			Card RDR ok	
			Processor ok	
D. Busick K. Senior	9:00	10:00	Maintenance	
L. M. Hantman	10:00	12:00	Tried sorts. Some card feed checks.	
			Some tape errors. Still some	
			short records being read.	
Tom Whalen	12:00	2:15		
Kie Corp	2:15	3:00	Tape to Print unit L	3-RPE / 1-RLE) 1700 recs @ 556
Morse	3:00	5:45	Tapes Ok!	
Kie Corp	5:45	8:00	Tape to print - Many Recoverable RPE	
			2 Non-Recoverable - RPE became RLE after re-reads - 16,054 records	
L. Hantman	8:00	9:30	Trying sort. Still getting many parity errors on both reading and writing. Most noticeable on unit "2". Got one shifted record, no parity error and correct length. This can be disastrous. No other problems. Power off	31.2
HYMAN	23:00	24:00		

MAINTENANCE RECORD

Writing & Reading 'EOF' appears to be OK

DKB + KS

PDP LOG

POWER						DATE
	TIME ON					6 Nov
	TIME OFF					

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
HYMAN	2400	0730	OK	38.0
MacLean	8:00	9:00	Used card Rdr	
			Mag Tapes } OK	
			Printer	
			Cuf on is intermittent	
D. [illegible] K. [illegible]	9:00	11:45	Maintenance	
[illegible]	11:45	12:35	OK [illegible]	
J. Richardson	12:35	1:30	Punch tape 1 hole (Checked [illegible])	
K [illegible]	1:30	2:00	Tape to Print	
Finley + Morse	200	525		
K [illegible]	3:25	7:25	Debugging - Tape on unit M	
			failed to Reproduce Systape	
[illegible]	7:25	10:20	OK.	52.0

MAINTENANCE RECORD

Replaced E.O.T. light in Drive "M"
Upper Memory Failed - Adj enough for 2 volt
Margins. — Fine Tuning Tomorrow
DKH + KS

PDP LOG

POWER						DATE
	TIME ON					11-7
	TIME OFF					

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
Ken + Don	9:00	12:00	Maint	
JCR	1:15	9:30	Parity errors in my tape	
Jack Richardson	2:30	300	units 4 & R	
~~FORSL~~				
Nancy Hurley	300	345	—	
Ross	600		could not make a	
			systems tape (back-space	
			didn't)	
Piner	6:30	1030	? Either Dave OR	65.3
			the Computer doesn't work!	
			PROBABLY Dave!	
Jack Richardson	9:15	9:25	OK.	65.6
" "	9:40	9:55	O.K.	

MAINTENANCE RECORD

Adj Sense amps (upper Memory) -5 +3 Margins

PDP LOG

POWER						DATE
	TIME ON					
	TIME OFF					11-8

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
D.K. Busick	9:30	10:30	maintenance	
ABel off		320		
Korse on	320		I am not able to write accurately on any tape unit$ - with a [illegible] program which worked Friday, Saturday Sunday Monday tuesday and wednesday.	
[illegible] off		630		
[illegible]	700	915		

PDP LOG

POWER						DATE
	TIME ON					11-9
	TIME OFF					

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
K. Lanza (Informatics)	3:30	3:45	Power on @ 77.1	77.3
[illegible]	8:05	[illegible]		
[illegible]				
[illegible]	7:15	[illegible]		[illegible]

PDP LOG

POWER						DATE
	TIME ON	2:00	10:45			11-10-83
	TIME OFF	8:00	2:00			

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
[illegible]	9:00	[illegible]	ok	93.9
[illegible]	4:25	8:00	Tape to Print - Read ≈ 9000 recs on R in High dens w/o errors. Line printer spacing brushes are in terrible shape. Skips 2-3 pages on a restore. I printed 500 pages & got about 900 extra blank pages	97.4

PDP LOG

POWER					DATE
TIME ON	830	1025			11/11/63
TIME OFF	105				

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
MacLean	10:00	11:00	using Printer, Mag tapes	
			card Reader	
			None of the tape unit recognize	
			eof. L.M.R.	
			Printer spacing questionable	
			used both my program and write	
			and list tape, had no success	
Kie Corp	3:30	7:00	Tape to Print	
Sellers	700	[illegible]		
Kie Corp	10:50	6:45 AM	Tape to Print Read - 20,000 recs	
			[illegible] units L & R at 556 w/o error!	
			Printer spacing O.K. [illegible] no extra	
			[illegible] in 4000 pps.	113.7
J. E. Richardson	[illegible]	[illegible]	[illegible]	114.3
[illegible]	7:20			
MORSE	1105		Register dropped a bit (4 times) (3572)	
			making 761510 become 761410.	
			Tried tapes again:	
			1) Could not read a	
			system tape written at	
			Kie and tried there	
			2) Could not write a	
			system tape using the	
			Same old program.	
			THIS COMPLAINT IS	
			NOW 5 DAYS OLD!	
OFF		1115		

PDP LOG

POWER						DATE
	TIME ON					11/17/63
	TIME OFF					([illegible])

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
MORSE	1120		SAME BIT dissappeared	
			AGAIN - It is being lost	
			either in memory,	
			or in ~~a~~ the following sequence	
			1341 lac 3572	
			sad	
			law	
			dac 3572	
CONTEST	1125			
Fellows	6:45	8:00	OK.	
Piner	8:00	9:10	I can not seem to get a	
			good assembly of a program	
			that has assembled before	
			with the RELOCASSEM.	
			Suspect above mentioned	
			bit-dropping. Can't continue	
~~Hyman~~	~~2:30~~	~~3:30~~	~~[illegible]~~	

PDP LOG

POWER	TIME ON				DATE
	TIME OFF				13 NOV

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
HYMAN	0230	0330	PECULIAR BEHAVIOR (MAY BE THE SOFTWARE)	
HYMAN	0600	0630	OK	
MORSE	1000	1035	what happened to it !!	
Killick & Semin	900	1115	⟵ MUST HAVE DONE NOTHING FOR 3 HRS NO MAINT RECORDED !!	
MacLean	1:00	2:20	Top of form not working. EOF with BP 57 not working (intermittent). PARITY Errors, did not clean Heads.	
N Hurley	2:20			
MORSE		515	Made a number of systems tapes – the program which did not work yesterday do today! great.	
Dellow	6^00	11^10	OK.	

Be brave next time and sign your name! Ken Semin

PDP LOG

POWER						DATE
	TIME ON					14 NOV
	TIME OFF					

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
HYMAN	0230	0700	OK	147.1
Hurley, Morse	8:45		Could not retrieve the systems tape! ~~[illegible]~~	I manage to get the listing off the systems tape about 8:50 but nothing later.
	9:00		→ This worked yesterday (same tape on the same unit - it has not been dismounted)	
	1000		Cleaned the heads on unit H. Still cannot retrieve systems tape	
			Same is true of unit (L)	
OFF	1020			

PDP LOG

POWER					DATE
TIME ON					15 NOV
TIME OFF					

USER	TIME ON	TIME OFF	COMMENTS	ELAPSED TIME METER READING AT POWER OFF
K. SENIOR	9:00	10:00	MAINTENANCE	
Morse	1130	100	Systems tape OK!!	
J. Avey (KIE CORP)	1:00	2:10	Print Production Run	
B Calhoun	2:10	5:00	Loosened set screws on arm of FULL REEL sw so as to have full reel all the time sw is sticky and sometimes does not come back on when in a rewind !!	
Fellows	5:45	10⁴⁰		167.7

PDP-6 Log

November 1, 1963
8:00 - 9:30
F. MacLean

Either printer or reader dropping digits. Print posit. 67 dropping 1,S
Not quite sure about gap on card reader, open too far.

November 1, 1963
9:30 - 10:30
H. Morse

Tape to print -- no mag. tape

November 1, 1963
12:40 - 2:00
J. Abel
J. R. Avery
Kie Corporation

Problems - printer sometimes skips pages when restarting

November 1, 1963
2:00
H. Morse

November 1, 1963
3:30 - 4:30
Senior & Busiek

Maint. on Printer

H. Morse
November 1, 1963
2:00 - 7:45

November 1, 1963
7:45 - 10:00
Fellows

Printer - no got form tape! Where is it?

November 2, 1963
8:30 - 16:10
W. Colburn

Using tapes L M & R on high density. Line Printer & Card Rdr.

Card Reader knives were off by some large amount - we readjusted knives and ran a deck of app. 8000 cards with not a single hitch.

Since this is a deck of mixed cards - several taypes of cards and some new some well used it is suggested that any immediate complaints of feed checks should not be blamed on C. R.

Picked up two one ch noise records on unit "L"

November 2, 1963
7:15 - 2:50
Fellow

ok.

November 3, 1963
12:05
H. Morse

There is 1) no paper tape, 2) no paper supply here.

November 3, 1963
D. Busiek

Time meter ok.

November 3, 1963
H. Morse
13:50

Much trouble with tapes . Cleaned all heads etc, resulting in better operation. This should be done regularly as part of preventative maintenance.

November 3, 1963
18:30
H3

Off

No vember 4, 1963
8:00 - 8:50
F. MacLean

Card not stacking correcting inconsistant line printer and feed check on card read. Did not use mag. tapes

November 4, 1963
10:00 - 12:30
Morse & Hurley

Cleaned the tape transports

November 4, 1963
Joe & Nancy
12:30 - 2:00

E R N K

November 4, 1963
2:00 - 3:30

dec INTEROFFICE MEMORANDUM

DATE November 18, 1963

SUBJECT Columbia PDP-4 Status

TO K. Olsen
✓H. Anderson
S. Olsen
N. Mazzarese

FROM J. Smith

Central Processor has been completely checked out using the 8K prototype memory. The memory assigned to Columbia is completely wired and awaiting one more module type 4551. The model was received Friday, November 15. A special priority has been assigned to this module and they should be available Thursday or Friday of this week.

dec INTEROFFICE MEMORANDUM

DATE November 18, 1963

SUBJECT PDP-5-5 Westinghouse Status

TO K. Olsen
✓H. Anderson
S. Olsen
N. Mazzarese

FROM J. Smith

Delivered to Checkout 11/8/63 minus the below listed modules.

Model No.	Present Status
4 - 4206	Engineering Change - first lot currently is in test
1 - 4802	Engineering Hold - boards for the new model were screened Friday, 11/15/63

Option Status

High Speed Paper Tape Reader - completely checked out, ready for special mounting

High Speed Paper Tape Punch - completely checked out, ready for special mounting

Special mounting hardware for the Reader and Punch is presently being drawn up in Drafting. To date, prints have not been released.

Logic for the above Reader and Punch is complete awaiting Reader, Punch mounting.

dec INTEROFFICE MEMORANDUM

DATE November 18, 1963

SUBJECT Dartmouth PDP-6

TO N. Mazzarese
H. Anderson ✓
S. Olsen
G. Bell
H. Morse

FROM R. L. Lane

General Electric has been conducting Programming Classes at Dartmouth for the past several months. The computer selection was made last year based upon available equipment at the time. PDP-1 was considered but ruled out as it was too small. They inferred that PDP-6 was the best machine but it could result in a re-education program for them. Their current plans are to continue as scheduled with General Electric. Their decision will be in writing by December 1 as this information was obtained during a telephone call on November 15, 1963.

dec INTEROFFICE MEMORANDUM

DATE November 18, 1963

SUBJECT Enclosed Memo

TO H. Anderson
R. L. Best

FROM Gordon Bell

We must do something about the enclosed because:

1. It may be typical of outside customers. (eg. BBN)

2. Programmers are unhappy about conditions as a lot of their time is wasted and they don't accomplish their desires. L. Hantman has lost three man-months, and H. Morse one year.

3. It is expensive.

4. It may be typical of the other DEC installations (PDP-1)

Someone must be given the computer installations responsibility.

INTEROFFICE MEMORANDUM

DATE November 18, 1963

SUBJECT

TO Stan Olsen, Harlan Anderson, & Ed deCastro

FROM Ken Olsen

Mr. Kermit Fischer of Fischer & Porter Company is going to visit me about 9:00 a.m. on December 2nd. We are apparently trying to sell PDP-5's to them and he'd like to look us over. We should have the appropriate people available to discuss this, although he may largely be interested in talking to myself. Because it is so early, I'm not sure that he will be staying for lunch.

We should be particularly interested in talking with him because they have opened plants in Melbourne, Toronto, Workington (England), Clermont-Ferrand, Goettingen, Tokyo, Mexico City, and Arnhem.

He should be very helpful in giving us advice on opening overseas operation.

Ken Olsen

INTEROFFICE MEMORANDUM

DATE November 15, 1963

SUBJECT Overdue Computer Systems and Options.

TO K. Olsen
H. Anderson ✓
S. Olsen
G. O'Dea
W. Hindle
D. Best
D. Hills
M. Sandler
R. Beckman
R. Cavell
B. Stephenson
D. Harwood
J. Shields
D. Smith
J. McCalip
J. Smith
S. Lambert
T. Stockebrand
J. Rutschman
P. Greene

FROM M. Mazzarese

The following is a list of overdue computer systems and options. The engineer responsible for the project's completion is indicated in each case.

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
AECL	Multiplexer	1	2564	10/30/63	Checkout completed. Customer late in firming up specification.	Late Nov.	P. Greene
AECL	PDP-5 (DC-12)	1	2565	10/30/63	Customer late in firming up specification.	Late Nov.	E. DeCastro
AECL	PDP-4-18 Including Reader	1	2566	10/30/63	Completed Contingent upon Multiplexer EN# 2564.	Late Nov.	E. Harwood
AECL	Additional Memory Module Type 134	1	2567	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	E. Harwood
AECL	Type 18 Extended Arithmetic Unit	1	2568	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	E. Harwood
AECL	Two (2) On-Line Teleprinters	2	2569	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	E. Harwood

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
AECL	Punch and Control	1	2570	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	E. Harwood
AECL	One Data Interrupt Multiplexer	1	2571	10/30/63	Operating Program being de-bugged.	Late Nov.	P. Greene
AECL	8-Bit D to A Converters	2	2572	10/30/63	Operating program being de-bugged.	Late Nov.	P. Greene
AECL	Output Buffers and Command Circuits	2	2573	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	P. Greene
AECL	Spare Reader	1	2574	10/30/63	Checkout completed.	Late Nov.	P. Greene
AECL	Drum System 16K Type 24A	1	2575	10/30/63	Checkout completed.	Late Nov.	T. Johnson
AECL	Light Pen Type 32	1	2577	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	R. Savell
AECL	Direct Drum to Display Circuits	1	2578	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	P. Greene

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
AECL	Type 30L Precision Display	1	2579	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	R. Savell
AECL	Mul. & Div. 10	1	2610	8/15/63	Installed not accept-ed. Entire P.O. not complete.	Late Nov.	J. Shields
AECL	Micro Tape 555	3	2611	8/15/63	Contingent upon EN# 2612, Micro Tape 550.	Late Nov.	T. Stockebrand
AECL	Micro Tape 550	1	2612	8/15/63	PDP-1 Pro-gramming incomplete.	Late Nov.	T. Stockebrand
AECL	16 Channel 1 Seq. Break	1	2613	8/15/63	Installed not accept-ed. Entire P.O. not complete.	Late Nov.	J. Shields
DEC - PDP -4 Proto-type	Micro Tape Control 550	1	2719	10/14/63	Original went to Project MAC.	12/2/63	T. Stockebrand
DEC-PDP-4 Prototype	Micro Tape Transports 555	3	2720	10/14/63	Complete Contingent upon Micro Tape Control 550 EN#2719.	12/2/63	T. Stockebrand

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
DEC Sales Physics	PDP-5-4 (4K Memory)	1	2723	10/30/63	It was re-scheduled for ship-ment.	11/7/63	E. Harwood
DEC Sales Physics	CRT Display with yellow filter - tek-tronix Type 34	1	2724	10/30/63	It was re-scheduled for ship-ment.	11/7/63	J. Jones
DEC Sales Physics	Nuclear Data 160F A to D	1	2725	10/30/63	It was re-scheduled for ship-ment.	11/7/63	J. Jones
DEC Sales Physics	Interface for 160F A to D	1	2726	10/30/63	It was re-scheduled for ship-ment.	11/7/63	J. Jones
DEC Sales Loan AECL	Memory Module Type 12	1	2750	10/25/63	Late del-ivery of Ferroxcube Stacks to DEC.	11/15/63	G. Moore
Ft. Meade	Micro Tape 550	1	2604	8/15/63	In systems checkout.	11/21/63	T. Stockebrand
Ft. Meade	Micro Tape 555	1	2609	8/15/63	Completed; Delivery contingent on Micro Tape 550 EN#2604.	11/21/63	T. Stockebrand

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
JPL	IBM Interface	1	2628	8/15/63	Shipped not accepted - Entire P.O. not complete.	11/15/63	R. Beckman
JPL	Multiplexer 133	1	2632	8/15/63	Installed waiting for acceptance.	11/15/63	R. Beckman
MIT - Lincoln Lab.	Data Control 131	1	2579	8/1/63	Had Design problems. Presently in final checkout.	11/8/63	R. Beckman
MIT - Lincoln Lab.	Tape Control 510	1	2580	8/1/63	Had Design problems. Presently in final checkout.	11/8/63	R. Beckman
MIT - Lincoln Lab.	Data Speed Channel 19	1	2581	8/1/63	Waiting for Data Control 131 EN#2579.	11/8/63	R. Beckman
MIT - Project MAC	Intensity Level for CRT Type 30E	1	2474	11/1/63	Delivered Contingent on System Acceptance.	Late Dec.	J. Shields

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
MIT - Project MAC	16K Memory for PDP-1C-40	1	2540	11/1/63	Previous Design Problems.	Late Dec.	J. Shields
MIT - Project MAC	High Speed Channel Control Type 19	1	2727	11/1/63	Delivered Contingent on System Acceptance.	Late Dec.	J. Shields
MIT - Project MAC	Light Pen Type 32	1	2728	11/1/63	Delivered Contingent on System Acceptance.	Late Dec.	J. Shields
MIT - Project MAC	Symbol Generator Type 33	1	2729	11/1/63	Delivered Contingent on System Acceptance.	Late Dec.	J. Shields
MIT - Project MAC	Data Control Type 131	1	2730	11/1/63	Delivered Contingent on System Acceptance.	Late Dec.	J. Shields
MIT - Project MAC	Micro Tape Control Type 550	1	2731	11/1/63	Previous difficulties in checkout have caused delay.	Late Dec.	T. Stockebrand
MIT - Project MAC	Micro Tape	1	2732	11/1/63	Previous difficulties in checkout caused delay.	Late Dec.	T. Stockebrand

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
MIT - Project MAC	CRT Display Type 3CE	1	2774	11/1/63	Delivered Contingent on System Acceptance.	Late Dec.	J. Shields
System Development Corp.	Line Units	56	2615	7/22/63	Being installed.	End of Nov.	D. Smith

INTEROFFICE MEMORANDUM

SUBJECT: JOB ALLOCATION, MECHANICAL DESIGN DATE: November 15, 1963

TO: All Engineers
K. Olsen
S. Olsen
H. Anderson
N. Mazzarese
M. Sandler
J. Smith
R. Maxcy
R. Maroney
K. Peirce
H. Crouse
B. Brackett
W. Hindle

FROM: Loren Prentice

To better acquaint all engineers and management with job responsibility within the mechanical design department, a memo will be issued periodically as required.

ENGINEER	JOB NUMBER OR EN NUMBER	DESCRIPTION	% COMPLETE
Loren Prentice	1136	555 Tape Unit E.C.O.'s	95%
	1065	Large Display	10%
	1000	Building layout	75%
	1196	Tape transport type 570	90%
	1000	Quotation - plastic parts	50%
	1000	Engineering standards	0.5%
	1237	555-A tape unit Solid State Dev.	20%
	1252	Security	
	unassigned	Link computer	0%
Phil Backholm	1196	M3000 tape transport Prototype type 570	85%
	1185	Automatic silk screen	2%
	1191	PDP-5 Prototype	80%

ENGINEER	JOB NUMBER OR EN NUMBER	DESCRIPTION	% COMPLETE
Ken FitzGerald	1023	Additional assembly jig for 1914 mounting panels	75%
	1000	Paint adhesion on steel components	30%
	1053	Welding jigs for standard computer cabinets	99%
	1253	Sheet metal, cabinet assembly and carpenter shop supervision and administration	--
	1254	Machine shop supervision and administration	--
	1178	PDP-6 console mechanical design and prototype fabrication	95%
	1208	DEC paper tape reader (Stepping motor drive)	30%
	1000	"Plastic" doors and end panel research	0%
	1254	Programming tape controlled milling machine	--
	1097	Automated module production	10%
	2740	Mechanical parts for "Havoc" computer	95%
Scott Miller	1000	Tiltable mounting panel	85%
	1022	Power Supply Redesign	75%
	1023	Mounting panel label	75%
	1088	Package design - module	70%
	1196	Tape Transport 570	99%
	1211	PM Light Pen	75%
		Product Identification	Open

ENGINEER	JOB NUMBER OR EN NUMBER	DESCRIPTION	% COMPLETE
Ron Cajolet	1178	PDP-6	90%
	1236	Display 340	95%
	1027	Stability test stand (Display 30)	50%
	2667	PDP-1D	65%
	1170	7090 Data Channel	50%
	1181	Camera Mount	5%
	1023	Mounting panel development	--
	1177	PDP-5	--

JOBS PENDING - UNASSIGNED		ASSIGNED ELECTRONIC ENG.
1151	Large Tape Storage - Hold	T. Stockebrand
1165	Projection display	R. Savell
1180	Camera equipment for 30 display	R. Savell
1181	Camera equipment for 31 display	R. Savell
1182	Electrostatic display development	R. Savell
1086	Holley printer	R. Savell
1064	Eye-ball unit	R. Savell

H Anderson

INTEROFFICE MEMORANDUM

TO: All Sales Personnel FROM: Stan Olsen

RE: Sales Meeting DATE: November 14, 1963

As was planned at our last meeting, we will have a Sales Meeting on the twenty-sixth of this month which will again be held at La Petite Auberge starting promptly at 8:30 a.m.

If you have any suggestions for the Agenda, please call Mary Ellen by Monday afternoon.

INTEROFFICE MEMORANDUM

DATE November 14, 1963

SUBJECT

TO K. Olsen
✓H. Anderson
S. Olsen
N. Mazzarese

FROM J. Smith

One module type still remains unreleased for PDP-5.

Module type 4802.

INTEROFFICE MEMORANDUM

DATE November 13, 1963

SUBJECT Acceptance of Renegotiation Filing for Fiscal Year Ended June 30, 1962

TO K. Olsen
H. Anderson
S. Olsen
G. O'Dea
W. Hindle

FROM R. Mills

I received a call from Matt Chick at Lybrand, Ross Bros. & Montgomery in Washington today telling me that he had delivered our reply to the Renegotiation Board's questions to Mr. Alex Watt. Alex Watt stated, after asking several price list questions concerning our letter, that if we did not hear from the Renegotiation Board in a couple of weeks that our SNA Filing for the Fiscal Year Ended June 30, 1962 had been accepted.

It is significant that of the several questions asked, there was no reference to our having filed previously for Class Exemption for Computers, only a question regarding the individual billing procedures which we followed in billing computers - i.e., in accordance with our price list with modifications being billed separately.

RM/bl

dec INTEROFFICE MEMORANDUM

DATE November 12, 1963

SUBJECT SHARE

TO H. R. Morse/ H. Crouse

H. E. Anderson
E. Newman

FROM Gordon Bell

I am asking H. Crouse to investigate the possibility of DEC becoming a member of the IBM sponsored organization, SHARE.

There may be a different SHARE organization for each of the IBM machines, if so, our current interest might be for these:

7090
1620
1401

We would like to get on their mailing list, receive their programs, etc.

H. Anderson

INTEROFFICE MEMORANDUM

DATE November 11, 1963

SUBJECT Semiconductor Price List

TO All Sales Personnel, Engineering Personnel & Administration

FROM A. L. Fortin

H. Andersen ✓
K. Olsen
S. Olsen
N. Mazzarese
G. Bell
R. Best
H. Crouse
D. Chin
R. Doane
E. Harwood
J. Richardson
J. Ridgeway
R. Hughes
R. Mills
R. Boisvert
R. Leonard
R. Savell
J. Rutschman
J. Shields
J. Roudela
F. Bonner
B. Beckman
J. Myers
A. Hall
B. Farnham
B. Fowle
D. Smith
G. Rice
R. Lane
H. Painter
S. Mikulski
J. O'Connell
P. Gould
M. Ruderman
G. Moore
A. Titcomt
R. Wilson
J. Padiman
J. Jones
A. Ross
J. Long, Canada
R. Colman, Los Angeles
G. Benton, Los Angeles
T. Johnson, Los Angeles
R. Oakley, Los Angeles
K. Larsen, Palo Alto
J. Burley, Washington, D. C.
D. Donniston, New York
G. Biewe, Munich, W. Germany
D. Doyle, Canada

All DEC Sales Offices (2 copies).

The attached list of Semiconductors has been updated. Please destroy all previous copies in your possession.

ea

SEMICONDUCTOR PRICE LIST
DIGITAL EQUIPMENT CORPORATION
TRANSISTORS

DEC NUMBER	SELLING PRICE	REPLACEMENT TYPE & MANUFACTURER
2N224	See 2N527	
2N393	See MA89	
2N398A	$1.30	2N398A Motorola
2N412	See DEC 1305	
2N456A	$2.35	2N456A Texas Instrument
2N457A	$2.85	2N457A Texas Instrument
2N522A	$1.35	2N522A General Instrument
2N527	$1.91	2N527 Texas Instrument
2N588 White	See MD94	
2N588 Yellow	See MD94	
2N588 Red	See MD93	
2N588 Black	See MD109	
2N588 Green	See MD95	
2N598	$2.55	2N1998 Texas Instrument
2N656	$6.70	2N656 Texas Instrument
2N711A	$1.45	2N711A Texas Instrument
2N744	$8.25	2N744 Texas Instrument
2N813	$6.87	2N813 Raytheon
2N835	$2.90	2N835 Motorola
2N964A	$5.25	2N964A Motorola
2N1132	$11.15	2N1132 Motorola
2N1146A	$4.70	2N1146A Clevite

A. L. Fortin 11/11/63

DEC NUMBER	SELLING PRICE	REPLACEMENT TYPE & MANUFACTURER
2N1184	$2.48	2N1184 R. C. A.
2N1184B	$4.13	2N1184B R. C. A.
2N1204	$6.38	2N1204 Motorola
2N1218	$7.50	2N1218 Sylvania
2N1304	$0.61	2N1304 Texas Instrument
DEC 1304	See 2N1304	
DEC 1305	See 2N1305	
DEC 2219	See 2N2219	
FSP-24	$35.40	FSP-24 Fairchild
GA 212	$3.45	2N1999 Texas Instrument
GA 439	$1.91	2N527 Texas Instrument
MA 45	See MA 89	
MA 80	See MA 89	
MA 89	$4.85	2N2451 Sprague
MA 90	$4.85	2N2451 Sprague
MA 90 (R)	$4.85	DEC only
MA 90 (BR)	$4.85	DEC only
MD27 White	See MD94	
MD27 Yellow	See MD94	
MD27 Red	See MD93	
MD27 Black	See MD109	
MD27 Green	See MD95	
MD93	$4.85	2N2487 Sprague
MD94	$2.95	2N2488 Sprague

A. L. Fortin 11/11/63

DEC NUMBER	SELLING PRICE	REPLACEMENT TYPE & MANUFACTURER
MD95	$3.65	2N2489 Sprague
MD109	$3.65	2N2489 Sprague
MD114	See 2N1499A	
MD114 (R)	See MM999	
MM999	$4.70	MM999 Motorola
S1188A	$36.00	DEC only
SDA-1	$63.00	2N2919 Fairchild
SDA-1 (R)	$63.00	DEC only
SDA-4	$63.00	2N2919 Fairchild
SDA-5	$63.00	DEC only
2N1304 (R)	$1.90	DEC only
2N1305	$0.61	2N1305 Texas Instrument
2N1305 (R)	$1.90	DEC only
2N1308	$1.12	2N1308 Texas Instrument
2N1309	$1.12	2N1309 Texas Instrument
2N1310	$4.51	2N1310 General Instrument
2N1370	See 2N527	
2N1427	See MA89	
2N1494	$6.80	2N1494 Motorola
2N1495	$7.35	2N1495 Motorola
2N1499A	$1.40	2N1499A Sprague
2N1600	$6.15	2N1600 Transitron
2N1613	$3.71	2N1613 Fairchild
2N1719	$12.60	2N1719 Texas Instrument

DEC NUMBER	SELLING PRICE	REPLACEMENT TYPE & MANUFACTURER
2N1754	$1.35	2N1754 Sprague
2N1754 (R)	See MM999	
2N2099	$4.20	2N2099 Sprague
2N2100	$7.20	2N2100 Sprague
2N2218	$5.85	2N2218 Motorola
2N2219	$6.75	2N2219 Motorola
2N2475	$6.19	2N2475 R. C. A.
2N2713	$1.50	2N2713 General Electric
2N2714	$1.65	2N2714 General Electric
2N2804	$33.00	2n2804 Texas Instrument
2N2904	$11.00	2N2904 Motorola
2N2904A	$16.25	2N2904A Motorola
4JX1C741	$1.91	2N527 Texas Instrument
16B-1	See 2N2713	
16B-2	See 2N2714	
SDA-6	$63.00	2N2919
SF2506	$32.40	DEC only
SF2507	$36.00	DEC only
SJ1071	$11.70	2N1990 Fairchild
SP390	$28.00	DEC only
SW1250-3	$12.75	DEC only
T1692	See 2N1754	
T1796	$8.00	DEC only
T1961	See 2N1754	

DEC NUMBER	SELLING PRICE	REPLACEMENT TYPE & MANUFACTURER
1/4M6.8AZ5	$4.00	1/4M6.8AZ5 Motorola
1/4M8.2Z5	$4.00	1/4M8.2Z5 Motorola
1N67A	$0.60	1N67A Clevite
1N91	$0.85	1N91 General Electric
1N270	$0.32	1N270 Clevite
1N429	$5.80	1N429 Motorola
1N469	$3.75	1N469 Hoffman
1N469A	$4.75	1N469A Hoffman
1N648	$1.95	1N648 Clevite
1N748	$2.00	1N748 Motorola
1N748A	$2.80	1N748A Motorola
1N750	$2.00	1N750 Motorola
1N750A	$2.80	1N750A Motorola
1N758A	$2.80	1N758A Motorola
1N762	$2.00	1N762 Transitron
1N764	$2.00	1N764 Transitron
1N825	$7.95	1N825 Motorola
1N964A	$2.20	1N964A Dickson
1N987B	$3.45	1N987B Dickson
1N1217	$0.68	1N1217 Motorola
1N1220	$0.93	1N1220 Motorola
1N1227	$1.17	1N1227 Westinghouse
1N1315	$3.25	1N1315 U. S. Semcor
1N1341	$1.12	1N1341 Westinghouse

DEC NUMBER	SELLING PRICE	REPLACEMENT TYPE & MANUFACTURER
1N1875	$3.50	1N1875 U. S. Semcor
1N1982	$7.92	1N1982 U. S. Semcor
1N1998	$3.25	1N1998 U. S. Semcor
1N2175	See LS400	
1N2970B	$7.60	1N2970B Motorola
1N2974B	$7.60	1N2974B Motorola
1N2976B	$7.60	1N2976B Motorola
1N3156	$16.85	1N3156 Motorola
1N3208	$1.15	1N3208 Motorola
1N3209	$1.30	1N3209 Motorola
1N3210	$1.75	1N3210 Motorola
1N3316	$6.25	1N3316 Motorola
1N3316B	$10.80	1N3316B Dickson
1N3340A	$6.25	1N3340A Motorola
1N3496	$19.00	1N3496 Transitron
6RS20SP4B4	$1.03	6RS20SP4B4 General Electric Thyrector
6RS21SA2D2	$2.00	6RS21SA2D2 General Electric Thyrector
D-001	$0.64	1N276 Clevite
D-003	$1.75	1N994 Transitron
D-007	$0.54	DEC only
D-662	$1.40	1N645 Clevite
D-664-3	$2.90	1N3606 General Electric
LS400	$13.50	LS400 Texas Instrument Light Sensor

A. L. Fortin 11/11/63

DEC NUMBER	SELLING PRICE	REPLACEMENT TYPE & MANUFACTURER
Q-5-100	$1.85	Q-5-100 International Diode Corporation
Q-6-100	$1.95	Q-6-100 International Diode Corporation

Clevite Transistor, 241 Crescent Street, Waltham 54, Massachusetts

Dickson Electronic Corp., 248 Wells Fargo Avenue, Scottsdale, Arizona

Fairchild Semiconductor Corp., 4300 Redwood Highway, San Rafael, California

General Electric Co., Rectifier Components Dept., 1224 W. Genesee Street, Syracuse, New York

General Instrument Corp., 65 Gouverneur Street, Newark 4, New Jersey

Hoffman Semiconductor Div., 4501 N. Arden Drive, El Monte, California

International Diode Corp., 88 Forest Street, Jersey City, New Jersey

Motorola Semicon. Products, 5005 East McDowell Road, Phoenix, Arizona

National Semiconductors Ltd., 230 Authier Street, Montreal 9, Quebec, Canada

National Transistor Mfg., Inc., 500 Broadway, Lawrence, Massachusetts

Radio Corp. of America, Semiconductor Div., Somerville, New Jersey

Raytheon Semiconductor Div., 900 Chelmsford Street, Lowell, Massachusetts

Sprague Electric Co., North Adams, Massachusetts

Sylvania Semiconductor Div., 100 Sylvan Road, Woburn, Massachusetts

Texas Instruments, Semicon.-Components Div., P.O. Box 5012, Dallas, Texas

U. S. Semcor, Solid State Div., 3540 Osborn Road, Phoenix, Arizona

Westinghouse Electric Corp., Semiconductor Dept., Youngwood, Pennsylvania

H. Anderson

INTEROFFICE MEMORANDUM

DATE: November 11, 1963

SUBJECT: PDP-6 Simulator

TO: PDP-6 List FROM: L Gossel

The PDP-6 Simulator will simulate a "6" with about 3000 words of memory on an 8K PDP-4.

It is operated from the typewriter in the numeric case. Statements are entered in the form nnnnX, where n is a string of digits and X is a control character.

nnnnnn␣	(Space)	Print out the contents of n and open the register for modification (a line feed completes the modification command and a CR is used for no modification.)
↵	(Carr. Ret.)	Print out and open the next sequential register.
nnnnnn	(bell)	Load n into the PC and start in the "6" mode.
.	(period)	Print out the state of the PC, MA, MB, AR, MQ and FLAGS (OV, CRY-0, CRY-1, PCCF).
:	(colon)	Continue the "6" program without modifying the PC.
!	(exclamation pt.)	Load a standard program tape and start on completion of the loading.
nnnnnn "		Set up the address halt to stop at n when AC sw 2 is up.

A program halt, an address stop or a reference to non existent memory will print out the contents of the PC followed by a slash, the memory address, and the contents of the memory location referenced.

The AC switches have the functions:

0 - 0 ⇒ external 36 bit memory, 1 ⇒ internal memory

1 - Single instruction mode

2 - Address Stop mode

The console simulator begins at location 14000

LIMITATIONS

Interrupt system not simulated.

The IO instructions simulated are:

DATAI	Paper Tape Reader, Switch Register 18-35
DATO	Paper Tape Punch
CONO	Paper Tape Reader, Punch

Portions not debugged are:

Floating Point

Mul/Div

Shift Rotate

Character OPS

LG/dhw

INTEROFFICE MEMORANDUM

DATE 7 November 1963

SUBJECT PDP-5 Course Convening 11 November 1963

TO K. Olsen
H. Anderson
S. Olsen
N. Mazzarese
R. Beckman
R. Wilson
All Sales Personnel
District Offices

FROM R. Bernier

The following individuals are scheduled to attend a one week PDP-5 Maintenance Course convening 11 November 1963:

NAME	COMPANY
B. Clark	Digital Equipment Corp.
F. Dillingham	Bell Telephone Labs
R. Gagne	Digital Equipment Corp.
Lt. R. O' Hagen	U.S. Coast Guard
T. Quinn	Digital Equipment Corp.
J. Richardson	Digital Equipment Corp.
C. Striver	Bell Telephone Labs

****

DIGITAL MAYNAD

DIGITAL EQPA

MSG NO. SFO-218

DEC PALO ALTO TO DEC MAYNARD 4.45 PM 11-6-63.

ATTN ..... KEN OLSEN

SUBJ ..... MEMORIES

AMPEX 2 USEC COINCIDENT CURRENT MEMORIES DESIGNATED R Z
IN DEVELOPMENT. THEY WILL BE RELEASED TO PRODUCTION IN DECEMBER AND WILL TAKE ORDERS FOR DELIVERY IN JULY OR AUGUST 1964.

THE PRICE FOR 8191 XXXX 8192 X 36 IS $ 60,000
FOR 16284 X 36 IS $ 70,000

FOR EARLIER DELIVERY THEUNITS WOULD BE BUILT BY THE SPECIAL PRODUCTS GROUP WHICH IS THEIR PRE-PRODUCTION LINE. APRIL-MAY DELIVERY WOULD COST APPROX. 5-10 PER CENT MORE. TO EXPEDITE DELIVERY TO BEFORE APRIL WOULD COST 10-20 PER CENT MORE.

AMPEX 1 USEC LINEAR SELECT MEMORIES DESIGNATED L Z

4K?

FOR 8192 X 36 IS $ 134,000
FOR 16284 X 36 IS $ 228,000

I ASKED THAT THEI EAST COAST OFFICE CONTACT YOU REGARDING MEMORY STACKS.

ELECTRONIC MEMORIES WILL HAVE NO 2 USEC COMMERCIAL MEMORY SYSTEM AVAILABLE IN THE NEAR FUTURE.

RON HEATH QUOTED THE FOLLOWING STACK PRICES FO 2 USEC COINCIDENT CURRENT STACKS.

SIZE	QUANTY 1	5	10
8192 X 36	$ 14,800	$ 13,600	$ 12,700
16284 X 36	$ 29,000	XXXXXXXX $ 29,000	

NO STACK HAS BEEN DESIGNED FOR 1 USEC LINEAR SELECT MEMORY.

KEN LARSEN.

H. ANDERSON

INTEROFFICE MEMORANDUM

DATE November 7, 1963

SUBJECT Overdue Computer Systems and Options.

TO K. Olsen
H. Anderson ✓
S. Olsen
G. O'Dea
W. Hindle
D. Best
D. Mills
M. Sandler
R. Beckman
R. Savell
B. Stephenson
E. Harwood
J. Shields
D. Smith
J. McCalip
J. Smith
S. Lambert
T. Stockebrand
J. Rutschman
P. Greene

FROM N. Mazzarese

The following is a list of overdue computer systems and options. The engineer responsible for the project's completion is indicated in each case.

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
AECL	Multiplexer	1	2564	10/30/63	Checkout completed. Customer late in firming up specification	Late Nov.	P. Greene
AECL	PDP-5 (DC-12)	1	2565	10/30/63	Customer late in firming up specification	Late Nov.	E. DeCastro
AECL	PDP-4-18 Including Reader	1	2566	10/30/63	Completed Contingent upon Multiplexer EN# 2564.	Late Nov.	E. Harwood
AECL	Additional Memory Module Type 134	1	2567	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	E. Harwood
AECL	Type 18 Extended Arithmetic Unit	1	2568	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	E. Harwood
AECL	Two (2) On-Line Teleprinters	2	2569	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	E. Harwood

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
AECL	Punch and Control	1	2570	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	E. Harwood
AECL	One Data Interrupt Multiplexer	1	2571	10/30/63	Operating Program being de-bugged.	Late Nov.	P. Greene
AECL	8-Bit D to A Converters	2	2572	10/30/63	Operating program being de-bugged.	Late Nov.	P. Greene
AECL	Output Buffers and Command Circuits	2	2573	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	P. Greene
AECL	Spare Reader	1	2574	10/30/63	Checkout completed.	Late Nov.	J. Smith
AECL	Drum System 16K Type 24A	1	2575	10/30/63	Checkout completed.	Late Nov.	T. Johnson
AECL	Light Pen Type 32	1	2577	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	R. Savell
AECL	Direct Drum to Display Circuits	1	2578	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	P. Greene

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
AECL	Type 30L Precision Display	1	2579	10/30/63	Completed Contingent on System Acceptance.	Late Nov.	R. Savell
AECL	Mul. & Div. 10	1	2610	8/15/63	Installed not accepted. Entire P.O. not complete.	Late Nov.	J. Shields
AECL	Micro Tape 555	3	2611	8/15/63	Contingent upon EN# 2612, Micro Tape 550.	Late Nov.	T. Stockebrand
AECL	Micro Tape 550	1	2612	8/15/63	PDP-1 Programming incomplete.	Late Nov.	T. Stockebrand
AECL	16 Channel 1 Seq. Break	1	2613	8/15/63	Installed not accepted. Entire P.O. not complete.	Late Nov.	J. Shields
DEC - PDP -4 Prototype	Micro Tape Control 550	1	2719	10/14/63	Original went to Project MAC.	12/2/63	T. Stockebrand
DEC-PDP-4 Prototype	Micro Tape Transports 555	3	2720	10/14/63	Complete Contingent upon Micro Tape Control 550 EN#2719.	12/2/63	T. Stockebrand

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
DEC Sales Physics	PDP-5-4 (4K Memory)	1	2723	10/30/63	It was re-scheduled for ship-ment.	11/7/63	E. Harwood
DEC Sales Physics	CRT Display with yellow filter - tek-tronix Type 34	1	2724	10/30/63	It was re-scheduled for ship-ment.	11/7/63	J. Jones
DEC Sales Physics	Nuclear Data 160F A to D	1	2725	10/30/63	It was re-scheduled for ship-ment.	11/7/63	J. Jones
DEC Sales Physics	Interface for 160F A to D	1	2726	10/30/63	It was re-scheduled for ship-ment.	11/7/63	J. Jones
DEC Sales Loan AECL	Memory Module Type 12	1	2750	10/25/63	Late del-ivery of Ferroxcube Stacks to DEC.	11/15/63	G. Moore
Ft. Meade	Micro Tape 550	1	2604	8/15/63	In systems checkout.	11/21/63	T. Stockebrand
Ft. Meade	Micro Tape 555	1	2609	8/15/63	Completed; Delivery contingent on Micro Tape 550 EN#2604.	11/21/63	T. Stockebrand

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
JPL	IBM Interface	1	2628	8/15/63	Shipped not accepted - Entire P.O. not complete.	11/15/63	R. Beckman
JPL	Multiplexer 133	1	2632	8/15/63	Installed waiting for acceptance.	11/15/63	R. Beckman
JPL	Tape Control Type 57A	1	2633	8/15/63	Installed waiting for acceptance.	11/15/63	R. Beckman
MIT - Lincoln Lab.	Data Control 131	1	2579	8/1/63	Had Design problems. Presently in final checkout.	11/8/63	R. Beckman
MIT - Lincoln Lab.	Tape Control 510	1	2580	8/1/63	Had Design problems. Presently in final checkout.	11/8/63	R. Beckman
MIT - Lincoln Lab.	Data Speed Channel 19	1	2581	8/1/63	Waiting for Data Control 131 EN#2579.	11/8/63	R. Beckman
Princeton	Tape Control 510	1	2558	9/15/63	Shipped awaiting acceptance.	11/15/63	R. Beckman
Princeton	Data Control 131	1	2559	9/15/63	Shipped awaiting acceptance.	11/15/63	R. Beckman

Customer	Item	Quantity	EN#	Original Date Due	Reason for Delay	Acceptance Expected	Engineer in Charge
Princeton	High Speed Channel Type 19	1	2560	9/15/63	Shipped awaiting acceptance.	11/15/63	R. Beckman
System Development Corp.	Line Units	56	2615	7/22/63	Being installed.	End of Nov.	D. Smith.

INTEROFFICE MEMORANDUM

DATE: November 7, 1963

SUBJECT: DESCRIPTION OF PROGRAMMING ENGINEERING GROUP

TO: K H Olsen
H Anderson
W Hindle
G O'Dea
R Mills
All Engineers
All Programmers
M Sandler
K Wakeen
E Harwood
R Beckman
J Shields
S Olsen
N Mazzarese
R Lassen

FROM: L M Hantman

The Engineering Programming Group is defined as that group of programmers who will work directly with the engineers, production group, checkout group, and field service personnel during the design, testing, debugging, demonstration and checkout of newly designed and current computer hardware and special systems. The group will produce programs to be incorporated into checkout, diagnostic, maintenance, and acceptance tests. As the amount of available personnel permits, it will also produce programs for such in-house functions as module testing, wiring lists, information retrieval, inventory and production control, and machine aided design problems.

The Engineering Programming Group under my direction presently consists of the following persons:

David Brown
Charles Stein
Leo Gossel
Russell Winslow
Ted Strollo

LMH/dhw

Mr. K. Anderson

INTEROFFICE MEMORANDUM

DATE November 7, 1963

SUBJECT

TO Works Committee

FROM J P Hastings

Before I submit another proposed Employment Agreement to the Works Committee may I please have your comments on a revised format.

JPH/dhw

INTEROFFICE MEMORANDUM

SUBJECT: SYSTEMS PROGRAMMING GROUP November 7, 1963

TO: K. OLSEN
H. Anderson
W. Hindle
G. O'Dea
R. Mills
M. Sandler
K. Wakeen
E. Harwood
R. Beckman
J. Shields
S. Olsen
N. Mazzarese
R. Lassen
All Engineers
All Programmers

The Systems Programming Group will be responsible for development and maintenance of the programming systems for the PDP's.

The group consists of,

Steve Piner	Nancy Hurley
Dave Fellows	Larry Portner
Norman Hirst	Nilda Hughes (Sec'y)
Gino Colicelli	Peter Samson (1/2 time)
Harris Hyman	Harrison R. Morse III

Harrison R. Morse III

HRM/nbh

dec INTEROFFICE MEMORANDUM

DATE November 6, 1963

SUBJECT Fabri-Tek

TO Harlan E. Anderson FROM Henry J. Crouse

The following people will be at the Las Vegas Show:

Jim Schallerer, Vice President General Manager of Operations,

Don Hazelhorst, Vice President Chief Engineer, and

Bob Rife, Sales Manager.

They are staying at the Riveria in Las Vegas.

Henry J. Crouse

November 4, 1963

Kenneth Olsen

Ed Decastro
cc: Stan Olsen
Harlan Anderson ✓

I would like to see Westinghouse get one of our cabinets to hold a high-speed reader and punch. I am willing to give them the cabinet if necessary just so that the set up looks good.

I propose that you ask them how much a cabinet is worth. If they will give us $50, $100, or $200, I would be willing to give them a cabinet. You might tell them that it is worth so much to us to have it look good that we are willing to give it to them at any price or for free. Maybe free would be easier than bickering over $50.

KHO:jb

Mr Henderson

digital MEMO

DATE Nov 4, 1963

TO Works Committee Members FROM J P Hastings

Will you please review and be prepared to discuss, at Works Committee, the proposed Employee Agreement drafted by Bob Cesari, Patent Counsel.

I have underlined parts of the employment agreement to point out the changes under consideration. Also enclosed for your reference is a copy of the existing Invention and Copyright Agreement.

JPH:ASJ
Encls

INVENTION AND COPYRIGHT AGREEMENT

Maynard, Massachusetts

_____196__

IN CONSIDERATION of my employment by Digital Equipment Corporation, a Massachusetts Corporation, (the "Corporation") I agree that I will make full and prompt disclosure to the Corporation of all inventions, improvements, modifications, discoveries, methods or processes made, conceived or developed by me or under my direction during the period of time beginning with my entry into employment of said Corporation and ending when I leave said employment. Whether or not the subject matters of such disclosures are pertinent or useful to the business of the Corporation shall rest in the sole judgment of the Board of Directors and I agree, upon the request of the Board and at the expense of the Corporation, to execute, file and assign to the Corporation, without other or further consideration, appropriate applications for letters patent in such countries as the Board may direct and to cooperate fully with the Corporation in prosecuting such applications. I further agree to execute and deliver any instruments that may be necessary or appropriate for full assignment of any patents that may issue upon such applications and, during the life of any such patents, and renewals or extensions thereof, to cooperate fully with the Corporation in securing to the Corporation full protection in respect of any and all of the same. I also agree to assign to the Corporation any and all copyrights and reproduction rights to any material prepared by me in

connection with my said employment. The provisions of this agreement insofar as capable of performance after the termination of my employment with the Corporation shall survive such termination and shall be binding upon my heirs, executors, administrators and assigns.

Witness my hand and seal

Signature _____(Seal)

Witness_____

EMPLOYMENT AGREEMENT

Maynard, Massachusetts
, 196

In consideration of my employment hereafter by Digital Equipment Corporation, a Massachusetts corporation, (the "Corporation") I hereby agree as follows:

1. I will make full and prompt disclosure to the Corporation of all inventions, improvements, modifications, discoveries, methods or processes, (all of which are collectively termed "developments" hereinafter), whether patentable or not, made, conceived or developed by me or under my direction during the period of time beginning with the date of this agreement and ending when I leave said employment, whether or not such making, conception or development takes place during normal working hours or on the premises of the Corporation.

2. Upon request of the Corporation, I agree to assign to the Corporation all developments covered by paragraph 1, which are pertinent or useful to the business of the Corporation and to execute and file such assignments, applications for letters patent and other docu-

ments in any and all countries whatsoever as the Corporation may direct and to cooperate fully with the Corporation in prosecuting such applications. I will execute and deliver to the Corporation any instruments that the Corporation may deem necessary or appropriate for full assignment of any patents that may issue upon such applications, and during the life of any such applications, patents and renewals and extensions thereof, I will cooperate fully with the Corporation in securing to the Corporation full protection in respect of any and all of the same. Whether or not any given development is pertinent or useful to the business of the Company, I agree to grant to the Company a nonexclusive royalty-free license to use the development.

3. I will also assign to the Corporation any and all copyrights and reproduction rights to any material prepared by me in connection with my said employment.

4. During the course of my employment by the Corporation, I may learn of confidential information relating to the Corporation, such information including matters not

generally known outside the Corporation, such as various developments, inventions, improvements, methods, etc., relating to the products and services marketed or used by the Corporation, and also general business operations of the Corporation (e.g., relating to sales, costs, profits, organization, etc.), and I agree not to disclose any such information to others or to make use of it, whether or not such information is produced by my own efforts, except as expressly permitted by the Corporation. Also, I may learn of apparatus, methods, ways of business, etc., which in themselves are generally known but whose use by the Corporation is not generally known, and I agree not to disclose to others such use insofar as the Corporation has indicated that it considers it confidential, whether or not such use is due to my own efforts.

5. The provisions of this agreement insofar as capable of performance after the termination of my employment with the Corporation shall survive such termination, regardless of the manner of such termination, and shall be binding upon my heirs, executors, administrators and assigns.

Witness my hand and seal

Signature_____(Seal)

Witness_____

DIGITAL EQUIPMENT COMPUTER USERS SOCIETY

Maynard, Massachusetts

November 4, 1963

To: H. Anderson

From: Elsa Newman

Attached is the list of attendees for the DECUS Annual Meeting to be held on November 18 and 19, 1963 at Lawrence Radiation Laboratory, Livermore, California. Compaines on the West Coast, not listed, will contact LRL directly.

ATTENDEES

DECUS ANNUAL MEETING

November 18, 19, 1963
Livermore, California

Charles W. Adams Associates
Bedford, Massachusetts

Mr. John T. Gilmore, Jr.

Air Force Cambridge Research Labs.
Bedford, Massachusetts

C. M. Walter

Air Force Systems Command
Electronic Systems Division
Bedford, Massachusetts

John Goodenough
Raymond Nickerson

Air Force Technical Applications Center
Headquarters, USAF
Washington, D.C.

John Davidson
Charles Haltom

ARPA, Washington, D.C.

Dr. J.C.R. Licklider

Beckman Instruments Inc.
Fullerton, California

Frank Ingram

Bolt, Beranek & Newman, Inc.
Cambridge, Massachusetts
Los Angeles, California

Lewis Clapp
William Fletcher
Richard J. McQuillin

Department of Defense
Washington, D.C.

Douglas L. Hogan
Robert J. Scott

Digital Equipment Corporation
Maynard, Massachusetts

Robert Beckman
Ronald Colman, L.A. Office
Leonard Hantman
Kenneth Larsen, Palo Alto Office
Nick Mazzarese
Elsa Newman
Stanley Olsen

Information International, Inc.
Maynard, Massachusetts

Edward Fredkin
Malcolm Pivar
Robert Saunders

International Telephone & Telegraph
Paramus, New Jersey

Jack Touber

Itek Corporation
Lexington, Massachusetts

Charles Burgess

Lawrence Radiation Laboratory
Livermore, California

Frazer Bonnell (will give names directly)

Mass. Institute of Technology
Cambridge, Massachusetts

Richard Mills
Prof. Marvin Minsky

M.I.T. Lincoln Laboratory
Lexington, Massachusetts

David Clapp

Stanford University
Stanford, California

Dr. John McCarthy

Systems Development Corporation
Santa Monica, California

Jules Schwartz

United Aircraft Research Laboratories
East Hartford, Connecticut

R. Belluardo
G. Paquette (?)

Wolf Research & Development Corp.
West Concord, Massachusetts

R. P. Gagan
William M. Wolf

Mr Anderson

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ACCESSION LIST FOR OCTOBER, 1963 November 1, 1963

FROM: J EBNER

TITLE	AUTHOR
Introduction to Labor Economics	Phelps, Orme W
Complete Guide to the Robinson-Patman Act	Patman, Wright
Higher Education 1962-63	U S Dept of Health
Webster's Seventh New Collegiate Dictionary (6)	Webster-Merriam (G & C Merriam Co)
High Speed Analog Computers	Tomovic, Rajko and Karplus, Walter J
Arithmetic Operations in Digital Computers	Richards, R K
Arithmetic of the Computer (2)	Crowder, Norman and Martin, Grace
Digital Computers and Control Engineering	Ledley, Robert Steven
The Compatible Time Sharing System	MIT Computation Center
Planning a Computer System	Bucholz Werner - Editors
Information Processing Language-V Manual	Rand Corp, Newall Allen - Editors
Computer Programming and Formal Systems	Braffort, P and Hirschberg, D - Editors
A Profile of the Programmer	Deutsch and Shea Inc - Compiled by
Automatic Data Processing Seminar for Federal Executives	U S Dept of Agriculture
Programming and Coding Digital Computers	Sherman, Philip M
Optical Processing of Information (2)	Kuester, Pollock and Tippett
Workshop on Computer Organization	Barnum, Alan A and Knapp, Morris A - Editors
Calculus	Thomas, George B
ABC's of Lasers and Masers	Lytel, Allen
Nuclear Pulse Spectrometry	Chase, Robert L
Materials Handbook	Brady, George S
Metal Spinning Applications of the Process-Equipment, Tools and Procedure	The Machinery Publishing Co, Ltd
Simplified Modern Filter Design	Phillip and Geffe
Motivation and Productivity	Gellerman, Saul W

Tough-Minded Management	Batten, J D
Job Evaluation, Text and Cases	Patten, John A and Littlefield, C L
Int'l Business Techniques, Legal and Financial Aspects	Crosswell, Carol McCormick
Production Control	Voris, William
Welding Handbook, Fourth Edition, Section Four	Phillips, Arthur - Editor
More Effective Writing in Business and Industry	Gunning, Robert

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