OPERATIONS COMMITTEE MEETING

February 24, 1969

AGENDA

1. Additions and Corrections to Minutes of the February 11 Meeting, and the "Woods" Meeting of February 11 and 12
2. Personnel Department Budget - (Win Hindle)
   (See attached report)
3. Company-Assigned Training - (Win Hindle)
   (See attached report)
4. Manager Training Program - (Win Hindle)
   (See attached report)
5. Status of the TU-79 Project - (Bob Savell)
   (See attached report)
6. Preliminary 1970 Bookings and Net Equipment Sales - (Ed Savage)
   (See attached report)
7. Monthly Reports by Vice-Presidents
8. Overdue Orders - (Stan Olsen, Nick Mazzarese, Win Hindle)

MINUTES OF THE OPERATIONS COMMITTEE

February 24, 1969

Present: K. Olsen, S. Olsen, T. Johnson, W. Hindle, P. Kaufmann (Secretary)

Absent: N. Mazzarese

1. Next Monday each Vice President will list his responsibilities, the time spent on each one, the weaknesses on each one and how he plans to strengthen the weaknesses and when the weaknesses will be strengthened.

2. The minutes of the February 11 meeting were accepted with the following exceptions:

   (a) #14, cross out sentence #2 and #3. Replace with "Bob Lane will develop a plan."

   (b) Sales Administration will be reviewed with Ron Smart on Wednesday.

3. Personnel Department Budget

   A $150,000 increase in the Personnel Department budget was approved.

4. Company Assigned Training

   Proposal was accepted as submitted.

5. Manager Training Program

   Proposal was accepted.

6. TU-79

   A management review committee was selected to review this project.

   Jack Shields
   Tom Stockebrand
   Marv Horovitz
   John Jones
   Steve Sobel

   Also minority reports from D. Knoll and J. St. Amour or anyone will be accepted by the Operations Committee. TU-30 will fill the obligations to customers.

7. Insurance

   $5,000 cost for 30 million umbrella coverage for airplane charters was approved.

8. April 15 Press Release has been postponed until further notice.

jb

INTEROFFICE MEMORANDUM

DATE: February 18, 1969

SUBJECT: Personnel Department Budget

TO: Operations Committee FROM: Win Hindle

In order to meet the hiring needs now projected by all departments by June 30, Personnel needs an additional $150,000 above the revised December budget. The facts are these:

	Need forecasted in December	Need as now forecast	Additions
Plant Personnel	460	590	130
Field Service	100	160	60
TOTAL	560	750	190

The cost for recruiting plant personnel averages $400 per hire; for Field Service it is $1650 per hire. The total added cost is thus (130 x $400) + (60 x $1650) or $151,000. These increased costs will be in Space, Advertising, Relocations, Agency Fees, and Travel Expenses.

I can provide further backup data if needed. However, I recommend that we aggressively go after these additional people and spend the money necessary to get them.

bwf

INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: Company Assigned Training

TO: Operations Committee

FROM: Personnel Committee
(G. A. Thayer)

The attached policy proposal on Company Assigned Training has been approved by the Personnel Committee and is forwarded for final review and approval.

There has been a growing need to clarify the Company's position in this area for both managers and employees, and to provide a basis for more informative counseling and guidance to insure maximum benefit to the employee and the Company.

GAT/lw

COMPANY ASSIGNED TRAINING

GENERAL:

The Company recognizes the value and need for sending an employee to a specialized course of instruction in order to acquire additional knowledge in an area of importance to his current job or in preparation for added responsibility.

In order to derive the fullest benefit from such experiences, managers are urged to counsel in advance with the Personnel Department so that their experience and knowledge of the various training organizations can be utilized in helping to select the one most appropriate for the individual employee's need. Also, for certain classes of employees, the provisions of wage and hour laws may apply and should be reviewed with the manager.

Completed course evaluation forms (attached) are maintained by the Personnel Department so that this information can be made available when counseling with managers and employees on proposed training courses.

POLICY:

When an employee is assigned to an educational course as part of his work, the Company will pay the whole cost of the course, including books and travel expenses.

Courses assigned by supervision as part of an employees work must be approved in advance by the department manager.

It is the responsibility of the department manager to insure that the reasons for assigning the employee to the course are necessitated by a requirement for him to gain specialized knowledge which could not be achieved practically through other means.

Employee requested courses, which would normally be approved via the Company's regular tuition refund program, are not to be approved as Company assigned training under provisions of this policy.

PROCEDURE:

The requesting supervisor completes and approves the Request for Training (see attached form) and forwards it to his manager for approval.

Upon approval, the manager forwards the Request to the Personnel Department. Approved requests for salaried personnel should be sent to the Manager of Professional Personnel; and approvals for hourly personnel should be sent to the Manager of Plant Personnel.

Personnel will forward the Request to the Purchasing Department for processing.

The Purchasing Department will distribute copies of the completed Request as follows:

Original - to be returned to Personnel Department for retention in the employee's Personnel file.

2 copies - to be returned to Requesting Supervisor. One for file, and one to be attached to Request for Check Form. (It is the responsibility of the requesting supervisor to forward the Request for Check Form together with the approved Request for Training Form to Accounting for processing.)

1 copy - to be retained by Purchasing Department.

Upon completion of the course the employee will complete the Training Course Evaluation and distribute copies as follows:

Original - to immediate supervisor

2 copies - to Personnel Department

(triplicate)

REQUEST FOR TRAINING

(For Company Assigned Training Only)

EMPLOYEE NAME _____ Badge No_____ Cost Ctr._____

Request approval for above named employee to be assigned to the following training for reasons indicated below:

Description of Training:_____

_____

_____

_____

Reason(s) Why Training Should be Assigned:_____

_____

_____

_____

_____

Organization Conducting Training:_____

_____

Period of Training: From_____ To _____

Cost of Training: _____

APPROVALS

1. Requesting Supervisor_____Date_____

2. Manager _____Date_____

3. Personnel _____Date_____

PURCHASING DEPARTMENT

Purchasing Authorization By_____Date_____

(original)

JIPMENT
)N

Distribution
Supervisor - orginal
Personnel - 2 copies

TRAINING
COURSE
EVALUATION

. Course | Dates Attended

ization Conducting Course | Where Course Conducted

urpose of Course

Did Course Accomplish its Purpose - Explain

Yes ☐ No ☐

Name of Instructor | Evaluation of Instructor

Good Points of Course

Weak Points of Course

Will Course Help You Improve Your Performance - Explain

Yes ☐ No ☐

Would You Recommend This Course - Explain

Yes ☐ No ☐

Additional Comments

Submitted By | Job Title | Location-Department

INTEROFFICE MEMORANDUM

DATE: February 13, 1969

SUBJECT: Manager Training Program

TO: Operations Committee FROM: Win Hindle

For the past 9 months we have been holding sessions of the Manager Training Program with 55 of the middle managers at DEC. Five seminar groups have met in the evening about once per month to discuss subjects that the group selected as pertinent - many of these groups have invited Operations Committee members as guests for an evening. There have been four lectures for the entire group given by Prof. Art Gerstenfeld of B.U., Prof. Ed Roberts of MIT and Professors Harry Levinson and Ted Levitt of Harvard Business School.

The Steering Committee for this Program (J. Jones, M. Ruderman, L. Portner, J. Smith, D. Packer and myself) recommends continuing this Program for another six months with a re-alignment of the seminar groups. Three more guest speakers will be invited to talk to the entire group.

We feel that the selection of participants for the Program for the next session should be carefully considered, since some of the participants for the previous session did not seem to be appropriate for this Program. The selection criteria we recommend for participants is:

1. Person should now be managing (this is not constructed as a program to teach new managers but is a program to assist those who have management responsibility).

2. Person should interact with other departments.

3. Person should be interested in increasing his management responsibility (should have "upward mobility" as one person phrased it).

We would like each Vice President to recommend men who meet these criteria as it is these men who will gain most from the Program and who will contribute most to it.

We expect the next session to last 6 months and then we will mix the groups again. Mixing of groups is one factor which appeals to the participants because it allows them to interact with many different managers in the company.

One other common suggestion we will attempt to accomplish in the next session is better preparation for each seminar - such as a case study or article to be read before the meeting.

bwf

INTEROFFICE MEMORANDUM

DATE: February 19, 1969

SUBJECT: Status of TU-79 Project

TO: Operations Committee

FROM: Bob Savell

cc: Jim Young
Dave Knoll
Bob Antonuccio
Dave Nevala

One month ago I reported on the status of the TU-79 project and said that it was in a confused state and that I would return in one week to give a more complete report on its status and to provide a schedule for completion of the project. An indication of exactly how confused the project is is the fact that it took me four weeks instead of one week to get this report finished.

During these last weeks we have endeavored to answer the following questions: (1) Where are we in the project? (2) How did we get there? (3) What is the schedule to get from where we are today to the end of the project? This last question was approached in two stages, first, the schedule to complete two pilot production units and second, the schedule to complete the rest of the initial production run of 32 units.

1. Where are we?

We have a total investment in the project at this point of approximately $500,000. We have an investment in production inventory for the 32 production units of approximately $100,000. All engineering tests have been run on the engineering prototype along with long term reliability tests. The great majority of these tests were passed successfully. Some, however, did not pass and changes were put in and are being put in both mechanical and electrical. Not all of the changes that have been installed in the engineering prototype have yet been installed in the pilot production units. I feel quite confident that the few changes yet left to install in the prototype in the Real Servo area and the Read-Write area will pass successfully as a great deal of work has already been done on these changes on a breadboard basis.

There are 32 pilot production units in various stages of construction. Nine of these have been completely assembled and have had various amounts of checkout done on them. There are numerous changes, both electrical and mechanical, that still must be installed in all of these units. Some of these changes are due to engineering problems, others are due to vendor supply problems, ie., vendors not being able to make material according to the prints, others due to assembly problems.

The documentation, and I refer here primarily to drawings, are in pretty bad shape. They are full of errors. Some of these are initial design errors, some are simply the result of changes being made to the equipment and not being properly documented.

.. How did we get there?

I will list a few of the reasons but as you can probably deduce from the answer to the previous question, the major answer to this question has to be poor project management. If we had carloads of engineering design problems, we could blame the design engineer, but that is obviously not the primary problem. The primary problem is that things were not well enough organized. Jim Young has been the project engineer on the project since last fall when I gave Jo Sutton the additional responsibility for PDP-10 peripherals. This is Jim's first project and he needed guidance which he didn't receive from Jo and which neither one of them received from me.

In the electrical area the primary problem has been that we made changes on top of changes. Some of these were initiated by Engineering and some by Production Engineering, and neither of these were controlled in the manner in which they should be. Production Engineering people contributed greatly to the confusion in the electrical area, especially in the area of cabling where they took on the responsibility for redoing all the cabling which they were supposed to document. No documentation got done, models got lost, etc. Our engineering people should have kept the production engineering people under control and they failed to do so.

Confusion seems to be worst in the mechanical area. That's where the largest number of drawing errors are and where the greatest amount of work remains to bring the documentation up to where it should be. It is also where the greatest number of changes have been made and have yet to be made to the pilot production units. I am convinced that the major problem here has been the lack of a mechanical engineering test plan that is the analog to our, what turns out to be, electrical engineering test plan. The lack of this formal plan aggravated by such things as having Phil Backholm leave and having the production engineering people disagree as to what constituted proper mechanical engineering tests to perform on the first few pilot production units, have brought us to our present state.

I feel that this latter point is an extremely important one because we are so careful to make a thorough electrical engineering test plan and to include in those engineering tests, things such as looking for noise on signals, and other tests of a similar nature to prove that the system behaves the way it is supposed to, not simply tests which prove that the system is connected up the way it is supposed to be. We really ignored this when it comes to mechanical things. We jumped to the conclusion on this project and the production engineering people seemed to have jumped to the same conclusion that, for instance, a mechanical part can be assumed to be correct simply because we have an incoming mechanical inspection that inspects things to see that they agree with the drawing. This is a fallacious assumption because one of the purposes of building pilots is to find out whether or not the drawings are correct. Part of a satisfactory engineering test plan involves going into the units and performing mechanical inspection on individual parts of the unit to a plan which should enable one to verify that, in fact, the drawings are correct.

3.1. The schedule to finish the first two pilot production units

As the attached schedule shows on the line labeled Production, the first two pilot production units can have all changes installed and be completely through all tests including testing on the PDP-10 by April 19 and May 1, respectively.

3.2. Schedule for the remainder of the 32 pilot production units

We have not determined a firm schedule for the rest of the units as yet. To complete all the mechanical drawings, our best estimate in collabpration with Dave Nevala and Gordon Graham is approximately 2 1/2 months. If we assume that we complete construction and test of the additional 30 units as soon as possible following the first two at a rate of 6 per month, it would take 5 more months to complete the production run. Further, I would estimate that the engineering people would be tied up for approximately 6 months from today, or three more months to get all the mechanical drawings squared away and to finish tests on the first two pilot production units and an additional three months to clean up final details and to fully turn the TU-79 over to Production. I would estimate that the engineering costs incurred during this period would be another 50 to $70,000.

Personnel assigned to the project at present are Jim Young, who is the project engineer and who is doing all the electrical design, Warren Gorlick, the engineer performing all the electrical tests, and Dave Nevala, mechanical engineering.

I feel that our prospects of continuing for any period of time approaching 6 months on this project without incurring further slippages are poor. I have already pointed out that this is Jim's first project and as project engineer and electrical engineer on a project which is in a very confused state, he will be spread extremely thin. I feel that he would need help from someone more experienced in project management to the extent of at least two full days a week. I cannot possibly spend that sort of time without seriously jeopardizing the PDP-10 program. The mechanical engineer assigned, Dave Nevala, has as his major project at this time, the PDP-11. Life being what it is, I expect that Dave will be under tremendous amounts of pressure to get the PDP-11 done as soon as possible and that it is unrealistic to expect that he will be able to devote even the 25% of his time that he feels he can devote to the TU-79 today.

I certainly expect slippage in that area. As I expect most of you know, Jo Sutton has left to join Data General, so is not available to continue to help manage the project.

Alternatives

1. Quit today.

2. Keep on going and complete the entire project.

3. Complete only the first two units and stop. Do only enough documentation to be able to maintain the system.

Put the two TU-79's on Larry Portner's PDP-10 for long-term test. Put the engineering resources to work into Arnold Sherman's new low-priced TU-79 design. Salvage as much of the remaining inventory as possible. I would estimate at least $30,000 could be salvaged in heads, modules, power supplies, alone.

4. Complete the first two units and come back shortly with a firm schedule for completing the rest. While completing the first two, keep going and finish all the drawings and documentation required to complete the rest.

5. Complete the first two units, do not do any documentation except that necessary for the first two units and decide after seeing whether those two work successfully, whether or not to continue to do the rest. If the decision is made to go ahead, complete the rest of the documentation at that time.

I propose that we should follow Alternative 3. As I have said previously, I feel that the management of the project and the availability of personnel for an extended period of time is going to be a problem. In the long run, we will be better off to put the engineering effort into the new low-priced TU-79.

I do not favor quitting today because we are so close to being able to complete and therefore really long term test 2 pilot production units.

Alternative 4 will slow down the completion of the first two due to the necessity for continuing on with the administrative task of producing a full-blown schedule for the other 30 units in the near future.

Alternative 5 would take the longest in calendar time to result in completion of the entire project. For that reason, I don't feel it is a reasonable alternative.

One might argue that we should follow the 570 philosophy of finishing the project and thereby being able to sell 30 of these units or so, and essentially break even on the project as a whole. That's one way to look at it but the great bulk of the money was expensed prior to this year and we are certainly not going to break even this year.

bwf

SHEET 1 OF 2

14-19 SCHEDULE

2/21 2/28 3/7 3/14

ELEC. DWG's (corrected input to drafting/prod)

- REEL SERVO
- P/W
- P/W CABLES
- MISCELLANEOUS
- DS — REEL SERVO
- WIRE LIST/PROGRAMMING — REEL SERVO

MECH DWG's (corrected input to drafting/prod & 2 of a kind parts to prod)

- COOLING — Delivery of Reel Mtr Blowers
- ELECT.
- TD & AS — #1 ready for off-line check
- OTHER
- PRODUCTION — #2 has mech rework done.

HARD CORE DOC. (DWGS, MAC, SPEC) → to May 2nd

1st TU-79 thru PDP to Acceptance & Engin Test → to April 18th (subsequent units at ~ 2wk intervals)

OFF-LINE & ON-LINE PROG (typed copy input to drafting)

- ON-LINE — to 3/28
- OFF-LINE (PDP-10)
- ACCEPTANCE

REEL MAINTENANCE MANUAL

- FINAL OUTLINE (TYPED) & CONFIRMED
- ROUGH DRAFT (typed) → to April 11th

COMPANY CONFIDENTIAL

OPERATIONS COMMITTEE MEETING

February 10, 1969

AGENDA

Steve Stone
Meeting held
Feb. 11th

1. Additions and Corrections to Minutes of the February 3rd Meeting
2. Marketing Review Committee Summary - (Ted Johnson)
   (See attached minutes of the February 4th meeting)
3. Discussion of Sales Administration - (Ted Johnson, Ron Smart, Dave Packer)
4. Fiscal Year 1970 Marketing Plans - (Ted Johnson)
5. Proposed Employee Discounts on DEC Products - (Ted Johnson)
   (See attached report)
6. Special Reviews - (Pete Kaufmann)
7. Proposed Parking Regulations - (Stan Olsen)
   (See attached report)
8. Review of Bob Collings' Proposal on the KV Graphic System - (Nick Mazzarese)
   (Report distributed for the January 27th meeting)
9. Proposed Changes to the Statement of Operations for FY 1970 - (Ed Savage)
   (Report distributed for last week's meeting)
10. Microsystems Technology - (George Rice)
    (See attached report)
11. Proposed Corporate Contributions for 1969 - (Win Hindle)
    (See attached report from the Personnel Committee)
12. Design Review Committees - (Tom Stockebrand)
    (See attached reports)
13. Procedure for Setting Dates for Taking Orders of New Products and Peripherals

COMPANY CONFIDENTIAL

digital INTEROFFICE MEMORANDUM

DATE: March 6, 1969

SUBJECT: *REVISED OPERATIONS COMMITTEE MINUTES OF FEBRUARY 11, 1969

TO: Operations Committee FROM: Nick Mazzarese

Present: K. Olsen, W. Hindle, T. Johnson, P. Kaufmann, S. Olsen, N. Mazzarese

Secretary: N. Mazzarese

1. Additions and Corrections to Minutes of 2/3/69 Meeting:
   Minutes approved as submitted.

2. Marketing Review Committee Summary:
   Minutes approved as submitted.

3. Discussion of Sales Administration:
   Concern was expressed that we have not made progress in solving problems of sales administration.

   Ken proposed we break up incoming orders into groups and have one person be responsible for quoting deliveries and checking to see that equipment is delivered on time.

   Ron Smart will report on progress and plans at the next Operations Committee meeting.

4. Fiscal Year 1970 Marketing Plans:
   This topic will be discussed at the Woods Meeting.

5. Proposed Employee Discounts on DEC Products:
   We will not set a policy in regard to selling DEC products to our own employees.

6. Special Reviews:
   These were deferred to the Salary Review Meeting.

-cont'd-

*Note: These minutes supersede the original minutes from the February 11, 1969 meeting. Please destroy all copies.

7. Proposed Parking Regulations:
Stan's plan was approved with the following additions:
a. The Visitor's Lot is available for evening shift and weekends.
b. Main Street Lot will be used on a first-come basis; illegally parked cars will be towed away.
c. Ken should write a "nice" note to employees explaining rules and why we have implemented them.

8. Review of Bob Collings' Proposal on the KV Graphic System:
It was decided we should proceed with laying out marketing programs, however, putting immediate hold on quoting deliveries and taking new orders. We should concentrate on shipping out our backlog.

9. Proposed Changes to the Statement of Operations for FY 1970:
All changes were agreed to with the following additions:
a. Trade shows will be transferred to advertising and promotional literature line.
b. Foreign bookings will be added to domestic; therefore, we will have only one booking total.

10. Microsystems Technology:
It was decided we would give Microsystems Technology our program if they sell our computers OEM. In return, we would ask for some consideration:
a. Not money.
b. We will not give them any technical support.

If they want to go into service businesses, we will ask for a royalty/wire charge of 6¢. In addition, we will exclude them from assigning our table design and program to any other company (either by selling it or by acquisition).

11. Corporate Contributions for 1969:
The Personnel Committee's proposal was accepted with the exception of the contributions to WGBH-TV and the AMA 2-week course. The $550 will be put in a kitty for distribution later in the year.

12. Design Review Committees:
Members were chosen for RF09, DECTAPE and Small Printer design review committees. The Secretary of the Operations Committee has notified all who have been selected as follows on Page 3.

-cont'd-

RF09 Design Review Committee:

Chairman - D. Zereski
D. Best
E. Haight
R. Antonuccio
G. Saviers
M. Sifnas

DECTAPE Transport Design Review Committee:

Chairman - D. Best
D. Clayton
D. Dubay
R. Vonada
T. Stockebrand

Small Printer Design Review Committee:

Chairman - J. Shields
D. White
A. Kent
T. Stockebrand
P. Schneebeli

13. Procedure for Setting Dates for Taking Orders of New Products and Peripherals:
This topic was deferred.

14. Display Business:
Bob Lane presented his initial thoughts on starting a group to design and market display. Bob will develop a plan.

15. Accounting Report:
This topic was deferred.

16. *Policy on Employee Authors:
Employees who wish to write articles or books on their own time should specifically get approval from their supervisor. In cases where payment is forthcoming, the employee will keep the money.

*Note: Addition to original agenda.

NJM/bb

digital INTEROFFICE MEMORANDUM

DATE: February 6, 1969

SUBJECT: EMPLOYEE DISCOUNTS ON DEC PRODUCTS

TO: Operations Committee FROM: Ted Johnson

Bob Lane raised the question of the possibility of employee discounts on DEC products. The question was originally raised by a prospective employee who wanted to buy a computer for his own use. The question may not be very significant now but with our falling prices on computers, I suspect it will be a question in the future so we might as well discuss it to see what our philosophy might be.

mr

digital INTEROFFICE MEMORANDUM

DATE: February 6, 1969

SUBJECT: Parking Proposal

TO: Operations Committee

FROM: Stan Olsen

Attached is a proposal for parking regulations for all DEC parking areas.

SO:o

I DEC PARKING LOTS

A. Visitors Lot - Thompson Street
B. Upper Thompson Street
C. Lower Thompson Street
D. Walnut Street
E. Main Street (Dennison Lot)
F. Main Street (In Yard Area)

II RULES

A. Visitors Lot - Thompson Street
   1. The Visitors Lot is reserved exclusively for visitors.
      a. Should nurse's vehicle, which is used for emergency purpose, be allowed to park in visitor's lot?

B. Upper Thompson Street Lot
C. Lower Thompson Street Lot
D. Walnut Street Lot
E. Main Street (Dennison Lot)
   1. Maximum speed in these lots and when entering and leaving is 10 miles per hour.
   2. Parking on ramps and in aisles is prohibited.
   3. Occupy only one parking space.
   4. Ramps leading into upper Thompson Street Lot from Thompson Street will be closed between the hours of 7:00 - 9:00 a.m. and 4:00 - 6:00 p.m.
   5. DEC will designate area in Lower Thompson Street Parking Lot adjacent to Building No. 5 for handicapped employees and service vehicles (telephone trucks, repair people, etc.)

F. Main Street (In Yard Area)
   1. Maynard Industries has allocated 117 parking spaces as shown on Drawing No. 0-0-3009-50D and to be used exclusively for DEC vehicles.
   2. Parking will be on a first come first serve basis
   3. Park within yellow lines.
   4. Occupy only one parking space and do not block other vehicles from using unoccupied spaces.
   5. Parking in any area other than the assigned area as described by Drawing No. 0-0-3009-50D within the mill yard is prohibited.
   6. Maximum speed in this lot and when entering and leaving is 10 miles per hour, or as posted.

III GENERAL RULES

A. Parking in Shipping or Receiving areas is prohibited.

B. All employees must register their cars in the Personnel Department and must immediately advise Personnel of any changes or additional registration numbers.

C. Snow removal is usually performed between the hours of 6:00 p.m. to 8:00 a.m. Plowing might require employees to move their vehicles during this period.

IV PARKING TICKET (Four Part)

A. One part left on violator's windshield.

B. One part to violator's supervisor.

C. One part filed with Pinkerton Security Service.

D. One part to respective Vice President.

V PENALTIES - Upper and Lower Thompson Street Lots, Walnut Street, Main Street (Dennison Lot), Visitors Lot

A. Each employee will be informed in writing of each violation.

B. If an employee receives three violations within a one-year period, his name will be presented to his respective Vice President, who in turn will be responsible to the Operations Committee.

VI PENALTIES - Main Street - (In Yard Area)- Maynard Industries

A. Each employee and their respective supervisor will be informed in writing of each violation.

B. Any employee who violates any of the rules for parking in this area will lose the privilege of parking within the Mill Yard as per orders of Maynard Industries.

VII ADMINISTRATION

A. Executive Responsibility - Stan Olsen

B. Department Responsibility - Plant Engineering and Personnel Department

C. Enforcement Responsibility - Pinkerton Security Service

D. Main Street - (In Yard Area) - Irving Burg, Resident Manager of Maynard Industries

VII EMERGENCY PROCEDURE

A. Any vehicle which is parked in a manner that could obstruct the passage of police cars, fire trucks, ambulances, etc., will be considered a safety hazard to all employees and buildings, and in the event that the vehicle must be removed by towing, a decision will be made by:

Main Street - (In Yard Area) - Stan Olsen
Irving Burg

All other DEC Lots - Stan Olsen

digital INTEROFFICE MEMORANDUM

DATE: January 22, 1969

Tape Specs

SUBJECT: KVGS

TO: Operations Committee FROM: Bob Collings

The enclosed report presents in detail an Engineering Budget ($113 K), Marketing Budget ($51 K/yr.) and an anticipated Return on Investment of greater than 50% for the KV Graphic System.

What hasn't been presented is perhaps even more important. That is, will this idea ever be a product. During the past three months that I have had responsibility for this project we have started the many parallel tasks (Technical Writing, Software Documentation, Diagnostic Progress, Production Engineering) that must be completed before an idea becomes a product. In addition to the engineering development, effort has been made to develop and begin implementing a marketing program. All that has been accomplished to date hangs on a single thread--the basic system will someday work.

Because I'm basically optimistic and probably naive, I think that someday the system can be made to work; however, the pragmatic side says it does not work today nor can we accurately predict when it will work; therefore, we should do two very difficult things.

First, inform our sales force that the KVGS has not been released to production, and hence we should expend no further effort selling the system, nor will we accept orders until the system is fully proven.

Second, inform our existing customers that because of technical difficulties the system is not an acceptable product, presently we cannot estimate when it will be, and allow them to cancel the order and return any PDP-8/I's and PDP-10's purchased for use with KV 8/I. This second task will be accomplished by my calling our salesmen to inform him and requesting who should be contacted at the customer's end and jointly contacting them.

If or perhaps I should say when the system is solid, and several systems have been built and tested, then I think we should re-activate the marketing program. Because of the very substantial potential that this product has, the high anticipated R.O.I., and the number of computer systems it will assist in selling, I don't believe the project should be dropped at this time. I would suggest at least a three to four month concentrated effort on solving the problems of the basic system.

digital INTEROFFICE MEMORANDUM

DATE: January 22, 1969

SUBJECT: KV Graphic System Budget

TO: Operations Committee FROM: Bob Collings

The purpose of this memo is to present an Engineering Budget of $113,607 and a Marketing Budget of $51,000/yr. for the KV Graphic System. The combined efforts are expected to provide a discounted cash flow Return on Investment of greater than 50%.

ENGINEERING BUDGET

The estimated engineering expenditures for the KV Graphic System (Discrete Project #7192 is $113,607. Through December 1968, $48,990 has been spent on this program. The project is expected to be completed in June 1969 with an estimated expenditure of $50,280 in Q_3 and $27,900 in Q_4. (See Exhibit 1.)

The KV Graphic System is expected to result in the sale of $3,100,000 of options over the next three years and contribute to the sale of an additional $3,430,000 of computer systems. The Engineering Cost Ratio $\frac{\$113,607}{\$6,530,000}$ (Total Sales) = 1.7% or $\frac{\$113,607}{\$3,100,000}$ (Option Sales) = 3.7% is well below our traditional ratios.

MARKETING BUDGET

The estimated marketing expenditures for the KV Graphic System is $50,500/yr. (See Exhibit 2.) The Marketing Program (See Appendix A.) is expected to result in sales of $1,018,000 KV Graphic System Options over the next calendar year and contribute to an additional $1,125,000 PDP-8/I & 8/L systems.

Exhibit I

ESTIMATED ENGINEERING BUDGET

KV GRAPHIC SYSTEM

Cost Center	Name	Total to Date	Actual Dec.	Forcast Jan.	Forcast Feb.	Forcast Mar.	Forcast Apr.	Forcast May	Forcast June	Project Completed
324	Model Shop	5,289	1,606	1,800	1,200	800				
325	Drafting	2,155	727	1,800	1,000					
330	Mech. Engr.	1,278	613	800	700	400				
374	Prod. Engr. (1)	6,767	4,205	5,000	5,000	4,000	2,000	2,000	2,000	
375	Display Engr. (2)	30,343	7,142	7,200	7,200	7,200	7,200	7,200	3,600	
386	Spec. Proj.	3,302	1,212	1,200	1,200	1,200				
360	Software Manual (3)		300	880	500	600				
	Diag. Software (4)		200	800	600	200				
	Tech. Writing (5)						3,900			
	TOTAL	48,990	16,005	18,480	17,400	14,400	13,100	9,200	5,600	127,170
Q_1 15,561 (Act)		Q_2 33,429 (Act)		Q_3 50,280			Q_4 27,900			
									less	13,563
										113,607

(1) Includes 3,563 Prod. Parts in Dec., 10,000 Budget for Jan., Feb., & March
(2) Includes charges from 381
(3) Estimated by George Arnold normally not included in Discrete Project Totals
(4) Estimated by Ed Steinberger normally not included in Discrete Project Totals
(5) Estimated by John Bellantoni normally not included in Discrete Project Totals.

MARKETING APPLICATIONS FORECAST KV GRAPHIC SYSTEMS

Submitted by Bob Collings Date January 22, 1969

	Fiscal Quarters				Total Year
	___ Qtr. FY	___ Qtr. FY	___ Qtr. FY	___ Qtr. FY	
Bookings $ / Systems / System	22	33	35	35	
Product Line PDP-8	$ 172,000 /	$ 267,000 /	$ 284,000 /	$ 295,000 /	$1,018,000 /
_____	/	/	/	/	/
_____	/	/	/	/	/
_____	/	/	/	/	/
_____	/	/	/	/	/
_____	/	/	/	/	/
Total Bookings	$	$	$	$	$
% of Bookings - Subs.	35 %	35 %	35 %	35 %	35 %
Unique Engineering Exp.	See KVGS Engineering Budget				
P. L. Marketing	$ 4,200	$ 4,300	$ 4,500	$ 4,500	$ 17,500
Space Advertising	1,500	3,000	1,000	1,000	6,500
Promo. Literature	2,500	2,500			5,000
Trade Shows	2,000	2,000		2,000	6,000
Direct Mail	500				500
Unusual Sell. Exp.(2)					
Application Software Dev.		3,000	3,000	3,000	9,000
Development of ComputerPAC		6,000			6,000
Total Selling Exp.	$ 10,700	$ 20,800	$ 8,500	$ 10,500	$ 50,500

Note: Software Manual & Technical Manual included in Engr. Budget.

(2) Unusual Selling Expense should account for only unique or specialized people which will be part of the Sales Staff to support this application.

****

Suggested Product Line distribution of expenses ____% and Product Line Manager's review _____ (please initial).

PDP-8/I ____% _____ PDP-9 ____% _____ PDP-10 ____% _____

Line ____% _____ Trad. ____% _____ Modules ____% _____

Other ____%

Exhibit 2

Estimated KV Graphic System Option Bookings & Expenditures by quarter:

	Q_3	Q_4	Q_1	Q_2	Total
Bookings	$172,000	$267,000	$284,000	$295,000	$1,018,000
Mkt. Exp.	10,700	20,800	8,500	10,500	$50,500

The marketing Cost Ratio $\frac{\$50,500 \text{ (Mkt. Expense)}}{\$2,143,000 \text{ (Total Sales)}} = 2.4\%$ or

$\frac{\$50,500 \text{ (Mkt. Expense)}}{\$1,018,000 \text{ (Option Sales)}} = 5\%$ compares favorably with our traditional ratios.

RETURN ON INVESTMENT

The discounted cash flow Return on Investment for the KV Graphic System is estimated to be greater than 50 %. In Exhibit 3 the estimated engineering (blue line) and marketing costs (red line) have been plotted. Also the expected profit after tax has been plotted (in green) for two different cases: 1) shipments begin in Q_3 and 2) shipments begin in Q_4. The estimated profit after tax figures came from multiplying shipments times the expected profit ratio.

The expected profit ratio (15.2%) for KV Graphic options has been developed from estimating the CGS of the anticipated product mix, the engineering budget, our "normal" General & Administrative expense ratio, and a 50% tax rate (See Exhibit 4.)

OPERATIONS COMMITTEE MEETING

February 24, 1969

AGENDA

1. Additions and Corrections to Minutes of the February 11 Meeting, and the "Woods" Meeting of February 11 and 12
2. Personnel Department Budget - (Win Hindle)
   (See attached report)
3. Company-Assigned Training - (Win Hindle)
   (See attached report)
4. Manager Training Program - (Win Hindle)
   (See attached report)
5. Status of the TU-79 Project - (Bob Savell)
   (See attached report)
6. Preliminary 1970 Bookings and Net Equipment Sales - (Ed Savage)
   (See attached report)
7. Monthly Reports by Vice-Presidents
8. Overdue Orders - (Stan Olsen, Nick Mazzarese, Win Hindle)

MINUTES OF THE OPERATIONS COMMITTEE

February 24, 1969

Present: K. Olsen, S. Olsen, T. Johnson, W. Hindle, P. Kaufmann (Secretary)

Absent: N. Mazzarese

1. Next Monday each Vice President will list his responsibilities, the time spent on each one, the weaknesses on each one and how he plans to strengthen the weaknesses and when the weaknesses will be strengthened.

2. The minutes of the February 11 meeting were accepted with the following exceptions:

   (a) #14, cross out sentence #2 and #3. Replace with "Bob Lane will develop a plan."

   (b) Sales Administration will be reviewed with Ron Smart on Wednesday.

3. Personnel Department Budget

   A $150,000 increase in the Personnel Department budget was approved.

4. Company Assigned Training

   Proposal was accepted as submitted.

5. Manager Training Program

   Proposal was accepted.

6. TU-79

   A management review committee was selected to review this project.

   Jack Shields
   Tom Stockebrand
   Marv Horovitz
   John Jones
   Steve Sobel

   Also minority reports from D. Knoll and J. St. Amour or anyone will be accepted by the Operations Committee. TU-30 will fill the obligations to customers.

7. Insurance

   $5,000 cost for 30 million umbrella coverage for airplane charters was approved.

8. April 15 Press Release has been postponed until further notice.

jb

INTEROFFICE MEMORANDUM

DATE: February 18, 1969

SUBJECT: Personnel Department Budget

TO: Operations Committee

FROM: Win Hindle

In order to meet the hiring needs now projected by all departments by June 30, Personnel needs an additional $150,000 above the revised December budget. The facts are these:

	Need forecasted in December	Need as now forecast	Additions
Plant Personnel	460	590	130
Field Service	100	160	60
TOTAL	560	750	190

The cost for recruiting plant personnel averages $400 per hire; for Field Service it is $1650 per hire. The total added cost is thus (130 x $400) + (60 x $1650) or $151,000. These increased costs will be in Space, Advertising, Relocations, Agency Fees, and Travel Expenses.

I can provide further backup data if needed. However, I recommend that we aggressively go after these additional people and spend the money necessary to get them.

bwf

INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: Company Assigned Training

TO: Operations Committee

FROM: Personnel Committee
(G. A. Thayer)

The attached policy proposal on Company Assigned Training has been approved by the Personnel Committee and is forwarded for final review and approval.

There has been a growing need to clarify the Company's position in this area for both managers and employees, and to provide a basis for more informative counseling and guidance to insure maximum benefit to the employee and the Company.

GAT/lw

COMPANY ASSIGNED TRAINING

GENERAL:

The Company recognizes the value and need for sending an employee to a specialized course of instruction in order to acquire additional knowledge in an area of importance to his current job or in preparation for added responsibility.

In order to derive the fullest benefit from such experiences, managers are urged to counsel in advance with the Personnel Department so that their experience and knowledge of the various training organizations can be utilized in helping to select the one most appropriate for the individual employee's need. Also, for certain classes of employees, the provisions of wage and hour laws may apply and should be reviewed with the manager.

Completed course evaluation forms (attached) are maintained by the Personnel Department so that this information can be made available when counseling with managers and employees on proposed training courses.

POLICY:

When an employee is assigned to an educational course as part of his work, the Company will pay the whole cost of the course, including books and travel expenses.

Courses assigned by supervision as part of an employees work must be approved in advance by the department manager.

It is the responsibility of the department manager to insure that the reasons for assigning the employee to the course are necessitated by a requirement for him to gain specialized knowledge which could not be achieved practically through other means.

Employee requested courses, which would normally be approved via the Company's regular tuition refund program, are not to be approved as Company assigned training under provisions of this policy.

PROCEDURE:

The requesting supervisor completes and approves the Request for Training (see attached form) and forwards it to his manager for approval.

Upon approval, the manager forwards the Request to the Personnel Department. Approved requests for salaried personnel should be sent to the Manager of Professional Personnel; and approvals for hourly personnel should be sent to the Manager of Plant Personnel.

Personnel will forward the Request to the Purchasing Department for processing.

The Purchasing Department will distribute copies of the completed Request as follows:

Original - to be returned to Personnel Department for retention in the employee's Personnel file.

2 copies - to be returned to Requesting Supervisor. One for file, and one to be attached to Request for Check Form. (It is the responsibility of the requesting supervisor to forward the Request for Check Form together with the approved Request for Training Form to Accounting for processing.)

1 copy - to be retained by Purchasing Department.

Upon completion of the course the employee will complete the Training Course Evaluation and distribute copies as follows:

Original - to immediate supervisor

2 copies - to Personnel Department

(triplicate)

REQUEST FOR TRAINING

(For Company Assigned Training Only)

EMPLOYEE NAME _____ Badge No_____ Cost Ctr._____

Request approval for above named employee to be assigned to the following training for reasons indicated below:

Description of Training:_____

_____

_____

_____

Reason(s) Why Training Should be Assigned:_____

_____

_____

_____

_____

Organization Conducting Training:_____

_____

Period of Training: From_____ To _____

Cost of Training: _____

APPROVALS

1. Requesting Supervisor_____Date_____

2. Manager _____Date_____

3. Personnel _____Date_____

PURCHASING DEPARTMENT

Purchasing Authorization By_____Date_____

(original)

JIPMENT
)N

Distribution
Supervisor - orginal
Personnel - 2 copies

TRAINING
COURSE
EVALUATION

Course	Dates Attended
ıization Conducting Course	Where Course Conducted

Purpose of Course

Did Course Accomplish its Purpose - Explain

Yes ☐ No ☐

Name of Instructor	Evaluation of Instructor

Good Points of Course

Weak Points of Course

Will Course Help You Improve Your Performance - Explain

Yes ☐ No ☐

Would You Recommend This Course - Explain

Yes ☐ No ☐

Additional Comments

Submitted By | Job Title | Location-Department

INTEROFFICE MEMORANDUM

DATE: February 13, 1969

SUBJECT: Manager Training Program

TO: Operations Committee FROM: Win Hindle

For the past 9 months we have been holding sessions of the Manager Training Program with 55 of the middle managers at DEC. Five seminar groups have met in the evening about once per month to discuss subjects that the group selected as pertinent - many of these groups have invited Operations Committee members as guests for an evening. There have been four lectures for the entire group given by Prof. Art Gerstenfeld of B.U., Prof. Ed Roberts of MIT and Professors Harry Levinson and Ted Levitt of Harvard Business School.

The Steering Committee for this Program (J. Jones, M. Ruderman, L. Portner, J. Smith, D. Packer and myself) recommends continuing this Program for another six months with a re-alignment of the seminar groups. Three more guest speakers will be invited to talk to the entire group.

We feel that the selection of participants for the Program for the next session should be carefully considered, since some of the participants for the previous session did not seem to be appropriate for this Program. The selection criteria we recommend for participants is:

1. Person should now be managing (this is not constructed as a program to teach new managers but is a program to assist those who have management responsibility).

2. Person should interact with other departments.

3. Person should be interested in increasing his management responsibility (should have "upward mobility" as one person phrased it).

We would like each Vice President to recommend men who meet these criteria as it is these men who will gain most from the Program and who will contribute most to it.

We expect the next session to last 6 months and then we will mix the groups again. Mixing of groups is one factor which appeals to the participants because it allows them to interact with many different managers in the company.

One other common suggestion we will attempt to accomplish in the next session is better preparation for each seminar - such as a case study or article to be read before the meeting.

bwf

INTEROFFICE MEMORANDUM

DATE: February 19, 1969

SUBJECT: Status of TU-79 Project

TO: Operations Committee

FROM: Bob Savell

cc: Jim Young
Dave Knoll
Bob Antonuccio
Dave Nevala

One month ago I reported on the status of the TU-79 project and said that it was in a confused state and that I would return in one week to give a more complete report on its status and to provide a schedule for completion of the project. An indication of exactly how confused the project is is the fact that it took me four weeks instead of one week to get this report finished.

During these last weeks we have endeavored to answer the following questions: (1) Where are we in the project? (2) How did we get there? (3) What is the schedule to get from where we are today to the end of the project? This last question was approached in two stages, first, the schedule to complete two pilot production units and second, the schedule to complete the rest of the initial production run of 32 units.

1. Where are we?

We have a total investment in the project at this point of approximately $500,000. We have an investment in production inventory for the 32 production units of approximately $100,000. All engineering tests have been run on the engineering prototype along with long term reliability tests. The great majority of these tests were passed successfully. Some, however, did not pass and changes were put in and are being put in both mechanical and electrical. Not all of the changes that have been installed in the engineering prototype have yet been installed in the pilot production units. I feel quite confident that the few changes yet left to install in the prototype in the Real Servo area and the Read-Write area will pass successfully as a great deal of work has already been done on these changes on a breadboard basis.

There are 32 pilot production units in various stages of construction. Nine of these have been completely assembled and have had various amounts of checkout done on them. There are numerous changes, both electrical and mechanical, that still must be installed in all of these units. Some of these changes are due to engineering problems, others are due to vendor supply problems, ie., vendors not being able to make material according to the prints, others due to assembly problems.

The documentation, and I refer here primarily to drawings, are in pretty bad shape. They are full of errors. Some of these are initial design errors, some are simply the result of changes being made to the equipment and not being properly documented.

How did we get there?

I will list a few of the reasons but as you can probably deduce from the answer to the previous question, the major answer to this question has to be poor project management. If we had carloads of engineering design problems, we could blame the design engineer, but that is obviously not the primary problem. The primary problem is that things were not well enough organized. Jim Young has been the project engineer on the project since last fall when I gave Jo Sutton the additional responsibility for PDP-10 peripherals. This is Jim's first project and he needed guidance which he didn't receive from Jo and which neither one of them received from me.

In the electrical area the primary problem has been that we made changes on top of changes. Some of these were initiated by Engineering and some by Production Engineering, and neither of these were controlled in the manner in which they should be. Production Engineering people contributed greatly to the confusion in the electrical area, especially in the area of cabling where they took on the responsibility for redoing all the cabling which they were supposed to document. No documentation got done, models got lost, etc. Our engineering people should have kept the production engineering people under control and they failed to do so.

Confusion seems to be worst in the mechanical area. That's where the largest number of drawing errors are and where the greatest amount of work remains to bring the documentation up to where it should be. It is also where the greatest number of changes have been made and have yet to be made to the pilot production units. I am convinced that the major problem here has been the lack of a mechanical engineering test plan that is the analog to our, what turns out to be, electrical engineering test plan. The lack of this formal plan aggravated by such things as having Phil Backholm leave and having the production engineering people disagree as to what constituted proper mechanical engineering tests to perform on the first few pilot production units, have brought us to our present state.

I feel that this latter point is an extremely important one because we are so careful to make a thorough electrical engineering test plan and to include in those engineering tests, things such as looking for noise on signals, and other tests of a similar nature to prove that the system behaves the way it is supposed to, not simply tests which prove that the system is connected up the way it is supposed to be. We really ignored this when it comes to mechanical things. We jumped to the conclusion on this project and the production engineering people seemed to have jumped to the same conclusion that, for instance, a mechanical part can be assumed to be correct simply because we have an incoming mechanical inspection that inspects things to see that they agree with the drawing. This is a fallacious assumption because one of the purposes of building pilots is to find out whether or not the drawings are correct. Part of a satisfactory engineering test plan involves going into the units and performing mechanical inspection on individual parts of the unit to a plan which should enable one to verify that, in fact, the drawings are correct.

3.1. The schedule to finish the first two pilot production units

As the attached schedule shows on the line labeled Production, the first two pilot production units can have all changes installed and be completely through all tests including testing on the PDP-10 by April 19 and May 1, respectively.

3.2. Schedule for the remainder of the 32 pilot production units

We have not determined a firm schedule for the rest of the units as yet. To complete all the mechanical drawings, our best estimate in collabpration with Dave Nevala and Gordon Graham is approximately 2 1/2 months. If we assume that we complete construction and test of the additional 30 units as soon as possible following the first two at a rate of 6 per month, it would take 5 more months to complete the production run. Further, I would estimate that the engineering people would be tied up for approximately 6 months from today, or three more months to get all the mechanical drawings squared away and to finish tests on the first two pilot production units and an additional three months to clean up final details and to fully turn the TU-79 over to Production. I would estimate that the engineering costs incurred during this period would be another 50 to $70,000.

Personnel assigned to the project at present are Jim Young, who is the project engineer and who is doing all the electrical design, Warren Gorlick, the engineer performing all the electrical tests, and Dave Nevala, mechanical engineering.

I feel that our prospects of continuing for any period of time approaching 6 months on this project without incurring further slippages are poor. I have already pointed out that this is Jim's first project and as project engineer and electrical engineer on a project which is in a very confused state, he will be spread extremely thin. I feel that he would need help from someone more experienced in project management to the extent of at least two full days a week. I cannot possibly spend that sort of time without seriously jeopardizing the PDP-10 program. The mechanical engineer assigned, Dave Nevala, has as his major project at this time, the PDP-11. Life being what it is, I expect that Dave will be under tremendous amounts of pressure to get the PDP-11 done as soon as possible and that it is unrealistic to expect that he will be able to devote even the 25% of his time that he feels he can devote to the TU-79 today.

I certainly expect slippage in that area. As I expect most of you know, Jo Sutton has left to join Data General, so is not available to continue to help manage the project.

Alternatives

1. Quit today.

2. Keep on going and complete the entire project.

3. Complete only the first two units and stop. Do only enough documentation to be able to maintain the system.

Put the two TU-79's on Larry Portner's PDP-10 for long-term test. Put the engineering resources to work into Arnold Sherman's new low-priced TU-79 design. Salvage as much of the remaining inventory as possible. I would estimate at least $30,000 could be salvaged in heads, modules, power supplies, alone.

4. Complete the first two units and come back shortly with a firm schedule for completing the rest. While completing the first two, keep going and finish all the drawings and documentation required to complete the rest.

5. Complete the first two units, do not do any documentation except that necessary for the first two units and decide after seeing whether those two work successfully, whether or not to continue to do the rest. If the decision is made to go ahead, complete the rest of the documentation at that time.

I propose that we should follow Alternative 3. As I have said previously, I feel that the management of the project and the availability of personnel for an extended period of time is going to be a problem. In the long run, we will be better off to put the engineering effort into the new low-priced TU-79.

I do not favor quitting today because we are so close to being able to complete and therefore really long term test 2 pilot production units.

Alternative 4 will slow down the completion of the first two due to the necessity for continuing on with the administrative task of producing a full-blown schedule for the other 30 units in the near future.

Alternative 5 would take the longest in calendar time to result in completion of the entire project. For that reason, I don't feel it is a reasonable alternative.

One might argue that we should follow the 570 philosophy of finishing the project and thereby being able to sell 30 of these units or so, and essentially break even on the project as a whole. That's one way to look at it but the great bulk of the money was expensed prior to this year and we are certainly not going to break even this year.

bwf

SHEET 1 OF 2

2/21 2/28 3/7 3/14

ELEC. DWG's (corrected input to drafting/prod)
- RACK ASSYS
- R/W
- R/W CABLES
- MISCELLANEOUS
- BS — REEL SERVO
- WIRE LIST/HARNESS — REEL SERVO

MECH DWG'S (corrected input to drafting/prod & 2 of a kind parts to prod)
- COOLING — Delivery of Reel Mtr Blowers
- ELECT.
- TU & AS
- OTHER

PRODUCTION — #1 ready for off-line check; #2 Rack mech rework done.

HARD CORE LOC. (DWGS, MISC, SPEC) → to May 2nd

1st TU-79 thru PDP to Acceptance & Engin Test → to April 18th (subsequent units at ~ 2wk intervals)

OFF-LINE & ON-LINE PROG (Typed copy input to drafting)
- ON-LINE — to 3/28
- OFF-LINE — (PDP-10)
- ACCEPTANCE

REEL MAINTENANCE MANUAL
- FINAL OUTLINE (TYPED & CONFIRMED)
- ROUGH DRAFT (typed) → to April 11th

COMPANY CONFIDENTIAL

OPERATIONS COMMITTEE MEETING

February 10, 1969

AGENDA

Steve Stone
Meeting held
Feb. 11th

1. Additions and Corrections to Minutes of the February 3rd Meeting
2. Marketing Review Committee Summary - (Ted Johnson)
   (See attached minutes of the February 4th meeting)
3. Discussion of Sales Administration - (Ted Johnson, Ron Smart, Dave Packer)
4. Fiscal Year 1970 Marketing Plans - (Ted Johnson)
5. Proposed Employee Discounts on DEC Products - (Ted Johnson)
   (See attached report)
6. Special Reviews - (Pete Kaufmann)
7. Proposed Parking Regulations - (Stan Olsen)
   (See attached report)
8. Review of Bob Collings' Proposal on the KV Graphic System - (Nick Mazzarese)
   (Report distributed for the January 27th meeting)
9. Proposed Changes to the Statement of Operations for FY 1970 - (Ed Savage)
   (Report distributed for last week's meeting)
10. Microsystems Technology - (George Rice)
    (See attached report)
11. Proposed Corporate Contributions for 1969 - (Win Hindle)
    (See attached report from the Personnel Committee)
12. Design Review Committees - (Tom Stockebrand)
    (See attached reports)
13. Procedure for Setting Dates for Taking Orders of New Products and Peripherals

COMPANY CONFIDENTIAL

digital INTEROFFICE MEMORANDUM

DATE: March 6, 1969

SUBJECT: *REVISED OPERATIONS COMMITTEE MINUTES OF FEBRUARY 11, 1969

TO: Operations Committee FROM: Nick Mazzarese

Present: K. Olsen, W. Hindle, T. Johnson, P. Kaufmann, S. Olsen, N. Mazzarese

Secretary: N. Mazzarese

1. Additions and Corrections to Minutes of 2/3/69 Meeting:
   Minutes approved as submitted.

2. Marketing Review Committee Summary:
   Minutes approved as submitted.

3. Discussion of Sales Administration:
   Concern was expressed that we have not made progress in solving problems of sales administration.

   Ken proposed we break up incoming orders into groups and have one person be responsible for quoting deliveries and checking to see that equipment is delivered on time.

   Ron Smart will report on progress and plans at the next Operations Committee meeting.

4. Fiscal Year 1970 Marketing Plans:
   This topic will be discussed at the Woods Meeting.

5. Proposed Employee Discounts on DEC Products:
   We will not set a policy in regard to selling DEC products to our own employees.

6. Special Reviews:
   These were deferred to the Salary Review Meeting.

-cont'd-

*Note: These minutes supersede the original minutes from the February 11, 1969 meeting. Please destroy all copies.

7. Proposed Parking Regulations:
Stan's plan was approved with the following additions:
a. The Visitor's Lot is available for evening shift and weekends.
b. Main Street Lot will be used on a first-come basis; illegally parked cars will be towed away.
c. Ken should write a "nice" note to employees explaining rules and why we have implemented them.

8. Review of Bob Collings' Proposal on the KV Graphic System:
It was decided we should proceed with laying out marketing programs, however, putting immediate hold on quoting deliveries and taking new orders. We should concentrate on shipping out our backlog.

9. Proposed Changes to the Statement of Operations for FY 1970:
All changes were agreed to with the following additions:
a. Trade shows will be transferred to advertising and promotional literature line.
b. Foreign bookings will be added to domestic; therefore, we will have only one booking total.

10. Microsystems Technology:
It was decided we would give Microsystems Technology our program if they sell our computers OEM. In return, we would ask for some consideration:
a. Not money.
b. We will not give them any technical support.

If they want to go into service businesses, we will ask for a royalty/wire charge of 6¢. In addition, we will exclude them from assigning our table design and program to any other company (either by selling it or by acquisition).

11. Corporate Contributions for 1969:
The Personnel Committee's proposal was accepted with the exception of the contributions to WGBH-TV and the AMA 2-week course. The $550 will be put in a kitty for distribution later in the year.

12. Design Review Committees:
Members were chosen for RF09, DECTAPE and Small Printer design review committees. The Secretary of the Operations Committee has notified all who have been selected as follows on Page 3.

-cont'd-

RF09 Design Review Committee:

Chairman - D. Zereski
D. Best
E. Haight
R. Antonuccio
G. Saviers
M. Sifnas

DECTAPE Transport Design Review Committee:

Chairman - D. Best
D. Clayton
D. Dubay
R. Vonada
T. Stockebrand

Small Printer Design Review Committee:

Chairman - J. Shields
D. White
A. Kent
T. Stockebrand
P. Schneebeli

13. Procedure for Setting Dates for Taking Orders of New Products and Peripherals:
This topic was deferred.

14. Display Business:
Bob Lane presented his initial thoughts on starting a group to design and market display. Bob will develop a plan.

15. Accounting Report:
This topic was deferred.

16. *Policy on Employee Authors:
Employees who wish to write articles or books on their own time should specifically get approval from their supervisor. In cases where payment is forthcoming, the employee will keep the money.

*Note: Addition to original agenda.

NJM/bb

digital INTEROFFICE MEMORANDUM

DATE: February 6, 1969

SUBJECT: EMPLOYEE DISCOUNTS ON DEC PRODUCTS

TO: Operations Committee FROM: Ted Johnson

Bob Lane raised the question of the possibility of employee discounts on DEC products. The question was originally raised by a prospective employee who wanted to buy a computer for his own use. The question may not be very significant now but with our falling prices on computers, I suspect it will be a question in the future so we might as well discuss it to see what our philosophy might be.

mr

digital INTEROFFICE MEMORANDUM

DATE: February 6, 1969

SUBJECT: Parking Proposal

TO: Operations Committee

FROM: Stan Olsen

Attached is a proposal for parking regulations for all DEC parking areas.

SO:o

I DEC PARKING LOTS

A. Visitors Lot - Thompson Street
B. Upper Thompson Street
C. Lower Thompson Street
D. Walnut Street
E. Main Street (Dennison Lot)
F. Main Street (In Yard Area)

II RULES

A. Visitors Lot - Thompson Street
   1. The Visitors Lot is reserved exclusively for visitors.
      a. Should nurse's vehicle, which is used for emergency purpose, be allowed to park in visitor's lot?
B. Upper Thompson Street Lot
C. Lower Thompson Street Lot
D. Walnut Street Lot
E. Main Street (Dennison Lot)
   1. Maximum speed in these lots and when entering and leaving is 10 miles per hour.
   2. Parking on ramps and in aisles is prohibited.
   3. Occupy only one parking space.
   4. Ramps leading into upper Thompson Street Lot from Thompson Street will be closed between the hours of 7:00 - 9:00 a.m. and 4:00 - 6:00 p.m.
   5. DEC will designate area in Lower Thompson Street Parking Lot adjacent to Building No. 5 for handicapped employees and service vehicles (telephone trucks, repair people, etc.)
F. Main Street (In Yard Area)
   1. Maynard Industries has allocated 117 parking spaces as shown on Drawing No. 0-0-3009-50D and to be used exclusively for DEC vehicles.
   2. Parking will be on a first come first serve basis
   3. Park within yellow lines.
   4. Occupy only one parking space and do not block other vehicles from using unoccupied spaces.
   5. Parking in any area other than the assigned area as described by Drawing No. 0-0-3009-50D within the mill yard is prohibited.
   6. Maximum speed in this lot and when entering and leaving is 10 miles per hour, or as posted.

III GENERAL RULES

A. Parking in Shipping or Receiving areas is prohibited.

B. All employees must register their cars in the Personnel Department and must immediately advise Personnel of any changes or additional registration numbers.

C. Snow removal is usually performed between the hours of 6:00 p.m. to 8:00 a.m. Plowing might require employees to move their vehicles during this period.

IV PARKING TICKET (Four Part)

A. One part left on violator's windshield.

B. One part to violator's supervisor.

C. One part filed with Pinkerton Security Service.

D. One part to respective Vice President.

V PENALTIES - Upper and Lower Thompson Street Lots, Walnut Street, Main Street (Dennison Lot), Visitors Lot

A. Each employee will be informed in writing of each violation.

B. If an employee receives three violations within a one-year period, his name will be presented to his respective Vice President, who in turn will be responsible to the Operations Committee.

VI PENALTIES - Main Street - (In Yard Area)- Maynard Industries

A. Each employee and their respective supervisor will be informed in writing of each violation.

B. Any employee who violates any of the rules for parking in this area will lose the privilege of parking within the Mill Yard as per orders of Maynard Industries.

VII ADMINISTRATION

A. Executive Responsibility - Stan Olsen

B. Department Responsibility - Plant Engineering and Personnel Department

C. Enforcement Responsibility - Pinkerton Security Service

D. Main Street - (In Yard Area) - Irving Burg, Resident Manager of Maynard Industries

VII EMERGENCY PROCEDURE

A. Any vehicle which is parked in a manner that could obstruct the passage of police cars, fire trucks, ambulances, etc., will be considered a safety hazard to all employees and buildings, and in the event that the vehicle must be removed by towing, a decision will be made by:

Main Street - (In Yard Area) - Stan Olsen
Irving Burg

All other DEC Lots - Stan Olsen

digital INTEROFFICE MEMORANDUM

DATE: January 22, 1969

Tape Specs

SUBJECT: KVGS

TO: Operations Committee FROM: Bob Collings

The enclosed report presents in detail an Engineering Budget ($113 K), Marketing Budget ($51 K/yr.) and an anticipated Return on Investment of greater than 50% for the KV Graphic System.

What hasn't been presented is perhaps even more important. That is, will this idea ever be a product. During the past three months that I have had responsibility for this project we have started the many parallel tasks (Technical Writing, Software Documentation, Diagnostic Progress, Production Engineering) that must be completed before an idea becomes a product. In addition to the engineering development, effort has been made to develop and begin implementing a marketing program. All that has been accomplished to date hangs on a single thread--the basic system will someday work.

Because I'm basically optimistic and probably naive, I think that someday the system can be made to work; however, the pragmatic side says it does not work today nor can we accurately predict when it will work; therefore, we should do two very difficult things.

First, inform our sales force that the KVGS has not been released to production, and hence we should expend no further effort selling the system, nor will we accept orders until the system is fully proven.

Second, inform our existing customers that because of technical difficulties the system is not an acceptable product, presently we cannot estimate when it will be, and allow them to cancel the order and return any PDP-8/I's and PDP-10's purchased for use with KV 8/I. This second task will be accomplished by my calling our salesmen to inform him and requesting who should be contacted at the customer's end and jointly contacting them.

If or perhaps I should say when the system is solid, and several systems have been built and tested, then I think we should re-activate the marketing program. Because of the very substantial potential that this product has, the high anticipated R.O.I., and the number of computer systems it will assist in selling, I don't believe the project should be dropped at this time. I would suggest at least a three to four month concentrated effort on solving the problems of the basic system.

digital INTEROFFICE MEMORANDUM

DATE: January 22, 1969

SUBJECT: KV Graphic System Budget

TO: Operations Committee FROM: Bob Collings

The purpose of this memo is to present an Engineering Budget of $113,607 and a Marketing Budget of $51,000/yr. for the KV Graphic System. The combined efforts are expected to provide a discounted cash flow Return on Investment of greater than 50%.

ENGINEERING BUDGET

The estimated engineering expenditures for the KV Graphic System (Discrete Project #7192 is $113,607. Through December 1968, $48,990 has been spent on this program. The project is expected to be completed in June 1969 with an estimated expenditure of $50,280 in Q_3 and $27,900 in Q_4. (See Exhibit 1.)

The KV Graphic System is expected to result in the sale of $3,100,000 of options over the next three years and contribute to the sale of an additional $3,430,000 of computer systems. The Engineering Cost Ratio $\frac{\$113,607}{\$6,530,000}$ (Total Sales) = 1.7% or $\frac{\$113,607}{\$3,100,000}$ (Option Sales) = 3.7% is well below our traditional ratios.

MARKETING BUDGET

The estimated marketing expenditures for the KV Graphic System is $50,500/yr. (See Exhibit 2.) The Marketing Program (See Appendix A.) is expected to result in sales of $1,018,000 KV Graphic System Options over the next calendar year and contribute to an additional $1,125,000 PDP-8/I & 8/L systems.

Exhibit I

ESTIMATED ENGINEERING BUDGET

KV GRAPHIC SYSTEM

Cost Center	Name	Total to Date	Actual Dec.	Forcast Jan.	Forcast Feb.	Forcast Mar.	Forcast Apr.	Forcast May	Forcast June	Project Completed
324	Model Shop	5,289	1,606	1,800	1,200	800				
325	Drafting	2,155	727	1,800	1,000					
330	Mech. Engr.	1,278	613	800	700	400				
374	Prod. Engr. (1)	6,767	4,205	5,000	5,000	4,000	2,000	2,000	2,000	
375	Display Engr. (2)	30,343	7,142	7,200	7,200	7,200	7,200	7,200	3,600	
386	Spec. Proj.	3,302	1,212	1,200	1,200	1,200				
360	Software Manual (3)		300	880	500	600				
	Diag. Software (4)		200	800	600	200				
	Tech. Writing (5)						3,900			
	TOTAL	48,990	16,005	18,480	17,400	14,400	13,100	9,200	5,600	127,170
Q_1 15,561 (Act)		Q_2 33,429 (Act)		Q_3 50,280			Q_4 27,900			
									less	13,563
										113,607

(1) Includes 3,563 Prod. Parts in Dec., 10,000 Budget for Jan., Feb., & March
(2) Includes charges from 381
(3) Estimated by George Arnold normally not included in Discrete Project Totals
(4) Estimated by Ed Steinberger normally not included in Discrete Project Totals
(5) Estimated by John Bellantoni normally not included in Discrete Project Totals.

MARKETING APPLICATIONS FORECAST KV GRAPHIC SYSTEMS

Submitted by Bob Collings Date January 22, 1969

	Fiscal Quarters				Total Year
	___ Qtr. FY	___ Qtr. FY	___ Qtr. FY	___ Qtr. FY	
Bookings $ / Systems / System	22	33	35	35	
Product Line PDP-8	$ 172,000 /	$ 267,000 /	$ 284,000 /	$ 295,000 /	$1,018,000 /
_____	/	/	/	/	/
_____	/	/	/	/	/
_____	/	/	/	/	/
_____	/	/	/	/	/
_____	/	/	/	/	/
Total Bookings	$	$	$	$	$
% of Bookings - Subs.	35 %	35 %	35 %	35 %	35 %
Unique Engineering Exp.	See KVGS Engineering Budget				
P. L. Marketing	$ 4,200	$ 4,300	$ 4,500	$ 4,500	$ 17,500
Space Advertising	1,500	3,000	1,000	1,000	6,500
Promo. Literature	2,500	2,500			5,000
Trade Shows	2,000	2,000		2,000	6,000
Direct Mail	500				500
Unusual Sell. Exp.(2)					
Application Software Dev.		3,000	3,000	3,000	9,000
Development of ComputerPAC		6,000			6,000
Total Selling Exp.	$ 10,700	$ 20,800	$ 8,500	$ 10,500	$ 50,500

Note: Software Manual & Technical Manual included in Engr. Budget.

(2) Unusual Selling Expense should account for only unique or specialized people which will be part of the Sales Staff to support this application.

****

Suggested Product Line distribution of expenses ____% and Product Line Manager's review _____ (please initial).

PDP-8/I ____% ____ PDP-9 ____% ____ PDP-10 ____% ____

Line ____% ____ Trad. ____% ____ Modules ____% ____

Other ____%

Estimated KV Graphic System Option Bookings & Expenditures by quarter:

	Q_3	Q_4	Q_1	Q_2	Total
Bookings	$172,000	$267,000	$284,000	$295,000	$1,018,000
Mkt. Exp.	10,700	20,800	8,500	10,500	$50,500

The marketing Cost Ratio $\frac{\$50,500 \text{ (Mkt. Expense)}}{\$2,143,000 \text{ (Total Sales)}} = 2.4\%$ or $\frac{\$50,500 \text{ (Mkt. Expense)}}{\$1,018,000 \text{ (Option Sales)}} = 5\%$ compares favorably with our traditional ratios.

RETURN ON INVESTMENT

The discounted cash flow Return on Investment for the KV Graphic System is estimated to be greater than 50 %. In Exhibit 3 the estimated engineering (blue line) and marketing costs (red line) have been plotted. Also the expected profit after tax has been plotted (in green) for two different cases: 1) shipments begin in Q_3 and 2) shipments begin in Q_4. The estimated profit after tax figures came from multiplying shipments times the expected profit ratio.

The expected profit ratio (15.2%) for KV Graphic options has been developed from estimating the CGS of the anticipated product mix, the engineering budget, our "normal" General & Administrative expense ratio, and a 50% tax rate (See Exhibit 4.)

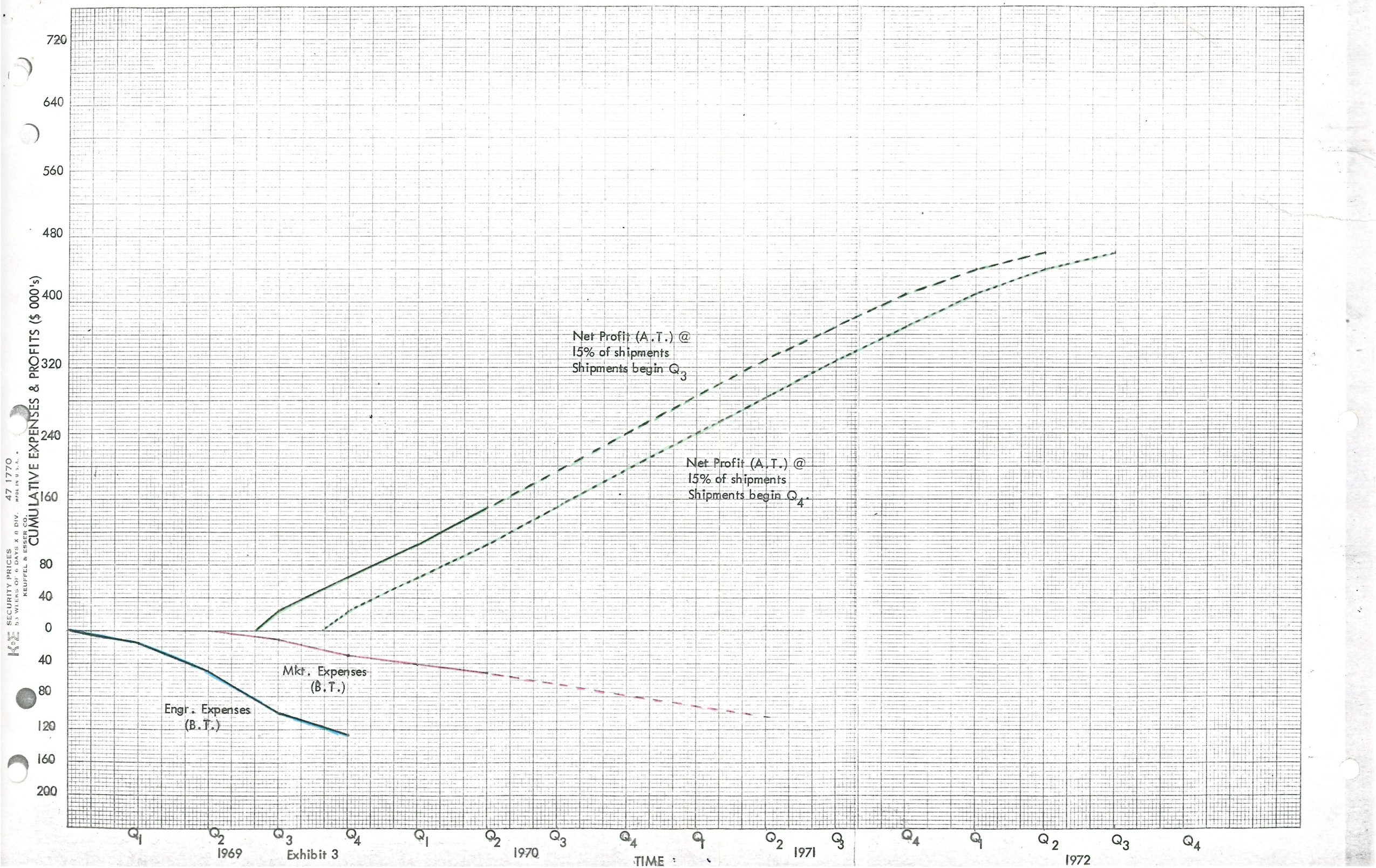
CUMULATIVE EXPENSES & PROFITS ($ 000's)
720
640
560
480
400
320
240
160
80
40
0
40
80
120
160
200
Net Profit (A.T.) @
15% of shipments
Shipments begin Q3
Net Profit (A.T.) @
15% of shipments
Shipments begin Q4
Mkt. Expenses
(B.T.)
Engr. Expenses
(B.T.)
Q1
Q2
1969
Q3
Q4
Q1
Q2
1970
Q3
Q4
Q1
Q2
1971
Q3
Q4
Q1
Q2
Q3
Q4
1972
TIME

Exhibit 3

COMPARATIVE P & L RATIOS

	Company Total 1968	KV Graphic System Projected 1969
Total Sales	100.0 %	100.0 %
Cost of Goods Sold	50.0 %	49.0 %
Gross Profit	50.0 %	51.0 %
Research & Engineering Expenses	11.1 %	3.7 %
Selling, General & Administrative	16.8 %	16.8 % (Assumed the same)
Operating Profit	22.1 %	30.5 %
Net Income (A. T.)	12.0 %	15.2 % (Assumes straight 50 % tax)

Exhibit 4

Return on Investment Calculation

(Shipment begin in Q_3)

Year	Item	Cash Flow (A.T.)	Present Value Factor @ 50%	Present Value of Cash Flow
Year 1	A. Engineering Expenses	($63 K)	.667	($42 K)
	B. Marketing Expenses	($16 K)		($11 K)
	C. Net Profit	$65 K		$43 K
Year 2	A. Engineering Expenses	(--)	.444	(--)
	B. Marketing Expenses	($26 K)		($12 K)
	C. Net Profit	$175 K		$78 K
Year 3	A. Engineering Expenses	(--)	.296	(--)
	B. Marketing Expenses	($26 K)		($8 K)
	C. Net Profit	$170 K		$50 K
Year 4	A. Engineering Expenses	(--)	.198	(--)
	B. Marketing Expenses	($26 K)		($5 K)
	C. Net Profit	$50 K		$10 K
				$103 K

Conclusion: The Discounted Cash Flow Return on Investment on the KV Graphic System (assuming shipments beginning in Q_3) is well in excess of 50 %. The present value factors for higher rates of return were not readily available or I would have attempted to determine the exact rate.

Exhibit 5

Return on Investment Calculation

(Shipment begin in Q_4)

Year	Item	Cash Flow (A. T.)	Present Value Factor @ 50%	Present Value of Cash Flow
Year I	A. Engineering Expenses	($63 K)	.667	($42 K)
	B. Marketing Expenses	($16 K)		($11 K)
	C. Net Profit	$25 K		$17
Year 2	A. Engineering Expenses	(--)	.444	(--)
	B. Marketing Expenses	($26 K)		($12 K)
	C. Net Profit	$170 K		$76 K
Year 3	A. Engineering Expenses	(--)	.296	(--)
	B. Marketing Expenses	($26 K)		($ 8 K)
	C. Net Profit	$175 K		$52 K
Year 4	A. Engineering Expenses	(--)	.198	(--)
	B. Marketing Expenses	($26 K)		($5 K)
	C. Net Profit	$90 K		$18 K
				$85 K

Conclusion: The Discounted Cash Flow Return on Investment on the KV Graphic System (assuming shipments beginning in Q_4) is well in excess of 50 %. The present value factors for higher rates of return were not readily available or I would have attempted to determine the exact rate.

Exhibit 6

digital INTEROFFICE MEMORANDUM

DATE: November 21, 1968

SUBJECT: MARKETING PLAN FOR KV8-I

TO: Operations Committee FROM: Bob Collings

This note serves to present a preliminary marketing program for the KV8-I Storage Tube Graphics System. The discussions will include: Product Concept, Sales Goal for 1969, Market Application Areas, Competitive Situation, and a Proposed Plan of Action. This program is expected to result in the sale of 125 systems and shipment of 105 systems during the next year (Fiscal '69, Q3 and Q4, Fiscal '70, Q1 and Q2).

Product Concept - The basic KV Graphic System (KVGS) consists of a KV Display Controller, VT01 Storage Tube Display (Modified Tektronix 611 scope), H306 Joy Stick, and a basic EDGRIN software package. The use of a Direct View Storage Tube (DVST), a special form of CRT modified so that it retains a visual image exactly as it is drawn, eliminates one of the most limiting factor of conventional CRT displays; namely, the necessity to rewrite the picture thirty or more times per second in order to present a flicker-free image. Without the refresh requirement, expensive computer memory need not be utilized for the refresh function and the speed requirements for both the controller and display drive circuitry are nearly two orders of magnitude less than that of a refresh system. Conditions of low speed and high accuracy can be met by modern, low-cost integrated circuit operational amplifiers and, more importantly, the slower transfer rates permit software to perform functions such as character generation, sub-routine iteration, zooming and special data formatting. All of these functions require hardware in refresh systems because the transfer speeds are too fast for programs to handle. The end result is a graphics system (including a PDP-8/I or 8/L) which is 20-50% of the cost of available refresh systems and superior in performance in many applications.

The next step in the development of the KV8-I Graphic System is a multi-scope system (up to 8 scopes) utilizing VT02 Display Terminals (including keyboard and interface electronics) under the control of a single KV8-I Controller and Multiplex Option. Multiplexing several scopes, on a single controller and computer, will be a unique capability of the KVGS and provide us with a powerful competitive advantage.

Goals - We can expect to sell 320 KVGS Systems over the next three years. This number of systems is approximately ten times the number of 338 and 339 systems that have been sold to date. The estimates for calendar 1969 are 125 systems, calendar 1970 150 systems, calendar 1971 50 systems. The dollar volume is more difficult to estimate because of several factors:

1) Some systems will be multiple scope systems, and the average number of scopes directly influence sales volume. 20% of the systems sold are expected to be multi-scope with an average of three scopes per system.

   125 Total Systems x 20% = 25 Multi-scope Systems

   25 Multi-scope Systems x (KV Control @ $3,500, Multiplex Option @ $450,) = $ 488,000
   (3) VT02 Scopes @ $5,200

2) Single scopes are estimated to account for 80% of the total volume or 100 systems. Of this amount, some customers will provide their own scopes and others will purchase VT01 Displays from Digital Equipment Corporation.

125 Total Systems x 80% = 100 Single scope systems	= $ 140,000
100 Single Scope Systems x 40% (KV Control @ $3,500)	
100 Single Scope Systems x 60% x (KV Control @ $3,500 + VT01 @ $3,000)	= 390,000
Total Sales	$1,018,000

3) Shipments are expected to lag sales by two months or 20 systems total, therefore, we would expect shipments to total 125 minus 20, or 105 systems during the first year.

$1,018,000 \times \frac{105}{125}$ = $854,000 shipment during calendar 1969

The impact of KVGS on DEC is far greater than just the value of these options. In the majority of cases, the sale of a KVGS will be in conjunction with either a PDP-8/I or PDP-8/L computer. While this has been the case in 80% of the present orders, this percentage will probably decrease as the system is marketed to existing PDP-8 and PDP-8/I customers as well as new customers. We would reasonably expect 60% of the KVGS system to be in conjunction with the computer sales, hence, this marketing effort directly affects:

125 Total Systems x 60% = 75 Computer Systems @ $15K	Computer Syst.	$1,125,000
	KVGS	1,018,000
	TOTAL	$2,143,000

Markets - The market/application areas for the KVGS include a substantial portion of those presently served by 338, 339 and Type 30 displays as well as several areas which are more of an alphanumeric nature. The 338/339 and Type 30 areas are:

Market	Application
Universities	Display Research
Government	Computer Aided Design
R & D & Engineering Service	Computer Aided Simulation
Aerospace	

Note: An application area may be associated with one or more market area and not necessarily the one directly opposite.

The Advent of a Graphic System at less than one-half of the cost of the existing system should open up several segments of these Market/Application areas that are presently below the cost justification level.

Market/Application areas, which are of a combined alphanumeric and graphic nature include:

Market	Application
Universities	Computer Aided Design
Publishing	Computer Aided Simulation
Architecture	Text Editing
Biomedical	Computer Aided Instruction
Government	Display Research
R & D & Engineering Service	Management Information Systems
Computer Time-Sharing	Process Control Monitoring
Aerospace	Information Retrieval
Electronics	Automated Drafting System
Petrochemical	Mathematics/Curve Fitting
Machine Tool	Data Entry
Automotive	Scheduling
	I/O Terminal

The greater magnitude of this latter group provides the potential necessary to reach the sales effort sought by this marketing effort.

Competition - Competition for the KV Graphics System comes from two major areas. One is those offering storage tube display systems and those offering refresh type display systems.

Storage Tube Systems:

There are only two storage tube systems presently available, the KV Graphic System and ARDS. The ARDS was developed as a stand-alone terminal which can be connected to any computer via dictaphone. A basic configuration with Joy Stick lists for $14.4K (without dataphone) which compares to $6.5K for the KVGS and $16.5K for a complete system including a PDP-8/L. The capabilities of these two systems are similar except that the KV Graphics System employs a software character generator and the ARDS unit includes a hardware character generator; more importantly, the KVGS includes a circle or arc generator, whereas, the ARDS has none.

KVGS vs. Refresh System:

The comparison of the KVGS with Refresh System is more difficult because the differences between the two technologies are greater and the importance of these differences depends upon the application. A general listing of the advantages and disadvantages of each follows:

Refresh Type		KV Storage Tube	
Advantages	Disadvantages	Advantages	Disadvantages
Dynamic picture	Ties up computer	Stroke vs. Dot	No dynamic motion
Man/mach. communication easier (light pen)	High cost	Low cost	No selective erase
Selective erase	Flicker @ high density	Very high density (4000 characters)	Limited Viewing time
Large screen available		No flicker	

MARKETING PROGRAM

New Customers - Our traditional sales/marketing approach for selling new DEC customers, who are interested in a graphic and/or alphanumeric capability, will be utilized. The majority of our selling effort will come from our regular sales force supported by Display Marketing with delivery, price and technical information. Sales Support will include a new option brochure (almost completed), application notes and photos, limited advertising, and participation in several trade shows. We anticipate making the announcement of the Multi-scope System very notable and have begun to arrange for several articles and wide coverage.

Existing Customers - Existing PDP-8 and 8/I customers constitute a substantial market for KVGS "add ons" and this segment will be approached with a direct mail campaign. Beginning with 8/I customers and then progressing to PDP-8 customers (as soon as the VS08 interface to the PDP-8 is completed), each "family of 8" customer will be contacted first with a brochure and system description, followed by a salesman contact and/or a marketing phone call.

Computer Pack - As soon as the KVGS is firmly in production, the possibility of developing this option into a computer pack will be pursued. A rather complete software package presently exists, but a substantial effort will be necessary to clean it up and to obtain the documentation and quality control necessary to complete the software preparation.

Application Packages - Presently, the Marketing/Application areas represented by existing and interested KVGS customers is quite diverse, with the university market most predominant. As greater exposure is obtained, it is anticipated that we will want to develop "application packages" based on the software developments of existing customers, the total potential envisioned, and the amount of effort required.

Tektronix Stand-Alone Terminal - Tektronix has developed a Stand-Alone Terminal utilizing the 611 Storage Tube. This Terminal includes a keyboard, character generator (dot matrix), and control, and it can be handled as a simple Teletype terminal. One possibility would be for DEC to market this Terminal (exclusively?) for Tektronix. A prototype unit is in-house, and Operations Committee members and Product Managers have been invited to examine it. Opinions will be collected after the demonstration is completed, and as soon as Tektronix arrives at a selling price, we can evaluate how we would like to proceed with this opportunity.

Bob Collings

mac

digital INTEROFFICE MEMORANDUM

DATE: January 30, 1969

SUBJECT: CHANGES TO THE STATEMENT OF OPERATIONS FOR FY-70

TO: Operations Committee FROM: Ed Savage

The following changes are recommended as meaningful improvements to the Statement of Operations for FY-70.

1. Accounting for various activities within the foreign subsidiaries. Currently there are many expenses which are classified as "foreign selling" within the foreign subsidiaries. Some examples are promotional costs, marketing costs, and general administrative costs, to name but a few. In order to provide management with better information regarding the operations of the subsidiaries, it is our opinion that it is essential to split these items out of the category known as "foreign selling expense" and report them on the same basis that they would be reported in Maynard's accounting system. These expenses would be shown on the same lines in the corporate financial statement as are the related domestic expenses. Adequate backup schedules would be provided in order to report to the various functional managers the domestic and foreign content of the expenses which are being incurred. The budgets for these particular items are becoming rather significant and it is our opinion that a control mechanism must be implemented in order to provide the functional managers with information necessary to exercise proper control over their various operations.

2. Space advertising and promotional literature. The second change involves the space advertising and promotional literature line. We suggest that lines 53 and 54 on the statement which represent space advertising and promotional literature be combined into one line. Both of these items are managed by the same functional manager who has overall budget responsibility for both of these items. We would continue to maintain the flexibility of being able to provide separate costs for each of these items if the need to know this type of information arose. When one considers the complexities which we continue to build into these systems, such as the cross-product line marketing concept, it seems to make a great deal of sense to combine items which are basically related to each other in order that a functional manager would have less difficulty in providing budget information for the various cross-product line managers.

3. Computer administration center. It is suggested that on the backup schedule 1A we combine the "computer administration expense" with the "domestic selling expenses." The computer administration function certainly is an integral part of our domestic selling costs. In order

to streamline the statement, it is felt that the two items should be combined into one. The foreign computer administration costs currently are not separated from total cost of foreign selling. The combining of these two items does not take away any measure of control from various managers involved but is merely an attempt to streamline our statement of operations which continues to become more and more unwieldy.

4. Shared product line engineering. Currently there are two types of engineering projects which show up on the line known as "shared project line engineering" in the statement of operations: first, there are the engineering projects which have been initiated at the direction of the Operations Committee and are shared by all product lines on a previously agreed-upon basis; secondly, there are projects which are being shared jointly by one or more product lines but not all product lines. It is our opinion that this latter type of project should be shown as "product line engineering" as opposed to "shared project engineering" where it is currently being reported. An adequate backup schedule would be provided to separate the various activities which are going on within the product line engineering schedule. The management of these expenses is certainly quite different and, therefore, in our opinion, should be separated and reported on the basis of management responsibility.

All of these changes make the Statement of Operations a more meaningful presentation of the Company's activities.

I would be extremely happy to discuss any or all of these items with you if you so desire.

ES/ml

digital INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: Microsystems Technology

TO: Operations Committee FROM: George Rice

Microsystems Technology Corporation, Burlington, Massachusetts is a new company presently consisting of two people. The co-founders are Mr. Jack Staller, formerly from Sylvania and well known for his electronic circuit packaging and interconnection technology. The other person is Mr. Albert Hughes who founded Electro Lab Incorporated and was President of Microfab Inc.

Microsystems plans to offer certain production services to small companies that cannot afford or are in such a hurry that they cannot get the capability quickly. Therefore, they plan on running a service bureau type of operation. However, as their customer needs grow until they want their own internal capabilities, Microsystems intends to also sell this same equipment either via a distributor arrangement or by directly manufacturing it. Their planned services are complete design capability and production automation performing specific functions from circuit layout design, printed, hybrid and integrated circuit artwork generating circuit board drilling and back panel, plus logic board wire wrapping.

Microsystems is interested in computer control for many of these operations, and through their explorations of our PDP-8 computer capabilities they became aware of our semi-automatic wire wrap machine. They initially became interested in obtaining one or more of these machines for their own service center use. The next logical question was can they sell them either by buying them from us or by obtaining a right to manufacture them.

Bill McNamara presented the idea of marketing our semi-automatic wire wrap machine to the Marketing Review Committee and was turned down.

Charlie Kotsaftis then told Microsystems that we would allow them to build our wire wrap system and that he would work out the details with respect to terms. Charlie then wrote an internal

memo requesting permission to go ahead with Microsystems. It is unclear where he obtained permission to let Microsystems proceed, or even if he did. He then terminated from DEC and at the same time Microsystems continued on and ordered two semi-automatic stations from the same supplier that we use. Their stations are scheduled for delivery in early '69 along with their first PDP-8 equipment.

I visited Microsystems to see where we stood and feel out how much we might negotiate for in the manufacturing rights that they were already exercising. It appears that they are dependent upon us for success and are anxious to cooperate; however, they thought we were going to give them the rights as a method to promote and sell our equipment. I shocked them when I suggested that they couldn't really expect all this technology without some consideration. Since they do not have the program yet and are depending on getting it with some minimal assistance, they are still willing to talk terms.

The technology we have given Microsystems is minimal and the amount of support we have expended is primarily Tom Stockebrand and some evenings of his people and some Saturday work - not more than a few days total. We have primarily given Microsystems engineering drawings and minimal consultation services, which has resulted in them being able to bring something to the market much sooner than if they were on their own. We have the following alternatives.

1. Terminate - Give them no further support. We might have to take legal action to stop them from manufacturing the equipment, and we many not have the power to stop them.

2. Obtain Stock in Microsystems - This would give us a definite interest in their success, however, for the near future would only be a worthless piece of paper.

3. Royalty Arrangement - This method would optimize maybe both parties interest giving us the high payoff if Microsystems is successful, and not forcing Microsystems to come up with any sizeable cash outlay. Microsystems is interested in this approach. The royalty would force

us to support them if we want them to succeed. It would be complex since they will be redesigning our equipment for resale, plus distributing several new stations to fit other customer needs.

4. Lump Sum - This method would require Microsystems to pay us a one-time charge for all services and technology supplied, and would then relieve us from any further commitments.

Both parties have some general requirements. Microsystems states they do not want to sign anything which forces them to stay locked to us. We, of course, will sign nothing which excludes us from selling the same to other, or possibly enter the market at some later date.

My recommendation is that we do the following.

Request a lump sum payment from Microsystems of $10,000. The payment will be for non-exclusive license rights, 'as is' drawings and programs, and consultation services. The agreement should limit our further involvement to supplying the program and 24 hours additional consultation.

Some of the side benefits of doing business with Microsystems are as follows.

1. A showcase for our computers performing N/C applications.
2. A fair amount of business for DEC if Microsystems succeeds in selling (their two (2) year projections are 18 PDP-8s).
3. A competitive product for the other wire wrap suppliers to drive them to us. Already Gardner Denver has visited us. Both Universal and CIC have also shown some interest.

I need the following:

1. An approval on my recommendation or an alternative now.

2. An approval or suggestion as to how to handle the next one with a similar situation (Gardner Denver and CIC have already asked).

digital INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: CORPORATE CONTRIBUTIONS

TO: Operations Committee

FROM: Personnel Committee

Attached is the proposed corporate contribution program for calendar year 1969. The proposal was prepared by a committee consisting of D. Dimancesco, F. Gould and R. Collings and was approved by the Personnel Committee on 2/5/69.

N.E. cover

pm

1969

CORPORATE CONTRIBUTIONS

Maynard Community Chest — $3,000

Previously approved and already disbursed.

Emerson Hospital — 1,500

To be used toward construction of a new room in the hospital's new wing. Total cost of a room is $4,500. Contribution to be made over a 3-year span.

Marlboro Hospital — $500

Ranks 2nd in terms of use by Digital employees. Amount is to be used toward specific piece of equipment.

Lowell Hospital — $100

Framingham Hospital — $100

High School Scholarships — $2,300

Maynard High School	$500
Marlboro High School	200
Marlboro Vocational	200
Acton/Boxboro High School	200
Hudson High School	200
Hudson Catholic	200
Nashoba Regional	200
Leominster High School	200
Littleton High School	200
Lowell High School	200

These schools were selected on the basis of Digital population figures. The schools can determine the scholarship winner. The only stipulations are that he be an individual showing promise in the field of science or engineering and that the money be used toward tuition at an accredited school offering a two or four year degree program.

Libraries — $350

Maynard	$100
Acton	50
Marlboro	50
Hudson	50
Leominster	50
Stow	50

Marlboro Red Cross	$100
WGBH	$100
Maynard Beautification	$400

To be used toward Maynard clean-up campaign as discussed with Maynard Selectmen.

AMA 2-Week Course	$450

This amount would be used to send a Maynard High School student to the two-week summer "Operation Enterprise" seminar, sponsored by the AMA. The program is designed to help create enthusiasm for the management profession. We would like to try this on a "one-time" basis without any committment to annual participation.

Reserve Fund	$100
Total:	$9,000

Jerry Baker

digital INTEROFFICE MEMORANDUM

DATE: February 3, 1969

SUBJECT: REPORT OF RF/RS08 DESIGN REVIEW COMMITTEE

TO: Design Review Members FROM: Tom Stockebrand

The new committee met for the first time on December 6, 1968. Since the committee was newly formed, and the project is fairly old, about half the time was spent in tutorial matters. It was recommended that a next full session be held in the evening to avoid interuptions.

The following conclusions were generated:

1) The mechanics portion is difficult to check out. Signal wave forms are not available and neither is a check out procedure. (Steve said this will be available in two weeks (Dec. 20) in the Engineering Spec. of the RS08 Mechanical Setup Procedure. Also a field service adjustment procedure will be available at that date).

2) A complete table of contents or guide for outsiders is needed for the specifications and documentation. It is very hard to find your way around the prints.

3) No check out procedure exists.

4) Timing track should have been sliced and zero - detected to eliminate gain in slice control. It's probably too late to do this now, of course.

5) The design seems to assume that amplitude changes with time, temperature, etc. will not exist and the margins for amplitude are therefore too tight.

6) It seems that the complexity of the 14th timing pulse being left out is not necessary and can contribute to unreliability.

7) Each individual disk is more expensive than it needs to be because timing pulses A, B and C are partially combined in each local control. TBH belongs in the control.

8) It seems that double pulsing is possible in the TPA pulse. Steve thinks that maybe it is. The TAP is not solid enough,

terminators are shown incorrectly on D-DS-RF08-0-1, they should be indicated at the end of the line only.

9) Barry Bornstein hasn't yet got a mechanical assembly of the whole works.

10) Power control is far too sensitive to noise and will generate noise as it is designed. "Q-of-one" circuits are urgently needed. It would also appear that the disk can easily be wiped out by noise pulses as power goes down.

11) The G085 applifier is an abortion.

12) A glossary and a flow chart is sorely needed.

13) No real production testers, specs and grubby know how has yet been generated.

Tom

bn

digital INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: DESIGN REVIEW II - RF/RS08 - FEBRUARY 4

TO: Design Review Committee
Engineering Committee
Operations Committee

FROM: Tom Stockebrand

The committee convened to review the Engineering Specifications of the revised Disk project in an effort to determine whether the specs defined an acceptable product. If they do, we have a Disk because a Disk to these specs can be manufactured. It is admitted that the specs are less than ideal, they do describe an achievable Disk however. The question is: Are they adequate?

Conclusions:

1. Basicly the specs are users specs. It is important that an acceptance procedure be generated, presumably tighter than the users specs, which should be provided the committee at the earliest possible date.

2. The basic question of long range life still exists. Apparently the friction polymer problem can be taken care of by water washing -- we should see this in some construction specifications. The start - stop problem seems to have been tested as adequately as can be at this point.

3. The vibration/shock item in the spec as written is a meaningless English sentence but the intent is approved by the committee if it can be explained better.

4. The reliability spec will have to do but the sentence about running continuously must be made more firm.

5. A line noise specification must be added such as: a) An RF filter will be there or must be installed. b) Noise generated inside the cabinet by other means must be kept down. c) Maybe cabinet wiring specs for add-ons need to be defined.

6. A shipping spec must be added such as: Designed to be shipped in its cabinets. Motor clamp is to be used. A foam padded box will be provided if the Disks must be shipped separately -- a procedure not recommended.

7. The Disk group must be willing to train some members of Field Service in the care and feeding of Disks with the intent of working out field procedures for some basic jobs which may need to be done occasionally such as changing heads. Until this is done, the sale of Disks should be restricted geographically to the United States.

8. As mentioned at first, acceptance procedures should be written to cover shock tests, the burn-in period if any, etc.

digital INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: RF09 DESIGN REVIEW

TO: Operations Committee FROM: Tom Stockebrand

The following committee was approved for the RF09 Design Review:

B. Young	R. Antonuccio
E. Haight	G. Saviers
~~J. Sutton~~	M. Sifnas

Tom

bn

digital INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: RF/RS08 DESIGN REVIEW MEETING II - FEBRUARY 4

TO: Operations Committee FROM: Tom Stockebrand

The second meeting of the RF/RS08 Design Review took place on February 4 at 2:00 in the Peripheral Engineering Conference Room.

The reports of the first meeting and the meeting held February 4 are attached.

Tom

bn

digital INTEROFFICE MEMORANDUM

DATE: February 3, 1969

SUBJECT: REPORT OF RF/RS08 DESIGN REVIEW COMMITTEE

TO: Design Review Members FROM: Tom Stockebrand

The new committee met for the first time on December 6, 1968. Since the committee was newly formed, and the project is fairly old, about half the time was spent in tutorial matters. It was recommended that a next full session be held in the evening to avoid interuptions.

The following conclusions were generated:

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2) A complete table of contents or guide for outsiders is needed for the specifications and documentation. It is very hard to find your way around the prints.

3) No check out procedure exists.

4) Timing track should have been sliced and zero - detected to eliminate gain in slice control. It's probably too late to do this now, of course.

5) The design seems to assume that amplitude changes with time, temperature, etc. will not exist and the margins for amplitude are therefore too tight.

6) It seems that the complexity of the 14th timing pulse being left out is not necessary and can contribute to unreliability.

7) Each individual disk is more expensive than it needs to be because timing pulses A, B and C are partially combined in each local control. TBH belongs in the control.

8) It seems that double pulsing is possible in the TPA pulse. Steve thinks that maybe it is. The TAP is not solid enough,

digital INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: DESIGN REVIEW II - RF/RS08 - FEBRUARY 4

TO: Design Review Committee
Engineering Committee
Operations Committee

FROM: Tom Stockebrand

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Conclusions:

1. Basicly the specs are users specs. It is important that an acceptance procedure be generated, presumably tighter than the users specs, which should be provided the committee at the earliest possible date.

2. The basic question of long range life still exists. Apparently the friction polymer problem can be taken care of by water washing -- we should see this in some construction specifications. The start - stop problem seems to have been tested as adequately as can be at this point.

3. The vibration/shock item in the spec as written is a meaningless English sentence but the intent is approved by the committee if it can be explained better.

4. The reliability spec will have to do but the sentence about running continuously must be made more firm.

5. A line noise specification must be added such as: a) An RF filter will be there or must be installed. b) Noise generated inside the cabinet by other means must be kept down. c) Maybe cabinet wiring specs for add-ons need to be defined.

6. A shipping spec must be added such as: Designed to be shipped in its cabinets. Motor clamp is to be used. A foam padded box will be provided if the Disks must be shipped separately -- a procedure not recommended.

7. The Disk group must be willing to train some members of Field Service in the care and feeding of Disks with the intent of working out field procedures for some basic jobs which may need to be done occasionally such as changing heads. Until this is done, the sale of Disks should be restricted geographically to the United States.

8. As mentioned at first, acceptance procedures should be written to cover shock tests, the burn-in period if any, etc.

digital INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: DECTAPE TRANSPORT DESIGN REVIEW

TO: Operations Committee FROM: Tom Stockebrand

The following committee was approved for the DECtape Transport Design Review:

~~Dave Nevala~~
~~Dave Gross~~
~~Jerry Butler~~
Tom Stockebrand
Dick Clayton
Dick Best
Ron Lavoie
Remo Vogelsang
~~Martha Sifnas~~
L. Carroll

Tom

bn

digital INTEROFFICE MEMORANDUM

DATE: February 5, 1969

SUBJECT: SMALL PRINTER DESIGN REVIEW

TO: Operations Committee FROM: Tom Stockebrand

The following committee was approved for the Small Printer Design Review:

George Wood, Chairman	Tom Stockebrand
Russ Doane	Bob Antonuccio
Don Busiek	Pierre Schneebeli
Bob Hughes	

Tom

bn

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COMPANY CONFIDENTIAL

OPERATIONS COMMITTEE MEETING

February 3, 1969

AGENDA

1. Additions and Corrections to Minutes of the January 27th Meeting
2. Marketing Review Committee Summary - (Ted Johnson)
   (See attached minutes of the January 28th meeting)
3. Review of Bob Collings' Proposal on the KV Graphic System - (Nick Mazzarese)
4. Proposed Changes to the Statement of Operations for Fiscal Year 1970 - (Ed Savage)
   (See attached report)
5. Proposed Budget Timetable for Fiscal Year 1970 - (Ed Savage)
   (See attached report)
6. Proposed Budgeting and Reporting of Cross-Product Line Marketing - (Ed Savage)
   (See attached report)
7. Consultants Relations Proposal - (Mark Nigberg)
8. Discussion of Proposed Environmental Control Chamber - (Joe St. Amour)
9. Procedure for Setting Dates for Taking Orders of New Products and Peripherals
10. Discussion of the Disposal of Company Reports - (Stan Olsen)
11. Communications Status
    (See attached report from John McNamara)
12. Mail Room Proposal - (Frank Kalwell/Nick LoRusso)
    (See attached report)
13. Discussion of Proposed $80,000 Booth for Trade Shows - (Jim Jordan/John Jones/Roy Gould)

THE "WOODS" MEETING HAS BEEN RESCHEDULED FOR THE AFTERNOON OF
FEBRUARY 11TH AND ALL DAY THE 12TH
AT KEN'S HOME IN NEW HAMPSHIRE

digital INTEROFFICE MEMORANDUM

DATE: February 4, 1969

SUBJECT: Operations Committee Meeting
February 3, 1969

TO: Operations Committee FROM: Win Hindle

Present: Stan Olsen, Ted Johnson, Win Hindle
Secretary: Win Hindle

1. Minutes of the January 27th meeting were approved.

2. Minutes of the January 28th Marketing Review Committee were accepted.

3. Budget Timetable for FY1970 - Approved.

4. Cross-Product Line Marketing - We decided that the primary control should be based on market areas. Budgets should be established in advance with each product line manager by each cross-product marketing manager. Sub-product expenses can be collected through discrete projects.

5. Trade Shows - We agreed that Gabe d'Annunzio should take responsibility for Trade Shows. Roy Gould will report to Gabe and Gabe believes he has the time to supervise this activity well.

6. Consultant Relations - Gabe d'Annunzio proposed that we walk into this program slowly (not adding another person to his group) by sending product information and the Newsletter to them. The Public Relations Group will compile a list of consultants by asking all the key DEC people who should be on the list. Then a letter will be sent to introduce the program to those on the list.

7. Spring Joint Computer Conference Booth (Jim Jordan, Bob McInnes, Loren Prentice, Joe St. Amour, Roy Gould, Gabe d'Annunzio).

   Jim Jordan presented 3 alternate proposals for SJCC. Stan proposed a 4th alternative (the "boothless" booth). A compromise between alternative 1 (old booth system using four corners for 4 new products) and Stan's alternative (open booth with benches in corners) was suggested. Jim Jordan, Bob McInnes, Gabe d'Annunzio and Roy Gould will work out a compromise and propose it later this week. Stan will advise the group. The total cost of this approach should be between $3,500 and $4,500.

8. Disposal of Company Reports - Nick LoRusso will set up a procedure for disposal of all computer print-outs and other sensitive company data.

9. Communications Status - Report received as information. Win Hindle asked that we increase the number of outgoing Arlington lines and Stan will look into this. We will order from the Telephone Co. an increase in internal lines from 1000 to 1200 to be ready for expansion in June.

10. Proposed Environmental Control Chamber - Joe St. Amour's proposal was accepted.

11. Mail Room Proposal - Accepted the proposal. Nick LoRusso will discuss with Senior Secretaries and publicize new system well prior to implementing it.

Items for February 10 Meeting

a. Proposal by Bob Collings on KV8I.

b. Proposed changes to Statement of Operations (Ed Savage).

c. Procedure for Setting Dates for Taking Orders of New Products.

d. TU79 Review (Bob Savell)

bwf

digital INTEROFFICE MEMORANDUM

DATE: January 30, 1969

SUBJECT: Budget Timetable - FY 1970

TO: Operations Committee

FROM: Ed Savage

The recommended timetable for the Fiscal Year 1970 is shown on the attached flowchart. A more detailed flowchart which shows the interaction of our world-wide activities during the budget cycle has been prepared and will be distributed shortly.

The purpose of the attached chart is to acquaint you with the major events within the budget cycle which will have a direct bearing on your own planning.

Preliminary discussions have already begun and I will continue to implement the attached plan unless I hear otherwise from the committee.

ELS/ba
Attachment

DIGITAL EQUIPMENT CORPORATION
BUDGET PROCEDURE

OPERATIONS COMMITTEE | ACCOUNTING | PRODUCT LINE MANAGERS

1/27
DEVISE TIMETABLE

1/27 - 1/30
REVIEW TIMETABLE

1/27 - 1/31
DISTRIBUTE TIMETABLE AND FORMS

1/31 - 2/19
PRELIMINARY BOOKINGS AND NET EQUIPMENT

2/19 - 2/20
SUMMARIZE BOOKINGS AND NET EQUIPMENT

2/21 - 2/24
REVIEW BOOKING AND NET EQUIPMENT

1/31 - 3/3
PRODUCT DATA TO MANUFACTURING

2/25 - 2/27
LIST G & A CENTERS BY VICE PRESIDENT

2/27 - 3/3
APPROVE G & A CENTERS AND MISC. EXPENSE AS PRESENTED BY VICE PRESIDENT

3/4 - 3/6
LIST PROJECTS BY VICE PRESIDENT AND SUBMITS TO PRODUCT LINE AND OPERATIONS COMMITTEE

3/6 - 3/10
APPROVES PROJECTS AS PRESENTED BY VICE PRESIDENT

3/10 - 3/13
INCORPORATE G & A CENTERS, SHARED AND MFG. PROJECTS, AND MISC. INCOME INTO STATEMENTS

2/24 - 3/10
PREPARE BUDGET STATEMENT EXCEPT LINES 41, 42, 61 & 62

3/10 - 3/13
SUMMARIZES PRODUCT LINE STATEMENTS

3/14 - 3/24
REVIEW PRODUCT LINE STATEMENTS

3/24 - 3/28
PREPARE COST CENTER DETAIL TO STATEMENTS

3/28 - 4/3
SUMMARIZES DETAILS AND ADVISES COST CENTERS

4/3 - 4/17
REACHES MUTUAL AGREEMENT WITH COST CENTER MANAGERS

4/3 - 4/17
REFINES BUDGET

4/17 - 4/23
SUMMARIZES AND MATCHES PRODUCT LINE TO COST CENTERS

4/24 - 4/28
FINAL APPROVAL OF ALL BUDGETS

4/28 - 5/2
NOTIFY CC OF OPER. APPROVAL AND CONFIRM BUDGET

5/2 - 5/4
C O N F I R M

5/2 - 5/5
SUBMIT COPIES TO BOARD

5/5 - 5/12
BOARD APPROVES

C. RIX/clw
1/29/69

digital INTEROFFICE MEMORANDUM

DATE: January 30, 1969

SUBJECT: Cross Product Line Marketing

TO: Operations Committee

FROM: Ed Savage

On January 15, 1969 I summarized the progress to date on the Cross Product Line Marketing project as well as certain unresolved problems which had to be overcome. In order to do an effective budgeting job the new dimension of Cross Product Line Marketing must be considered.

Since January 15, 1969, many discussions have been held with certain members of the Operations Committee as well as Cross Product type managers. From these discussions it was obvious that no unanimous opinion exists on how to tackle the budgeting and subsequent reporting problems concerned with the Cross Product Line Marketing concept. In order to move forward I propose the following solution.

1. The bookings will be coded by application area as well as sub-product where applicable.

2. The expenses will be coded in the same manner where applicable. The coding of expenses is a major area of disagreement but I feel by coding in the manner I suggest allows a greater amount of flexability in reporting than is offered by the "either-or" situation.

3. Reporting

In my opinion the only new dimension being added is that of the Cross Product Line concept. The sub-product line concept is merely an extension of our already existing product line concept. The sub-product line period expenses automatically fall out of the existent discrete project reporting system.

Planned expenditures for sub-product projects are part of the product line budget. The monthly discrete project report would show the period expenditures as measured against budget and could easily be compared to bookings.

The Cross Product Line Marketing report would show all bookings and related expenses bearing an application code irregardless whether a sub-product code existed or not.

In my opinion our budgeting as well as reporting should place primary emphasis on the market application concept. If the committee agrees with this approach I will develop a budgeting procedure which will be intergrated into our current planning for fiscal 1970.

ELS/ba

digital INTEROFFICE MEMORANDUM

DATE: January 27, 1969

SUBJECT: Communications at Digital Equipment Corporation

TO: Operations Committee FROM: John E. McNamara

The present communications problems of the Digital Equipment Corporation are outlined below, accompanied by information on the status of solutions to those problems.

I. In/Out Communications

A. Maynard Incoming Lines

Phase I - Change from 15 one-way incoming and 5 two-way trunks to 20 one-way incoming trunks. (Completed 12/22)

Phase II- Change from 20 one-way incoming trunks to 24 one-way incoming trunks. (Ordered 1/16, completion due about 3/1)

Phase III-Install more sophisticated switching equipment in Maynard telephone office for better access to DEC lines and greater expansion possibility. (Due 7/15)

B. Maynard Outgoing Lines

Phase I - Change from 18 one-way outgoing and 5 two-way trunks to 28 one-way outgoing trunks. (Completed 12/22)

Phase I produced satisfactory performance; no further expansion contemplated in immediate future.

C. Arlington Incoming Lines

Phase I - Change from 3 one-way incoming and 9 two-way trunks to 10 one-way incoming trunks. (Completed 11/26)

Phase II- Initiate Telephone Company study in Arlington to determine number of additional trunks needed. (In progress)

D. Arlington Outgoing Lines

Phase I - Change from 9 two-way trunks to 10 one-way outgoing trunks. (Completed 11/26)

Phase I produced satisfactory performance; no further expansion contemplated in the immediate future.

II. Internal Communications

A. Telephone Lines

Phase I - Expansion of internal switching system from 600 line capacity to 1000 line capacity. (Completed 11/9)(800 now used)

Phase II- Expansion of internal switching system from 1000line capacity to 1200 line capacity. (Will be required by about 6/15 - should be ordered now)

B. Telephone Cabling

Phase I - Installation of cable to connect new switching system with existing cabling. (600 pair installed at cut-over of new switching system on 11/9)

Phase II- Temporary cabling to permit telephone installations pending completion of Pase III.. (Completed about 12/9)

Phase III-Installation of a new 600 pair cable to Building 5 and new distribution cabling within that building. Installation of a new 600 pair cable to Building 1 and distribution cabling within that building. (This cabling was supposed to be installed in time for the cut-over of the new switching system on 11/9, but someone in the Telephone Company forgot to order it, leaving us with a 1000 line switching system on the end of a 600 pair cable (Phase I) and necessitating stop-gap measures (Phase II). Installation is in slow progress.)

III. Branch Office Communications and Expense

A. WATS arrangements probably will not be satisfactory due to long conversation times and clustering of calls, but the Telephone Company has been requested to make a study for us.

B. Items that have a high monthly charge and encourage more calling, but do not affect service to our customers, should be eliminated. Specifically, Touch-Tone service should not be ordered.

C. Preliminary information has been obtained from A.T.&T. indicating that an eastern offices tie-line network centered on Parsippany or Princeton or Palisades Park might be financially attractive. New England Telephone Company will be asked to do an in-detail study after Office Services does a rough study.

IV. Written Message Service

A. Code Compatability - operators should not have to manually convert tapes received from branches, field service, etc. by the tape-to-page copy-to-tape process presently used. Common carrier and transmission terminal personnel at both Maynard and Reading are being consulted about the feasibility of converting trans-Atlantic operations to 8-level tape.

B. Distribution - as now, heavy users should continue to have their own internal loop teletypewriters. This permits rapid delivery and reduces the afternoon work overloads in the TWX room. Unlike individual machines with direct outside access, it saves money on skilled personnel and allows pooling of message transmissions. Improvement of local loop service by provision of unattended operation and computer-directed routing will be studied. Moderate users of written message services could be served by a small dial dictation system that would permit a skilled transcribing typist to generate TWX tapes directly from recordings. All non-loop users of the written message services should receive notification of message arrival by telephone and have the option of personal pickup or mail delivery, rather than the present policy of having operators hand-deliver messages. Adoption of a mail delivery policy would place an additional burden of the mail room, hence location of the mail room adjacent to the TWX room would be highly desireable. The volume of messages to be delivered would be over 100 per day.

C. Traffic and Costs - the message center handled 53% more messages in July-December 1968 than in July-December 1967. Domestic traffic increased moderately, but international traffic nearly doubled. This makes the code and distribution problems outlined above particularly pressing. Western Union International is presently studying the Maynard/Reading traffic for us and will have the results in a few weeks. We are determining the feasibility of a quarter-speed full period leased circuit between these points.

JEM:hs

digital INTEROFFICE MEMORANDUM

DATE: 1/29/69

SUBJECT: MAIL ROOM PROPOSAL

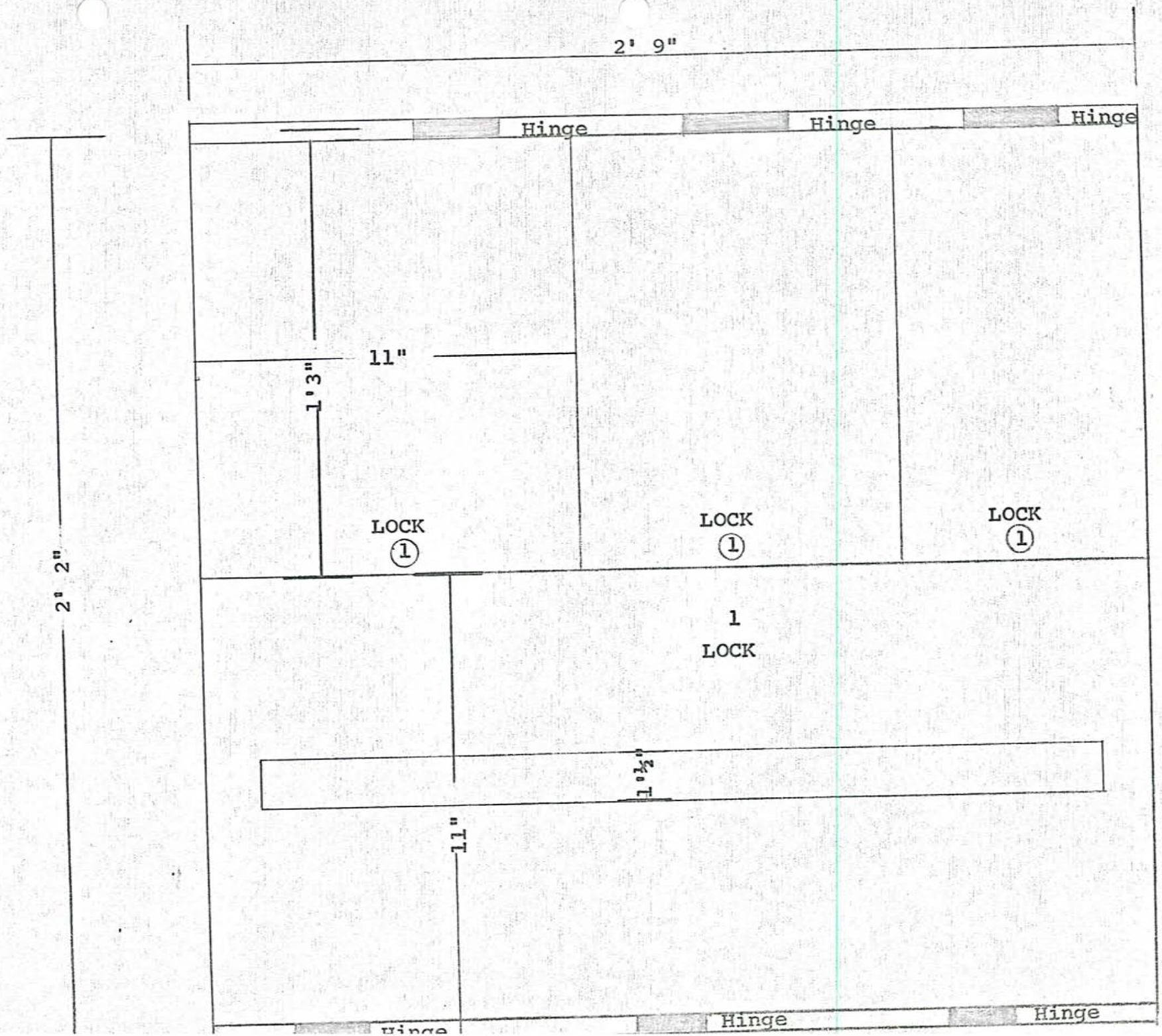
TO: Operations Committee

FROM: Frank Kalwell /Nick LoRusso

The Operations Committee has approved all segments of the 12/10/68 Mail Room Proposal with the exception of "Type of Delivery". It is the Mail Room's interest to cut costs but yet provide the service needed for all product lines to function. With the massive growth and square footage presently in existance, the only way to cut such costs is to cut the number of stops from 84 to 21. The below list indicates the area(s) to be served.

BLDG.LOCATION	ARE SERVED BY EACH BOX
12-1	Ken Olsen-Tape Preparation-Receptionist
12-3	Programming-Decus
3-5	Print Shop-Art Dept.-Plant Engineering
4-5	Mech. Engineering-Special Products
4-4	Drafting
7-1	Fab Shops-Printed Circuit Boards
8A-3	Training-Silk Screen
6A-3	Office Services-TWX Room-Office Supplies Stk. rm.
1-4	Peter Kaufmann-Computer Production
1-3	Peripherals-Production Control-Expendable Stk. rm.
5-5	Win Hindle-PDP-9(J.Cohen)-PDP-10 Production Engineering-Linc 8-Physics Mktg.
5-4	Purchasing-Incoming Mech. Inspection
5-4	Personnel
5-4	Production "A"-Dispensary-Quality Control
5-3	Field Service-Model Shop-Library
5-3	Traffic-Export-Computer Administration-C.O.D.
5-3	Ted Johnson-Sales-N.E. Sales-Stan Olsen
5-2	Nick Mazzarese-PDP-8 Group-Advertising
5-2	Legal Dept.-Accounting-Tech Writing
5-2	Tab Room

You will note the U.S. Post Office now has attempted to cut the number of rural stops by consolidating twenty (20) or so mail boxes at some intersection along a country road. This is because it is no longer feasible or possible for one man to make all deliveries door to door. The U.S. Government feels that it would not be to their advantage to hire an additional man.



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OPERATIONS COMMITTEE MEETING

March 31, 1969

AGENDA

1. Additions and Corrections to Minutes of the March 24th Meeting
2. Marketing Review Committee Summary - (Ted Johnson)
   (See attached minutes of the March 20th meeting)
3. Proposal for a Central Complaint Department - (Jim Cudmore)
   (See attached report)
4. PDP-11 Party Line - (John Cohen)
   (See attached report)
5. Release of Corporate Information - (Mark Nigberg)
   (See attached report)
6. Land Committee Status Report - (Dave Knoll/Ed Schwartz/Al Hanson)
7. Display Proposal - (Bob Collings)
8. Annual Physical Examinations for Key Employees
   (See attached report)
9. Overdue Orders - (Win Hindle/Stan Olsen/Nick Mazzarese)
10. Informal Discussion on the IEEE Show, and the Booth for the SJCC - (Gabe d'Annunzio)

THE NEXT "WOODS" MEETING IS SCHEDULED FOR WEDNESDAY, APRIL 2
AT HOWARD JOHNSON'S IN CONCORD

OPERATIONS COMMITTEE MINUTES

March 31, 1969

Present: W. Hindle, T. Johnson, P. Kaufmann, N. Mazzarese, K. Olsen, S. Olsen (Secretary)

1. Minutes

The minutes from the meeting of March 24, 1969 were approved.

2. Marketing Review Summary

Summary from the meeting of March 20, 1969 was approved.

3. Central Complaint Desk

Go ahead. Pete and Ted will meet with QC and Field Service to decide who this person will report to.

4. PDP-11

We are making some changes in the order code, and we decided to delay the announcement date.

5. Release of Corporate Information

Functions of the Public Relations Group should be as follows:
Product and market publicity
DEC publicity
Information
Community relations

The Report should incorporate the following changes: Rewrite history; Should represent facts (like prospectus)...simple, not like salespitch; Keep log of everything said; No predictions.

6. Land Committee Status Report

Pick up options on Leominster and Westfield. Ken and Pete will look at property tomorrow.

7. Display Proposal

This item was postponed until next week.

8. Annual Physical Examinations

We will also use Dr. Goorno. Treadmill will be optional.
The following changes to the submitted list should be noted:
Additions: Joe St.Amour, Mort Ruderman, Larry Portner
Deletions: Dick Clayton, Bob Lane.

9. "DEC" Trademark

We will keep the trademark, "DEC", but Ed Schwartz will look into getting the "d i g i t a l" trademark.

10. There will be a Woods Meeting on Wednesday, April 2, 1969 at Howard Johnson's in Concord.

cag

digital INTEROFFICE MEMORANDUM

DATE: MARCH 25, 1969

SUBJECT: SECOND PASS AT DEFINING A CENTRAL COMPLAINT DESK

TO: OPERATIONS COMMITTEE

FROM: JIM CUDMORE

I THINK IT IS NECESSARY TO FIRST DEFINE THE PURPOSE OF A CENTRAL COMPLAINT DESK. THE DESK DOES NOT EXIST TO SOLVE PROBLEMS.

THE DESK EXISTS TO:

1. ASSURE THAT QUALITY PROBLEMS GET REPORTED TO THE PERSON RESPONSIBLE.
2. COLLATE COMPLAINTS IN ORDER TO ASSESS THE MAGNITUDE OF CROSS-PRODUCT PROBLEMS.
3. PROVIDE SOME SIMPLE MEASURE OF PRODUCT QUALITY.
4. ASSURE THAT THE PERSON REGISTERING THE COMPLAINT GETS AN ANSWER.

THE TYPE OF PROBLEMS BEING PROCESSED BY THE CENTRAL COMPLAINT DESK WILL BE:

1. DESIGN
2. MANUFACTURING
3. SHIPPING AND OTHER PRODUCTION RELATED OPERATIONS

THE CENTRAL COMPLAINT DESK WILL NOT HANDLE PROBLEMS CONCERNING:

1. DELIVERY DATES
2. PRODUCTION SCHEDULE SLIPPAGES
3. NEW PRODUCT STATUS INFORMATION

IN SUMMARY, THE COMPLAINT DESK MERELY PROCESSES COMPLAINTS. THE RESPONSIBILITY FOR ANSWERING DESIGN COMPLAINTS UNEQUIVOCALLY LIES WITH THE PRODUCT LINE. THE RESPONSIBILITY FOR ANSWERING COMPLAINTS AS FAR AS MANUFACTURING ERRORS OR POOR WORKMANSHIP CLEARLY LIES WITH QUALITY CONTROL OR PRODUCTION ENGINEERING GROUPS.

-CONT'D-

THE COMPLAINT CENTRAL DESK AS DEFINED, CAN HARDLY BE CONSIDERED ANOTHER ORGANIZATIONAL LAYER. IN ACTUALITY, IT WILL CONSIST OF EITHER A PART OR FULL TIME CLERK TYPIST, DEPENDING ON THE WORK LOAD. THE COMPLAINT DESK WILL IN NO WAY DILUTE THE RESPONSIBILITY OF THE PRODUCT SUPPORT ORGANIZATION. IF ANYTHING, THIS COMPLAINT DESK WILL PROVIDE THEM WITH A MEANS OF GETTING ANSWERS TO SOME OF THE COMPLAINTS THAT THEY HAVE.

JGC/TAB

COMPLAINT NUMBER _____ _____ _____ (TO BE FILLED OUT BY COMPLAINT CENTRAL)
(MONTH) (YEAR) (NO.)

ORIGINATOR - - FILL OUT THIS SECTION

THIS COMPLAINT CONCERNS THE:

( ) RELIABILITY
( ) MAINTAINABILITY
( ) APPEARANCE
( ) PERFORMANCE
( ) ADEQUACY
( ) OTHER

OF THE

( ) ELECTRICAL HARDWARE
( ) MECHANICAL
( ) SOFTWARE/DOCUMENTATION
( ) SHIPPING/CRATING
( ) OTHER

OF THE

( ) PDP _____ (TYPE
( ) PERIPHERIAL _____ (TYPE
( ) MODULES _____ (TYPE
( ) OTHER _____

FOR FURTHER INFORMATION
CONTACT: NAME _____
PHONE NO. _____

EXAMPLE: DEC # _____ SERIAL # _____ CUSTOMER _____

DETAILED DESCRIPTION _____

ORIGINATOR _____ OFFICE _____ DATE _____
(MO.) (DAY) (YR.)

MAIL TO COMPLAINT CENTRAL C/O QUALITY CONTROL DEPT. - MAYNARD

_____ _____ HAS AGREED TO ANSWER YOUR COMPLAINT _____ (DATE)
(NAME) (EXT.)

ANSWER

( ) I'M AWARE OF THE PROBLEM AND,
( ) IT'S BEEN TAKEN CARE OF (LIST ECO# OR DATE FIX WILL BE EFFECTIVE) _____ _____
(ECO) (DATE)
( ) I'M WAITING FOR MORE SIMILAR REPORTS BEFORE TAKING ANY ACTION.
( ) I PLAN NO ACTION - PROBLEM IS TOO TRIVIAL OR UNLIKELY TO OCCUR AGAIN.
( ) I'LL INVESTIGATE AND REPORT BY _____ (DATE)
( ) OTHER _____

( ) THIS IS A NEW PROBLEM AND,

_____ SIGNED _____ (DATE)

FINAL DISPOSITION

( ) HAS BEEN FIXED (ECO # OR EFFECTIVE DATE)
( ) WAS INVESTIGATED AND NO ACTION WILL BE TAKEN
( ) OTHER _____

_____ _____
(SIGNED) (DATE)

COMPANY CONFIDENTIAL

digital INTEROFFICE MEMORANDUM

DATE: 27 March 1969

SUBJECT: PDP-11 Party Line

TO: Operations Committee FROM: John Cohen

In light of the change in course for the PDP-11, I propose we take the following position in regard to the outside world. I suggest we tell our customers:

1. A Change Has Been Made in PDP-11 Architecture

Reaction to the initial PDP-11 design was favorable. However, some customers and consultants found negative aspects. One of our consultants, working with DEC engineers, proposed an alternative. The new design had all the good features of the old, but overcame many of its difficulties.

2. PDP-11 Announcement and Delivery Will Be Delayed

Our engineers and programmers felt that the old design would be good for two years, but that the new design could last at least five years. The question was whether the product delay was justified by the prospect of having a better product. Given our feelings for the potential of the mini-computer market, our decision for the new design was easily reached.

3. When Will The PDP-11 Be Announced?

Sometime this summer. We do not know the exact date.

4. When Will Prices and Technical Specifications Be Available?

When the PDP-11 is announced.

JC:mh

Carol

digital INTEROFFICE MEMORANDUM

DATE: March 26, 1969

SUBJECT: RELEASE OF CORPORATE INFORMATION

TO: Ken Olsen
Nick Mazzarese
Win Hindle
Stan Olsen
Ted Johnson
Pete Kaufmann

FROM: Mark Nigberg

As per Ken Olsen's request, I have put together the attached package which I propose as the type of information I would like to be able to distribute to the press and to financial analysts.

I request the Operations Committee's approval to release the type of information attached.

MN/sf

Attachment

digital INTEROFFICE MEMORANDUM

DATE: March 25, 1969

SUBJECT: ANNUAL PHYSICAL EXAMINATIONS

TO: Operations Committee FROM: Elsa Carlson

It is time to schedule annual physical examinations with Dr. Purcell for some of our key employees. Before I schedule the appointments, however, I would like your approval of the following names. I really goofed last year and scheduled some people you would have liked deleted from the previous year's list.

Minutes of the January 8, 1968 meeting state: "Some people do not want to take the annual physical. It was decided that personnel can go to their own doctor, but must pay the bill themselves, and a letter from their doctor should be sent to Dr. Houck. If they use Dr. Purcell, the Company will pay the bill. However, key personnel are required to have an annual physical."

Minutes of the January 22, 1968 meeting state: "Vice-Presidents and Product Line Managers will get physicals every year. Every three years, personnel on list will have physicals."

Besides yourselves, these are the people obligated to have a physical within the next couple months:

1. Bill Long
2. John Jones
3. Bob Savell
4. Dick Clayton
5. Al Devault
6. Bob Lane

OPERATIONS COMMITTEE MEETING

March 24, 1969

AGENDA

1. Additions and Corrections to Minutes of the March 17th Meeting
2. Marketing Review Committee Summary - (Ted Johnson)
   (See attached minutes of the March 17th meeting)
3. Special Salary Review - (Pete Kaufmann)
   (See attached report)
4. Review of PDP-11 Schedule - (Roger Cady)
5. 1969 Staffing Plans for Salaried Employees - (Graydon Thayer)
   (Report distributed for March 17th meeting)
6. Summer Replacement Program for 1969 - (Win Hindle)
   (See attached report)
7. Proposed Company-Sponsored No-Smoking Campaign - (Win Hindle)
   (See attached report presented to the Personnel Committee by Clayton Rix)
8. Land and Space Report - (Ed Schwartz/Dave Knoll/Al Hanson)
9. Proposed PDP-15 Price List - (Bob McInnis)
   (See attached report)
10. Monthly Status Report - (Dick Best)
11. Overdue Orders - (Stan Olsen/Nick Mazzarese/Win Hindle)

COMPANY CONFIDENTIAL

digital INTEROFFICE MEMORANDUM

DATE: March 24, 1969

SUBJECT: OPERATIONS COMMITTEE MINUTES - MARCH 24, 1969

TO: Operations Committee FROM: Nick Mazzarese

Present: Ken Olsen, Pete Kaufmann, Win Hindle, Ted Johnson, Nick Mazzarese

Secretary: Nick Mazzarese for Stan Olsen

1. Additions and Corrections to Minutes of March 17th Meeting:

   The minutes were approved as submitted.

2. Marketing Review Committee Summary (Ted Johnson):

   No comments were made on this summary.

3. Special Salary Review (Pete Kaufmann):

   Pete's request for a special raise for Ira Morse was approved.

4. Review of PDP-11 Schedule (Roger Cady):

   Roger proposed a new PDP-11 schedule. It was suggested that the 3μS processor was not the right machine to build first. To test this idea, a meeting was scheduled to review the PDP-11 versus competition and the 1μS processor.

5. 1969 Staffing Plans for Salaried Employees (Graydon Thayer):

   Graydon felt that our salaries were pretty well in line with the rest of the industry.

   His plan covered the techniques which he would use in 1969 hiring.

   The Operations Committee agreed that a job posting system should be initiated.

   Graydon agreed to send Operations Committee a list of top level openings each month.

6. Summer Replacement Program for 1969 (Win Hindle):

   This proposal was approved as submitted.

7. Proposed Company-Sponsored No-Smoking Campaign (Win Hindle):

This proposal was approved. Clayton Rix was appointed chairman of committee to set up the program.

8. Land and Space Report (Ed Schwartz/Dave Knoll/Al Hanson):

New Hampshire and Connecticut were ruled out because taxes are high (and labor market is also poor i.e., Portsmouth, New Hampshire). It was decided to concentrate on Leominster-Westminster area and Springfield-Holyoke area. The Land Committee will report back next Monday.

9. Proposed PDP-15 Price List (Bob McInnis):

Bob will report back this Friday with:

a) Engineering status on each item.
b) Manufacturing systems cost.
c) Markup on each item.

OPERATIONS COMMITTEE MINUTES (Cont'd) - AFTERNOON SESSION

10. Monthly Status Report (Dick Best):

No action required.

11. Overdue Orders (Stan Olsen/Nick Mazzarese/Win Hindle):

This was deferred.

4. Continuation of PDP-11 Schedule Discussion (Roger Cady):

Decisions:

a) Go with slow processor and 1μS memory (4K)
b) Do 2K memory as a second priority.
c) Schedule accepted as proposed.

NJM/bb

digital INTEROFFICE MEMORANDUM

DATE: February 18, 1969

SUBJECT: 1969 Staffing Plans - Salaried Employees

TO: Operations Committee FROM: G. A. Thayer

CC: R. Lassen

Per the request of the Operations Committee, I have prepared a brief presentation of our current staffing plans for salaried employees.

This presentation is presently scheduled for the March 3rd meeting of the Committee.

An outline is attached for your information.

GAT/lw

PRESENTATION OUTLINE (10-15 minutes)

1969 STAFFING PLAN - SALARIED EMPLOYEES

A. Internal Sources

1. Employees
2. Former employees
3. Rejected offers
4. Organizational planning

B. External Sources

1. Employment agencies
2. Search programs
3. Advertising
4. Unsolicited applicants
5. College
6. Professional societies
7. Government agencies
8. Minority Group organization
9. Customers
10. Trade shows
11. Field trips

G. A. Thayer

digital INTEROFFICE MEMORANDUM

DATE: March 19, 1969

SUBJECT: Summer Replacement Program - 1969

TO: Operations Committee FROM: Personnel (John Murphy)

During the month of March we must determine our summer replacement personnel requirements for 1969.

Outlined for your review are the practices we recommend for this year's program:

1. Employment Period -

   June 16, 1969 to August 29, 1969. (Approval must be obtained from the appropriate Group Vice President for a replacement to work after August 29).

2. No Holiday Pay

3. Summer Replacement Philosophy -

   A. Hourly Replacements:

      1. Primary - to replace direct production personnel (i.e. people who work directly on one of our products) during their vacation period.

      2. Secondary - a limited number of students who we are actively recruiting and who we have an excellent chance of hiring in the future on a permanent basis upon completion of their studies, would be considered.

      3. Clerical - replacement should be kept to a minimum and requests for clerical employees should be reviewed very carefully by the Group Managers.

      4. Only former employees with good work records will be considered for rehire.

   B. Professional Replacements:

      We are planning no solicitation for professional summer employees primarily because our experience in the past has indicated that such a program is too costly and unpractical.

digital INTEROFFICE MEMORANDUM

DATE: March 4, 1969

SUBJECT: Sponsoring a No Smoking Campaign

ROBERT LASSEN
MAR 5 1969
PERSONNEL DEPT.

TO: Bob Lassen
Personnel Committee

FROM: Clayton Rix

Please consider sponsoring a program to help DEC employees quit smoking. There are several organizations like the Heart Fund, Smokers Anonymous, etc. which have these programs open to the public but are just inconvenient enough in time or place that our Maynard employees may not participate. The "Seventh Day Adventist" sponsor a good concentrated 5 day program which could be held in our cafeteria. The programs consist of films and lectures by laymen, doctors, and dentists.

If we can find approximately 100 people seriously interested in quitting smoking I would like to arrange for a program running 5 consecutive nights in late April. Normally contributions are solicited to "defray expenses" however, knowing this company's policy on solicitations, I suggest offering them a flat fee to conduct the program.

CER/ba

From
Bob McInnis
3-21-69

PDP-15

PRICING OBJECTIVES

- Price "typical" configurations very competitively
- Maximize profits on expansions
- Encourage sale of DEC tapes
- Encourage "standard" configurations

	Prereq.	I/O PROCESSOR OPTIONS	Note	
KA 15	None	Automatic Priority Interrupt		$ 3,000
KW 15	None	Real-Time Clock		$ 500
DW 15A	None	Positive to Negative Bus Converter		$ 2,000
		INPUT/OUTPUT OPTIONS		
PC 15	None	Paper Tape Station -- High Speed, 300 cps Reader/50 cps Punch		$ 3,300
CR03B	DW15A	Card Reader -- 200 cpm Reader and Control	3	$ 5,200
647 D	None	Line Printer -- 300 lpm Printer and Control		$ 21,000
647 F	None	Line Printer -- 1000 lpm Printer and Control		$ 40,000
350	DW15A	CalComp Plotter -- CalComp 563, 31-inch Drum Plotter, 0.01-inch Step, 12,000 Steps/Minute with Control	3	$ 13,400
	DW15A	CalComp Plotter -- CalComp 563, 31-inch Drum Plotter, 0.005-inch Step, 18,000 Steps/Minute with Control	3	$ 13,400
	DW15A	CalComp Plotter -- CalComp 565, 12-inch Drum Plotter, 0.01-inch Step, 18,000 Steps/Minute	3	$ 8,900
	DW15A	CalComp Plotter -- CalComp 565, 12-inch Drum Plotter, 0.005-inch Step, 18,000 Steps/Minute	3	$ 8,900
TC 15	None	DECtape Control for Up to 8 Transports		$ 4,500
TU 55	None	DECtape Transports		$ 2,350
TC 59	DW15A	Magnetic Tape Transport Control for Up to 8 Transports	3	$ 8,000
TU 20	TC59	7-Track, 200, 556 and 800 BPI, 45 IPS		$ 12,000
TU 20A	TC59	9-Track, 200, 556 and 800 BPI, 45 IPS		$ 13,000
TU 30	TC59	7-Track, 200, 556 and 800 BPI, 75 IPS		$ 21,000
TU 30A	TC59	9-Track, 200, 556 and 800 BPI, 75 IPS		$ 22,000
RF 15	None	DEC Disk Controller for Up to 8 RS09 DEC Disks		$ 6,000
RS09	RF15	262,144 Word Magnetic DEC Disk Drive		$ 9,000

	Prereq.	INPUT/OUTPUT OPTIONS (Continued)	Note	
RP 15	None	Disk Pack Controller for Up to 8 RP02 Disk Pack Drives		$ 18,000
RP 02	RP15	10.24 Million Word Storage, Removable Disk Pack Drive		$ 26,000
RP 02P		Disk Pack (Spares)		
		DATA COMMUNICATIONS		
LT 19A	DW15A	Multi-Station Control; Allows Expansion of Up to 5 LT19B Line Units	3	$ 1,200
LT 19B	LT19A	Line Units, One Required for Each Teletype or EIA Line Adapter		$ 800
LT 19C	LT19A LT19B	EIA Line Adapter (Per Line)		$ 100
PT 15	None	Teletype Control for One Teletype Only		$ 1,200
KSR-33		Teletype, Keyboard Send-Receive, Model 33		$ 900
ASR-33		Teletype, Automatic Send-Receive with Paper Tape Reader and Punch, Model 33		$ 1,200
KSR-35		Teletype, Keyboard Send-Receive, Model 35		$ 2,500
ASR-35		Teletype, Automatic Send-Receive with Paper Tape Reader and Punch, Model 35		$ 4,000
DP 09A	DW15A	Data Communications System, Compatible with EIA RS 232B Interface, Bell System Type 201 Dataphone	3	$ 6,000
		DISPLAY DEVICES		
VP 15A	None	Storage Tube Display (Tektronix Model 611-Modified), Mounting Hardware and Control		$ 5,800
VP 15B	None	Oscilloscope Display (Tektronix RM503), Mounting Hardware and Control		$ 3,600
VP 15BL	None	Oscilloscope Display (Tektronix RM503), Mounting Hardware, Type 370 Light Pen and Control		$ 5,225
VP 15C	None	Oscilloscope Display (Type VR12), 7-inches by 9-inches of Point Plotting Display Area		$ 4,800

digital INTEROFFICE MEMORANDUM

DATE: March 6, 1969

SUBJECT: PDP-15 Markup Calculation

TO: File

FROM: J. A. Jones

	Units	Unit Price	Sales $ Volume for 100 Units	Unit Cost	Cost for 100 Units
PDP-15 (8K)	100	22.5	2250	8.85(1)	885
EAE	66	2.8	185	.2 (1)	13
API	33	3.0	99	.35(1)	12
KX	18	1.5	27	.2 (1)	4
PF	22	1.0	22	.05(1)	1
4H	24	2.8	67	.35(1)	8
PC0	70	3.3	231	.95(2)	67
8K (extra)	35	14.0	490	3.95(1)	139
TC02A	54	4.5	243	1.2 (1)	65
TU55	142	2.3	327	1.0 (2)	142
TC59	17	10.0	170	2.3 (2)	39
TU20/A	24	12.0	288	6.5 (2)	156
			$4399		$1531

NOTES:
90% ↔ has 8% "system" discount
10% ↔ at full price
(1) Butler/Accounting Estimate
(2) Actual Cost from Accounting

less 7% system discount
4399 X .93 =
$4100

M.U. = 4100/1531 = 2.7
PDP-9 M.U. FY'68 = 100/43.5 = 2.3
PDP-8 M.U. FY'68 = 100/37.6 = 2.7

nb

PDP-15 (PRICING)

SYSTEMS

	PRICE ($K)	COST	% MARK-UP	COST OF MANUFACTURING
PDP-15/10: 4K Core w/cabinet ASR-33	16.5 PDP-9/L: 19.9 17%			
PDP-15/20: 8K Core w/cabinet KSR-35 TC02 2-TU55 EAE PC15	36.0 SUM: 1-$\frac{SYS}{SUM}$ 39.1 8% PDP-9: 52.7 1-$\frac{SYS}{PDP-9}$ 32.7%			
PDP-15/20 D (FUTURE) 8K Core w/cabinet KSR-35 RF09X Disk + 2-DECtape RS09 2-TU55 EAE PC15				

PDP-15 (PRICING)

SYSTEMS

	PRICE ($K)	COST	% MARK-UP	COST OF MANUFACTURING
PDP-15/30	58.0			
16K Core w/cabinet KSR-35 EAE API RTC MEMORY PROTECT PC15 TC15 3-TU55 PT15 KSR33	SUM: 62.6 $1-\frac{\text{sys}}{\text{sum}}$ 30 7.5%			
	SYS 15/20 59.5 $1-\frac{\text{sys}}{\text{sys}}$ 30 20 2.5%			
	PDP-9 78.6 2.9 81.5 $1-\frac{\text{sys}}{\text{PDP9}}$ 30 28.8%			

PDP-15 (PRICING)

SYSTEMS

	PRICE ($K)	COST	% MARK-UP	COST OF MANUFACTURING
PDP-15/40 24K Core w/cabinet KSR-35 EAE API RTC MEMORY PROTECT RELOCATION REG. PC15 TC15 2-TU55 RF15 2-RS09 PT15 KSR33	92.0			
	SUM: 99.7 $1-\frac{\text{sys 40}}{\text{sum}}$ 8.0%			
	SYS - 20, $1-\frac{\text{sys 40}}{\text{sys 20}}$ 96.6 5.2%			
	SYS - 30,*$1-\frac{\text{sys 40}}{\text{sys 30}}$ 97.5 5.6%			
	* 1 extra DECtape			

SMALL SYSTEMS
(16 to 18 bit machines)

Systems ① \ Manufacturer	Hewlett-Packard 2114 (2 µsec core)	Hewlett-Packard 2115A (2 µsec core)	Varian 520I (2 µsec core)	Varian 620I (2 µsec core)	Interdata 4 (2.4 µsec core)
I Basic 4K System	12,000	16,000	8,900	16 bits 13,900 / 18 bits 15,900	14,400
II Paper Tape 8K System	22,200	30,700	19,500	29,900 / 32,400	29,600
III 8K Data Acquisition w/IBM compatibility	34,700	43,200	28,400	38.800 / 41,400	41,600
IV Basic 8K "Load & Go" Scientific Processor	HP 2116 ② (1.6 µsec core) 60,200	55,700	37,300	45,700 / 50,200	49,200
V Basic 8K Disk System, Paper Tape I/O	53,200	48,700	35,600	44,000 / 48,500	53,200
VI Basic 8K Disk System Mag (DEC) Tape I/O	65,700	61,200	44,500	52,900 / 57,400	65,200
VII 16K Data Acquisition System With Magtape or Disk Bulk Storage	60,200	N.A.	N.A.	58,000 / 63,000	64,200

1. See P.P. for detailed description of systems.
2. HP 2114 expands to 8K only.
3. Byte addressing 1.2 usec per byte.

SMALL SYSTEMS (cont.)
(16 to 18 bit machines)

Systems \ Manufacturer	Lockheed MAC 16 (1 μsec core)	SCC 4700 (.920 μsec core)	SDS Sigma 2 (.900 μsec core)	Honeywell 516 (.960 μsec core)	DEC PDP-9 (1 μsec core)
I Basic 4K System	12,000	16,500	31,000	25,000	19,900 9/I
II Paper Tape 8K System	≃21,000	33,200	59,000	41,300	35,000
III 8K Data Acquisition w/IBM compatibility		57,200	77,000	64,800	46,000
IV Basic 8K "Load & Go" Scientific Processor		73,700	89,000	77,900	51,000
V Basic 8K Disk System, Paper Tape I/O		57,200	85,000	75,500	54,000
VI Basic 8K Disk System Mag (DEC) Tape I/O		81,200	103,000	99,000	63,800
VII 16K Data Acquisition System With Magtape or Disk Bulk Storage		73,600	110,900	93,900	81,000

SMALL SYSTEMS (cont.)
(16 to 18 bit machines)

Systems \ Manufacturer	DEC PDP-15 (.800 µsec core)	
I Basic 4K System	16,500	
II Paper Tape 8K System	28,600	
III 8K Data Acquisition w/IBM compatibility	39,600	
IV Basic 8K "Load & Go" Scientific Processor	37,800 36,000 (1)	
V Basic 8K Disk System, Paper Tape I/O	43,600	
VI Basic 8K Disk System Mag (DEC) Tape I/O	50,500	
VII 16K Data Acquisition System With Magtape or Disk Bulk Storage	60,600	

1. PDP-15/20 system price.

LARGE SYSTEMS
(16 to 18 bit machines)

Systems \ Manufacturer		Honeywell DDP 516 (.960 µsec core)	SDS Sigma 2 (.900 µsec core)	CDC 1700 (1.1 µsec core)	IBM 1800 (2.0 µsec core)	SEL (.790 µsec core
VIII	Paper Tape 16K System	57,300	77,000	68,900	87,700	57,100
IX	Basic 16K "Load & Go" Scientific Processor	97,000	117,900	108,900	132,100	101,500
X	16K Disk "Load & Go" Scientific Processor	158,200	181,900	174,900	200,300	160,800
XI	32K Disk "Load & Go" Scientific Processor with Disk Pack Storage	203,900	280,600	217,800	273,700	217,600

RANK ORDER SELL PRICE

SMALL SYSTEMS

I		II		III		IV		V	
Manf	$	Manf	$	Manf	$	Manf	$	Manf	$
Varian 520I (2 µsec)	8,900	Varian 520I (2 µsec)	19,500	Varian 520I (2 µsec)	28,400	DEC PDP-15 (.8 µsec)	36,000 (15/20)	Varian 520I (2 µsec)	35,600
H.P. 2114 (2 µsec)	12,000	MAC 16 (1 µsec)	21,000	H.P. 2114 (2 µsec)	34,700	Varian 520I (2 µsec)	37,300	DEC PDP-15 (.8 µsec)	43,600
MAC 16 (1 µsec)	12,000	H.P. 2114 (2 µsec)	22,200	Varian 620I (2 µsec)	38,800	Varian 620I (2 µsec)	45,700	Varian 620I (2 µsec	44,000
Varian 620I (2 µsec)	13,900	DEC PDP-15 (.8 µsec)	28,600	DEC PDP-15 (.8 µsec)	39,600	Interdata 4 (2.4 µsec)	49,200	H.P. 2115A (2 µsec)	48,700
Interdata 4 (2.4 µsec)	14,400	Interdata 4 (2.4 µsec)	29,600	Interdata 4 (2.4 µsec)	41,600	H.P. 2115A (2 µsec)	55,700	H.P. 2116 (1.6 µsec)	53,200
H.P. 2115 (2 µsec)	16,000	Varian 620I (2 µsec)	29,900	H.P. 2115A (2 µsec)	43,200	H.P. 2116 (1.6 µsec)	60,200	Interdata 4 (2.4 µsec)	53,200
DEC PDP-15 (.8 µsec)	16,500	H.P. 2115A (2 µsec)	30,700	SCC 4700 (.92 µsec)	57,200	SCC 4700 (.92 µsec)	73,700	SCC 4700 (.92 µsec)	57,200
SCC 4700 (.92 µsec)	16,500	SCC 4700 (.92 µsec)	33,200	CCD 516 (.96 µsec)	64,800	CCD 516 (.96 µsec)	77,900	CCD 516 (.96 µsec)	75,500
CCD 516 (.96 µsec)	25,000	CCD 516 (.96 µsec)	41,300	SDS Sigma 2 (.9 µsec)	77,000	SDS Sigma 2 (.9 µsec)	89,000	SDS Sigma 2 (.9 µsec)	85,000
SDS Sigma 2 (.9 µsec)	31,000	SDS Sigma 2 (.9 µsec)	59,000						

RANK ORDER BY SELL PRICE (cont.)

SMALL SYSTEMS				LARGE SYSTEMS					
VI		VII		VIII		IX		X	
Manf	$	Manf	$	Manf	$	Manf	$	Manf	$
Varian 520I (2 μsec)	44,500	Varian 620I (2 μsec)	58,000	DEC PDP-15 (.8 μsec)	39,300	DEC PDP-15 (.8 μsec)	55,300 80,000 [1]	DEC PDP-15 (.8 μsec)	127,600
DEC PDP-15 (.8 μsec)	50,500	H.P. 2116 (1.6 μsec)	60,200	SCC 4700 (.92 μsec)	46,700	SCC 4700 (.92 μsec)	93,200	SCC 4700 (.92 μsec)	141,000
Varian 620I (2 μsec)	52,900	DEC PDP-15 (.8 μsec)	60,600	SEL (.79 μsec)	57,100	CCD 516 (.96 μsec)	97,000	CCD 516 (.96 μsec)	158,200
H.P. 2115A (2 μsec)	61,200	Interdata 4 (2.4 μsec)	64,200	CCD 516 (.96 μsec)	57,300	SEL (.79 μsec)	101,500	SEL (.79 μsec)	160,800
Interdata 4 (2.4 μsec)	65,200	SCC 4700 (.92 μsec)	73,600	CDC 1700 (1.1 μsec)	68,900	CDC 1700 (1.1 μsec)	108,900	CDC 1700 (1.1 μsec)	174 900
H.P. 2116A (1.6 μsec)	65,700	CCD 516 (.96 μsec)	93,900	SDS Sigma 2 (.9 μsec)	77,000	SDS Sigma 2 (.9 μsec)	117,900	SDS Sigma 2 (.9 μsec)	181,900
SCC 4700 (.92 μsec)	81,200	SDS Sigma 2 (.9 μsec)	110,900	IBM 1800 (2 μsec)	87,700	IBM 1800 (2 μsec)	132,100	IBM 1800 (2 μsec)	200,300
CCD 516 (.96 μsec)	99,000								
SDS Sigma 2 (.9 μsec)	103,000								

1. Magtape substituted for DECtape.

SYSTEM CONFIGURATIONS

SMALL ↓

#	System	Configuration
I	Basic 4K	4K, ASR 33
II	Paper Tape 8K	8K, ASR 33, Multiply/Divide, High Speed Paper Tape Reader/Punch
III	Data Acquisition 8K IBM Compatibility	8K, ASR 33, Multiply/Divide, High Speed Paper Tape Reader/Punch, Incremental IBM Compatible Magtape
IV	Load & Go Scientific Processor 8K	8K, ASR 33, Multiply/Divide, High Speed Paper Tape Reader/Punch 2 Magtapes (low speed)
V	Basic Disk System Paper Type I/O 8K	8K, ASR 33, Multiply/Divide, High Speed Paper Tape Reader/Punch, Disk (slow, 100K to 500K words)
VI	Disk System Mag(DEC) I/O 8K	8K, ASR 33, Multiply/Divide, High Speed Paper Tape Reader/Punch, Disk (slow, 100K to 500K words), Slow Mag(DEC) Tape Input
VII	Data Acquisition Mag or Disk Storage 16K	16K, ASR 33, Multiply/Divide, High Speed Paper Tape Reader/Punch, Interrupts 4 or more, 1 Mag Tape or Disk
VIII	Paper Tape 16K	16K, ASR 33, High Speed Paper Tape Reader/Punch
IX	Load & Go (Basic) Scientific Processor 16K	16K, ASR 33, Multiply/Divide, High Speed Paper Tape Reader/Punch, Interrupts 4, Real Time Clock, 2 tapes(slow)

↑ LARGE

SYSTEM CONFIGURATIONS (cont.)

#	System	Configuration
X	Load & Go Disk Scientific Processor 16K	16K, ASR 33, Multiply/Divide, High Speed Paper Tape Reader/Punch, or Card Input, Memory Protect and Power Failure, Interrupts 4, Real Time Clock, 2 tapes (1 IBM compatible), Disk (500-1M words), Line Printer (300-600 LPM)
XI	Load & Go Disk Scientific Processor 32K	32K, ASR 33, Multiply/Divide, Memory Protect and Power Failure, Card Input, Interrupts 8, Real Time Clock, 2 Tapes (1 IBM compatible), Mass Memory (3M words), Line Printer (300-600 LPM)

A R G E

digital INTEROFFICE MEMORANDUM

DATE: March 21, 1969

SUBJECT: Proposal for Price Revision on 647D 300 LPM Line Printer

TO: Pricing Review FROM: Bob McInnis

I strongly recommend that we review our price on the 647 300 LPM line printer. I would like to reduce the price of this peripheral from our current...$28,900 to... 21,000 and to make this change effective only for the new PDP-15. My reason for suggesting this change lies in our expanding market opportunities for the product line. Three market segments that we are now actively pursuing, hybrid, bio-med, and analytical chemistry, require medium speed line printer output. The average price of the PDP-15 in the bio-med area will range between $100K to $150K and in the hybrid and analytical chemistry area between $70K and $150K. Our current line printer price is approximately $5K to $9K more than the price of our competitors.

Honeywell	300 LPM.....	$24,000
IBM	120-430 LPM.....	19,750
Varian	300 LPM.....	20,000
Interdata	300 LPM.....	19,500
SCC	300 LPM.....	20,000

Only CDC and SDS have more expensive units.

CDC	300 LPM.....	$38,500
SDS	600 LPM (no 300)	35,000

As we compete against those companies with lower priced line printers, in the bio-med area, we lose between 5 to 13% of our systems price advantage and in the other two areas between 3 to 13%. Since many of these systems are originally purchased with line printers, a high line printer price can cost us sales of significantly large systems.

I estimate that in the next two-year period, we will engage in 100 to 130 sales opportunities in bio-med and about half of that in hybrid and analytical chemistry labs. Line printers will be a factor in 25 to 35% of these cases. Our sales success in large part depends on our highly competitive price/performance ratio. I would like to see us maintain that position with line printer "configurations."

Viewing the proposed cost reduction on an incremental basis, of the first three hundred PDP-9 and 9/L's sold, only six of these systems have bought our line printers.

Cost	Price	Gross Profit	Number Sold	Contribution
$13,200	28,900	15,700	6	94,200

The proposed price would sell 2½ to 3 times as many over the same base.

Cost	Price	Gross Profit	Number Sold	Contribution
$13,200	21,000	7,800	15	117,000

jl

digital INTEROFFICE MEMORANDUM

DATE: March 21, 1969

SUBJECT: ACTIVITIES JANUARY - MARCH 21, 1969

TO: Operations Committee

FROM: Dick Best

Burroughs Disk

The error rate was too high when connected to the PDP-9 control, with most the errors traceable to addressing errors. The control determines the address by counting sector pulses, so that an extra pulse gives a 50% probability of accessing the wrong address. We added a one-shot that causes the control to ignore any sector pulse that comes too soon after an accepted sector pulse.

RF08, RS08

This disk had data reliability problems apparently caused by noise. The logic was reviewed to eliminate some module application errors and an H714 line filter was added, reducing the errors to an acceptable rate. The filter was repackaged into a rack mountable form (the H718) and has been incorporated into the cabinet. The first batch is going through Field Service for delivery acceptance.

DF32

These disks make too many errors in the Production area assigned to them. Line filters didn't help. The final reliability run has been moved to an area where the errors are sufficiently low. We still don't know the source of the offending noise.

PC04, PC05

The new paper tape readers are using a phototransistor cell in place of the previous solar cell for reason of cost and ease of assembly. The sensitive area on the previous cell was larger than the feed hole in the tape, so that "end of tape" could be detected by the feed hole cell. The phototransistor has a much smaller sensitive area so that the feed hole cell always gives full output. I modified the proposed amplifier to allow to operate with any phototransistor cell that passed the vendor's specs, and added a diode, capacitor, and a gate to the feed hole circuit so the output will only come up when the motor is running and periodic dark signals don't appear. Now a PC04 can replace any PC01 without changing the original interface logic.

The PDP-8/I was clobbering its memory during the transient caused by turning off power, especially with 230 volt power. Proper application of shielded wire and Q of 1 circuits solved the problem.

Roger Dow is helping me half time, and is removing some of the module load I have been carrying. He now passes on the adequacy of the module description before the final release to production of a module, and has also revised the module production release form after consulting with the many people involved in that loop. He is going to maintain the records of design reviews for the Engineering Committee, and is working with Steve Sobel to check that all projects that should have schedule reviews are, and that all of those that should have design reviews do have design reviews.

PDP-15

I am helping on two knotty circuit design problems, one for the Manchester reader-writer (needed for positive logic DECtape controls) and the other a variable frequency oscillator that can slew to a reference frequency coming from a disk pack and phase lock to its average phase.

I/C Specs

The complex module tester was first programmed to test the M220, a fairly complex module used in 8/I 's and 8/L's . In trying to determine why some of the modules that it passes fail in computers, an I/C application was turned up that Texas Instrument has verbally told us, on several occassions, is ok, but for which there is no test in the device spec. We are modifying our incoming test to check for this characteristic, and will then see if Texas Instrument will put their money where their mouth is and accept this spec for the same price. If they won't, we will select those that pass, paint them red, and use them in M220's and then change the M220 so that red ones aren't needed. The only added component needed to make it solid is a 12¢ transistor.

RB:cam

COMPANY CONFIDENTIAL

OPERATIONS COMMITTEE MEETING

March 17, 1969

AGENDA

1. Additions and Corrections to Minutes of the March 10th Meeting
2. Marketing Review Committee Summary - (Ted Johnson)
   (See attached minutes of the March 10th meeting)
3. Typesetting Problems and Opportunities - (Marv Cothran)
   (Report distributed for last week's meeting)
4. Manufacturing Reaction Capability - (Pete Kaufmann)
   (See attached report)
5. Peripherals System Responsibility - (Pete Kaufmann)
   (See attached report)
6. DEC Software - (Win Hindle)
   (See attached report)
7. 1969 Staffing Plans for Salaried Employees - (Graydon Thayer)
   (See attached report)
8. Land and Space Status Report - (Dave Knoll/Al Hanson/Ed Schwartz)
9. PDP-10 Product Line Price Structure - (Win Hindle)
   (See attached report)
10. Price and Delivery of the PDP-14 - (John Holzer)
    (See attached report)

COMPANY CONFIDENTIAL

OPERATIONS COMMITTEE MINUTES

March 17, 1969

Present: W. Hindle, T. Johnson, P. Kaufmann, N. Mazzarese, K. Olsen, S. Olsen (Secretary)

1. Minutes for the meeting of March 10, 1969 were accepted.

2. Transfer Pricing

   This will be discussed at the upcoming Woods Meeting.

3. Marketing Review Committee

   Ken asked who has behavior and attitude problems on European trips.

4. Typesetting

   Problems in the coming year will not be as big as the past three years. Problems in letting the field sales force understand the quantity discount policy. High cost of field service built into price.

5. SJCC Booth Review

   Model and price ($1600) were approved. Nick will monitor price.

6. Manufacturing Reaction Capability

   Pete said PDP-14 is easy...General reaction very good...We can follow rules.

7. PDP-10 Product Line Structure

   This was approved.

8. Price and Delivery of PDP-14

   Prices approved were as follows:

CP Price	$4900
Extra Input Box	540
Extra Output Box	680
Extra ROM	1200
Extra Braid	420
Extra Power Supply	250
Computer Interface	590

Delivery...It will be mid summer until completion of the first five engineering models. At that time, specific delivery dates will be completed.

9. 1969 Staffing Plans for Salaried Employees

Graydon Thayer will come back to give formal proposal with his charts.

10. DEC Software

Larry Portner's proposal will go into effect...Exceptions will be received and considered.

11. Peripherals Systems Responsibility

Product Lines have the responsibility.

12. Land and Space Status Report

So far, Leominster looks best. They will come back in a week with a complete evaluation of New England, studying: taxes, unions, people, water, sewerage, power, and transportation (people and material), as well as interest of town, and availability of temporary space.

cag

Kex

digital INTEROFFICE MEMORANDUM

DATE: March 5, 1969

SUBJECT: Typesetting Problems and Opportunities

TO: Operations Committee
(Meeting 3/10/69)

FROM: Marv Cothran

I. Accomplishments in Typesetting

A. Total Installations of Typesetting Systems Direct and OEM as of Dec.'68 - 187

1. Direct Sales (end users 52 in 1968
   a. Average dollar per system $50K
   b. IBM 1130 was the competition in most of the 52 sales.
   c. Two systems for commercial typesetting applications were sold to McGraw-Hill for Business Week Magazine. Competition was 1130 and Honeywell 200.
      (1) 25% of Business Week has been set by our system since Jan. 1.
      (2) 75% of it was set last week (Feb. 24, 1969).
      (3) 100% will be set beginning April 1, 1969.
      (4) All 7 McGraw-Hill publications will be set by Dec. 31, 1969.
   d. Discount agreements were signed with the large newspaper groups.
      (1) 6 systems for Gannett Newspapers
      (2) 4 systems Freedom Newspapers
      (3) 10 systems Ridder Newspapers
      (4) 10 systems Thompson Newspapers - potential of 100
      (5) 6 agreements were signed with individual newspapers for 2 systems.
2. OEM agreements were signed with 4 new customers.
   a. Composition Systems, Inc. bought 24 systems.
   b. Mergenthaler bought 7 systems.
   c. Linotype GmbH bought 5systems.
   d. CERCI and Scientific Systems Services did not release any typesetting systems in'68. Agreements were signed in November and December.
   e. These add to our current list of OEM's, Scan Data, Dissly, Harris Intertype, Dow Jones, IKO, Comtec, and Comprite.

B. Bookings Calendar 1969 - $1,000K Direct and OEM.

1. Agreement signed with CCSI, a computer utility dedicated to newspaper services. This agreement will replace at present 7 IBM 1130's. Their 5-year forecast is 5 PDP-10's, average configuration $1.1 million and 100 8/I typesetting systems and 100 680I systems.

2. Discount agreements signed by Cowles Communications and Scripps-Howard Newspapers. One release from Scripps-Howard was an 1130 cancellation. Two systems have been released by Cowles.

II. Opportunities in the 22.5 Billion Dollar Graphic Arts Market

A. Typesetting Business FY 1970 11 Million
   1. Newspaper market needs storage and retrieval system.
      a. Wire service, classified advertising
      b. Should have typesetting back-up capability
      c. Present market potential in DEC accounts 120
      d. Average dollar configuration $40K
   2. Small newspapers need low-priced system.
   3. Commercial typesetting market
      a. Sell present McGraw-Hill system, average dollar per system 60K
      b. Need lease arrangement to fully exploit commercial market

B. Manufacture Phototypesetting Machine
   1. Current typesetting machine manufactures lack:
      a. Technical capability
      b. Service capability
   2. Machine should sell less than 40K.

C. Process Control Systems
   1. Mailroom (newspaper distribution)
   2. Newsprint warehousing
   3. Pressroom

D. PDP-10's in Printing & Publishing
   1. Metropolitan newspaper market
      a. Centralized system
      b. Communications link with dedicated Process Control systems
   2. Service Bureau
      a. Typesetting
      b. Printing Production management information system

III. Problems Affecting the Product

A. Typesetting Hardware Design
   1. Lack of engineering
   2. Projects not funded
   3. Hurriedly designed options

B. Software Design, Development, Documentation, Implementation, & Production
   1. Total responsibility shared by two senior programmers
   2. Requires considerable PDP-6 and/or PDP-10 time
   3. Requires typesetting systems with TC01 and 552 controls
   4. Downtime on any systems causes:

a. Hardware to ship before programs are ready
b. Lengthy delays in customer programs

C. Field Service
1. Lack of coordination of projects with Field Service
2. Inadequate training of Field Service personnel
3. Market in general is more demanding
4. Reader logic, readers and 552 controls cause most problems.

D. Correction of Items A, B, & C
1. Two engineers assigned - December '68
2. New typesetting hardware (positive bus) being designed - Dec.'68
3. Specialized training undertaken in Field Service - Sept.'68
4. Programmer hired for documentation - Nov.'68
5. Two computer operators building system software - July '68
6. PDP-6 reliability still a problem / no PDP-10 time available

IV. Problems Affecting the Marketing

A. Coordination with Sales Department in Selling to Specialized Market
1. Different selling approach
2. Lack of prestige image - motivation

B. OEM or Direct Sales Market
1. OEM's lack capability and understanding - Mergenthaler
2. Direct sales effort lacks interest and planning

C. New Products
1. Selling the same product for 3½ years
2. No new ideas to stimulate buying and/or interest
3. No engineering people available for development

D. Price
1. Selling at same price as IBM 1130 typesetting system
2. Unable to decrease price
a. High field service cost
b. High cost of typesetting hardware

E. Correction of A, B, C, and D
1. Planned sales effort using regional applications specialist
2. Closer evaluation of OEM
3. Development of Graphic 8
4. Development of positive bus typesetting options

dg

digital INTEROFFICE MEMORANDUM

DATE: March 12, 1969

SUBJECT: MANUFACTURING REACTION CAPABILITY

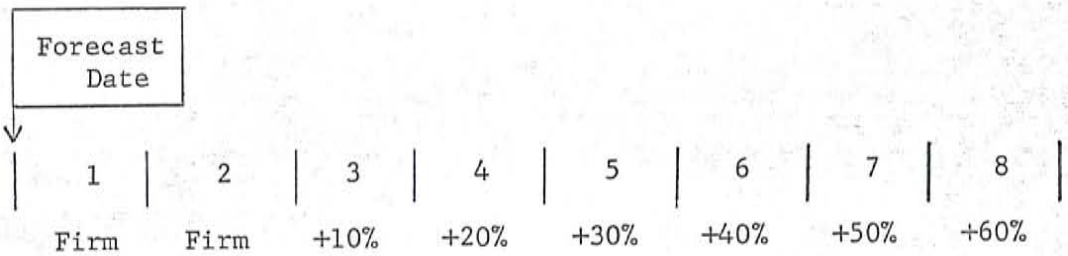
TO: Operations Committee

FROM: Pete Kaufmann

cc: Central Planning

The following is a guideline of Manufacturing's capability to react to forecast changes. It is an attempt to describe the time necessary to increase the product shipments from a previously agreed plan.

1. From the forecast month, month one is firm, month two is firm, month three can change 10%, month four 20%, month five 30%, month six 40%, month seven 50%, month eight 60%. (This means that we can double our business from a firm agreed upon plan in one year.)



This new plan then becomes the new agreed plan.

2. Plans can be altered only three times per year at least four months apart.

When the plan is changed, it must be expected that in months three, four, five, and six the cost of manufacturing will go up 10%. This is because it requires a considerable amount of subcontracting. (We are creating variances at $60,000 per month because of the recent 8/I and 8/L upsurge because of subcontracting needs in printed circuit boards alone.) It also means increased overtime. After six months from forecast date, it can be expected that product cost will be returned to their original levels unless there has been another substantial change in the agreed upon plan within those six months.

The above should be used as a guideline to Manufacturing's reaction capability; but, should not prevent the Product Lines from ordering anything they want at any time. If changes are foreseen, they should be forecasted. <u>It is extremely important that the forecast continue to be what the Product Lines want, not what the Product Lines think Manufacturing can perform.</u>

Pete

jb

digital INTEROFFICE MEMORANDUM

DATE: March 12, 1969

SUBJECT: PERIPHERALS SYSTEM RESPONSIBILITY

TO: Ken Olsen
Stan Olsen
Win Hindle
Nick Mazzarese

FROM: Pete Kaufmann

A number of problems have come up during the past few weeks concerning system's responsibility on peripherals. They seem to fall into the following categories:

1. Category where Special Projects has designed an electromechanical peripheral, such as a disk or tape transport, and each individual Product Line has designed their own controller to interface with their computer. When a problem occurs in the field or in production or along the way, who has the system's responsibility to fix the problem?

2. Where there isn't one standard controller that is used on all computer lines for a specific peripheral, who has the system's responsibility? Does it fall within the Product Line or should Joe's group staff take care of this?

   I am primarily concerned with the vagueness of the responsibility and really don't care who takes the responsibility as long as it is clear.

   Can anyone shed light on this.

Pete

Pete

jb

digital INTEROFFICE MEMORANDUM

DATE: March 13, 1969

SUBJECT: DEC Software

TO: Operations Committee FROM: Win Hindle

The attached memo from Larry Portner points up a problem. I recommend we adopt points 1, 2, and 3 as operating procedures.

As an example, I confess to being blatantly guilty of not using the Programming Department to test LAB-8 software (done by Bruce Delagi in Mort Ruderman's group). The results were a series of problems in the field and unhappy customers because of software difficulties.

bwf

digital INTEROFFICE MEMORANDUM

DATE: February 17, 1969

SUBJECT: Our Good Name as a Manufacturer of Software

TO: Win Hindle FROM: Larry Portner

Just to formalize our conversation of Friday, February 14, I offer the following statement of a problem that I anticipate and a possible solution.

For better or worse, we seem commited to the philosophy that anyone who cares to try his hand at it can become a manager of his own Programming Department; that many people will take the opportunity is being proven daily in the cross-product line marketing area. The problem is that the products of their success (or failure) becomes "standard DEC software" to our salesmen and customers. The major goal of the Programming Department for the last several years has been to build up confidence in DEC as a producer of highest quality software systems. To a surprising extent we have been successful, and this image has made both selling and recruiting easier. I am not disposed to stand by while several years of hard work go out the door just so I can say "I told you so!" Instead, I propose the following as the minimum rational level of corporate self protection.

1. Have all contracts for software vended outside the company, reviewed by the Programming Department for comments; no veto power intended.

2. Establish minimum specification, documentation and quality standards. Adherence to these standards to be determined by subjecting the software in question to Programming Department Product Test (within the limits of available staff and practicality).

3. Distribute any item which is not tested or has failed the tests as a "Preliminary" release until success is achieved.

4. Support the Product Test function by increasing the budget to reflect the anticipated level of activity company wide.

5. Provide for adequate follow-up on activity in the Software Maintenance and Software Information Services area.

I would appreciate your comments.

COMPANY CONFIDENTIAL

digital INTEROFFICE MEMORANDUM

DATE: March 13, 1969

SUBJECT: EXPANSION NOTES

TO: P. Kaufmann FROM: D. Knoll

Al Hanson, Ed Schwartz and I have been spending a good amount of time developing a proposal for plant expansion. I missed the operations committee package deadline but thought yo u might be interested in the thoughts below before your next meeting. We would like to get your thoughts as to whether we are proceeding down the right path toward a proposal for plant expansion under the following assumptions:

1. We need a new labor market to support a plant of 1500 people. Additional space in the Maynard labor market is not useful for expansion.
2. We should be as close as possible to Maynard and within 50 miles.
3. We need plant space expandable to 500K square feet eventually.

What we are doing now:

1. We have concluded that the best labor market seems to be west on Route 2 from 495. This is better than the other primary area considered, the Blackstone Valley, South of Framingham. Personnel feels confident of the labor market in the Leominster - Fitchburg - Gardner area.

2. Spacewise we are looking for two things.

   (a) 60,000 ft. of existing space (June 69) to occupy and start operating in, hiring from etc.

   (b) Eighty plus acres of land on which we could build at least a million square ft. plant plus parking etc.

What we're pursuing for space:

Short term space (2 year lease)

1) Fitchburg mill space - have found 110K ft.(2 floors). We are developing leasehold improvement costs and negotiating to arrive at a lease rate. This might run 100K leasehold and 70¢ lease plus salvageable buss duct.

2) Leominster - We are meeting with the developers of an industrial park on Rt. 12, 3 miles south of Rt. 2, to determine comparable 2 year occupancy charges (leasehold improvements and lease). This would be 50-60K of new space available in July or August. This might run 90¢ lease, and 50K unsalvageable leasehold improvements.

Long term (land) - We are looking at two parcels

1) Leominster - 80 beautiful acres on Rt. 2 at Mechanics Road (fruit orchard surrounded with woods - good visibility from Rt. 2) This is the best spot I've seen in the last two years. The cost would be 2-3K per acre. There also is adjacent land available. There are some legal matters to be taken care of. It must be rezoned and is currently under option to another company. Surprisingly, neither of these seems to be a big problem. We will be developing site preparation estimates for this property.

2) Westminster - We're looking at 100 acres on Rt. 2 ($750/acre) and developing site preparation estimates. Westminster has neither zoning nor a public works department and it takes a town meeting vote to get the town to get water under Rt. 2 etc. This could be sticky but the land is cheaper. We'll be able to compare these two areas as soon as the site preparation estimates are done.

Building Thoughts

As a thought, when we get some land, Al Hanson suggests that we build a 500,000 sq. ft. shell at around $3/sq. ft. and improve the inside as necessary at around $5 per sq. ft. (summer or winter).

What we're after at this time is a feeling as to whether we're on the right track and whether the timing is appropriate. Specifically, is this a time consuming exercise at this time or is there a reasonable probability that the Operations Committee would act if we came in with the facts and a proposal on these properties in the next month. What might your questions be at that time?

Dave

jb

CONFIDENTIAL

digital INTEROFFICE MEMORANDUM

DATE: March 13, 1969

SUBJECT: PDP-10 Product Line Price Structure

TO: Operations Committee FROM: Bob Savell

I. PROBLEM STATEMENT

Memory manufacturers such as Ampex, RCA, and Lockheed have been actively attempting to secure PDP-10 memory business. Their prices for 1.0 μsec memory are as low as 50% below our current prices. Unless an immediate change is made in the PDP-10 product line price structure, these manufacturers will most likely secure a long term "foothold" into PDP-10 memory business which will have a negative affect on product line profits over the next few years.

II. RECOMMENDATIONS

1. Raise CPU price to $160K from 113K with options

2. Price CPU options as follows:

KA10	$142.0K	(incl. KE10)
KM10	9.0K	
KT10A	9.0K	

3. Price MA10 at $51.0K each.

4. Discontinue MB10.

5. Add Ampex 2.2 μsec memory
(Stop Ampex from quoting 2.2 memories to PDP-10 customers.)

1st.	32K	$ 70.K	
Add.	32K	42.K	(max. of 3)

6. Discount memory separate of systems. Memories already delivered on existing discount agreements count for determining memory discount level.

7. Allow existing quotes to be valid for 30 days or period stated on quote, whichever is longer. This will help to close purchase orders for small system customers who would be faced with a price increase.

8. Systems delivered at time of announcement will not qualify for price reductions. Customers with purchase orders in house at time of announcement may choose to either retain their existing system price or to reprice their entire system at the new prices.

9. Initiate a program immediately to reduce the manufacturing cost of our 1.0 μsec memories to improve our margin on memory in the face of advancing memory technology so that DEC will remain competitive in the future.

III. COMPETITIVE SITUATION (1.0 μsec memory)

During the last six months, Ampex Corporation has been very aggressive in securing PDP-10 memory sales. Ampex is currently negotiating with most of our larger memory customers including Applied Logic Corporation, Badger Meter Corporation, Bolt, Beranek, and Newman Inc., Interactive Computing Corporation, North American Computing Corporation, and Interactive Sciences Corporation. Ampex is also quoting to several of our smaller memory customers such as the First National City Bank of New York. As noted in Attachment 1, large customers purchase approximately 117, 16K memory modules per year. Loss of this business would have a sizable effect upon the profitability of the product line.

Attachment 2 illustrates clearly why Ampex has been a strong competitor for our memory business. Applied Logic Corporation for example, can purchase 1.0 μsec memories from Ampex in quantities of 25 for approximately $37.3K each. Assuming that ALC buys from 7 to 9 PDP-10 systems/year, they would qualify for a system discount level of 12%. Under these circumstances, ALC would have to pay $63.3K (72 x .88) for a 16K module. Therefore, it would cost ALC $650.K more per year to purchase memory from DEC than from Ampex. BB&N would pay approximately $415K extra per year to buy from DEC based upon 16 memory modules on four PDP-10 systems.

DEC's memory prices are quite low compared with other computer manufacturers. SDS charges approximately 100K for a 16K module while other manufacturers tend to be even higher. Ampex has gone after our customers for the following reasons which make DEC particularly vulnerable for such competition.

1. The PDP-10 memory bus is well documented. Interfacing is easy and inexpensive.

2. DEC customers are generally more willing to assume responsibility for connecting foreign equipment to their system.

3. DEC's sale only policy implies that we lose control over a system after payment except in some cases for Field Service supervision. SDS and IBM have high lease and rental percentages which gives them more control for keeping foreign equipment off of their system. Ampex does not lease which is another reason that customers already on a lease plan might not want to change over to Ampex. However, Ampex indicates that SDS will be their next target.

Several other manufacturers make 1.0 μsec memories. Fabri-Tek has quoted us a price of $38K for a 16K 1.0 μsec memory in quantity of one interfaced to the PDP-10 memory bus. EMI also makes a memory which is in the same competitive range. However, neither of these firms has exerted any competitive pressure on DEC. This is probably due to the fact that both firms are suppliers of core stacks for the MA10 memory. They also may view sales expense as too costly for direct competition in view of their existina supplier relationship with DEC. In the final analysis, Ampex, Lockheed, and RCA are strong competitors for our memory business. These companies are in a good position to take away over half of our memory business if we do not take immediate steps. A chart of competitive 1.0 μsec memory prices is found in Attachment #3.

IV. SLOWER THAN 1.0 μsec MEMORY STATUS

The MB10 1.65 μsec memory is more costly to make than the MA10 1.0 μsec memory. Therefore, it is recommended that the MB10 memory be dropped immediately from the product line.

In place of the MB10, there is need for a memory system with low cost per word of storage for large memory systems and of slower speed than the MA10. Ampex builds a "mass core" system with an access time of 800 nanoseconds and a cycle time of 2.2 μsec. The basic module is 32K words and up to four units may be added to one interface for a total expansion for 128K words per interface. This system would be very desirable in multiprogrammed/non-swapping systems which normally run very long jobs. A 128K word system would have a manufacturing cost of $116K.

A second application would consist of using a number of memory interfaces with individual 32K modules per interface. This approach would allow memory overlap. Such memory modules could be used as upper core expansions of time-sharing utility systems and as the initial memory for a small system where it is mandatory to keep down the system price. Individual 32K modules with interface would have a manufacturing cost of approximately $32K.

A chart comparing mass memory available from a number of manufacturers and the characteristics of their memory systems are shown in attachment #4. From the standpoint of purchase cost, modularity and performance, the Ampex appears to be by far the best alternative. In addition, Ampex has working units while other manufacturers have no working systems.

Ampex is actively selling this memory interfaced to PDP-10 systems. BB&N has ordered 4 64K systems. During the last month, we have been requested by four potential PDP-10 customers to offer this system in competition with Ampex. Ampex has agreed to stop quoting interfaces for this memory to PDP-10 customers if we agree to include it in our product line.

V. PRICING STRATEGY

A pricing strategy for mass core is shown in Attachment #5. This strategy recommends a selling price of $70K for a 32K word module with interface and $42K for additional 32K modules. Incremental profit as a percent of sales would be approximately 38.5% with this strategy.

Five strategies for pricing 1.0 μsec memory and the KA10 processor to meet 1.0 μsec memory competition are outlined in Attachment #7. The various strategies involve various combinations of reducing memory prices and raising the KA10 price to make the MA10 more competitive. Strategy 1 is based on no change in our prices. Strategies 2 and 3 are based on dropping memory prices and raising the CPU price to $140K to balance total system price with our existing price structure for a 32K word system. Strategies 4 and 5 are based upon raising the CPU price to $160K which is higher than in strategies 2 and 3 to reduce year end loss for fiscal 1969 on existing purchase orders as a result of the pricing restructure. All strategies assumed a sales forecast of between $40M and $46M dollars. Strategy #4, the recommended strategy was recalculated on the basis of $32M sales and a related reduction in expenses. The study was based upon the higher sales forecast because the plan to keep sales at the $32M level was not known until the study was complete. The details of the five strategies are shown in Attachment #6.

VI. CHOICE OF STRATEGY

A summary of operating results is shown in attachment #7. Strategy 1 is inferior because it has the lowest percentage profit and an absolute profit which is $1.5 million less than the next best strategy.

Strategies 2 and 3 have the highest forecasted profits in 1970 but have rather high losses for fiscal 1969. Strategies 4 and 5 offer slightly lower profits than strategies 2 and 3 but guarantee a $300K lower loss for 1969 for equivalent MA10 pricing strategies. Strategies 4 and 5 both tend to maximize profit and reduce year end losses. These strategies assumed a loss of 10 small systems due to the higher CPU price.

Attachment #8 illustrates the small system CPU and memory prices for the various strategies. Note that the system prices for the strategies with the $160K CPU price are about 10% higher for 16K systems than they would be with the present prices or the $140K CPU price. The 32K word 1.0 μsec system with the $160K CPU price is also about 10% higher than present prices for 1.65 μsec MB10 system. This is offset by the introduction of mass core which provides a $230K system with 32K words.

Should sales begin to be lost due to the higher CPU price, the price could always be dropped again during fiscal 1970. There would be no need to drop the price if we do not begin to lose small system business. However, the year end prices would have been protected.

The choice between strategies 4 and 5 is not as obvious. The profits are essentially identical within the limits of accuracy of this study. However, strategy 4 loses $150K less this year. This is a known number as it is based upon existing purchase orders. In addition, memories are the only system devices which are purchased in quantity for a single system. This price structure encourages customers to buy more memory modules which is a high profit item. Therefore, a discount schedule for memories is a reasonable marketing strategy.

The operating results for strategy 4 with a 32K sales forecast are also shown in Attachment 7. Operating profit stays at approximately 28 percent due to a reduction in expenses. However, profit as a percent of sales should decrease in strategy 1 due to the fact that expenses are a larger percentage of sales than in the other strategies.

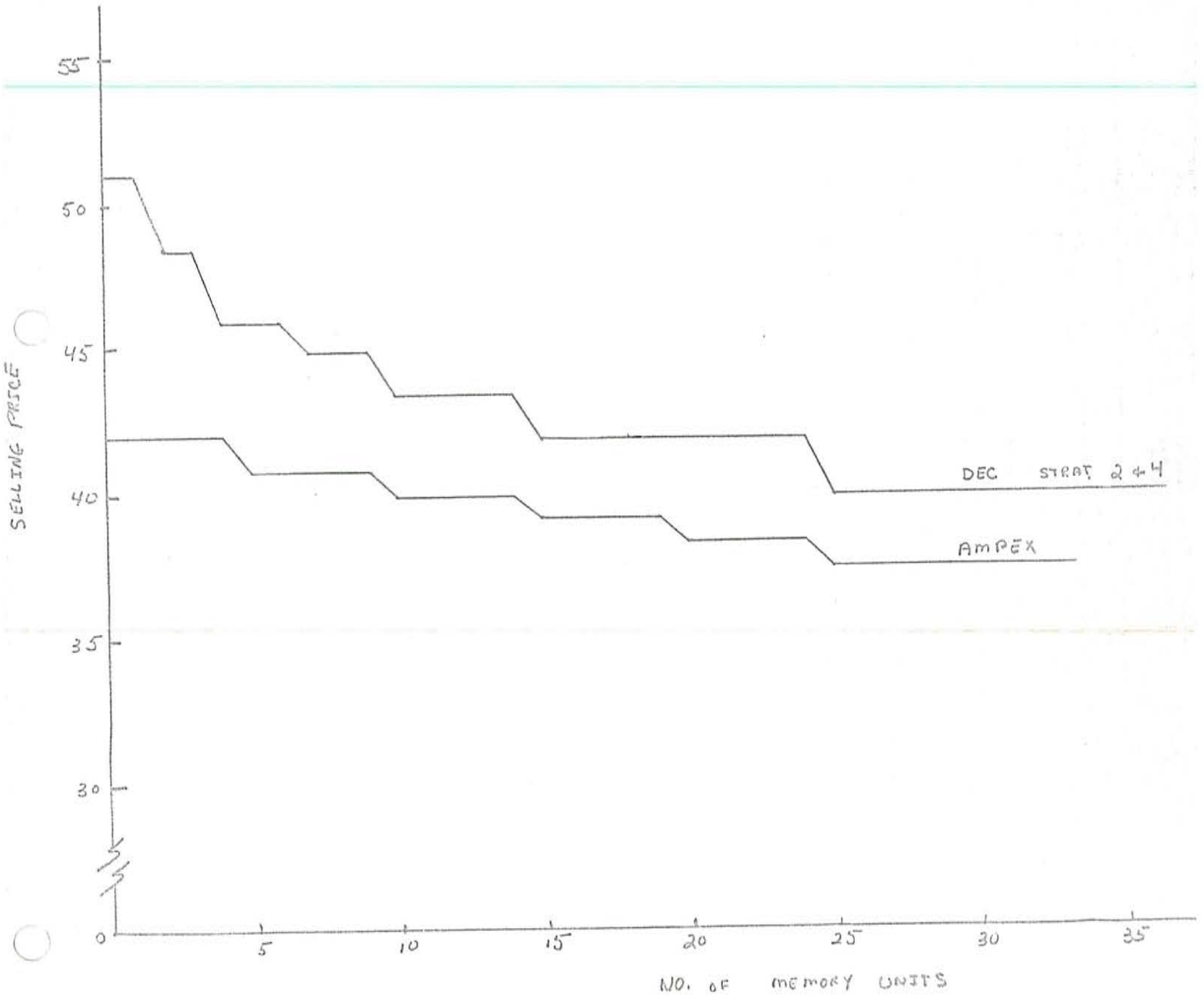
bwf

C O M P A N Y C O N F I D E N T I A L

ATTACHMENT #1

	Qty. Mem/Yr
Applied Logic	25
Badger	20
BBN	16
ICC	16
NACC	16
OLS	12
ISC	12
	117

ATTACHMENT # 2



C O M P A N Y C O N F I D E N T I A L

ATTACHMENT #3

Competative 1.0 µsec Memory Prices

Vendor	Cycle Time	Price 16k	In Qty. of
AMPEX	.900	$42k	1
	.900	37.5	25 up
RCA	.900	(has underbid AMPEX at Badger. Do not have exact price)	
FABRITEK	1.0	$40	1

ATTACHMENT #4

Mass Core Competitive Prices (128K words)

Vendor	Access Time (μsec)	Cycle Time (μsec)	Modular	Price 128k	In Qty of
AMPEX	.8	2.0-2.2	yes	$104k	24
FABRITEK	1.5	2.5	no	125k	1
				110k	10
				105k	25
				93.4K	50
FERROXCUBE	1.2	2.5	no	180k	1
				111k	12
				103k	24
LOCKHEED	2.2	3.0	no	250k	1
				132k	24

Attachment 5

Pricing Strategy Mass Core

A. 2.2 µsec Core Memory

Mass core units with cycle times between 2.0 and 3.0 usec sell in small quantity for between $160K and $250K for 128K units. All competitive units have longer cycle times and access times than the Ampex unit and lack modularity. A price of around $200K for the 128K word Ampex unit would be quite competitive.

Ampex currently sells the 32K modules less interface for between $41K and $42K. Although we can stop Ampex from selling mass core interfaces to PDP-10 customers, it will not be possible to stop them from selling 32K modules as they are standard catalog items. Therefore, the modules must be priced competitively with Ampex.

A cost and profit analysis is shown in Exhibit 1. The cost breakdown is based upon an incremental analysis. Only those costs or expenses which can be expected to change as a result of the mass core decision are included. For example, it was assumed that marketing expense, allocated engineering expense and allocated administrative expenses would not change as a result of introducing mass core. Also note that all checkout and value added items have been charged against the 32K module with interface.

A 42K price was choosen to be competitive with Ampex for the individual 32K word modules. The first module with interface was priced at $70K which gives a $196K price for 128K words. A forecast of gross margin for mass core is found in Exhibit 2. This calculation is carried over to the product line pricing strategies which follow this section.

Individual 32K modules each with interface, would influence to some extent the demand for 1.0 µsec modules. The cost per word for mass core would be approximately $2.20 ($70K÷32K). Under pricing strategies to follow, the cost for 1.0 µsec core would be approximately $3.20 ($51K÷16K). Therefore, the cost/word of mass core would be approximately 31% less for 2.2 µsec core than 1.0 usec core. On a 64K word time-sharing system valued at between $700K and $800K, the saving would be approximately $90K or between 11 and 13%.

Exhibit 3 is a sampling of instruction times using various memory speeds. At a cycle time of 2.0 µsec and an access time of 800 nanoseconds, the system with Ampex core runs at a rate 31% slower than with 1.0 µsec memory. The time-sharing utility will probably not be willing to give up 31% on CPU speed for a

saving of slightly more than 10% in system price, However, the 32K mass core modules would be very desirable as core extensions on 1.0 µsec systems to minimize swapping during heavy load periods. Therefore, the mass core will tend to supplement rather than replace 1.0 µsec modules with the utilities. The mass core will also be helpful in selling a system with low initial usage such as a small in-house time-sharing system or real-time system with moderate computing load.

C. Weighted profit % (see Forecast Exhibit 2)

$$\text{Wt. Profit} = \frac{27 \times 41.6 + (46-27) \times 34.5}{27 + (46-27)} \%$$

$$= \frac{27 \times 41.6 + 19 \times 34.5}{27 + 19}$$

$$= 38.5\%$$

EXHIBIT 2

MASS CORE, 2.2 USEC

Large Core (Single Interface)	Core	#Int.	Modules	Discount
	64K	5	10	none
	131K	3	12	none
T/S Utilities-Add on (Interface/Module)	32K	4	4	Approx. 25%
Small Systems		15	20	none
		27	46	

MARGIN CALCULATION

Sales price of initial 32K block w/interface = 70K
Man. cost of initial 32K block 3/interface = 32K
Sales price of additional 32K blocks = 42K
-Man. Cost of additional 32K blocks = 28K

Discount = (No. of mem. discountable) x (List Price) x (Disc.)
= 4 x 70 x .25 = 70

Sales	=	2690
Man. cost	=	1396
Gross Margin before discount	=	1294
Less Discount	=	70
Gross Margin after discount	=	1224

EXHIBIT 3

Inst.	Wt.	1.0 μsec Time	1.0 μsec. Wt.Time	1.65 Time	1.65 Wt.Time	2.0 Time	2.0 Wt.Time	2.2 Time	2.2 Wt.Time
Fixed Point Add	330	2.69	880.0	3.47	1145.0	4.17	1375.0	4.57	1508.0
Fixed Point Mul.	6	10.60	63.5	11.20	67.2	11.55	69.3	11.75	70.5
Fixed Point Div.	2	16.02	32.1	16.62	33.2	16.97	34.0	17.17	34.3
Floating Point Add.	73	6.54	477.0	7.14	521.0	7.49	547.0	7.69	561.0
Floating Point Mul.	40	10.42	417.0	11.02	441.0	11.37	455.0	11.57	463.0
Floating Point Div.	16	14.21	227.5	14.81	237.5	15.16	242.3	15.31	245.5
Word XFER (MOVE)	175	1.47	257.0	1.82	318.0	2.17	380.0	2.37	415.0
Index Mod.	190	.28	53.2	.28	53.2	.28	53.2	.28	53.2
Conditional Jump (JFCL)	65	1.61	104.5	1.65	107.0	2.00	130.0	2.20	143.0
Compare (CAM)	40	2.69	107.5	3.47	139.0	4.17	167.0	4.57	183.0
6 bit shift (ROT)	46	2.72	126.0	3.37	155.0	3.72	171.0	3.92	180.0
Locical OP (AND)	17	2.48	42.1	3.30	51.0	4.00	68.0	4.40	74.7
	1000		2795.4		3268.1		3691.8		3931.2
Average Inst. Time			2.80		3.27		3.70		3.93
% slower than 1.0 μsec.			0.0		16.8		32.1		40.3

Attachment 6

System Price Structure

This section will consider the effects on product line profitability of five strategies for meeting the Ampex 1.0 μsec memory competition. All five strategies assume that DEC will not supply or support software for configurations which do not contain the following minimal amounts of DEC memory:

10/30 system 16K
10/40 system 32K
10/50 system 48K

STRATEGY #1

Assumptions:

1. Drop MB10 from product line
2. Do not buy mass core from Ampex
3. MA10 price stays at $72K
4. CPU price unchanged

The effect of Strategy #1 is shown in Exhibit 1. It was assumed that 115 16K memory modules would be lost from a current forecast of 239 units. Therefore, 124 units would be sold for $72K each subject to system discounts.

Exhibit 2 is a forecast of sales dollars and manufacturing costs for all product line items except the CPU and memory. These figures are assumed to be invariant for the purposes of this analysis. Figures are based on sales (not bookings) of 84 systems or 7 systems per month. Please note that I have assumed a selling price of $50,000 for the RM10 drum unit. Product line expenses for Fiscal 1970 are outlined in Exhibit 3. The gross margin for this strategy is $23,673 after estimated discount.

The estimated effect of Strategy #1 on profit is illustrated in Exhibit 4. Absolute profit is 11.1 million dollars on sales of 41.3 million dollars for a profit of 26.9 percent of gross sales.

STRATEGY #2

Assumptions:

1. Raise CPU price to $140K incl. options
2. Price MA10 at $51K ea.

3. Discount memories separate of system discount using normal DEC discount schedule. Memories already delivered during current discount agreement count for determining discount level.
4. Sell Ampex 2.2 usec core memory.
5. Require Ampex to stop quoting interfaces to 2.2 µsec memory interfaces.

This strategy assumes raising the CPU price and dropping the memory price. This approximately balances our gross margin but places pressure on companies like Ampex who are attempting to compete with DEC for our memory business. It is a form of price leverage.

The second part of this strategy involves discounting memories separate of system discounts in order to make our memory prices more appealing to large memory customers. It was estimated that our price would have to be within 3K of the Ampex price in quantities of 25 in order to be competitive. Under these circumstances, a firm like ALC would only have to pay approximately $75K more for our memories on the purchase of memory systems worth 1 million dollars. The 7% premium would be justified because we would supply the service, support, and the advantage of dealing with one vendor. A discount schedule would make it much more difficult for Ampex to compete with DEC on large memory accounts. It was considered desirable to maintain a slightly higher price than Ampex to prevent a price war.

In order to achieve a price within 3K of the Ampex price for quantities of 25, the selling price of the MA10 had to be set at 51K when employing DEC's Standard Discount Schedule (Attachment #2). The price for 2.2 µsec core was set at 75K for the interface with one 32K word block while additional modules were priced at $42K which is competitive with the prices Ampex charges for this module.

The gross margin with Strategy #2 is 26.1 million as shown in Exhibit 5. Profit is estimated to be 13.6 million dollars which is 2.5 million dollars higher than Strategy #1 while the profit as a percent of sales is 28.5, up from 26.9%. Although the profit on each memory sold was much less in Strategy #2, the increase volume obtained by retaining the large memory customer helped to offset the product line fixed costs resulting in a higher absolute profit and a higher profit as a percentage of sales. (See Exhibit 6). The price restructure for Strategy #2 would result in a loss during Fiscal 1969 of $705K for customers with purchase orders that take advantage of the new prices.

STRATEGY #3

Assumptions:

1. Raise CPU price to 140K incl. options
2. Price MA10 at 45K ea.
3. Sell Ampex 2.2 μsec memory
4. Stop Ampex from selling 2.2 μsec interfaces

This strategy assumes that memory is discounted as a part of the system. The system discounts are lower than the memory discount rates of Strategy #2 due to smaller number of systems as compared to memory modules. Therefore, the starting price had to be set at $45K to stay within $3K of the large volume memory customer who would normally operate at system discount levels of around 10%. Note that 10 more memory modules were forecasted in Strategy 3 than in Strategy #2 due to the lower memory price for the small system buyer.

The gross margin for Strategy #3 is $25.9K as shown in Exhibit 7, which is virtually identical with that of Strategy #2. Profit is $13.5K which is $ .1K less than Strategy #2 but profit as a percent of sales is equal to that of Strategy #2. (See Exhibit 8). The year end loss due to price changes is $860K which is $155K higher than Strategy 2.

STRATEGY #4

Assumptions:

1. Raise CPU price to $160K
2. Same as Strategy #2
3. Same as Strategy #2
4. Same as Strategy #2
5. Same as Strategy #2

A major feature of this strategy is to raise the CPU price to $160K to reduce the loss in 1969 due to price changes. The volume of business in Fiscal 1969 would not be greatly affected by price changes. The theory of a price reduction is to save this memory business in Fiscal 1970 which would deteriorate if an immediate price reduction is not made.

The major price effect of this strategy is on the small system. Therefore, it was assumed that 74 instead of 84 systems would be sold. Therefore, 20 fewer MA10 modules were forecasted for 1970 as noted in Exhibit 9. Gross margin is $25.3K with these assumptions. The small system peripheral business lost with the 10 systems was estimated in Exhibit 10.

Profit calculations are shown in Exhibit 11. Strategy 4 has a pre tax profit of $12.9K and a profit on sales of 28.2% year end loss due to price changes on existing orders is only $420K.

STRATEGY #5

Assumptions:

1. Price CPU at 160K with options
2. Same as Strategy #3
3. Same as Strategy #3
4. Same as Strategy #3

Strategy 5 assumes 74 systems for the reasons given in Strategy #4. An additional 10 MA10 units were forecasted over Strategy #4 due to lower memory price for small system purchase.

Gross margin is $25.3K with Strategy #5 as shown in Exhibit 12. Profit is $12.9K and profit as a percent of sales is 28.4. Year end loss due to price change is 550K. (See Exhibit 13)

Exhibit #14 is an estimate of the product line profit under the assumptions of Strategy #4 but further assuming that the product line sales volume will be approximately $32 million after discount and that expenses may as a result be reduced as noted in Exhibit 3.

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EXHIBIT #2

Device	Dev/Sys	#Dev.	Unit Price	Unit Man.Cost	Av.Price Per Sys.	Av.Cost Per Sys.	84 Systems Total Price	84 Systems Tot.Man. Cost
RP10	.50		25.0	9.0	12.5	4.5	1050.0	378.0
RP01	.20		22.5	15.0	4.5	3.0	378.0	252.0
RP02	1.5		26.0	17.0	39.0	25.5	3276.0	2142.0
TM10	.61		18.0	6.0	11.0	3.7	924.0	310.8
TU20	1.08		12.0	5.5	13.0	5.9	1092.0	495.6
TU20A	.29		13.0	5.8	3.8	1.7	319.2	142.8
TU30	.02		21.0	10.0	.4	.2	33.6	16.8
TU30A	.07		22.0	10.0	1.5	.7	126.0	58.8
TU79	.25		18.0	8.0	4.5	2.0	378.0	168.0
TD10	.81		15.3	3.8	12.4	3.1	1041.6	260.4
TU55	3.47		2.4	1.0	8.3	3.5	697.2	294.0
CR10	.49		15.0	5.5	7.4	2.7	621.6	226.8
CP10	.08		30.0	12.0	2.4	1.0	201.6	80.5
LP10A	.26		25.0	13.0	6.5	3.4	546.0	285.6
LP10C	.40		50.0	25.0	20.0	10.0	1680.0	840.0
DC10A	.51		9.0	4.0	4.6	2.0	386.4	168.0
DC10B	1.17		5.0	2.0	5.9	2.3	495.6	193.2
KSR33	.36		.9	.5	.3	.2	25.2	16.8
KSR35	1.34		2.5	1.5	.9	2.0	75.6	168.0
KSR37	.17		3.5	1.7	.6	.3	50.4	25.2
GP10	.12		3.0	1.7	.4	.2	33.6	16.8
DA10	.39		5.0	2.3	2.0	.9	168.0	75.6
MX10	.02		4.5	2.0	.1	.04	7.5	3.4
MC10	4.91	413	1.5	.4	7.4	2.0	621.6	168.0
DF10	1.3	109	12.0	4.0	15.6	5.2	1312.0	436.0
RC10	.59	50	17.0	5.5	10.0	3.2	840.0	268.8
RB10A	.05	4	220.0		11.0		924.0	
RB10B	.05	4	190.0	164.0	26.0 10.0	16.4	2184. 840.0	1,377.6
RB10C	1.0	84	5.0		5.0		420.0	
RM10	.6	50	50.0	27.2	30.0	16.3	2520.0	1,370.0
RD10	.3	25	32.5	12.5	9.7	3.7	815.0	311.0
VT03	1.0	84	8.3	4.2	8.3	4.2	698.0	353.0
					269.0	130.2	22,598.7	10,903.5

C O M P A N Y C O N F I D E N T I A L

EXHIBIT #3

EXPENSE BREAKDOWN

	Sales $44-46 M	Sales $32M
Warranty & Installation and Royalty	2.8	1.6
Engineering Expense	3.6	3.0
Selling Expense	4.0	3.4
Administrative Expense	2.0	1.5
	$12.4M	$9.5M

C O M P A N Y C O N F I D E N T I A L

EXHIBIT #5

STRATEGY #2

QTY	DISCOUNT	FORECAST	
2-3	5	30	150
4-6	10	30	300
7-9	12	32	384
10-14	15	24	360
15-24	18	68	1220
25-49	22	25	550
		209	2064

Average Discount = $\frac{2964}{209}$ = 14.2

	16K	8K
Sales = 209 x 51	$10,659K	403
Less Average Discount 14,2%	1,512	
	9,147	403
Man. Cost 209 x 20	4,180	168
	4,967	235

MASS CORE

Sales of 2.2 µsec = 70 x 27 + 42 x 19 = 1,890 + 800 =	$2,690K
Discount	70
	2,620
Man. Cost = 32 x 27 + 28 x 19 = 864 + 532	1,396
Margin =	1,224

Total Memory Margin = 4967 + 235 + 1224 = 6426

CPU

CPU Sales = 138.3 x 84	=	11,617
Less Discount @ 6.3%	=	732
		10,885
Cost 35 x 85	=	2,940
		7,945

Margin on PER	11,695
Margin on CPU	7,945
Margin on MEM	6,426
Gross Margin	26,066

C O M P A N Y C O N F I D E N T I A L

EXHIBIT #6

STRATEGY #2

	Sales	Man. Costs
Peripherals	22,598	10,903
CPU	11,617	2,940
MEM (1.0 µsec, 16k)	10,659	4,180
MEM (1.0 µsec,8k)	403	168
MEM (2.2 µsec)	2,690	1,396
	47,967	19,587

Total Sales	
Man. Cost	19,587
	28,380
Discount	2,748
Margin After Discount	25,632
Expenses	12,400
	13,232
Plus Δ Rental/Field Service Revenue	400
	$13,632k

Discount	
Non. Mem. (incl. CPU)	1166
1 µsec.mem.	1512
2.2 µsec.mem.	70
	2748

Profit as % sales (pre tax) = $\frac{13,632}{47,967}$ = 28.5%

Loss for last quarter fiscal 1969 = $705.6k

C O M P A N Y C O N F I D E N T I A L

EXHIBIT #9

STRATEGY #4

QTY	DISCOUNT	FORECAST	
2-3	5	10	50
4-6	10	30	300
7-9	12	32	384
10-14	15	24	360
15-24	18	68	1220
25-49	22	25	550
		189	2864

Average Discount = $\frac{2864}{189}$ = 15.1

	16k	8k
Sales - 189 x 51	9,640	403
Less Discount	1,455	-
	8,185	403
Man. Cost 189 x 20	3,780	168
Margin	4,405	235

Mass Core Margin (same as strategy #2) = 1,224

Tot. Memory Margin - 4,405 + 235 + 1,224 = 5,864

CPU

CPU Sales = 158.3 x 74	11,700
Less Discount @ 6.3	738
	10,962
Cost 35 x 74	2,590
	8,372

Margin on CPU =	8,372
Margin on Mem. =	5,864
Margin on Peripherals =	11,083
Total Margin	25,319

C O M P A N Y C O N F I D E N T I A L

EXHIBIT #11

STRATEGY #4

	SALES		MAN.COST
Peripherals	21,602		10,519
CPU (74)	11,700		2,590
MEM (1.0 µsec, 16k)	9,640		3,780
MEM (1.0 µsec,8k)	403		168
MEM (2.2 µsec)	2,690		1,396
Total Sales	46,035	Man. Cost	18,453
Man. Cost	18,453		
	27,582		
Discount	2,685		Discount
	24,897	Non.Mem.(Incl. CPU)	1160
Expenses	12,400	1 µsec. mem.	1455
	12,497	2.2 µsec.mem.	70
Plus △ Rental/F.S. Revenue	400		2685
Profit pre tax	12,897		

Percent Profit = $\frac{12,897 \times 100}{\$6,035}$ = 28.2%

Profit Lost 1969 = $420k

C O M P A N Y C O N F I D E N T I A L

ATTACHMENT #8

Selling Price of Memory & CPU (IN K Dollars)

	CPU = $113K		CPU = $140K			CPU = $160K		
Mem. Size	MB10 $62k	MA10 $72K	MA10 $45 K	MA10 $51K	Mass Core $70K	MA10 $45K	MA10 $51K	Mass Core $70K
16K	$175	$185	$185	$191	-	$205	$211	
32K	$237	$257	$230	$236	$210	$250	$256	$230

PDP-14 PRICE LIST

MARCH 3, 1969

CONTENTS:

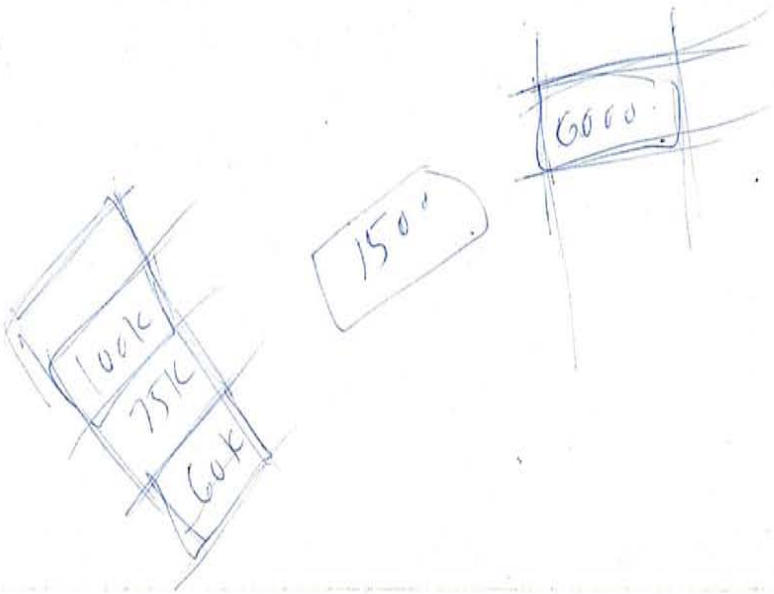
1.0 Hardware and Software List Prices*

2.0 Services and Software Included in the Price of PDP-14

3.0 Extra Services That May Be Purchased

4.0 PDP-14 Configuring and Pricing Example

* These prices are subject to change without notice.



1.0 Hardware and Software List Prices

TYPE NO.	DESCRIPTION	PREREQUISITE	PRICE	SOFTWARE INCLUDED
	BASIC SYSTEM			
PDP14-A	Basic PDP-14: Processor (PDP-14A) 1K ROM (MR14), one I box (32 115V ac inputs); (BX14-DA) one O box (16 115V ac outputs); (BY14-DA)	-	$4400	Depends upon how many units customer has bought
	PROCESSOR AND PROCESSOR OPTIONS			
PDP14	PDP-14 Processor: 8 input box slots (32 addresses/slot), 16 output slots (16 addresses/slot); pre-wired for Maintenance Panel, Computer Interface, up to 4K ROM in blocks of 1K; Power Supply for 7 amps at 5V; space for another 7 amp/5V power supply	-	$2600	PDP-14 Use Manual inc print set
714	Power Supply: 7 amps at 5V	PDP-14	$250	schematic
DA14-I	Computer Interface to PDP-8/I: Module package includes 3BC08C-10 mylar cables (10 ft. each)[1]	PDP-14, PDP-8/I	$590	schematic
DA14-L	Computer Interface to PDP-8/L: Module package includes 3BC08A-10 mylar cables (10 ft. each)[1]	PDP-14, PDP-8/L	$590	schematic
	PERIPHERAL SUBSYSTEMS			
BX14-DA	Input Box: 32 addressable 115V ac inputs; includes K726 shell, BC14A-15 cable[1], 4K578, 2K161, 1K135	PDP-14	$540	schematic
BY14-DA	Output Box: 16 addressable 115V ac outputs: includes K727 shell, BC14A-15 cable[1], 4K614, 4K207, 2K161, 1K135	PDP-14	$680	schematic
BF14-H	Storage Box: 32 addressable flip-flops; includes: K728 shell, 2BC14A-15 cables[1], 8K207, 4K161, 2K135	PDP-14	$470	schematic

1. The prices of non-standard length cables are available upon request

TYPE NO.	DESCRIPTION	PREREQUISITE	PRICE	SOFTWARE INCLUDED
BF14-D	Half Storage Box: 16 addressable flip-flops; included: K728 shell, 1 BC14A-15 cables[1], up to 4 K207's, 2 K161, 1 K135	PDP-14	$290	schemat:
BA14	Unloaded Accessory Box: 15 addressable outputs for timers and retentive memories; 1 BC14A-15 cable[1], 1 K729 shell, 1 K135, 2 K161, 4 K207; Timers, Counters, and Retentive Memory modules must be purchased separately.	PDP-14	$290	schemat:
	MEMORY			
MR14	Read-Only-Memory: 1024 words (12-bit); including one memory braid; up to 4 MR14's may be plugged into one PDP-14	PDP-14	$1200	schemat
MR14-B	Read-Only-Memory Braid: 1024 words; includes braid module and keeper module	MR14	$420	-
	COMPUTER OPTIONS			
PDP-8/L	PDP-8/L: General-purpose small computer	-	see PDP8/L price list	-
PDP-8/I	PDP-8/I: General-purpose small computer	-	see PDP8/I price list	-
	SELF MAINTENANCE ACCESSORIES			
SP14-A	Spare Module Kit: includes spare modules for each type of module in processor, I box, O box, S box, and A box	PDP-14		parts list
SP14-B	Spare Memory Option: one complete memory with braid. Same as MR14. Customer must specify braid contents	PDP-14	$1200	schemat

TYPE NO.	DESCRIPTION	PREREQUISITE	PRICE	SOFTWARE INCLUDED
BT14	Diagnostic Package: includes maintenance light panel and diagnostic Read-Only-Memory	PDP-14	Prices Available in April	Schematics
	PERIPHERAL SUBSYSTEM MODULES			
K303	Timer Module: 3 timers	BA14	$27	schematics
K273	Retentive Memory Module: 3 retentive memories	BA14	$72	schematics
K207	Storage Flip-Flop Module: 4 flip-flops	BF14-D or BF14-H	$24	schematics
-	Counter:		Prices available in April	schematics
	SOFTWARE			
DEC14-GRZA-D	PDP-14 User's Manual: Includes hardware descriptions, prints, software operation (BOOL-14, SIM-14, PAL-14)	-	$20	-
DEC14-KZZA-PB	BOOL-14 Binary Paper Tape: this program produces PDP-14 code from Boolean-like equations typed into the Teletype	8K PDP-8/L or 8K PDP-8/I	$20	-
DEC14-EDZA-PB	SIM-14 Binary Paper Tape: this program allows a user to debug a PDP-14 program by generating truth tables, typing out implied machine sequences, and providing read-write memory for the PDP-14 during final PDP-14 program debugging	8K PDP-8/L or 8K PDP-8/I	$20	-

TYPE NO.	DESCRIPTION	PREREQUISITE	PRICE	SOFTWARE INCLUDED
DEC14-ASZA-PB	PAL-14: this program assembles a PDP-14 program from a sequence of mnemonic instructions having mnemonic addresses.	8K PDP-8/L or 8KPDP-8/I	$20	-

SERVICES AND SOFTWARE INCLUDED IN PRICE OF PDP-14

Philosophy: As a customer uses more and more PDP-14's, his need for support from Digital decreases. Consequently, Digital has a "variable" support policy with the PDP-14; that is, Digital provides more support on the first PDP-14 a customer purchases than it does on later PDP-14's.

1. PDP-14 Training

a. Number of PDP-14 courses

PDP-14 Customer Serial Number	1	2-10	11-up
Number of PDP-14 courses (each 1 wk.)	3	1 per unit	none

b. Kinds of PDP-14 courses to which a customer is entitled by PDP-14 purchases

(1) PDP-14 programming course (one week)
The course teaches PDP-14 programming fundamentals. It is aimed at the control engineer, who has designed machine controls using relays or hard-wired solid state. No prior solid state nor computer programming knowledge is needed. Computer novices learn PDP-14 programming within two days; PDP-14 programming is substantially easier to learn than FORTRAN.
Topics: Boolean algebra, Boolean expressions implied by relay ladder diagrams, PDP-14 block diagrams, basic PDP-14 instructions, programming Boolean equations, BOOL-14 (a program to automatically generate PDP-14 programs from Boolean equations), SIM-14 (a program to debug PDP-14 programs), the use of Input boxes, Output boxes, Storage boxes, Timer/Retentive Memory boxes. Laboratory sessions are numerous.

(2) PDP-14 hardware maintenance course (1 week)
The course teaches PDP-14 hardware fundamentals. It is aimed at the individual who understands solid state logic. Topics: analysis of PDP-14 prints, hands-on analysis of all PDP-14 electrical and mechanical features, interfacing the PDP-14 to the PDP-8/L or PDP-8/I, use of the diagnostic Read-Only-Memory and Maintenance panel, installation and wiring procedures, examination of all PDP-14 subsystems and subsystem modules.

c. PDP-14 course schedules

Consult the Digital "Training Program" brochure.

2. PDP-14 Warranty

	First Machine	Second Through Tenth Machine	Eleventh through Infinity Machines
. Length of warranty	90 Days	90 days	90 days
. One day installation a	Yes*	No	No
. Number of on-site warranty calls b	2 calls**	1 call	None
. Warranty after on-site warranty elapses	Depot	Depot	Depot

a A field service engineer is available for one day to assist with the installation of the first PDP-14 which a customer receives.

b This warranty is limited to first-shift service. The warranty call-credits that a customer obtains by buying PDP-14's are applicable to maintaining any PDP-14 which the customer may own.

3. PDP-14 Software

a. Contents of the PDP-14 software kit

(1) PDP-14 Users Manual
(2) PDP-14 print set
(3) Binary paper tapes for:
  (a) BOOL-14
  (b) SIM-14
  (c) PAL-14

b. Number of PDP-14 Software Kits

PDP-14 Customer Serial Number	1	2-10	11-up
Number of PDP-14 Software Kits	2	1 per unit	none

EXTRA SERVICES THAT MAY BE PURCHASED

1. PDP-14 Training

a. At Maynard

For $300, DEC will train persons in any of the following courses:

(1) PDP-14 programming (1 week)
(2) PDP-14 maintenance (1 week)

b. On the customer's site

We will give the details of this policy upon request. In addition to the PDP-14 programming and maintenance courses, DEC offers the following on-site course:
PDP-14 Blue-Collar Maintenance Course (2-3 days)
The course teaches the blue-collar relay maintenance man how to maintain the PDP-14. The course focuses on simple, straight forward troubleshooting procedures that can be learned quickly.

2. PDP-14 Field Service

After the expiration of the PDP-14 warranty, the customer is responsible for repairing PDP-14 gear. He has three options:

a. Depot maintenance

A user may ship a PDP-14 Processor, Read-Only-Memory, I box, or O box to a PDP-14 depot repair center. Several depot repair services with computerized PDP-14 test facilities are scattered across the U.S. When a customer wants depot repair, he contacts the local depot repair center, which arranges transportation. When it arrives, the faulty gear is repaired and shipped back to the customer within 2 days. The current charge for depot repair is $12 per hour.*

* These prices are not official. Up-to-date field service prices may be obtained by contacting your nearest DEC field service office.

b. On-site maintenance

If a DEC field service office is located close to the user, the user may obtain on-site maintenance at the prevailing DEC one-shift hourly rates*. The customer is billed for traveling time and traveling expense. The customer may also purchase one-, two-, and three-shift service with weekend options.

DEC SERVICE CENTERS ARE LOCATED IN THE FOLLOWING PLACES:

DOMESTIC

Huntsville, Alabama
Anaheim, California
Palo Alto, California
Englewood, Colorado
New Haven, Connecticut
Cocoa, Florida
Miami, Florida
Des Plaines, Illinois
College Park, Maryland
Cambridge, Massachusetts
Maynard, Massachusetts
Ann Arbor, Michigan
Palisades Park, New Jersey
Parsippany, New Jersey
Princeton, New Jersey
Albuquerque, New Mexico
Centereach, L.I., New York
Rochester, New York
Durham, North Carolina
Cleveland, Ohio
Dayton, Ohio
Eugene, Oregon
Monroeville, Pennsylvania
Wayne, Pennsylvania
Dallas, Texas
Houston, Texas
Salt Lake City, Utah
Bellevue, Washington

CANADA

Edmonton, Alberta
Carleton Place, Ontario
Port Credit, Ontario
Montreal, Quebec
Ottawa, Ontario

ENGLAND

Berkshire
Manchester
Reading

GERMANY

Cologne
Hamburg
Munich

AUSTRALIA

North Sydney
West Perth
Melbourne
Brisbane

FRANCE

Paris

SWEDEN

Stockholm

SWITZERLAND

Geneva

HOLLAND

Noordwijkerhout

JAPAN

Tokyo

Norway
Oslo

* These prices are not official. Up-to-date field service prices may be obtained by contacting your nearest DEC field service office.

c. Resident engineer

DEC will supply the large end-user with a resident engineer, a PDP-14 spares inventory, and PDP-8/L-driven test equipment. The resident engineer policy is a means by which the new end-user can obtain immediate repair service. Moreover, the resident engineer policy provides a method by which an end-user may fully train all of his own maintenance personnel.

PDP-14 CONFIGURING AND PRICING EXAMPLE

A customer has a requirement to control a gear-grinding machine. Attached to the machine are the following:

1. DATA

AC Inputs
a. Limit Switches.....24
b. Pressure Switches.....21
c. Push Buttons..... 7
d. Selector Switches..... 4

Total AC Inputs.....56

AC Outputs
a. Solenoids.....11
b. Motor starters.....10
c. Indicator lights..... 8

Total AC Outputs.....29

Control Outputs = 13

Example of "control" outputs: CR3.

CR3 is latched up with itself. Therefore, in the PDP-14, the current value of CR3 must be stored in a flip-flop. The customer's gear-grinding machine requires 13 such flip-flops.

Accessories

a. Time delays..... 8
b. Retentive Memories..... 4

DRAWING

2. Configuring Analysis

a. Number of Input Boxes required

2 I boxes....64 inputs ——→ Extra I boxes = 2 - 1 = 1
Needed.....-56 inputs

Unused..... 8

The customer needs all but one K578 input module in the second I box. He will use this extra K578 as a spare.

b. Number of Output Boxes required

2 O' boxes.....32 outputs ——→Extra O boxes = 2 - 1 = 1
Needed.....-29 outputs

Unused..... 3 outputs

c. Number of Storage Boxes required

Half S box.....16 flip-flops
Needed.....-12 flip-flops

Unused..... 4

d. Number of Accessory Boxes and Accessories Needed

Timers (K303)
3 Time delay modules..... 9 timers
Needed.....-8 timers

Unused.....1 timer

Retentive Memories (K273)
2 Retentive memories..... 6 retentive memories
Needed .....-4 retentive memories

Unused..... 2 retentive memories

Accessory Boxes

Slots in 1 Accessory Box..... 5 slots
Slots needed by Timers.....-3 slots
Slots needed by Retentive Memories...-2 slots

Unused slots in Accessory Box..... 0 slots

e. Number of 1K Read-Only-Memories (ROM's)

Estimating the memory required to do a given control problem is straightforward. Memory needs are determined by two factors:

(1) The number of equations

The following items require equations:

(a) AC outputs
(b) Control outputs
(c) Timers
(d) Retentive memories

Each one of these items has an equation which either sets it or clears it.

(2) The average number of memory locations required per equation

Rule: if n is the number of variable appearances in an equation, then the maximum number of required memory locations will never exceed (2n + 4).*

Example:

$$y1 = (x1 \text{ and not } \overline{x2}) \text{ or } (x2 \text{ and } x3) \text{ or } (x4 \text{ and } x2)$$
$$= x1 \cdot \overline{x2} + x2 \cdot x3 + x4 \cdot x2$$

In this equation, there are 6 variable appearances, although there are only 4 variables. Therefore, the PDP-14 program for this equation will require no more than (2·6+4) = 16 memory locations.

* In general, the actual number of required memory locations will be 20%-40% less than (2n + 4).

The customer with the gear-grinding machine analyzes his ROM requirements accordingly:

(1) Number of equations = e

e = (AC Outputs) + (Control Outputs) + (Timers) + (Retentive Memories)

e = 29 + 13 + 8 + 4

e = 54

(2) Average number of memory locations required per equation = m

The customer believes that his machine control logic is moderately complex. Therefore, he estimates that the average equation will have 6 (=n) variable appearances.

Thus, $m = 2n + 4$
$m = 2 \cdot 6 + 4 = 16$

(3) The total worst-case ROM requirements for the gear-grinding machine = N
$N = e \cdot m$

$N = 54 \cdot 16$ memory locations

$N = 864$ memory locations, worst-case

Therefore, the customer needs only 1K of ROM, all of which comes with the basic PDP-14.

f. Computer interface

Assume that the customer orders a PDP-8/L. Accordingly, he purchases the DA14-L Computer interface package. The PDP-8/L and DA14-L will be one-time purchases for the customer. He may amortize these items over many PDP-14's.

The Computer interface connects the PDP-14 to the PDP-8/L or PDP-8/I. The interface includes 3 BC08A-10 cables (each 10 feet long) and six M Series modules which plug into the PDP-14 mainframe.

g. PDP-8/I or PDP-8/L computer

The customer may use either a PDP-8/I or PDP-8/L computer to write and debug PDP-14 programs. Typically, the customer amortizes the PDP-8/L over 100-200 PDP-14's.

Which computer should the customer purchase, the 8/I or 8/L? What options should the customer purchase? What cable should he buy to interface the PDP-14 to the PDP-8 family computer?

(1) 8/L vs 8/I

If the customer is primarily interested in economy, he should buy a PDP-8/L. If he is primarily interested in flexibility (the ability to inexpensively add disk, DECtape, etc.), he should buy a PDP-8/I.

(2) 8K of memory

The 8-family computer should have 8K of memory! If the user's PDP-14 program requires more than 1K of ROM, BOOL-14 and SIM-14 both require an 8K PDP-8/I or PDP-8/L.

(3). High speed reader/punch

With SIM-14 and BOOL-14, the user may input/output using the high speed paper tape reader/punch option. Most users who do much programming want this option.

h. Power supply requirements

Power requirements are as follows:

(1)	Basic PDP-14	3.80 amps
(2)	I box	0.05
(3)	O box	0.75 (max)
(4)	S box	.20
(5)	Half S box	.10
(6)	A box	.20 (max)
(7)	1K ROM	0.50
(8)	Computer interface	0.50

Based upon a total system including 1 basic PDP-14 1 extra I box, 1 extra O box, 1 Half S box, 1 A box, and 1 Computer interface, the customer needs 5.40 amps at 5 volts. The power supply in the processor provides 7 amps at 5 volts. Therefore, it should be adequate for the customer's needs.

3. PRICING SUMMARY: PDP-14 Control System for Gear-Grinding Machine

Type Number	Description	Number	Unit Price	Amount
PDP14-A	Basic PDP-14 (1K ROM, 1 I box, 1 O box)	1	$4400	$4400
BX14-DA	Input Box	1	540	540
BY14-DA	Output Box	1	680	680
BF14-D	Half Storage Box	1	290	290
BA14	Unloaded Accessory Box	1	290	290
	TOTAL PRICE OF PDP-14 CONTROL SYSTEM--			$6200
PDP-8/L	PDP-8/L: general-purpose small computer	1	separate order place for this	-
BA14-L	Computer Interface to PDP-8/L	1	$590	$590
SP14	PDP-14 Spare Parts Kit	1		

PRICES OF ITEMS AMORTIZED OVER MANY PDP-14's

digital INTEROFFICE MEMORANDUM

DATE: March 17, 1969

SUBJECT: THE PDP-14 PRICING DECISION

TO: Operations Committee
c.c. Al Devault
Dave Knoll
Ed Simeone

FROM: John Holzer

The purpose behind this memo is to acquaint you with the rationale underlying the proposed PDP-14 prices.

275 275

1.0 The Need for a Pricing Decision

We seek your approval of proposed PDP-14 prices because marketing cannot proceed without the publication of PDP-14 prices. We are getting an average of one RFQ every day, and the RFQ demand is rising; once more, the IEEE Show is one week away.

2.0 Central Issue: the Proposed Price of a Basic PDP-14 ($4400)

a. Why $4400?

Alan Ricketts and Don Chace made a careful, detailed PDP-14 cost estimate.

1755

Modules	255
Switch and filter assembly	20
Power supply	45
Mounting panel	72
Wiring (@ 5¢/wire)	55
Mechanical Package	82
I box	160
O box	200
1K ROM	314
PDP-14 costs excluding assembly and checkout	$1203
Assembly and Checkout	155
TOTAL PDP-14 costs	$1358

Alan Ricketts' estimate	$1358
Extra cost, wiring	55
Extra cost, PCBs	135
Extra cost, checkout	85
	$1633

1750

Implied very pessimistic case markup factor=2.7.

3.0 A Related Issue: Markups on PDP-14 Options

	Markup	Price
Extra Input Box	3.4	$ 540
Extra Output Box	3.4	680
Extra ROM	3.8	1200
Extra Braid	5.6	420
Extra Power Supply	5.6	250
Computer Interface	4.1	590

4.0 Intangibles Influencing the Pricing Decision of the Basic PDP-14

a. The higher the price--the more we will encourage PDP-14 competition.

b. The higher the price the better PDP-14 cash flow, which will enable us to aggressively market and support the PDP-14.

c. We have announced the PDP-14 price as being "under $5000", although several customers think the price is $4400.

mf

digital INTEROFFICE MEMORANDUM

DATE: March 13, 1969

SUBJECT: PDP-14 DELIVERY QUOTATIONS

TO: Al Devault
c.c. Pete Kaufmann
Stan Olsen
Dave Knoll
Don Chace

FROM: John Holzer

Today, Pete Kaufmann, Dave Knoll, and Don Chace arrived at the following agreement to which we will abide.

1. Now, we (the PDP-14 group and Jack Haggerty) will quote "mid-summer" deliveries on PDP-14's.

2. By April 15, after five PDP-14's have been operating, we will be in a position to quote mid-June delivery----if all is well and no major PDP-14 changes need be implemented.

   At that time, we will feel more confident about implementing the following schedule, toward which we are working.

   by June 15: ship 10 units

   by July 15: ship 20 more

   by August 15: ship 20 more.

mf

COMPANY CONFIDENTIAL

OPERATIONS COMMITTEE MEETING

March 10, 1969

AGENDA

1. Additions and Corrections to Minutes of the February 24th Meeting, and the "Woods" Meeting of March 3rd.
2. Marketing Review Committee Summary - (Ted Johnson)
   (See attached minutes of the February 27th and March 4th meetings)
3. Proposed New Organization Chart - (Nick Mazzarese)
4. Review of Typesetting Problems and Opportunities - (Marv Cothran)
   (See attached report)
5. Proposal for a Central Complaint Department - (Jim Cudmore)
   (See attached report)
6. Facilities Planning Review - (Al Hanson)
   (See attached report)
7. Secretarial Job Descriptions Study - (Paul Chambers)
   (See attached report)
8. Special "Boston Globe" Rotogravure Insert - (Mark Nigberg, Dimitri Dimancesco)
   (See attached report)

THE NEXT "WOODS" MEETING IS SCHEDULED FOR WEDNESDAY, MARCH 19TH

COMPANY CONFIDENTIAL

OPERATIONS COMMITTEE MINUTES

March 10, 1969

Present: W. Hindle, T. Johnson, P. Kaufmann, N. Mazzarese, K. Olsen
S. Olsen (Secretary)

1. Marketing Review Committee minutes were approved.

2. Typesetting proposal will be postponed until next week.

3. Central complaint department...Jim Cudmore will write another memo on what he would do to set up the department.

4. Secretarial job description was approved, but they will remove the requirement for a certain number of years.

5. Special Boston Globe rotogravure insert was turned down.

6. There will be a Woods Meeting for the two full days of March 18th and 19th. (We will leave Monday, the 17th, at 8:00 PM) We will complete Five-Year plans before leaving.

7. Those who are not attending the Directors Meeting this afternoon will work on facilities planning, transfer price, and list of separate product lines.

We also commented on the weaknesses of our Product Lines and decided that the following summarized the major weaknesses of each:

PDP-12

Missed Engineering schedule. January - April (3 months) Over-forecasted LINC-8 bookings. Marketing and engineering costs are high (above budget).

PDP-10

September increased budget too high. Should meet April's budget.

PDP-8

Forecasting mix (poor). Manufacturing costs higher than budget. Priced too low for a profit.

PDP-9

February 1968, we over-forecasted bookings and increased budget(illadvisedly). We cut back too little, too late.

Modules

Late in getting all module specialists. Longer lag in market response to K Series market.

Traditional

Learning Market.

cag

digital INTEROFFICE MEMORANDUM

DATE: March 5, 1969

SUBJECT: Facilities Planning Review

TO: Members of the
Operations Committee

FROM: Al Hanson

Attached you will find a schedule of all approved and proposed projects, with pertinent information to each project.

1. PROJECT: Fabrication Shop - Paint Facility

	EXISTING	PROPOSED
LOCATION:	6D-1	6D-1, 3-1
AREA:	1,000 ft^2	9,000 ft^2

STATUS: Approved
COST:
COMPLETION: May 1, 1969
DESCRIPTION: Use existing spray booth. Install new degreaser and monorail system for drying area. Install air make-up unit for 30,000 C. F. M.

2. PROJECT: Photo Resist

	EXISTING	PROPOSED
LOCATION:	4-4	7A-1
AREA:	400 ft^2	700 ft^2

STATUS: Approved
COST: 5 K
COMPLETION: March 15, 1969
DESCRIPTION: Upgrade area. Use existing ventilation. Install necessary lighting and power. Install sink and oven.

3. PROJECT: Drafting Department

	EXISTING	PROPOSED
LOCATION:	4-4	4-4
AREA:	11,500 ft^2	12,800 ft^2

STATUS: Approved
COST: 20 K
COMPLETION: June 1, 1969
DESCRIPTION: Refurbish entire area. Add necessary lighting and air conditioning. Modify existing layout.

4. PROJECT: Computer Center Expansion

	EXISTING	PROPOSED
LOCATION:	12-1	3-5
AREA:	4,000 ft^2	5,000 ft^2

STATUS: Approved
COST: 13 K
COMPLETION: April 1, 1969
DESCRIPTION: Install partitions, power, and acoustical type teletype booths in former RF08, etc. area. Install new duct work to utilize present air conditioning system.

9. PROJECT: Publication Storage

	EXISTING	PROPOSED
LOCATION:	unavailable	6A-2 & 6C-2
AREA:	unavailable	10,000 ft^2

STATUS: Approved
COST: 3 K
COMPLETION: April 1, 1969
DESCRIPTION: Storage of publications.

10. PROJECT: Stationery Supplies

	EXISTING	PROPOSED
LOCATION:	4-3	6A-3
AREA:	800 ft^2	3,200 ft^2

STATUS: Approved
COST: 1 K
COMPLETION: April 1, 1969
DESCRIPTION: Storage of office supplies.

11. PROJECT: Paper storage

	EXISTING	PROPOSED
LOCATION:	3-5	6C-1
AREA:		7,200 ft^2

STATUS: Approved
COST: Cost determination at a later date
COMPLETION: August 1, 1969
DESCRIPTION: Raw material storage area for Print Department.

12. PROJECT: Print Shop

	EXISTING	PROPOSED
LOCATION:	3-5	6C-1
AREA:		3,200 ft^2

STATUS: Approved
COST:
COMPLETION: August 1, 1969
DESCRIPTION: Note: Existing square footage includes paper storage and bindery.

digital INTEROFFICE MEMORANDUM

DATE: February 14, 1969

SUBJECT: SPECIAL BOSTON GLOBE ROTOGRAVURE INSERT

TO: Operations Committee

FROM: Mark Nigberg
Dimitri Dimancesco

Personnel, Sales Administration and Public Relations are enthusiastically proposing a special newspaper insert on DIGITAL to be printed by the Boston Globe for initial distribution in all of its Sunday newspapers on May 11, the week of the Spring Joint Computer Conference. In addition to providing support for SJCC, this insert will then be used to support several different corporate efforts as outlined below.

We would like your endorsement of this project and your approval of the objectives and methods as outlined.

GOALS AND OBJECTIVES

1. To serve as a recruitment/advertising medium. The insert would include an advertisement for professional personnel. By using the Sunday Globe for initial distribution, we will get superb coverage of the entire metropolitan Boston area as well as throughout the overall New England area. (Boston Globe Sunday circulation exceeds 500,000.) This is in line with our desire to help attract the talented personnel necessary to maintain and extend our present position in the computer industry. If we can project ourselves as an international company with well defined leadership direction and overall corporate health, we are in a prime position to attract the type of personnel we want for DIGITAL. This is true not just for Maynard, but also for our regional facilities throughout the country. If done well, this insert will eliminate the need for a recruiting brochure that was previously planned.

2. To provide one initial vehicle to project an international corporate image with continuing growth--in short, to advance an overview of DIGITAL--in our products, markets, history, and future. We would seek to make readers of this insert aware of our current growth and size, as well as our diversification in providing systems solutions and services to many different areas. We lack, at present, a vehicle to define for ourselves and others who and what DIGITAL is; our background and qualifications in computers; our present position in the industry; and indeed, the overall condition of the industry today!

3. To provide our customers and other interested publics with general information about DIGITAL, something that none of our specific product line information is designed to do. We desire to use this insert to supplement sales activities by serving as a forum to explain our stable of product lines and the services they afford. This piece of literature will clarify the logic behind the ever-growing line of systems solutions that we provide for many different markets, all in light of our continued growth.

digital INTEROFFICE MEMORANDUM

DATE: FEBRUARY 24, 1969

SUBJECT: PROPOSAL FOR A CENTRAL COMPLAINT DEPT.

TO: OPERATIONS COMMITTEE

FROM: JIM CUDMORE

CC: DAVE KNOLL
JACK SHIELDS

THIS PROPOSAL DESCRIBES A SYSTEM FOR GATHERING, ANALYZING, REPORTING AND RESOLVING COMPLAINTS. THIS SYSTEM IS NECESSARY TO END THE CHAOS WHICH MOST SALESMEN ENCOUNTER WHEN "LOOKING FOR AN ANSWER".

QUITE OFTEN, COMPLAINTS FROM THE FIELD GET "LOST" OR SO FILTERED BY THE MAZE ENCOUNTERED AS TO BECOME UNRECOGNIZABLE. SOME COMPLAINTS ARE NEVER ANSWERED, OTHER RECURRING COMPLAINTS ARE ANSWERED COMPLETELY DIFFERENTLY BY VARIOUS SOURCES AT DIFFERENT TIMES.

INPUTS FOR THE "COMPLAINT CENTRAL" SYSTEM WILL BE FROM FIELD SALES AND SERVICE OFFICES. THERE ARE NO PLANS TO GATHER COMPLAINTS DIRECTLY FROM CUSTOMERS. COMPLAINTS WILL BE NORMALLY MAILED TO MAYNARD ON A STANDARD FORM OR CALLED-IN BY PHONE IN CASE OF A DIRE EMERGENCY. ALL COMPLAINTS WILL BE PROCESSED BY ONE PERSON. THIS PERSON WILL BE RESPONSIBLE FOR THEIR LOGGING, DISTRIBUTION OF THE PAPER WORK AND MAINTENANCE OF THE RECORDS.

RECEIPT OF A COMPLAINT WILL BE ACKNOWLEDGED BY RETURN MAIL WITHIN ONE WEEK. ACKNOWLEDGEMENT WILL CONSIST OF A COPY OF THE RECORDED COMPLAINT, A LOG NUMBER, THE NAME OF THE PERSON ASSIGNED TO ANSWER THE COMPLAINT AND THEIR ESTIMATE OF THE DATE OF THE ANSWER. PRESUMABLY ANY COMPLAINT WILL BE ANSWERED WITHIN ONE MONTH.

IT IS NOT THE INTENT OF THIS SYSTEM TO HAVE THE QUALITY CONTROL DEPARTMENT ANSWER ALL THE COMPLAINTS. MOST OF THE ANSWERS/SOLUTIONS TO THE COMPLAINTS MUST COME FROM THE RESPONSIBLE DESIGN OR PRODUCTION ENGINEER. THIS SYSTEM WILL NOT WORK UNLESS THE PRODUCT LINE AND PRODUCTION ENGINEERING ORGANIZATIONS ACCEPT THEIR RESPONSIBILITY FOR ANSWERING COMPLAINTS.

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digital INTEROFFICE MEMORANDUM

DATE: March 5, 1969

SUBJECT: Secretarial Job Descriptions Study

TO: Operations Committee FROM: Personnel (P. Chambers)

Per your request, we have studied our current secretarial job classification and have also determined the number of girls currently classified as Senior Secretary.

Attached for your information is a list of employees currently classified as senior secretaries and to whom they report.

We have also re-written our secretarial descriptions in order to more clearly distinguish between the Secretary and Senior Secretary categories.

In addition, we have established a new secretarial class to properly identify the most senior and responsible secretarial positions within the Company.

In conclusion, we feel that the great majority of our current senior secretaries have been properly classified. However, our new descriptions will enable us to be more accurate in the future.

We suggest that you carefully review the attached senior secretarial list and we welcome any opinions you may have.

/gl

The following employees are currently classified as Senior Secretary in the Company:

TED JOHNSON

M. Rand	(Johnson)
M. Paul	(Eisenhauer)
J. Balmat	(Berman)
P. O'Dea	(Schwartz)
G. Howard	(Stevens)
J. Sargent	(Hill)
K. McCullem	(Willis)
O. Huff	(Crawford)
P. Bracken	(Liveris)
M. Bert	(McNeal)
A. Hanson	(Moore)
N. Darling	(Shields)
M. Fletcher	(Handy)
M. Fischer	(Belden)
P. Fileccia	(Bellantoni)
E. Smith	(Moore)
J. Jaffe	(Fredrickson)
J. Koski	(Fronk)
K. Gallo	(Kiesewetter)
I. Cummings	(Jacobs)
J. Warren	(Beal)
H. Herla	(McInturff)

NICK MAZZARESE

E. Brown	(Mazzarese)
M. Wojcik	(Rice)
M. Quillin	(Dewey)
D. Curtin	(Wilson)

WIN HINDLE

B. Fiske	(Hindle & Savell)
G. MacDonald	(Portner)
T. Wilkins	(Packer)
D. Covey	(Ruderman)
E. Warren	(Thayer)
J. Reilly	(Lassen)
M. Lenertz	(Hindle)

STAN OLSEN

C. Gallant	(Olsen)
C. Cobb	(Devault)
E. Lanes	(Lane)
J. Long	(McInnis)
J. Haynes	(Kalwell)

PETE KAUFMANN

J. Buscemi	(Kaufmann)
M. Mott	(Kendrick)
T. Buckley	(Cudmore)
A. Simoes	(Crouse)
G. Pasierb	(St.Amour)
M. Moore	(Smith)

KEN OLSEN

E. Carlson	(Olsen)

Junior Secretary

Some secretarial ~~experience desirable but not mandatory, but~~ training is required. ~~training is required.~~ Takes dictation either in shorthand or by dictating machine and transcribes on typewriter. Composes routine letters, memoranda, or reports from verbal information. Maintains supervisor's files for reference and follow-up. Meets callers and monitors phone calls. Makes and schedules appointments. Reminds supervisor of pertinent activities. Makes travel arrangements. Performs all clerical activities with speed and accuracy. May work for one individual or a small group of individuals. This position represents the lowest level of the secretarial family.

Secretary

Must have ~~1-2 years of~~ some secretarial experience and be capable of taking diversified dictation and typing of all kinds. Composes letters and memoranda from all sources including knowledge of circumstances and policy. Maintains confidential files. Meets callers and monitors phone calls. Arranges and schedules meetings, interviews and appointments. Make all travel arrangements. Analyzes and routes correspondence. Capable of independent judgment. Generally reports to a manager of the Corporation.

Senior Secretary

Must have ~~a minimum of 3 years of~~ secretarial experience and be capable of performing all secretarial functions. Handles important or confidential mail. May review correspondence, memoranda, and reports prepared by others for supervisor's signature to assure procedural and typographic accuracy. May prepare special reports or memoranda for information of supervisor. Capable of superior judgment and assuming leadership over junior people. Generally reports to a department manager.

Executive Secretary

Must have ~~a minimum of 5 years of~~ advanced secretarial experience and be capable of performing the most complex secretarial assignments with a minimum of supervision. Responsibilities include dictation, typing, preparing correspondence, arranging schedules and alleviating, wherever possible, in behalf of supervisor, administrative details. Interfaces regularly with department managers and individuals outside of the Corporation. Generally reports to an Officer of the Corporation. This position represents the highest level within the secretarial family of jobs. Appointment to this level must be approved by Bob Lassen ~~the appropriate Group Vice President.~~ Operations Committee

This title should be limited to secretary to the Pres. and secy to Vice-Presidents only.