dec INTEROFFICE MEMORANDUM

DATE December 28, 1962

SUBJECT Geotechnical Corporation Discussion

TO File

FROM Harlan E. Anderson

CC: Nick Mazzarese
Gordon Bell

On Wednesday, December 26, I telephoned Bob McMurray at the Geotechnical Corporation to give him our response to his question of last Friday regarding rental of our computer equipment. I told him we would be willing to rent to them, although our basic policy still is not to rent. I suggested that the PDP-4 would be best suited for his applications due to the availability of FORTRAN and the fact that it was a less expensive machine. I quoted him the following purchase prices and approximate rental prices.

	Purchase Price		Approximate Rental
Basic PDP-4 with 4,096 words of memory	$ 65,000	120,000	$ 2,200 per month
Real Time Option	8,000		260
Typewriter	7,000		300
Punch	5,000		170
Type 50 Magnetic Tape Unit	18,000	18,000	600
Type 54 Tape Control	7,000	7,500	230
Type 41-4 Card Reader	14,900	14,900	500
Type 63 Line Printer without Buffer	24,800	24,800	830
	167,700	185,200	5,690

I explained to him that the terms of the rental agreement would be twelve (12) months minimum before they could give a cancellation notice and then a ninety (90) day notice would be required. He asked whether they couldn't give notice so that the rental agreement could be ended at twelve (12) months, and I said no. I also explained that the maintenance charges would be extra and that they would be somewhere between $500 and $1,000 per month if he elected to use our maintenance. He was also interested in the extended arithmetic unit, which I told him cost $9,100 and would rent for a little over $300 per month. His reaction to this was that our prices were high when one included the maintenance charge which was a part of the price of all the competitive machines he was considering.

The competitive machines that he is considering are the GE 225, IBM 1620 Model 2, NCR 315, SDS 910, SDS 920, CCC DDP19, ASI 210, and the CDC 160A. The monthly rental charge for what they consider to be an equivalent configuration of each of these machines varies between $5,000 and $7,900, and includes maintenance. Their tentative choice is the CDC 160A which would have the following configuration.

Item 1	Basic CDC 160 A
Item 2	150 Line Per Minute Printer
Item 3	Extended Arithmetic Unit for FORTRAN
Item 4	Two Magnetic Tape Units
Item 5	250 Card Per Minute Card Reader

This configuration comes to about $5,400 per month and is the basis for their present justification to management for a $5,500 per month budget.

They hope to reach a decision shortly after the first of January and as a next step, plan to look carefully at the PDP-4 Manual. I sent them two copies airmail yesterday and also offered to come to Dallas to talk with them further. I believe Gordon Bell should make such a trip.

Harlan E. Anderson

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Harlan E. Anderson

dec INTEROFFICE MEMORANDUM

DATE December 28, 1962

SUBJECT Foxboro Organization

TO Arthur Hall

FROM Harlan E. Anderson

During a recent visit of Dick Sonnenfeld, we learned about the various people involved in Foxboro Company from a marketing standpoint. They are as follows:

Henry Ehrisman is Vice President and General Sales Manager for domestic sales. He has about 250 graduate engineers who report to him in the field sales force.

Mr. Charles J. Schwartzler is Vice President and General Sales Manager for international sales, which accounts for about 40% of their business. After three or four systems have been done in the United States by Foxboro, they then will start doing some international things. They anticipate this will be near the end of 1963.

Vin Tivy is Vice President in charge of new applications and new products. He will deal with customers where some development work might be involved.

The field sales force is divided in three ways. The first of these geographically, which includes regional and branch offices. The second division is by industry groups. There are seven groups such as: food, power, chemical, petrochemical, paper, etc. There are approximately three or four men for each group, and this area accounts for 30 to 40% of the home office sales force. The third division is by product group and has consisted principally of the analog product group which accounts for another 30 to 40% of the home office sales force.

A new group which will be similar to the product group for analog products has been organized and it is known as the Digital Systems Sales Division. It is headed by Hank Thistle, who used to be in the power group. They will be responsible for all marketing and sales of things from Natick. There are four people there now and they include Bob Smith, who is on loan from Vin Tivy's activity and a new man, Jim Tuma, who is a former Control Data Corporation employee. By the end of 1963, they anticipate having seven or eight people in this sales activity. Mr. Thistle reports to Henry Ehrisman. He and Dick Sonnenfeld appear to be developing a very close working relationship.

Harlan E. Anderson

HEA/mr

INTEROFFICE MEMORANDUM

DATE December 28, 1962

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Harlan E. Anderson

HEA/mr

dec INTEROFFICE MEMORANDUM

DATE December 18, 1962

SUBJECT Fitchburg Paper

TO Arthur Hall

FROM Harlan Anderson

cc: Ken Olsen
Stan Olsen

Dick Sonnefeld of Foxboro telephoned me to indicate what the situation is at Fitchburg Paper. Apparently, a Mr. Hollander joined Fitchburg Paper recently as Director of Research. He had ambitious plans for using computers to make significant changes in their operation. His first attempt, which has now been installed about six months, was based on use of the IBM 1710 which they rent for about $4,000 per month. Sonnefeld feels that this was a poor match of equipment to the problem since it has not been able to do the things they had originally hoped for. For example, it is operating only in a logging load and there is apparently not sufficient capacity available to close the loop nor do they know how to do it. Apparently, Mr. Hollander feels that he has not gotten all the support from IBM on this project and the atmosphere is one of disenchantment with IBM. Perhaps he has promised too much.

The current thinking is to try and obtain a more capable computer to do the job. Fitchburg Paper apparently is an old time customer of the Foxboro Company and they are now asking the Foxboro Company for some help. The plan of the moment seems basically unsound and we should be very cautious. They hoped to time share one computer between a close loop process control operation and their business applications. They also expect the total rental to be $6,000 to $7,000 per month. Independent of the process control applications they are considering buying a IBM 1440. Last Friday two of the people came here with Saul Dinman of Foxboro to talk to us. They spent some time with Dit Morse learning about out own internal business of operations. I think we should encourage them to believe that these things can be done but I think we should be very careful not to promise that 1) we will have a business compiler or 2) that we would believe in and support the kind of time sharing that they are talking about.

Foxboro feels that if they end up buying any of our hardware items that Foxboro does not get a discount on, they would prefer that they deal directly with us. If they buy a process control system of course Foxboro is then interested. My own personal hope is that they will buy a process control system and divorce it from the business applications. If they really have support they might consider buying two PDP-4's but I am sure that's too ambitious for them at this time.

Harlan E. Anderson

HEAncs

dec INTEROFFICE MEMORANDUM

DATE December 18, 1962

SUBJECT University of Rochester

TO Nick Mazzarese

FROM Harlan Anderson

cc: Stan Olsen
Ken Olsen
Win Hindle

Dr. Fulbright of the University of Rochester asked for some type of an educational discount in connection with the PDP-1 Computer that they are considering . He has strongly implied or said this was some type of requirement for National Science Foundation support of his project. I telephoned Gordon Kingsley who is the Assistant to the President of High-Voltage Engineering Co., to see if he knew of such a policy of the National Science Foundation. They are selling some type of a tandem accelerator for use in the same project at the University of Rochester but he did not know of a policy of this kind at NSF.

In general grants from NSF have been the opposite extreme. They are normally thought of as having no strings attached to them and the University receiving them can use the funds in any way that they wish. Also, he mentioned that the Renegotiation Act does not apply to NSF funded projects. He mentioned that they sell the same product to the Atomic Energy Commission or Universities using NSF funds at the same price.

I personally suspect that since a particular sum of money is given to the University, they are motivated to make it go as far as possible by being frugal, etc. This is quite different than military money which is given to a University. In the military case, the University is reimbursed for what is has spent plus its overhead, plus a small fee. There, there would be no motivation to cut down on the spending since any money saved would not be available to the University to spend. My guess is that this educational discount is something that the University of Rochester hopes to receive so that whatever money they get from NSF will go further in supporting other projects.

Even if this is the case we still should come up with a conclusion or decision relative to their request. Gordon Kingsley is going to have a discussion with their salesman who is handling this project for them to see if he knows anything about it. Also I have asked Win Hindle to check with someone at MIT to see if they know of such a rule by the National Science Foundation.

H.E.Anderson

HEA:mcs

INTEROFFICE MEMORANDUM

DATE December 18, 1962

SUBJECT Adams Associates

TO Ken Olsen

FROM Harlan E. Anderson

cc: Stan Olsen
Bob Beckman
Ed Harwood
George O'Dea

I have told Adams that we would loan them a PDP-1 computer that we have been testing for them commencing soon after January 1st. The agreement is that they will continue to use it as long as it is convenient for us to let them do so or until such time as they go ahead with their purchase order on behalf of the Oregon Priming Center. During the time that they are using it, they will reimburse us for whatever time they are able to use on their own projects or rent out to people such as Itek. We will give them 30-day notice if we decide to discontinue the loan arrangement. They have the following potential users of the equipment:

1. Itek (Library Work) - Kulpyers
2. Itek (Drafting Work) - this time will probably be used for program debugging, etc.
3. Stelma - Adams have written a simulator for the computer that Stelma is now developing and will be debugging some of Stelma's programs on the PDP-1

I told them we would provide whatever part of the configuration that they had originally ordered that we could get together. It now appears that this will include the basic machine, the plotter, two tape units. The machine that we have been planning to use for them has been changed around several times internally at DEC and now happens to have multiply and divide although they had not ordered this. We plan to leave this in for now. Most of the hardware for the extra typewriters will also be in although the extra typewriters will not be furnished. Sometime in the next two weeks, whoever is going to handle the installation should visit Adams to inspect the area that they plan to put it in. As I understand it, this is a new area which they are now remodeling and it will be done by January 2nd.

H.E.Anderson

HEA:mcs

dec INTEROFFICE MEMORANDUM

DATE December 11, 1962

SUBJECT Electronic Associates

TO Nick Mazzarese

FROM Harlan Anderson

cc: Stan Olsen
Dave Denniston

Tom Truitt of Electronic Associates telephoned me yesterday to indicate that they have a new Marketing Vice President at EA. His name is John A. Curtis and his office is in Long Branch. He apparently is a real active and aggressive individual who use to have a position like Marketing Manager for ACF Industries. He is seeking out some type of a joint venture with a digital company. The exact details of this are not complete. However, he apparently has thus far contacted Computer Control Company, Scientific Data Systems, and Control Data Corporation.

My thought here is that our quantity discount plan is such that it really encourages people to act as sales aids for us and this might be a non-contractual way of having a joint venture. We must show the initiative if we want to do anything in this area and the timing is urgent. This might be the door-opening technique for a computer setup at Princeton. In any event, it seems to me we should make some attempt to sell, rent or etc. the PDP-1 that they are now using.

Tom also mentioned that they still didn't have quite all of the programs that we had promised them.

Harlan E. Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE December 10, 1962

SUBJECT Sylvania Electric

TO Stan Olsen

FROM Harlan Anderson

I just spoke with Mrs. Joan Van Horn at Sylvania in their Applied Research Laboratory. She is the one whom Charlie Adams said was planning to get a PDP-1 Computer. She claims not to know Jim Foley who is the Purchasing man that had been calling us last week. Her telephone number is 894-8444. The configuration they might be interested in would be PDP-1 with a scope and a light pen and they would use it in speech analysis work and perception studies. Their getting this equipment depends on some pending contracts and they hope to know more after January 1st.

She has been dealing up until now with John Koudela in getting technical information about the PDP-1. She indicated that a person within Sylvania who will be very influential in deciding whether they get a computer is Dr. Donald Brick. I suggest that we certainly follow this up with high level contacts at Sylvania after January 1st.

Harlan Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE December 10, 1962

SUBJECT Stanford University Computer

TO Ken Olsen

FROM Harlan Anderson

John McCarthy telephoned today to bring me up to date on the situation regarding a PDP-1 Computer at Stanford.

First, the financial support from the Advanced Research Projects Agency headed by J.C.R. Licklider. He is not available yet and they probably will have no further word concerning it until after the first of January.

Second, a new and expanded source of financial support appears to be possible. This new support is being lined up by McCarthy selling the idea of time sharing systems for use as teaching machines within Stanford. In particular, he has pretty well convinced Professor Pat Suppes of the Philosophy Department that a PDP-1 is desirable for use as a multi-student teaching machine. Professor Suppes is interested in eventually equipping each student station with a typewriter, a scope and light pen, and an audio output. McCarthy has been so interested in this that he thinks there is immediate financial support available for the kind of system necessary to do this. He is being urged by the Carnegie Foundation to submit a formal proposal requesting funds to be reviewed at the January 3rd Meeting of the Carnegie Board.

The configuration that he would be interested in would be quite similar to that at BBN. It would contain a basic machine, one extra module core memory, sequence break system, five typewriters, one scope and light pen, drum system, memory protection control, and a new item, a connection to the IBM 7090 that is available at Stanford.

This latter connection can be done one of two ways. The first way would be through the IBM direct data device similar to the way that Gordon Bell had proposed to connect the PDP-4's to MIT's 7090. John recalled that we had quoted $10,000 for that. This way would probably be somewhat less desirable to Stanford since their 7090 has a direct data device which is on loan at the option of IBM and might disappear at any moment unless they buy it.

The second way of connecting to the 7090 that has been considered is to make our interface look like an IBM magnetic tape unit. This way would be preferable if it is not too expensive.

The people at Stanford are also looking at data display scopes for the teaching machine application. They, of course, did not yet know of our character generator which I told him about. There is also some possibility that our audio voice demonstration in Philadelphia might play some part in their audio requirements. John inquired about our willingness to work with them in some of these areas and I encouraged this

within the normal two limits that we impose on developments, i.e., our ability to make a technical contribution and general purpose need for the product resulting from the development.

If, they were to teach Russian with this setup, they would probably want approximately 2,000 Russian words stored on an audio system of some kind. I should emphasize that the audio things are not necessarily to be available immediately.

The questions for us are – how interested are we in this work and what kind of an educational discount or other assistance can we provide? If, when Ken Olsen is in California, it is possible for him to visit McCarthy to get a first hand impression of the situation, this would be very desirable. This should also be discussed with the DEC Board of Directors.

McCarthy has submitted a paper for consideration by the Committee for the Detroit Computer Conference on the subject of time sharing. If this paper is accepted, we might do well to try and demonstrate time sharing. In any event, we should form a judgement on our interest and willingness to proceed with increased participation in the time sharing use of the PDP-1.

Harlan E. Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE December 10, 1962

SUBJECT Dartmouth College Computer

TO Stan Olsen
Nick Mazzarese

FROM Harlan E. Anderson

While talking to John McCarthy of Stanford on the telephone today, I learned that Dartmouth has submitted a proposal to the National Science Foundation to establish a time shared computer facility. Their proposal is based on consideration of three possible ways of doing this. These involve the GE-225, IBM-7040, or the Bendix G-20. They are still apparently in their early stages of working out the details with these respected manufacturers since they have made no commitment to anyone as yet. The key people involved here are Tom Kurtz, who is nominally Director of their Computer Center, the spark plug above him is John Kemeny who is Chairman of the Mathematics Department. As soon as we arrive at some conclusion about our interest in the time sharing field, we should visit him and try to sell them on DEC hardware.

Harlan E. Anderson

HEA:ncs

V WARWICK HOTEL GAPLS

NORMAN TAYKORXXXXTAYLOR

XXXXXXX SORRY THIS IS DIGITAL EQUIPMENT CORP

MAYNARD MASS 617 I897 7976

&- GA

TO NORMAN TAYLOR ITEK CORPORATION

WARWICK HOTEL PHILADELPHIA PA

IF CONVENIENT FIR YOU KEN AND I WOULKXXX WOULD LIKE TO MEET WITH YOU SOMETIME ON TUESDAY . WE WILL ARRIVE ABOUT 11 A. M. AT SHERATON HOTEL LEAVE WORD AT DEC BOOTH OR HOTEL DESK IF POSSIBLE TO GET TOGETHER.

HARLAN E ANDERSON

END

OK WE WILL GIVE HIM MESSAGE END OR GAPLS

END T

TELEGRAM

NORMAN TAYLOR, ITEK CORPORATION

WARWICK HOTEL

PHILADELPHIA, PA

If convenient for you, Ken and I would like to meet with you sometime on Tuesday. We will arrive about 11AM at Sheraton Hotel. Leave word at DEC booth or hotel desk, if possible to get together.

H. E. Anderson

dec INTEROFFICE MEMORANDUM

DATE November 1, 1962

SUBJECT 1959 Eastman Joint Computer Conference Proceedings

TO Jack Atwood FROM H. E. Anderson

Frank Hart called today to find out if we knew the date when the EJCC Proceedings were mailed. Do you have any records which would indicate what that date was?

H.E.Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

File

DATE October 31, 1962

SUBJECT North American Aviation

TO Ted Johnson

FROM Harlan E. Anderson

Some time ago, Minneapolis Honeywell in Minnesota was attempting to justify the purchase of a PDP-1 for use in their Apollo simulator. Some of the people at North American that they were in contact with were Harris Steiner, and Charles Walli. The Honeywell people conjectured at that time that North American might also want one of these systems in the future. I understand that there is a temporary hold on funds for this program but you might want to contact these North American people some time in the future.

Harlan E. Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE October 26, 1962

SUBJECT Effects of Engineering Change Notices on Inventories

TO Ken Olsen

FROM Harlan Anderson

cc: Dick Best
Maynard Sandler
Dick Mills
George O'Dea

It is apparent that there are some major loopholes in our part procedure for examining the effect of Engineering Change Notices on inventories. This was dramatically displayed by suddenly finding almost $70,000 worth of raw material inventory items that had been obsoleted in the first quarter of 1963. There appeared to be no routine method of finding these problems at a time when some prevantive action or attention could be focused on it. It is obvious that too much of the coordination of this type in the past has depended on verbal contact rather than a procedure which was more automatic. In view of this, I would like to propose that the following procedure be followed.

1. Production does not implement any engineering changes which obsolete any inventory item without having first received the formal Engineering Change Notice in writing approved by the Engineering Department.

2. The engineering change notice should indicate what raw materials, sub-assemblies, and finished products are obsoleted or replaced by this Change Notice.

3. The Engineering Department should continue to alert production of any pending changes or effects on inventory. This is not a substitute for the formal Engineering Change Notice but is in addition to it.

4. The Production Department should make its own determination of the effect of Engineering Change Notices on present inventories. This includes the privilege of delaying the introduction of an Engineering Change Notice until existing inventories are consumed. The obvious exception to this is when an Engineering Change Notice is required because the old method of producing the item is totally unsatisfactory.

5. The Production Department is responsible for making sure that obsolete inventory is written off on a current basis meaning month to month.

6. Any individual inventory writeoff of more than $1,000 should be reported to the Works Committee.

7. Any specific problem in this area which cannot be resolved in a mutually satisfactory way by Engineering and Production should be brought up at the Works Committee at an early date.

H.E.Anderson

INTEROFFICE MEMORANDUM

DATE October 25, 1962

SUBJECT National Security Agency Programming

TO Stan Olsen
Ben Gurley
Gordon Bell

FROM Harlan Anderson

Today Doug Hogan of the National Security Agency called to indicate that they are interested in a new type compiler which is called a block diagram compiler. One of these has been developed for the 7090 by Bell Labs and is particularly useful in sampled data systems. There is a description of this in the May 1961 issue of Bell System Technical Journal.

NSA is quite serious about supporting the development of such a compiler. They are about to get a preliminary proposal from Datatrol in Silver Springs, Maryland. This is a group of people that originally worked at NSA and are now writing the computer programs. Doug was interested in telling us about this for two reasons. First of all they would plan to contribute this to the Decus Library; and second, they would like to have us take part in the technical discussions leading to this Datatrol Contract so that the resulting work is as compatible as possible with other programming systems. We will be invited to a meeting sometine in the future on this subject.

There is a new potential customer at NSA also. Doug would like information about how we interconnected two PDP-1's instead of a PDP-3 for Charlton Walter. This customer is one who would like to have equipment compatible with Doug Hogan's installation if at all possible.

For this forthcoming meeting I suggest that Gordon Bell or someone familiar with our programming attend and also discuss with Doug the intercommunication facilities of the PDP-1. The order for the PDP-1 will be forthcoming in the next few days according to Doug.

H.E.Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE October 23, 1962

SUBJECT

TO Ken Olsen
Gordon Bell
Win Hindle
Stan Olsen

FROM Harlan Anderson

Joe Grandine who formerly was with United Research and Dupont is looking for an employment opportunity, he has had ten to twelve years experience in the process control field and was somewhat of a technical leader and spokesman for Dupont in this area. I have known him casually for several years and invited him to come out for an interview with us on Wednesday, October 24 at 3:30 P.M. and would like to know if you have an interest in speaking with him.

Harlan E. Anderson

dec INTEROFFICE MEMORANDUM

DATE October 23, 1962

SUBJECT New Computer Competitor

TO Gordon Bell
Stan Olsen

FROM Harlan Anderson

According to the October 22 issue of Electronic News on page 37, Diginamics Corporation in Minneapolis is now making a $20,000 Process Control Computer.

Harlan E. Anderson

dec INTEROFFICE MEMORANDUM

DATE October 23, 1962

SUBJECT PDP-4 Programming Manual

TO Stu Grover

FROM Harlan E. Anderson

While showing the PDP-4 Programming Manual to some visitors recently, Gordon Bell and I noticed that the drawing of the central machine had one of the parts mislabeled. It was called the Instruction Counter and it should really be the Instruction Register.

Harlan E. Anderson

INTEROFFICE MEMORANDUM

DATE October 12, 1962

SUBJECT National Security Agency

TO Stan Olsen

FROM Harlan Anderson

Doug Hogan of NSA telephone today, Friday, October 12, to give us three pieces of information.

First, the notification of contract award for their computer will be issued next week.

Second, they would like to have two people attend the January Maintenance Course for the PDP-1. We should make the reservations for them and send to Doug Hogan the exact starting date of that course.

Third, they would be interested in obtaining the computer without the tapes or the analog-to-digital interface equipment early if this turned out to be possible. I asked him if they could pay for it early also and he assured me that if the contract didn't permit it now, he certainly could arrange for it to permit that possibility. Nothing was settled on this but I agreed that I would discuss it with him further after the contract had been awarded.

Fourth, he wanted to know if we had reached any agreement with his contracting people in the supply area regarding a provision parts list. His interest here was to know if we regarded their requirements as being excessive and he was also interested in helping to smooth this over so that there would be no problems in this area. He also provided some background on what has motivated this requirement for a provisioning parts list. Apparently in the past the Government has received parts lists for systems that they have bought which specified identifications for the parts and sub-assemblies which forced the Government to buy them from the system manufacturer. When it is feasible to buy the same part directly from someone else, they would like to know what the identification number for that part is. I told him that we would look into this and call him back so that they would not hold up the contract.

Harlan E. Anderson

HEA:ncs

HEA file

INTEROFFICE MEMORANDUM

DATE October 8, 1962

SUBJECT Decus Annual Meeting

TO Ken Olsen

FROM Harlan Anderson

Today Charlton Walter from the Cambridge Research Center called and invited you and myself to attend the Decus Meeting this Wednesday and Thursday. He particularly suggested that you might be interested in the demonstration of the color scope on Wednesday at 3 p.m. I told him I would call it to your attention and was sure that you would come if you could . This is probably the best meeting that they have had so far and it would be a nice jesture if we should go for part of it. I was considering going for part of Thursday. The program with abstracts is in the October issue of the Decuscope attached.

Harlan Anderson

HEA:ncs
Attached Decuscope

HEA file

INTEROFFICE MEMORANDUM

DATE October 8, 1962

SUBJECT Computer Prospect

TO Jim Burley
Washington, D. C. Office

FROM Harlan Anderson

This past summer Dr. Nancy Anderson was working at Bolt, Beranek and Newman and showed some interest in the PDP-1 and PDP-4 computers. I understand she has returned to the Washington area, and would suggest that you contact her. The address I have for her is the Department of Psychology, University of Maryland, College Park, Maryland. As I recall from the discussions with her this past summer, she had another affiliation which I don't remember. I believe it was with some non-profit corporation but she would probably be able to fill you in on that. She was interested in using a computer in her animal research experiments. Let me know what you hear after you have contacted her.

Harlan E. Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE October 1st, 1962

SUBJECT Hydac

TO The File

FROM Harlan E. Anderson

This week two engineers from Electronic Associates visited us and described their Hydac Product. They did this in conjunction with a planned joint demonstration of analog digital techniques. Hydac stands for Hybrid Digital Analog Computing. There are three principle parts to the Hydac.

The first of these is the analog-to-digital converter, the digital-to-analog converter, the analog multiplexer, trace and hold circuits, and duomultiplexers. These items have been sold by them for sometime and under the trade name of Addalink. They are somewhat slower than the Packer-Bell units and I do not believe they sold a tremendous number of these since they are really mostly an accessory to the analog computing business.

The second part of the Hydac is a servo memory. This is a delay line where they put the information on with flags for selectively recalling it. Its function is to create delays in analog computing. Analog computers just don't make delays nicely. Therefore, they have to go to rather cumbersome techniques to simulate the delay that might occur in a process control problem, etc.

The third part of the Hydac is a set of digital building blocks which can be patched together like they would normally patch analog amplifiers. The type building blocks they have are general purpose flip-flops, and circuits with two and six inputs, an up counter, a BCD down counter, shift register, clock, etc.

Todate, they have sold two of these Hydac units and delivered them. These two have not been used to create the interface with the digital computer but have merely provided some digital aids to an analog computer. One of the planned functions of course for the Hydac is to be the interface to a digital computer and that's why they are interested in this joint demonstration.

###

cc: Ken Olsen
Gordon Bell
Stan Olsen
Nick Mazzarese

dec **MEMO**

DATE September 24th, 1962

TO Kenneth H. Olsen FROM Harlan Anderson

Subject: Telephone call with Mr. Les Chapin of Beckman Systems.

I returned the call to Mr. Les Chapin of Beckman Systems that had originally been placed to you. I believe he is Chief Engineer of that division or some equivalent position of responsibility. His purpose in calling was to register a mild complaint about our hiring Ron Coleman and to register a strong request that the day he starts be postponed approximately 60 days. He claimed that the job Ron Coleman was in the middle of doing was approximately 60 days from completion, and that he was vital to the completion of the job. I believe he also indicated that a new sense of priority on the computer system for Aerojet now exists.

I tentatively agreed with this request of his and told him that assuming Ron Coleman was willing, and that there were no unusual problems at our West Coast office, we would go along with it. At this point, I called Ted Johnson and told him about it. In the meantime, Ted and Ron Coleman had worked out an intermediate arrangement which Mr. Chapin probably heard of since it was just revealed to Ron's immediate superior on Friday. I told Ted to settle it directly with Mr. Chapin in any way that would keep good relations and anything up to the 60 days extension that was acceptable to Mr. Chapin.

cc: Stan Olsen, Ted Johnson

dec INTEROFFICE MEMORANDUM

DATE September 14, 1962

SUBJECT

TO Stan Olsen

FROM Harlan Anderson

Today Mr. Eugene Herr from Emerson Electric in St. Louis, telephoned me to say that they are planning to submit a bid to Franklin Institute for a centrifuge control and that they would like to consider the use of a PDP type of computer. They had spoken with John Ward at MIT who suggested they contact us. On Tuesday, September 18th, Mr. George Kerm will visit here in the afternoon. He will be at MIT in the morning and he is particularly interested in the interface requirements for our program data processors.

# # #

CC: Gordon Bell

INTEROFFICE MEMORANDUM

DATE August 10, 1962

SUBJECT Foxboro, Natick

TO Ken Olsen
Gordon Bell
Ben Gurley

FROM H. E. Anderson

I have scheduled a meeting with Mr. Fine at Foxboro in Natick for 10 a.m. on Tuesday, August 14.

# # #

INTEROFFICE MEMORANDUM

DATE July 26, 1962

SUBJECT W. R. Grace & Company

TO Ken Olsen

FROM Harlan Anderson

Dorothy Rowe telephoned yesterday and said that General Doriot had spoken with his friend Alex Daignault, who is Executive Vice President of W. R. Grace & Company. His office is in New York, and his telephone number is Digby 4-1200. Apparently he asked General Doriot who they should go to to get advice on whether their approach to automation in their chemical processing was reasonable. Apparently they have been exceedingly conservative, and have done very little along these lines, and are wondering whether they should continue that way or become more aggressive. He was considering hiring John Diebold Associates as consultants, but the General suggested that he really ought to talk to us first. Mr. Daignault will be in Boston on Tuesday, July 31, and is going to call us early in the afternoon to arrange for a get-together later in the afternoon and possibly dinner that evening. These arrangements were made when I telephoned him to follow up a commitment that Dorothy Rowe had made to him earlier in the afternoon. I explained that we felt we knew very little, if anything, about his business and that we certainly weren't consultants, at which point he said he understood and did not want to impose on us, but would like to have a short discussion.

####

dec INTEROFFICE MEMORANDUM

DATE July 23, 1962

SUBJECT DEC Participation in Parachute Contest

TO File

FROM Harlan Anderson

At a meeting on Friday, July 20, I told the representatives of the sport parachuting contest that we would definitely participate in the parachuting contest by loaning them a PDP-1 computer and providing some incidental support. The machine which we plan to loan them is a PDP-1 scheduled for delivery to Minneapolis-Honeywell. Basically, our participation will involve the following three things:

1. Loaning the computer and assuring that it works properly.

2. Donate $300 to the contest. We hope that they will use this money to help provide support for Bill Mann in doing the programming and particularly operation of the computer during the contest.

3. We will provide and install the special cables and switches for the judges. This includes probably two master cables, each terminating in a junction box from which the five judges can connect in their individual boxes with a wire extension. The judges' boxes should have the three buttons labeled in three languages with names that they will provide for us in the near future. If we silk screen this, we probably should put on the symbol of the World Sport Parachuting Contest, and also a credit to Digital Equipment Corporation.

I told the people that we wanted the right to veto whatever building they came up with to house the computer if we deemed it unsatisfactory. I said that in the event we did veto their building that we would provide a building instead. I urged them not to take advantage of this, but to continue looking for a satisfactory building. The following schedule was worked out for the details relating to our participation:

Friday, 20 July: Preliminary draft of specifications for program completed.

Wednesday, 25 July: Specifications for program agreed upon in final form at meeting to be held at DEC at 2 p.m.

Monday, 30 July: Start building and start laying cable at Orange if necessary.

Wednesday, 1 August: Check program for contest on the Orange PDP-1 at DEC's factory.

Friday, 3 August: Building complete with power installed and air conditioning installed. Also, the cables should be complete by this time. They will have installed a telephone by this time also.

Monday, 6 August: Ship computer to Orange.

Friday, 10 August: Demonstration day for final check and the press.

Saturday, 11 August: First day of the meet.

There will be many intermediate items of work that will have to be completed, but they will all be built around the above schedule framework.

# # #

CC: Ken Olsen
Stan Olsen
Jack Atwood
Jack Smith
Alan Kotok
Ken Fitzgerald
Tom Leonard

dec MEMO

DATE June 22, 1962

TO K. Olsen/ Jay Forrester FROM H. E. Anderson

The following meetings have been scheduled:

Thursday, June 28: Special Board Meeting, AR&D Offices, 9:00 a.m.

Friday, July 6: Meeting with Dr. Storer, Applied Research Laboratory, Sylvania, Waltham, 10:00 a.m. The Laboratory is located on Sylvan Road. To reach there, take Winter Street Exit from Rt. 128, and watch for signs for Applied Research Lab.

# # #

INTEROFFICE MEMORANDUM

DATE June 19, 1962

SUBJECT Production Write-Offs

TO Ken Olsen
Maynard Sandler
Dick Mills
Dick Best

FROM H. E. Anderson

At a recent meeting of the Works Committee, the subject of how to handle the write-offs of obsolete and spoiled goods was discussed. Most of this memo deals with how to handle this in a routine fashion in the future. For the year now ending, some special write-offs will be taken as an adjustment to compensate for this general type of thing.

1. Production Re-work -- Maynard Sandler will assign a re-work operation number which will be available for use with any production job number. All expenses charged to this re-work number are to be expensed off on a monthly basis through the cost of goods sold. This means that they will not find their way into the inventory part of our balance sheet. However, should we want to know the cost of manufacturing a lot, including the re-work cost, the data is available for this computation.

2. Obsolete Raw Materials -- When these are formally obsoleted, the material normally will be transferred to the Engineering Department, or a special obsolete stockroom, and the cost of the items being obsoleted will be transferred to an engineering account number. If the items are associated with a particular product or product line, an engineering account number related to that product will be used for the charge-off. This method also applies to work-in-process parts which are obsoleted.

3. Finished Modules Rejected -- If modules are finished, including performance tests, but are rejected for physical appearance reasons or other causes which do not seriously impair their usability, the physical modules will be transferred to the Test Equipment Headquarters, and the cost for the modules will be transferred to the Engineering Department, probably the test equipment account number. In the case where modules in this category are transferred to a particular engineering project, for example, the PDP-4, the cost of the modules should be transferred to that account number.

4. Obsolete Models -- In general, we should expense off at the end of each year any excess inventory of models which are extremely low-volume usage.

The suggested rule of thumb is that any inventory in excess of one year's supply should be expensed off. In addition, any excess units that we make of a special module like the range gate amplifier for Cornell University should be expensed off.

The intention of the above methods of handling write-offs is to do two things:

a. Minimize the cost of finished goods carried in inventory.

b. Make sure that the ultimate place that the charge occurs is the one responsible for the decision that was made that created the charge.

# # #

INTEROFFICE MEMORANDUM

DATE June 14, 1962

SUBJECT Module List for PDP-1 and Options

TO Roger Melanson

FROM Harlan E. Anderson

I just received a copy of Drawing B-20074-D and noticed that there is no date showing the latest revision. I think the usefulness of this list is somewhat jeopardized by lack of a date. The letter is somewhat useful, but the date would be even more helpful.

This brings up the question of whether drawing revisions normally carry a date of revision on them.

# #

dec INTEROFFICE MEMORANDUM

H3.6

DATE June 7, 1962

SUBJECT Foxboro and Nabisco Personnel

TO File

FROM H. E. Anderson

Ralph Guimond at Foxboro gave me the names of the Chicago personnel involved in the Nabisco installation. Joe Conley is the regional manager of the Foxboro office in Chicago. Brad Biegler is the engineer assigned to the Nabisco job in Chicago. The Nabisco engineer is C. H. E. Woosley, also in Chicago. We should be careful that any contact with this latter man is handled through the Chicago office of Foxboro.

# # #

CC: Gordon Bell/George Rice

Foxboro
674-5810
Oakton
4546
Skokie

NABISCO 7300 South Kedzie
WA 5-4300

Nat. Elec. Conference then.
Schedule a meeting then.

dec INTEROFFICE MEMORANDUM

DATE June 7, 1962

SUBJECT Geotechnical Corporation

TO Bob Beckman FROM H. E. Anderson

I telephoned Dave MacKenzie at Geotech today to sample their opinion on how adequate our service and general supply of information, etc., is. He was very pleased with the work that your two people did when they were in Dallas. There are at present some things that we could do that would be helpful to him, which I am going to pass on to you in the order of importance that I believe he attached to them. Incidentally, I think we should do more of what I did; i.e., looking for problems or trouble before it comes to us.

First, they would like to have a copy of the diagnostic routine known as ECHO. I am not personally familiar with this, but apparently their maintenance man, Ray Arnold, learned about it when he was up here. I assume they would like to have a binary tape and a listing, and any other instructions we have for it.

Second, they would like to have copies of double precision programs which can be assembled by FRAP. I don't know the status of this either, but if we have it, it certainly would be helpful to them. An alternative to this is somewhat the equivalent in DECAL.

In about two months, they plan to move the computer to the final customer location in Washington. They would like some advice from us as to what units should be removed from the cabinets and what units need to be tied down, etc., in order to insure a safe journey. Would you provide him some information on this? Also, I offered that we would be glad to have someone go to Washington when the machine is shipped there to aid in setting up and testing the DEC unit. At the present time, Geotech is tying in all of their specialized equipment to make the complete system.

Another thing he would like to have is more detailed description of our maintenance routines. He feels it would be particularly helpful to have flow diagrams for the programs. I did not promise that we would do this, but that we would keep his request in mind when we are deciding what further support things we will be providing our customers.

At the present time, they are having some mysterious trouble which they are going to try and locate themselves. It has been going on since Tuesday, June 5, and the following symptoms exist. They have one program which rather

consistently will stop running during the first thirty minutes after the machine is turned on. They have other programs which only fail in a random fashion during the immediate period after the computer is turned on. The instruction test program stops after it has read in three or four sections. All of the programs that they learned how to run when our people were there last have been run with reasonably good success. I would suggest that you telephone them in 5 to 7 days from now to see if this trouble is still persisting. If it is, I think we should be prepared to send someone down again. This trouble may be related to their in-out system, so they are somewhat reluctant to call us into the thing yet.

# # #

dec INTEROFFICE MEMORANDUM

DATE June 7, 1962

SUBJECT Cash Flow Revisions

TO Dick Mills

FROM H. E. Anderson

The following are several decisions that have been made since the time of our Cash Flow Forecast which we should be sure to include in updating of the Cash Flow.

1. We are hiring significantly more summer personnel than what was assumed in that Cash Flow.

2. We are delaying the schedule for billing of the Livermore machine by perhaps as much as a month from what is shown there.

3. The JPL computer which is scheduled for delivery December 15 will be a lease. For the configuration of that and the terms, see the sales file.

4. We are borrowing the money from AR&D that was discussed earlier in the week.

# # #

dec INTEROFFICE MEMORANDUM

DATE June 7, 1962

SUBJECT News Release on University of California Computer Delivery

TO Jack Atwood FROM H. E. Anderson

I suggest that we start preparation of a news release to be issued either when the LRL computer leaves here or when it arrives in California. This should be a fairly comprehensive thing which goes into as much detail as possible about the application for which they will use the machine. It should also stress the special cathode ray tube display for film reading, tape units compatible with STRETCH and LARK, and the line printer and perhaps the Uptime reader.

A photo or two of either the equipment or the acceptance testing work showing University of California people and DEC people might be desirable. We should start quite early on this in order to get the text material cleared by the University of California. This clearance should be in writing and probably will have to come from some public relations office at Livermore. Perhaps the local people can tell us how it should be handled from their end. Ben Gurley or Bob Savell can give you some technical information to be included.

# # #

dec INTEROFFICE MEMORANDUM

DATE June 7, 1962

SUBJECT Foxboro and PDP-4 Maintenance Classes

TO Bob Beckman FROM H. E. Anderson

Would you please call Ralph Guimond at Foxboro today and take care of answering the following three questions. I gave him preliminary answers and really want you to verify them and also establish contact with Ralph, if you have not previously been in touch with him.

First, Ralph would like to attend our preliminary session on PDP-4 maintenance which is beginning on Monday, June 11. I explained to him that this was the first time we were offering this, and it was considered an in-house proposition, but we would be glad to have him come if there was room in the class. I think it is in our best interest to have him here, since he's willing to take the time to do it, for two reasons. He is probably very typical of the kind of customers that we will be having at the class in the future and would probably be willing to give responses as to whether it's too detailed or too fast, etc. Also, one of our missions in life is to increase the technical comprehension of our products at Foxboro. They need all the detailed exposure they can possibly achieve, and Ralph is certainly a key person. He will be very understanding about this being the first time we've offered the course. If we can possibly accommodate him, please verify that it's all right.

Second, would you confirm to him that the next PDP-4 maintenance class is being offered July 9, and that we have a slot for Nabisco and any other people that he might want to have in it.

Third, verify that we have taken the initiative at inviting Corning personnel to take part in the July 9 session.

# # #

INTEROFFICE MEMORANDUM

DATE April 27, 1962

SUBJECT United Aircraft

TO File

FROM H. E. Anderson

I understood from a telephone conversation with Ralph Ballorda several weeks ago, that they are anticipating delivery of their PDP-1 system on the 14th of September. I don't know whether this is the same date we have been planning or not, but I thought it was important that we have on record the date they are anticipating that it will arrive.

# # #

INTEROFFICE MEMORANDUM

DATE April 27, 1962

SUBJECT McDonald Aircraft, St. Louis

TO Stan Olsen

FROM H. E. Anderson

Some time ago, Jerry Kennedy mentioned the name of the man at McDonald who was interested in our general type computer. He is Donald Augustine. He was leaning strongly in the direction of the Univac Type 1218, and may have committed himself to that. I thought it was important that we have his name on record, however, as a possible candidate in the future.

# # #

INTEROFFICE MEMORANDUM

DATE April 27, 1962

SUBJECT Geotechnical Corporation

TO Jim Myers

FROM H. E. Anderson

Would you please arrange to have two Type 4603 Pulse Amplifiers sent to Geotechnical Corporation at no charge. I know we are behind large quantities of this particular type. However, these are in conjunction with the PDP-1 we have already delivered to them, and in a sense, we are required to complete the unit. Therefore, if you could find two before the present maintenance class ends, the Geotech representative at the class could take them back with him. If this is not possible, would you make sure that they are sent to the attention of Mr. Dave MacKenzie at the earliest possible moment.

# # #

INTEROFFICE MEMORANDUM

DATE April 26, 1962

SUBJECT Systems Research Laboratory

TO Bob Sevell
Ben Gurley
Gordon Bell
Bob Beckman
Ed Harwood

FROM H. E. Anderson

Mr. William Bishoff of SRL telephoned me today and indicated that there were two incomplete items on the PDP-1 that we delivered to them. These relate to packing two 9-bit words into one 18-bit word to go through the data channel, and some type of synchronization. I believe the written specification attached to the SRL order is reasonably clear about these items. The written information, coupled with what Lee Gassel picked up when he was in Dayton, should adequately define what remains to be done. I would like to see us take care of this as promptly as possible, in view of the fact that they only plan to pay approximately one-half of the amount of the invoice we sent them until such time as we have completed all the work. John Stewart was quite impressed with how smoothly the installation went off, and I think we have an opportunity to develop a very good relationship with this customer if we take care of these two open-ended matters. I said that Bob Beckman would telephone Mr. Bishoff on Friday, April 27, indicating when and how we plan to take care of these two areas.

# # #

INTEROFFICE MEMORANDUM

DATE April 23, 1962

SUBJECT Itek

TO Stan Olsen

FROM H. E. Anderson

Norm Taylor telephoned me on April 6, 1962, to indicate that he had gotten internal budget approval at Itek to buy another PDP-1. This is for use in a drafting machine that they plan to build for in-house utilization. The next step would be to get together with Norm and get all the details necessary to prepare a formal quotation. He indicates that they would like to have the Itek special instructions and 8,000 words of memory. I don't know what other things they would want also, but these should be pinned down.

# #

dec INTEROFFICE MEMORANDUM

DATE April 13, 1962

SUBJECT Geotechnical Corporation

TO Stan Olsen

FROM H. E. Anderson

I spoke with Bob McMurray of Geotech on the telephone Tuesday, April 10. He was calling merely to enroll some people in the maintenance class. However, I took this opportunity to see how things were going. He indicated the only problems they seem to be having now are with programming and getting information about subroutines and write-ups. Perhaps we should have John Koudela go down to see him. An appropriate time may be after the two weeks' maintenance course is finished. That would be the week of April 30, I believe. Some of the people in the maintenance course would be interested in this program stuff. Perhaps a trip to SRL could be combined with this, or perhaps he could give some of the information to the maintenance people.

I think we should be reasonably aggressive at making sure the people are satisfied rather than waiting until they come to us. In the case of Geotech, there is always the possibility of another computer for their in-house use.

# # #

INTEROFFICE MEMORANDUM

DATE April 12, 1962

SUBJECT PDP-1 Prospective Customer

TO John Koudela

FROM H. E. Anderson

Bill Nugent at Itek called to say that a man named David Dix at the Geophysics Corporation in Bedford had recently visited Itek and showed quite a bit of interest in the PDP-1.

Would you contact him and be sure he has literature as a minimum. I doubt if this is worth a sales call unless he shows some interest in the machine.

# #

INTEROFFICE MEMORANDUM

DATE April 9, 1962

SUBJECT **Bolt, Beranek and Newman, Inc.**

TO Bob Beckman

FROM H. E. Anderson

I mentioned to Bill Pickett, the purchasing man at BBN, that you would be picking up much of the administrative responsibility for these options and accessories that they want. I also committed you to telephone him on Wednesday to make an appointment to see him. He is going to be out of town Thursday and Friday, so I think some day next week would be appropriate. I am going to attach to this memo a copy of the BBN letter which summarized a number of open-ended items. See me if you have any questions about any of the background on this.

# # #

INTEROFFICE MEMORANDUM

DATE March 21, 1962

SUBJECT Dr. Rossner at Yale

TO Ben Gurley

FROM H. E. Anderson

Dr. Burton Rossner from Yale University will come to see you on Wednesday morning, March 28. He has been interested in PDP-1 for arc type things for a year. He originally hoped to be able to buy a PDP-1, but never got enough financial support to do that. Now he has some money from the National Science Foundation which he would like to use to rent time on our prototype PDP-1. We have told him that the price would be about $50 an hour. He expects to rent about 200 hours of time.

His plan is to make analog recordings of brain waves down at Yale, and then bring his recorder and tapes up here to play it through the computer. The purpose of his trip is to iron out any technical details of how to interconnect his analog signal with the computer.

# # #

INTEROFFICE MEMORANDUM

DATE March 20, 1962

SUBJECT Future ITT Orders

TO Nick Mazzarese

FROM H. E. Anderson

We would like to change the method of handling the quantity discount on future ITT orders. We would like to have them pay full price with a refund of the discount after it has been earned. This will avoid any difficulties of trying to collect it in case they do not earn it. Would you please work this into your new drafts of the purchase order terms. See me if you have any questions.

# # #

INTEROFFICE MEMORANDUM

DATE March 19, 1962

SUBJECT Tape Unit Type 50 for Bolt, Beranek and Newman, Inc.

TO Jim Myers

FROM H. E. Anderson

On Friday, March 16, Bill Pickett of BBN telephoned to say they would like to enter an order for 1 Mag Tape Type 50 to be attached to their PDP-1 in Los Angeles. He will send us a letter so stating early this week. This will be followed by a formal purchase order in about 10 days from General Discount Corporation. He was anxious that we enter the order as soon as possible in order to expedite the delivery. He has been told that delivery will be two months from receipt of order, which means two months from last Friday, March 16. Would you please notify everyone who is involved in the production of this tape unit.

# # #

CC: Jack Brown

INTEROFFICE MEMORANDUM

DATE March 15, 1962

SUBJECT Larry Buckland of Itek

TO Ken Olsen

FROM H. E. Anderson

Larry Buckland telephoned me at home Wednesday evening to ask if he could come out to see you and me regarding his new business undertaking which is confidential at this point. He would like to use the PDP-1 in a manner similar to Fredkin, I believe. The business future of his new company is directly dependent on a PDP-1.

I suggested that he come to see us at 4 p.m. on Friday, March 16. If this time is not convenient for you, he said he would be glad to rearrange his schedule to come whenever it was convenient for us.

# # #

INTEROFFICE MEMORANDUM

DATE March 15, 1962

SUBJECT Bolt, Beranek and Newman

TO Ben Gurley

FROM H. E. Anderson

In a letter dated March 6, 1962, from Bill Pickett, there are a number of open-ended items with BBN that we should take care of. I am sending you a photocopy of this letter so that we can get things under way. I have already sent a letter on the memory protection for time sharing on page 4.

// //

dec INTEROFFICE MEMORANDUM

DATE March 14, 1962

SUBJECT AFCRC

TO Dynamic System Simulator File
Flexible A to D Converter File

FROM H. E. Anderson

Miss Doherty of the Air Base called on Monday, March 12, and indicated that they were planning to extend the delivery date two weeks beyond the 6th of April date that we had requested. She said this was due to a request by the technical personnel at CRC (Charlton Walter) following some meetings with DEC people (presumably Steve Lambert). Her purpose in calling was to ask if this was all right with us, and then they plan to put this in a supplemental agreement to the main contracts.

# #

CC: Steve Lambert

dec INTEROFFICE MEMORANDUM

DATE March 14, 1962

SUBJECT Magnetic Tape Unit Sales

TO Jack Brown

FROM H. E. Anderson

In the last few days, I have been contacted by two DEC customers who would like to have an additional magnetic tape unit for their computers. The first of these is Max Syman at the Jet Propulsion Laboratory, and the second is Bill Fletcher at BBN in Los Angeles. Would you follow through and see if we can make a sale? Roland Boisvert indicated to me that our delivery could very easily be two months or slightly better. Ted Johnson knows about the JPL unit, and I'm not sure if he knows about the BBN unit.

# # #

INTEROFFICE MEMORANDUM

DATE March 12, 1962

SUBJECT Man in Space

TO Bob Hughes/Maynard Sandler FROM H. E. Anderson

Gary Woods of NASA came to visit us Friday and Saturday to investigate possible use of DEC equipment in the Mercury Project. While giving him a plant tour, I picked up a module which was ready to go into the stockroom and was distressed to see a transistor lead which was nowhere near the terminal to which it was supposed to be soldered. The full impact of this became apparent to me when I realized that the life of a man in a space capsule could be dependent on that solder joint. This isolated incident makes me wonder how many of our loyal customers are experiencing problems with our quality.

Closer to home, the business future of DEC is dependent on "solder joints." We are experiencing a tremendous increase in the demand for our products, and it is only natural that these things should tend to happen. If the resulting production increase cannot be accomplished with high quality, we are pursuing a dangerous course. It is our job to insure that this does not happen. If this means slowing down our rate of growth, then we must do it. Please be sure that our inspectors and testers take a personal responsibility for the quality of the things they pass.

# # #

INTEROFFICE MEMORANDUM

DATE March 12, 1962

SUBJECT Pricing

TO Jon Fadiman
Dick Best
Jim Myers
Ed Simeone
Maynard Sandler
Stan Olsen

FROM H. E. Anderson

Leonard Rittner started to work with us today and initially is going to help us document our procedures on pricing. As a first step in this, I have asked him to contact each of you to find out as many details as he can about how you do your part in the pricing work. Please give him any information that you have which is pertinent.

The objective of all of this is to (1) formalize the procedures for pricing, (2) make sure that the assumptions used in pricing are adequately documented, and (3) provide a basis for cost analysis after an item has been sold and produced.

# # #

CC: Len Rittner

dec INTEROFFICE MEMORANDUM

DATE February 21, 1962

SUBJECT Jet Propulsion Laboratory

TO File

FROM Harlan E. Anderson

The following is my interpretation of the many pieces of information that we have picked up relative to the JPL installation. My conclusion is that they will be a very satisfied customer once they start utilizing the machine. I think many of their present difficulties are centered around their inability to use the machine. The reason they are not able to use the machine, in my opinion, is that they do not have enough information about it. In particular, I think the written information should be augmented, but this should also be supplemented with additional verbal explanation. Closer communications by Ted Johnson and Ken Larsen with the people at JPL would help bridge the gap and give them a feeling that we're doing things for them.

As an example of the above, JPL wanted to adapt FRAP for use with punched cards. First, they wanted to get a listing of FRAP, so they could figure out how to do this. This was something we did not have, and therefore, was some time in coming from us. Their adaptation depended on use of mag tape. Their programming people, however, were not very familiar with mag tape. The written information we provided them was a rough draft of the specification for Type 52. Their difficulties in this area were further compounded because a temporary modification for testing purposes had been left in the Type 52 Tape Control. This mod was such that it interfered with the proper operation of FRAP, since it used program flags 4 and 6 which were necessary for FRAP.

With this much confusion going on, it is of the utmost importance that we have daily contact with the customer. The customer must not feel that he is being neglected. In other words, if the customer sees visible evidence that you are working hard to overcome any difficulties or problems of this type, he will be much more understanding and co-operative. We must avoid at all costs giving the impression that we are giving the customer the run-around. I don't believe that we have done this, but we must continually guard against it.

Some specific things that JPL would like taken care of as quickly as possible are the following:

1. A new brake for the paper tape reader. These are on order from Digitronics and Bill Newell is telephoning them today to find out if we can have one sent directly to Los Angeles immediately. They must be available since the new readers are coming through with this new style brake.

2. Spare lamp bulb for the photo reader. This is normally sent, but for some reason never got sent to them.

3. A supply reel for the paper tape punch. We get these when we buy the punches from Teletype, but normally do not send them to the customer, since most customers use fanfold tape. They will also use fanfold tape for almost all applications, but occasionally will want to punch roll tape and would like to have these attachments.

4. Two sets of magnetic tape door latches. We are not sure what is meant here, but Mr. Sparks said that this was something that Bob Oakley had talked over with Jack Brown. We are going to send what we think they meant, and Steve Lambert will verify that this either was the right thing, or will get the right thing.

5. Spare parts list for things other than modules. In particular, spare parts for the reader, punch and typewriter are desired, along with any other unusual spare parts. Nick Mazzarese is going to supply copy of all the spare parts we know about to Steve Lambert to take along today. The Potter Manual has rather extensive lists of spare parts for the mag tape.

6. A new magnetic tape head for one of the units will be taken by Steve Lambert. JPL indicated that there was a worn space in the guide, and that this was exhibiting 3 pounds of drag at a point where there was supposed to be normally 200 grams of drag.

JPL is going to order within the next two or three days $3,700 worth of modules to be used in making an attachment to the PDP-1 for teletype input connections, I believe. We can rebuild a lot of good will with these people if we can do something to expedite this order when it comes in.

Most of the above information was supplied by Mr. Sparks, who apparently is the man in charge of the application of the first PDP-1 at JPL. His extension is 1709. Our main contact on the project prior to this was Tom Miller, whose extension is 1256. The programmer who has been trying to write the punched card version of FRAP is Bill Sholey. The maintenance fellow is Bob Oakley. Bill Hoover essentially represents the management end of this part of the business. He is two levels above Tom Miller in the work.

JPL has had many complaints about the difficulty of loading the magnetic tape units. Most of these complaints are based on inherent characteristics of the Potter units relative to the IBM type magnetic tape unit. Therefore, there is very little we can do about most of them. Jack Brown is investigating the possibility

of using detachable leaders so that you don't have to thread the tape each time. The main point, I believe, is that most of these problems will go away once they start using the system. Right now, I would imagine that they would have to change tapes very frequently, because they're trying out the compatibility between the IBM 1401 and the PDP-1. Another IBM compatibility feature that we should be sure is crystal clear in our write-ups is the load point differences between Potter units and IBM units.

# # #

cc: Ted Johnson/Ben Gurley/Bob Beckman

dec INTEROFFICE MEMORANDUM

DATE February 21, 1962

SUBJECT Jet Propulsion Laboratory Computer

TO Bob Hughes

FROM H. E. Anderson

Ben Gurley called me on the telephone from Los Angeles yesterday and indicated that there were two intermittent shorts in the JPL machine that he found on Monday. These were apparently due to single strands of wire which perhaps had fallen into a place where they could cause shorting. Perhaps this occurred when the wire was cut or stripped. Ben was wondering if we should air blow over the complete computer as a final checkout step. Would you see if this type instruction could be included in your present quality control procedure?

# # #

dec INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT National Equipment Rental Company

TO Reminder File - 3/1/62 FROM H. E. Anderson

I should remember to call Dorothy Rowe at AR&D to verify arrangements for meeting with Mr. Silverman of the National Equipment Rental Company on Wednesday, March 7, at AR&D to discuss some of the aspects of leasing of computers.

# # #

4PM - ARD
on Wed.
H.E.A.

INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Format of Our Financial Statements

TO Dick Mills FROM H. E. Anderson

At the last Directors' Meeting, there were a number of questions regarding our financial statement which I was unable to answer. One of these was, "What was the PDP field service item for the month of December?" In particular, what caused the significant increase in the amount of this item?

Also, what is meant by the item called "Transfers to Consignments?" I believe this item was on the engineering page. In general, I could not explain or coordinate all the different consignment items shown on the statement.

The cost center called "Modules" is a gross misnomer and should be clarified. Until we get all our new cost centers operating, perhaps we should just call it "Production", which is what I believe it is.

The other cost center which is equally poorly named is "Computers and Systems", which is really engineering. The grouping of company sponsored engineering projects is badly in need of attention.

Will the January statement include Advertising as a separate cost center? In general, I think we should try to visualize what form of financial statement we will be heading for with our new cost center operations.

# # #

INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT New Quotation for Reader, Punch and Typewriter Stations

TO Geotechnical File FROM H. E. Anderson

Apparently Geotechnical Corporation have sent a telegram requesting us to prepare a quotation on what they called spare reader, punch and typewriter. Bob McMurray explained to me on the telephone that this was probably a misnomer, since they really meant that each one of these would be connected on line to the computer and would be in addition to the normal reader, punch and typewriter. When this formal request comes in, we should be sure to look into it promptly and interpret it as I have just explained. Also, there may be a cable length problem, since, I think, one of these configurations is intended to be at a slightly remote location.

# # #

dec INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Computer Delivery Dates

TO Stan Olsen

FROM H. E. Anderson

Would you make sure that all computer customers have been officially notified of any changes in their delivery dates before February 14. I think by that time we should have firm schedules established for all customers. One I'm thinking about in particular is Systems Research Laboratories in Dayton, Ohio. You should probably make an orderly check of all customers, though, just to be sure.

# # #

INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Foxboro-Nabisco

TO File

FROM H. E. Anderson

The names of the two men who visited us recently from Nabisco are Mr. Kune and Mr. Hagedorn.

# # #

dec INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Delivery of Air Force Computers

TO File

FROM H. E. Anderson

On Wednesday, February 7, Arthur Hall and I visited Charlton Walter at Cambridge Research Center to try and work out a schedule for delivery of the two PDP-1 computers covered by Contract No. AF19(604)-8067 and the analog attachments covered by Contract No. AF19(604)-8815. We came up with a plan which involves three phases of delivery, all aimed for completion by April 2 with installation complete at Bedford by April 6. The three phases are roughly as follows:

Phase 1: First basic machine with a 16-channel sequence break system, high speed multiply and divide, Type 51 tape control, two Type 50 tape units, and the Type 15 memory switching.

Phase 2: All analog equipment as described in Contract No. AF19(604)-8815. The Type 50 tape unit included in that contract would be the only thing not included in Phase 2.

Phase 3: Second basic machine with all other options including the color display, precision display, Type 52 tape control, two Type 50 tape units, and the extra memory module, and anything else that's left.

The intent here was to make Phase 1 the minimal thing with which he could start doing useful things, and to rush it to completion at the earliest possible moment, hopefully the first or second week in March. This Phase 1 equipment should be done in such a way that we have little or no field retrofitting of anything after delivery.

# # #

CC: Arthur Hall
Ben Gurley
Gordon Bell
Jack Smith

INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Institute for Defense Analyses

TO File

FROM H. E. Anderson

Mr. Al Fullerton of the Institute for Defense Analyses visited us approximately the 19th of January to investigate the possibility of buying a PDP-1 computer for their Cambridge facility. We should follow this up by contacting him about the 15th of February.

/ / /

CC: Stan Olsen
Reminder File 2/15

INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Itek Punch

TO Al Blumenthal

FROM H. E. Anderson

When talking with Larry Buckland recently, he mentioned that he understood that the new punch for Itek was about ready to be installed. He indicated that they are apparently starting to have trouble with the old Tally punch once again and are very anxious to get the new punch, particularly if it's ready.

# # #

dec INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Visitors from Lehman Brothers

TO Ken Olsen

FROM H. E. Anderson

On Monday, February 12, at 10 a.m., three visitors from Lehman Brothers in New York will come to see us. They are Bob McCabe, Dennis Stanfield (who, I believe, was here to see you once before), and John Lehman, who is the son of Herbert Lehman, apparently one of the partners. It would be nice if you could join them for coffee or lunch on Monday.

# # #

dec INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Plans for Handling Large ITT Orders Presently Under Discussion

TO ITT General File FROM H. E. Anderson

At the February Board of Directors Meeting, Forrester suggested that we consider a plan which might have two parts for handling ITT business. The first part could be identical to the present format of purchase order being used. It might be limited to approximately 12 machines as before. The second part would be intended to be an ordering procedure for those machines that ITT felt were firm enough that they would be willing to make a firm order out of it. It might be for one machine every three months, and could be continually renewed as time went along. What this would mean is that every three months a new computer would be ordered unless they chose to terminate the arrangement. This would mean that all computers ordered under this plan for the next 18 months would be firm, and that if any were cancelled, there would be a substantial cancellation charge involved. It is even conceivable that the discount for an evenly planned production schedule could be slightly greater. We should discuss this possibility without actually mentioning the possibility of an increased discount with Bob Hughes next Tuesday to see how he likes the idea.

# # #

dec INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Jet Propulsion Laboratory Computer

TO Jack Smith

FROM H. E. Anderson

Steve Lambert found that the computer we recently sent out to Jet Propulsion Lab had many screws come loose during shipping. I believe most of these were the ones that hold the mounting panels in place, but you should be sure to check up with Steve when he returns on Monday, February 12.

# # #

dec INTEROFFICE MEMORANDUM

DATE February 8, 1962

SUBJECT Jet Propulsion Laboratory Computer

TO Bob Hughes FROM H. E. Anderson

On the recent computer that we shipped out to Jet Propulsion Lab, Steve Lambert discovered a cold solder joint on one of the modules. He will probably give you the details on this, but I wanted to make sure you knew about it, so you could follow up by checking with him if he doesn't remember to tell you about it.

# # #

INTEROFFICE MEMORANDUM

DATE February 7, 1962

SUBJECT United Aircraft

TO John Koudela

FROM H. E. Anderson

The man from United Aircraft called today and had a number of things that he wanted to talk about. He would like to set up a meeting with us and the United Aircraft legal people to wrap up this contract. He had at least two specific things that he wanted to know. First, our quotation says that our warranty on the Packard Bell converter is limited to the warranty provided by Packard Bell. We should find out from Packard Bell what this is and quote this in a letter to United Aircraft. Second, in your letter of January 26, you gave a price for the Packard Bell, and they wanted to know what is included in this price. I told him I thought that the price included the cost of connecting the unit to the PDP-1 and also a mark-up on the Packard Bell unit.

He had several technical details that he wanted to clarify also:

1. They will provide the 100 volt reference supply for the analog to digital equipment. They will take this off some of their present analog equipment somewhere.

2. They want to have 128 volts full scale.

3. They would like to know how much rack space will be available in the PDP-1 cabinet for them to locate things of their own, and also how much power supply capacity will be available that they could count on using for logical things. All they wanted was an estimate on these capacity questions.

I told him that you would call him back today to set up a meeting time to answer all these questions. They offered to come here, and my idea would be to have the meeting early next week. We should have the meeting as soon as we are prepared to answer all the questions that they have asked.

# # #

dec INTEROFFICE MEMORANDUM

DATE February 7, 1962

SUBJECT Woods Hole Oceanographic Institution

TO File

FROM H. E. Anderson

The name of the man who visited Ken Olsen and myself today regarding the computer for the Woods Hole Oceanographic Institution is Henry Stommel, who apparently has his office at Pierce Hall at Harvard. He was accompanied by Dr. Veronis, who had telephoned Ken previously. They anticipate making some sort of a decision within the next three months.

# # #

dec INTEROFFICE MEMORANDUM

DATE February 6, 1962

SUBJECT Ess Gee, Inc.

TO John Koudela

FROM H. E. Anderson

Mr. Schechtman of Ess Gee, Inc., called today to find out if we were able to do the lease buy-back arrangement, and I told him no. He also asked for information about the quotation you had apparently promised him regarding an IBM tape station connection to the PDP-1. I told him I didn't know anything about this, but I would bring it to your attention.

# # #

INTEROFFICE MEMORANDUM

DATE January 26, 1962

SUBJECT ITT

TO Ken Olsen

FROM H. E. Anderson

Bob Hughes telephoned this morning regarding our meeting in New York on Tuesday. One item that he would like to have some preliminary discussion on is the quantity of units to be included in the next purchase order. They anticipate placing this order in about two months from now and would like to have us consider quantities as high as 48 machines for the next 18-month period. I said I would discuss this with you before going to New York on Tuesday morning.

My first thoughts are the number is too large to fit into the existing purchase order format where they can cancel virtually all of the computers at no penalty. As a minimum, some part of that quantity would probably have to be firm. Otherwise we would have to expand anticipating the full quantity, and yet they might cancel almost all of them.

Another consideration is that such a large order would make us more dependent on ITT than ever before. If our normal computer business is going to expand a similar amount during the time period, perhaps it is not too bad from a balance standpoint. Of course, if our normal business expanded that much and ITT expanded that much, the volume would be overwhelming.

Later today or Monday I would like to talk to you more about this, so we have some sort of a party line ready for the meeting on Tuesday.

# # #

INTEROFFICE MEMORANDUM

DATE January 23, 1962

SUBJECT Observations on Engineering Scheduling

TO Ben Gurley FROM H. E. Anderson

Following our discussion on schedules this morning, I have tried to make my comments more specific. I think they can be summarized in several major categories.

1. The engineering schedule should emphasize those engineering tasks that need to be done. For example, drafting time, circuit design, logic design, mechanical design, checkout, etc.

2. There should be a strong emphasis placed on obtaining commitments from those people who are to do the work that they can meet the schedule dates. Perhaps a more widespread use of the internal purchase order form with acknowledgment copies would help on this.

3. The scheduling of a computer should be done immediately after the order is received. There is little that can be done to improve final delivery dates on computers where a large portion of the schedule has already gone by.

4. We must make a constant effort to divide big jobs into many small jobs for which individual responsibility can be assigned.

My criticism of the engineering scheduling effort is that it is no different from what we had been doing previously, and it is redundant on the schedule boards maintained by Jack Smith. The engineering schedule really is just a scheduling of production rather than a scheduling of engineering work to be done.

This matter of responsibility must be taken very seriously and it must be crystal clear to a supervisor or worker what responsibility he already has. Then when he is asked to do a high priority crash schedule item, he can determine how it affects work already in process. In the past, little or no regard has been made of this fact, and as a result, no one knew what was being held up when a crash program was undertaken.

Emphasis must be placed on disseminating the information to the proper people. Adequate attention must be given to the details that have traditionally caused us difficulties, i.e., mechanical hardware items, etc.

# # #

dec INTEROFFICE MEMORANDUM

DATE January 22, 1962

SUBJECT Supplies Purchased from BBN

TO Ed Fredkin

FROM H. E. Anderson

Please issue an invoice for the supplies mentioned in your memorandum of January 10. Upon receipt of the invoice, we will reimburse you for these supplies. Let me know if I have misunderstood what you want us to do.

# # #

dec INTEROFFICE MEMORANDUM

DATE January 22, 1962

SUBJECT Huntsville Computation Center Personnel

TO Beckman File FROM H. E. Anderson

Bob Beckman has arranged for two people from Huntsville, who are the ultimate customer for the machines being delivered to Beckman, to visit DEC on Wednesday, January 24, through the end of the week. Their names are E. C. Mitchell and J. A. Pagax.

In addition to these two people, I have the name of one other person whom I met at the EJCC in Washington. His name is William Spralin, and he is also with NASA. These people are potential customers for two more PDP-1's, probably from Beckman.

# # #

INTEROFFICE MEMORANDUM

DATE January 22, 1962

SUBJECT Information International, Inc.

TO File

FROM H. E. Anderson

Last week, Ed Fredkin outlined his proposed plan for setting up a new company called Information International, Inc. He plans to do this soon and in rented space, probably sublet from Electronautics in Building #11 here in Maynard. He hopes to be an applied science or service bureau type of operation for PDP-1 customers. He would like to have a computer in his facility and has suggested a plan which we have agreed to go along with.

The features are:

1. Our prototype would be moved to his location.

2. He would pay us for the hours he uses it at a rate of $24 per hour for prime time (9 - 5) and $8 per hour for all other time.

3. DEC can use the machine at no charge up to half of the time available. I believe this is broken down to be 3 or 4 hours of prime time and the rest of the time on second shift.

4. This agreement would be continued on an informal basis and could be terminated or adjusted or expanded as we go along.

5. Fredkin will provide insurance for the equipment.

6. Fredkin will perform the maintenance of the equipment.

7. The Ampex tape unit will go along with the equipment.

8. We will probably buy Fredkin's services as a consultant instead of actually taking the cash payment for computer rental.

If he uses the computer to do consulting work for us, he need not pay for the computer time so used. Any time that he uses the computer, he will either pay for it or be authorized on a job-by-job basis to be using it on our behalf. He would not pay for time used for maintenance work.

Fredkin also agreed to lay out his space in such a way that it would be convenient to provide 24-hour a day access to the computer without leading the people into the rest of his space.

The old Itek cathode ray tube will be installed on the PDP-1 also. We said we would be willing to have the computer moved any time after February 1.

# # #

dec INTEROFFICE MEMORANDUM

DATE January 12, 1962

SUBJECT Shipping Arrangements for Jet Propulsion Laboratory Computer

TO Ed Harwood/Jim Myers FROM H. E. Anderson

Tom Miller, our primary contact at Jet Propulsion Laboratory, called yesterday, January 11, to inquire what the shipping date will be for their machine. I referred this question to Ben Gurley, who will call Miller directly today to answer it. Miller indicated they would like to have the machine shipped air freight.

I also promised Miller that we would send him a copy of the programs we plan to run in order to demonstrate acceptance of the machine. These all appear to be well documented except the Magnetic Tape Test, Random Multiply and Divide and Typewriter Test. I will send these out today.

# # #

cc: Ken Larsen/Ben Gurley

INTEROFFICE MEMORANDUM

DATE January 9, 1962

SUBJECT Adams Training Program

TO Ben Gurley/Ken Olsen

FROM H. E. Anderson

I just received a telephone call from Dan Kelley at Adams Associates who tells me that their next training program is going to begin on Monday, January 15. This is the one for which we said we would not have a computer available, but we could help them by letting them use a computer here at the plant. Their present plans, which I said were satisfactory, required the use of the computer from 8:30 a.m. until 12 noon on Thursday, January 18. On the previous day, the students will have been taught the FRAP system at Adams' office. They also will each have written a simple program in FRAP, which the instructor will probably bring to our factory on Wednesday evening, January 17, to do any preliminary debugging or fix-up of errors in typing. Kelley will call us a day or two before they are actually going to come out to remind us of the arrangements and to verify them.

# # #

dec INTEROFFICE MEMORANDUM

DATE January 2, 1962

SUBJECT United Aircraft

TO John Koudela

FROM H. E. Anderson

Ronald Goch of United Aircraft telephoned this morning and said he would like to come here on Thursday, January 4, to try out some very simple programs on the computer. He is an analog person primarily and his program is exceedingly simple of the order of 10 to 20 instructions. He's doing it primarily to verify that he's been understanding the PDP-1 Manual correctly. He will arrive at about 10 a.m. I would suggest that you maybe sign up for computer time an hour later assuming that his program will have to be punched and perhaps converted to FRAP or some other language.

# # #

STORAGE IDENTIFICATION INDEX

EN-01030-13-N177-(64F)

DEPARTMENT	EXT.	ORIGINATOR	EXT.	C.C.
Ken Olsen's Office		Peggy Dunn	2303	644

SUBMISSION DATE	RETENTION DATE	LOCATION/ MAIL STOP
May, 1977	77/99	ML12-1/A50

DESCRIPTION OF CONTENTS

DEC FORM NO.	DESCRIPTION	PERIOD	USER CTL NO.
	Memos & Correspondence of	1959 - 1965	
	Harlan E. Anderson		
	Minutes/Small Computer	Dec. 1964-Dec. 1965	
	Committee		

FOR RECORDS ADMINISTRATION USE ONLY

APPROVED FOR STORAGE BY	DATE	TYPE OF MEDIA
Allan Vasatka	6/9/77	SD

STORAGE LOCATION

2764 PK 3K1

WHITE- CUSTOMER YELLOW- RECORDS CARD- FILE

INTEROFFICE MEMORANDUM

DATE December 26, 1963

SUBJECT Hanover Fair

TO Jon Fadiman

FROM Harlan Anderson

Today I was speaking with Jerry Kennedy who is in charge of the International Sales Work for Applied Dynamics. He just returned from a trip to Europe and was mentioning that he plans to exhibit at the Hanover Fair. He pointed out that this year they are going to have two locations which he referred to as downtown and at the airport. Apparently, downtown is completely filled up but there still is space at the airport which is where he plans to be.

He mentioned to me that they have a Sales Representative working for them in Germany. They are proposing in Europe Hybrid PDP-5 and Applied Dynamics Type 256 computer systems. It seems desirable that our German sales office get in touch with Applied Dynamics representative who is Telco, Eichorndchen Strasse 26, Baldham Bei Munchen, West Germany. The man who is President of the company is Hans Pospiech. This information has been sent to Ted Johnson and Guenter Huewe so if you want them to do anything on your behalf they will already know about these people. Jack Ridgeway has been doing the applications programming in support of Applied Dynamics at this end.

Andy

HEA:ncs

digital MEMO

DATE Dec. 26, 1963

TO Ted Johnson or Guenter Huewe FROM Harlan Anderson

The representatives in Germany for the Applied Dynamics, Inc., 2275 Platt Road Ann Arbor, Michigan is:

Mr. Hans Pospiech, President
Telco
Eichomdchen Strasse 26
Baldham Bei Munchen
West Germany

Andy.

12/26/63

Nancy

(1) Please send 12 copies of F-55 and the new address of our Munich office to

Jerome Kennedy, Pres
Applied Dynamics International
—,
Ann Arbor, Mich

Fill in from previous correspondence

(2) Also send to Ted Guenter the Applied Dynamics (name of the) rep in Germany.

Mr. Hans Pospiech, Pres.
Telco
Eichorndchen Strasse 26
Baldham Bei München
West Germany

Andy

INTEROFFICE MEMORANDUM

DATE December 17, 1963

SUBJECT Display Sales Plan

TO Stan Olsen
Nick Mazzarese

FROM Harlan Anderson

cc: Bob Savell and Win Hindle

At the Works Committee meeting of December 10th, Bob Savell made some observations about the display results to date. He is instituting some cost reduction plans in the development area and is interested in spurring the sales of displays. It was agreed that a display sales plan similar to the general sales plan, but less detailed of course, would be developed and a first draft presented to the Works Committee on December 24th. Would you get in touch with Bob Savell for the purpose of working this out.

Harlan E. Anderson

HEA;ncs

INTEROFFICE MEMORANDUM

DATE December 17, 1963

SUBJECT Computer Reliability Reporting

TO Bob Beckman

FROM Harlan Anderson

cc: Jim Hastings

I understand you have been working on a system for reporting computer operations. Since I have seen no output data from this I am concerned with the possibility that the system is too elaborate to produce data quickly and to have it distributed widely. It is not obvious to me that a computer is required to report simple things like mean time between failures or percentage of assigned time which was useable.

As a pilot study perhaps the PDP-4 prototype could be used and the results reported weekly to the Computer Guidance Committee. Could you arrange this so that we have the first report within the next three weeks.

Harlan Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE December 17, 1963

SUBJECT Display Programming

TO Stan Olsen
cc: Bill Long

FROM Harlan Anderson

Jack Gilmore of Adams Associates telephoned me several weeks ago and was mentioning that the programs that they developed for the Digigraphic System could be made available if we were interested in them. He pointed out that as part of Itek selling the drafting activity to Control Data Corporation, Adams was given free usage of the programs thus far developed. These programs are, in Jack's opinion, 95 percent independent of the display system which is used. He pointed out that it normally took approximately 20,000 words to store a rather complex drawing in the Digigraphic System. He also pointed out that they could draw from 1500 to 2000 linear inches flicker free. I told him I doubted very much if we would be interested at all but that I would call this to the attention of other people at Digital.

Harlan Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE December 17, 1963

SUBJECT Telephone Call by W. E. Crosby

TO File

FROM Harlan Anderson

Mr. W. E. Crosby of Boston telephoned me on Friday, December 13th. He is an independent deal broker, which means that he helps to arrange mergers and acquisitions. He was formerly with the Kidder-Peabody Company and for the last ten years has been on his own. Henry Adams, who apparently is the key man at Control Equipment Corporation in Needham, suggested that he contact us because we might be interested in mergers or acquisitions. I explained to him that we were not a likely customer for his services at all. He mentioned that he was coming to Maynard that afternoon to visit Bonny Manufacturing Company. Apparently, Bonny's patents have expired and they are probably going to be involved in some kind of a merger or acquisition. Crosby apparently played some sort of a key role in helping Itek do some of its merging in its early history.

In his effort to find out a little about Digital he contacted a man named Phil Wilson, who is described as a leading attorney in Maynard. Mr. Wilson said he had never heard of Digital which I find confusing.

H. Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE December 12, 1963

SUBJECT Visit by Management Representatives of Elliott-Automation Limited

TO File

FROM Harlan Anderson

Several weeks ago a man named Mr. Clark who is an employee of Elliott-Automation Limited visited the KIE Corporation and was fascinated by the multiple input teletype equipment. He then returned to England and reported what he had seen in such a way that Sir Leon Bagrit who is Chairman of the Board of Elliott-Automation Limited and Dr. L. L. Ross who is Director of Elliott-Automation Limited decided to visit the Boston area. All contact for this visit was through Charlie Adams of Adams Associates. The purpose of the visit was stated in a vague general way that they merely wanted to get acquainted with us. They did come on Monday, December 9, 1963 and spent the early part of the morning at KIE Corporation and then came to the factory for a tour and lunch. Jack Gilmore of Adams was also with them.

They seem like very nice people and it was a very cordial visit with a reciprocal invitation to visit them when in England. I think it would be desirable for us to visit them in connection with some future trip. They mentioned that Elliott has 26,000 employees throughout the world and it has something like 20 or more factories in England alone. Their address is Elliott-Automation Limited, 34 Portland Place, London W 1 England. Their telephone number is Langham 9271/8. They were lamenting the availability of components such as transistors and diodes in England. They pointed out that they were limited to buying only standard items since there are strong monopolistic controls. They indicated that they have sold approximately 60 of the Elliott 803 Computers. They inquired if we have any operation or offices in England and I told them no but we anticipate we might someday. They have no operation in the United States but occasionally sell things here. They have a number of operations on the continent and are quite active in Australia and other commonwealth nations. I don't believe they have anything in Canada however. I do not see any likely relationship developing in the future but exposure to more and more people of this kind is desirable and educational.

H. Anderson

HEA:ncs
cc: J. Fadiman

dec INTEROFFICE MEMORANDUM

DATE December 12, 1963

SUBJECT PDP-1 at Project MAC

TO Bob Beckman

FROM Harlan E. Anderson

While having lunch with Marvin Minsky yesterday, I heard him say there was a problem with the Start-and-Stop switch on the PDP-1 that they have. Alan Kotok was there and seemed to know about the problem and said it had been fixed on the other machines. It seems that unless you push Stop before you push Start, you clobber the program. Would you look into this and let me know what happens.

H. Anderson

HEA:ncs

dec MEMO

DATE December 2, 1963

TO Ken Larsen

FROM Harlan Anderson

Ken Larsen,

Ed LaFranci of LRL told me during the Las Vegas Show that they had a defected memory stack. I told him to return it to us but as of yet nothing has shown up. Would you get in touch with him and see what we can do.

Harlan Anderson

Sent 12/2/63

DIGITAL EQPA

DIGITAL MAYNAD

MSG NO. M-696

TO KEN LARSEN

FROM HARLAN ANDERSON

ED LAFRANCI OF LRL TOLD ME DURING THE LAS VEGAS SHUXXXX SHOW THAT THEY ~~AD~~ HAD A DEFECTED MEMORY STACK . I TOLD HIM TO RETURN IT TO US , BUT WAS OF YET NOTHING HAS SHOWN UP. WOULD YOU GET IN TOUCH WITH HIM AND SEE WHAT WE CAN DO.

E ND OR GA PLS

.8 7/8 MIN PLS

OK

REPLY TO HARLAN ANDERSON MSG NO. M-5 YO 696

MR. LARSEN HAS CHECKED ON THIS MEMORY STACK AND LEARNED THAT IT WAS CAUSED BY A BAD SOLDER JOINT ON THE READ-WRITE BUSS. THE JARRING OF THE MACHINE DURING TH E CHANGING OF THE STACKS MUST HAVE CAUSED THE COINCIDENCE THAT GLEN STRAHL DESCRIBED WHEN WE TALKED IN LAS VEGAS

BETTY SWEDENBORG FOR KEN LARSEN

END OR GA PLS

INTEROFFICE MEMORANDUM

DATE November 19, 1963

SUBJECT Teletype Corporation

TO Jack Atwood

FROM Harlan E. Anderson

While in Las Vegas I talked with a Mr. Ralph A. Larsson of the Teletype Corporation in Skokie, Illinois. He was photographing our equipment to show how teletype units were used. I asked him about their advertising program where they have frequently shown pictures of computer equipment which use teletype units. He said he had no personal knowledge of what their future plans were in this area but said the man to contact if we were interested in taking part would be Mr. Frank Rinkor, Advertising Department. Teletype Corporation, 5555 Touhy Avenue, Skokie, Illinois. His telephone number is Cornelia 7-6700. If you are ever interested in this you might want to contact this man.

H. Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE November 6, 1963

SUBJECT P&L Statement for Foreign Subsidiaries

TO George O'Dea
Dick Mills

FROM Harlan Anderson

The Board of Directors asked if we could have available for our next meeting up-to-date financial statements for DECAN and DEGmbH.

Harlan Anderson

HEA:ncs
cc: Reminder File
Dec. 1, 1963

INTEROFFICE MEMORANDUM

DATE November 6, 1963

SUBJECT Scandinavian Sales Representative

TO Stan Olsen
Jon Fadiman
Ted Johnson

FROM Harlan E. Anderson

I was contacted by telephone today by Mr. Ivar Petersen of Washington, D.C., who was acting on behalf of a Swedish Sales Representative Company named Falen and Wicander in Stockholm. The President of this company is Joran Axell. Mr. Petersen operates a company called Petersen Technical Service at 515 Lane Building, Washington 6, D. C., telephone number 333-7734, area code 202. He sells Swedish made products in this country and is a personal acquaintance of Mr. Axell.

Falen and Wicander sell many different types of products in Scandinavia, including Bertol Aircraft Company who are a subsidiary of Boeing and make helicopters. They have approximately 35 to 40 sales engineers, some of whom specialize in electronic products. They now represent Sierra Research and Conductron of Ann Arbor. They are most anxious to be our representative in Scandinavia. Mr. Petersen was very nice and spoke very highly of the group. I told him that we do not have sales representatives working on our behalf in most areas. However, I would bring this group to the attention of the appropriate people.

I mentioned that we would have an exhibit at Mesucora in Paris and he plans to communicate that to the people in Stockholm who undoubtedly will have a representative look up Ted Johnson. They feel the key customer in Sweden is Saab who is doing a major military job of some kind.

H. Anderson

HEAncs

INTEROFFICE MEMORANDUM

DATE November 5, 1963

SUBJECT Norwegian Contact

TO File ✓
cc: Stan Olsen
Reminder File - November 18

FROM H. E. Anderson

While at MIT Project MAC yesterday, I met a Norwegian Engineer whose name is Lars Monrad-Krohn, from the Norwegian Defense Research Establishment in Kjeller, Norway (10 miles outside of Oslo). He is visiting at MIT for one year, which will be up during the month of December. He has not been going to school but has been learning about the different computer oriented things at MIT. He has spent some time with the PDP-1 at the Lab for Nuclear Science. He is an electrical engineer and has most recently been involved in programming. His location at MIT is Room 813, Technology Square, Project MAC. His telephone extension is 5873.

He was very interested in our European operation and was basically encouraging us to do more in Europe. I think there is a slight possibility he was even hinting about a job but even if he was not, I think he would be willing to try and help us locate people to work for us in Scandinavia if we wanted him to. In any event, I have asked him to come out and visit us and will call him during the week of November 18th to firm up a date. He has a colleague who also spent some time at MIT but returned to Norway earlier. This friend is building a computer at the Norwegian Defense Research Establishment with a very fast memory and Lars will probably program this when he gets back to Norway. I am sure we could get the name of that man from Lars if we wanted to contact him. He would be most receptive to a visit from someone at DEC and I think would be willing and interested in suggesting things for us to do in Scandinavia. This same laboratory is scheduled to get a CDC-3600 a little later.

He was indicating to me what the usage of the scope on the 6600 is. It is going to be used as an operator communication device instead of the typewriter. For example, when a monitoring program is running in the computer, instructions to the operator to load tapes, etc., will be flashed on the screen since it is much faster than typing things out. This is an idea that we could easily implement on our own scope and would be a good idea for Las Vegas.

HEA:jb

11 pm. Tuesday

RCANY OK COLLCT

0741 25 OCT

THIS IS 617 897-7976

WOULD LIKE TO CALL MUNICH GERMANY 841-5-24226

GA PLS

MOM

RCA NY TELEX POSN72/1 MOM PLS

DIGITAL MCHN

DIGITAL MAYNAD

MSG NO. M-541

TO LISA

FROM NANCY SURVILAS

IF SO ... PLEASE SEND FOLLOWING MESSAGE TO HIM

PLEASE CONTACT A MR. DON HUNTER AT THE COMPUTER ANALYSTS AND PROGRAMMERS, LTD. 11 GROCERS HALL COURT POULTRY LOND EC2 TEL. NO. MONARCH 2717, REGARDING HIS BEING A POTENTIAL EMPLOYEE FOR DEC IN THE UNITED KINGDOM.

HARLAN ANDERSON

PLS WHAT DO YOU MEAN IN THE BEGINNING ....IF SO QUERY

IS THIS FIRST MESSAGE FO R TED JOHNSON WHO IS IN LONDON
AND WILL BE BACK TONIGHT QUERY

63 YES I GUESS IT IS FOR TED
BUT IF IT SXX IS NOT I WILL LET KXXX YOU KNOW LATER
GA PLS

OK WILL GIVE THIS MESSAGE TO TEDS HOME ALREADY

OR/AND WILL TRY TO GIVE IT TO HIM BEFORE THAT WHILE STILLA
IN LONDON

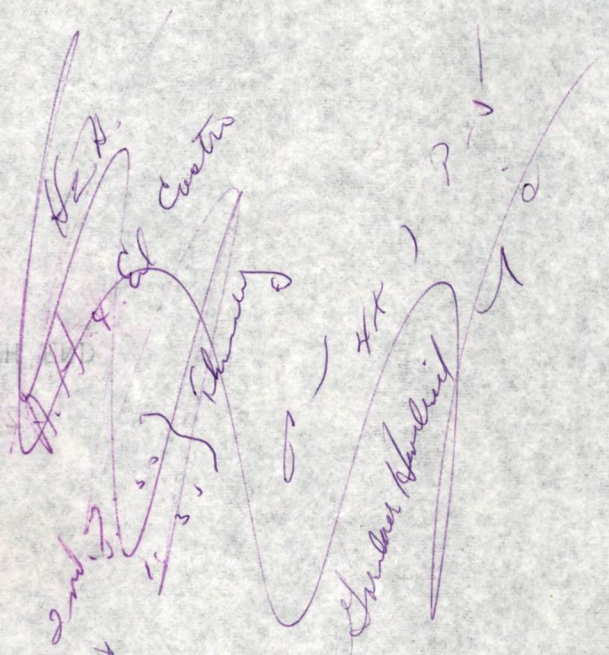
END OR GAPLSE

KZ

OK TU VERY MUCH END
DIGITAL MAYNAD

END LISA

DIGITAL MCHN



HEA file

INTEROFFICE MEMORANDUM

DATE October 16, 1963

SUBJECT Manufacturing in the Netherlands

TO File

FROM Harlan Anderson

This memorandum is based on some pencil notes taken during a trip to the Netherlands two years ago. At that time I visited the Netherlands Industrial Institute and the Foxboro subsidiary. Foxboro's European operation was solely for manufacturing. They have sold for many years in Europe through Sales Agencies exclusively. They started their manufacturing operation in August of 1959 and in August of 1961 it had 102 employees. One of the tricks in having a successful manufacturing operation is dependent on hiring people. Upper limits of manufacturing wages are established by collective labor agreements between the government and representatives of industry and labor. These would be different for different types of labor. The trick is to make sure that you are classified in the category which permits you to pay the highest wages. If you are not, it will not be possible to attract people to work for you.

Location of a plant is important also since the government of either the city or the nation controls erecting of new housing. If you locate in an area that the government doesn't want you in you may find that there is no housing available for your employees. Foxboro's operation was started with two American employees.

I also visited the U.S. Embassy at the Hague. They recommended the Netherlands Industrial Institute as being not only helpful but also fair in their advice. He recommended that one discuss the tax treatment of things made in the Netherlands and sold outside of the country. I believe he inferred that you could make special deals ahead of time if you brought it up properly. The Embassy also recommended that one use a Dutch lawyer in incorporating and negotiating initial business type things.

They also pointed out that construction of new buildings is very slow due to lack of capacity in the construction industry. Rentals of small amounts of space are possible however. If you build a new building in the Northern part of the Netherlands, you frequently will get considerable financial assistance from the government. The center of research and engineering type things is the Delft area where the Technological Institute is. They have a nuclear reactor there and lots of government research.

With Foxboro's 102 employees, there was only 18 cars in the parking lot but many many bicycles. This means, of course, that you would attract your employees from a more restricted area than we normally think of.

Harlan Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE October 15, 1963

SUBJECT Applied Dynamics

TO Stan Olsen
Nick Mazzarese

FROM Harlan Anderson

Today Gene Grayber of Applied Dynamics called and indicated that they are interested in hybrid systems which would use the PDP-5. This was a result of George Rice's visit there last week. They had one specific bid that they want to make and they have two more possible ones. He estimates they would be able to sell five PDP-5's in the next year. These would connect with their new 256 amplifier analog computer. They have some digital logic now in their computer which does switching type functions and they would have possibly 50 input signals to the PDP-5 from their logic. In addition, they would probably have need for 150 outputs from the PDP-5. They would also need one channel of analog to digital and one channel of digital to analog suitable for .01% accuracy. They plan to look into Adage further for meeting this requirement.

I think we have a golden opportunity once again with Applied Dynamics, but to be successful with them it will take some initial investment of our time. In my opinion they would need help in two ways. The first of these is in the interface between the computer and their equipment. They seem to have done a lot toward making this a clean cut interface but they still will need help from us. The second area which I believe is even more important is programming application help. They are asking such questions as - can an analog function be converted to digital numbers and stored in the PDP-5 and reproduced at a later interval of time? Also, they have asked - how hard it would be to set potentiometers in their analog equipment automatically with the PDP-5 using punch paper tape. Incidentally, they do not plan to use the PDP-5 as a computing element but instead as a housekeeping-type computer for initializing the analog computer and logical control.

I suggest that we have Jack Ridgeway and George Rice or Ed de Castro or Jim Burley meet with them real soon. I have indicated that we would let them know on Wednesday who would come to see them and at what time.

Harlan Anderson

HEA:ncs

October 11, 1963

KIE Corporation

Nick Mazzarese

Harlan Anderson

I understand that we nodified a teletype punch to do some kind of special five-hole punch for Adams. I believe we did this at no cost as a personal favor from Bill Newell to Al Rousseau. Adams now feels that they would like to buy the punch and somehow feel that now that it is cannibalized and nodified, it isn't as valuable to us and, therefore, they should buy it at less than the normal price.

Would you check into these facts to make sure that I understand them correctly? If this situation is as I see it, then I do not believe we should sell it to them at a lower than normal price. Bill Newell is probably the best source of information on this. The punch is in our possession and the original job for which they used it is now completed but they think it would be a handy thing for them to have around.

HEA:jb

NKR

October 11, 1963

Foxboro Meeting

Nick Mazzarese

Harlan Anderson

On Wednesday, Ken Olsen and I met with Dick Sonnenfeldt and Roy Fine of Foxboro to review their progress in the process control industry. Although their sales have not been completely satisfactory, I am quite confident in their long-range ability and chances for success. There are several specific things that were discussed and I would like to pass on the details to you.

The first of these is parity. They are running into the competitive argument that ends up with the customer asking the question, "Do you know of any other computer than yours which doesn't have parity in a process control application?" If one were not on the defensive at this stage, he could retaliate with, Do you know any computer which doesn't need parity other than ours? However, I have asked Arthur Hall to investigate ways of lowering the price of the parity option on the PDP-4 so that this argument need not be a factor.

The second area of the PDP-4 that they would like assistance on is the priority interrupt. Saul Dinman of Foxboro and George Rice have worked out a tentative way of adding priority interrupt without much difficulty. Foxboro would like to have us incorporate this with the PDP-4 and if we do not, they will add this modification on the machines after they buy them from us. I believe that this is a general requirement for our other customers, for example, KIE Corporation; and, therefore, feel quite strongly that we should add it as a standard feature of the machine if it indeed is as simple as I am led to believe.

The third area requires no action on our part but was really in the nature of a comment. They feel that the extended arithmetic unit for the PDP-4 is vitally necessary in order to be competitive with the SDS 910.

It was interesting to note that the question of silicon circuits was not listed as an area of concern to Foxboro. Their reasoning went as follows:

> The over-all temperature at which the complete system will perform is the only thing of importance and on this, DEC and SDS are essentially the same.

Foxboro is very interested in buying a PDP-5 but they feel the need for two additional things which we have been looking into for some time. The first of these is a drum or some auxiliary memory device having at least 8,000 words. I feel that if it is economically possible, a very desirable addition to the PDP-5 would be an 8,000 word drum which would sell for slightly under $20,000 and be somewhat expandable. The second thing they feel the need for is the extended arithmetic unit. I believe we should push both of these to a decision relatively soon.

Dick Sonnenfeldt indicated that he would like to have a joint meeting where we reviewed the competitive considerations between the SDS 910 and the PDP-4. They have done some work on this and would like to find out if we have any additional arguments. This could be very helpful to us and I would suggest that one or two people from DEC meet with Foxboro people. I would suggest that it be you and George Rice. Would you call Dick Sonnenfeldt and make such an appointment sometime within the next week?

HEA:jb

dec INTEROFFICE MEMORANDUM

DATE October 7, 1963

SUBJECT Training of Foreign Personnel

TO Works Committee

FROM Harlan Anderson

While on my recent trip to Japan and Australia, several questions concerning Japanese personnel and Australian personnel arose. The basic question is how far should we go in encouraging and supporting financially the training of people in these areas.

In Japan, the situation is the following. We now have installed well over a quarter of a million dollars worth of memory testing systems. The future for memory testers continues to look very good. In addition, the future for DEC computers in Japan looks encouraging. We could greatly benefit from having stronger technical representation in Japan. A well-trained person familiar with DEC equipment could help in servicing existing installations and taking care of warranty problems that might arise and could help in support of future sales of both memory testers and computers.

Rikei Trading Company is willing to hire an additional engineer and would like to send him to the United States to DEC for training. They have asked whether we would be willing to pay his living and travel expenses while here. They already have hired an engineer whose name is Mr. Mita. He was formerly involved making digital counters for somebody. Pat Greene has worked closely with him on his recent trip to Japan. The general feeling is that he is not really top quality. I would be reluctant to invest much money in further training of this man here at DEC. I would also be concerned about who they might hire.

Fortunately, I believe there is a feasible solution to all of this. Mr. Yu Hata of the TDK Electronics Company (a customer of ours), is interested in helping DEC become stronger in Japan with the idea of maybe working for our company several years from now. Mr. Hata is an Electrical Engineer having a senior position at TDK. He would be willing to interview candidates for Rikei and even suggests possible employees. Based on our contacts with Mr. Hata I would have considerable confidence that he would suggest a good person. Under these conditions, I think it is reasonable that we pay some portion and maybe all of the travel and living expenses for a Japanese employee of Rikei to come to DEC for a period of six months to a year. I think before we make this offer to Rikei, we should make arrangements that this man would be our employee if we decide to set up a Japanese operation of our own later on. If DEC did set up its own operation, I think there is a good chance we might continue to use Rikei for at least some period of time and maybe for a long time. I propose that we discuss this at a Works Committee Meeting to try to arrive at some conclusion concerning it.

A similar but slightly different situation exists in Australia. While there I was approached by a young man named Robin Frith. He would like to work for DEC in the United States for a year or so and then return to Australia. He is an Electrical Engineer who has made a digital electronic system for recording weather velocity for the Civil Aviation Agency. He is a very likeable fellow and has taken programming classes in the IBM 1620 and several other computers. He is intensely interested in working for DEC in America to the extent that he would be willing to pay his own passage here and work for Australian salaries which are roughly one half. He is a good man whom I think we should hire and pay at least part of the transportation cost here and pay him on an American salary while he is here although with the understanding that he would probably receive a good Australian salary when he returns to Australia.

Harlan Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE October 7, 1963

SUBJECT Maintenance of the PDP-1 at SDC

TO Systems Development Corporation File FROM Harlan Anderson

Several days ago we were contacted by Mr. Dean Pace, who is a Contract Manager and an Attorney for the SDC in Santa Monica. His telephone number is Exbrook 3-9411 Ext. 305. He was very concerned with the fact that our maintenance manuals for the PDP-1 contains stamps which say the manuals are for maintenance purposes and contain proprietary information. The problem arose because SDC plans to have the Military Products Division of IBM maintain the PDP-1 which will be attached to a very large IBM machine (Military Q32V). Our manuals had been sent to a Mr. Don Droulette, who is a Contract Manager at IBM Military Products Division in Kingston, New York. His telephone number is 383-6137. When he saw the proprietary information stamp he took it to IBM's attorney who said to seal it up and send it back.

Mr. Pace claims that SDC has free right to use any of our technical data without regard to the proprietary information stamp because of the contract clause called, "Data". After our telephone conversation, I reviewed this clause in the contract and it is quite inappropriate, since it was intended to apply in my opinion to development results in data which resulted from a development contract. The clause specifically excludes data on commercial items which is the bulk of what is involved. The only thing which conceivably could be covered by this data clause would be design modifications (of which there were a few) to our standard equipment. In short, if we provided the information required under the data clause, SDC would have received considerably less information than what they had been given. I think he was in err to try and interpret this under the data clause.

At Mr. Pace's suggestion I telephoned Don Droulette and attempted to relieve him of any concern on this matter by pointing out that IBM has bought our printed circuit modules for over three years at the Kingston plant and each time we send them a circuit schematic it has contained this phrase on it. Furthermore, on one instance, IBM requested formal permission to include our circuit schematics in their maintenance manual for a system that they made for NASA. We granted the permission providing that they identify the circuit diagrams as being the property of DEC and contained the proprietary statement on it. This was acceptable to them; therefore, I believe we have a very strong precedent in the matter. In any event, we do not plan to remove the proprietary information stamp from our drawings. I am now awaiting a telephone call from Mr. Droulette.

Harlan Anderson

HEA:ncs
cc: Ken Olsen
Bob Oakley
Don Smith

August 25, 1960

Mr. E. C. Cady
International Business Machines Corporation
Federal Systems Division
Department 516
Kingston, New York

Dear Mr. Cady: RE: IBM Letter of 8/23/60

On behalf of Digital Equipment Corporation, I am pleased to grant permission to enclose any of our copyrighted technical literature and DEC circuit schematics for the equipment you have purchased from us in your Equipment Manual for the Mercury Trajectory Simulator. Should you wish additional copies of any of this material for convenient binding into your manual, please let me know how many of what type, and we will be happy to furnish them at no charge.

Permission is also granted to include revised schematics of the DEC Power Supply Type 721 in your manual.

The above permission is granted on the assumption that proper credit will be given to Digital Equipment Corporation for the material involved. Simple binding of the actual material without removing the name of Digital Equipment Corporation is satisfactory in this regard.

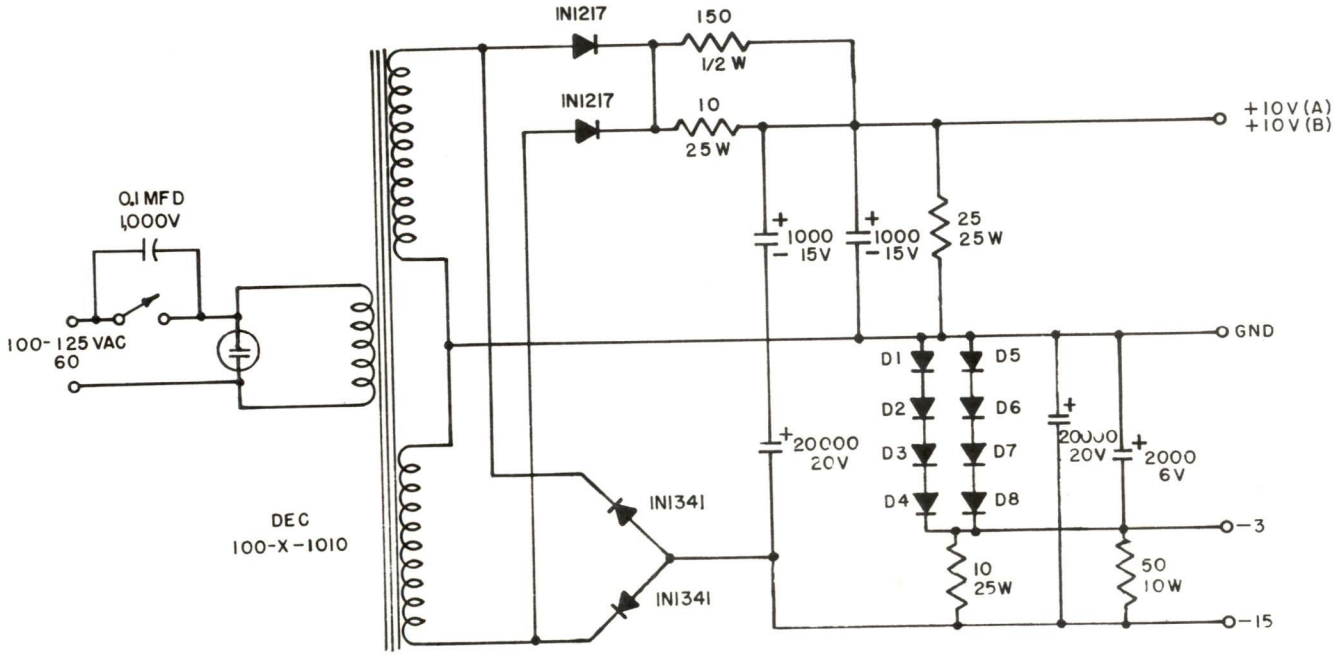
Thank you for this opportunity to be of help to you, and if there is anything further we can do, please feel free to contact us.

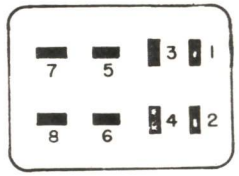
Sincerely,

Harlan E. Anderson
Vice President

HEA:ecp

CIRCUIT SCHEMATIC
POWER SUPPLY 721

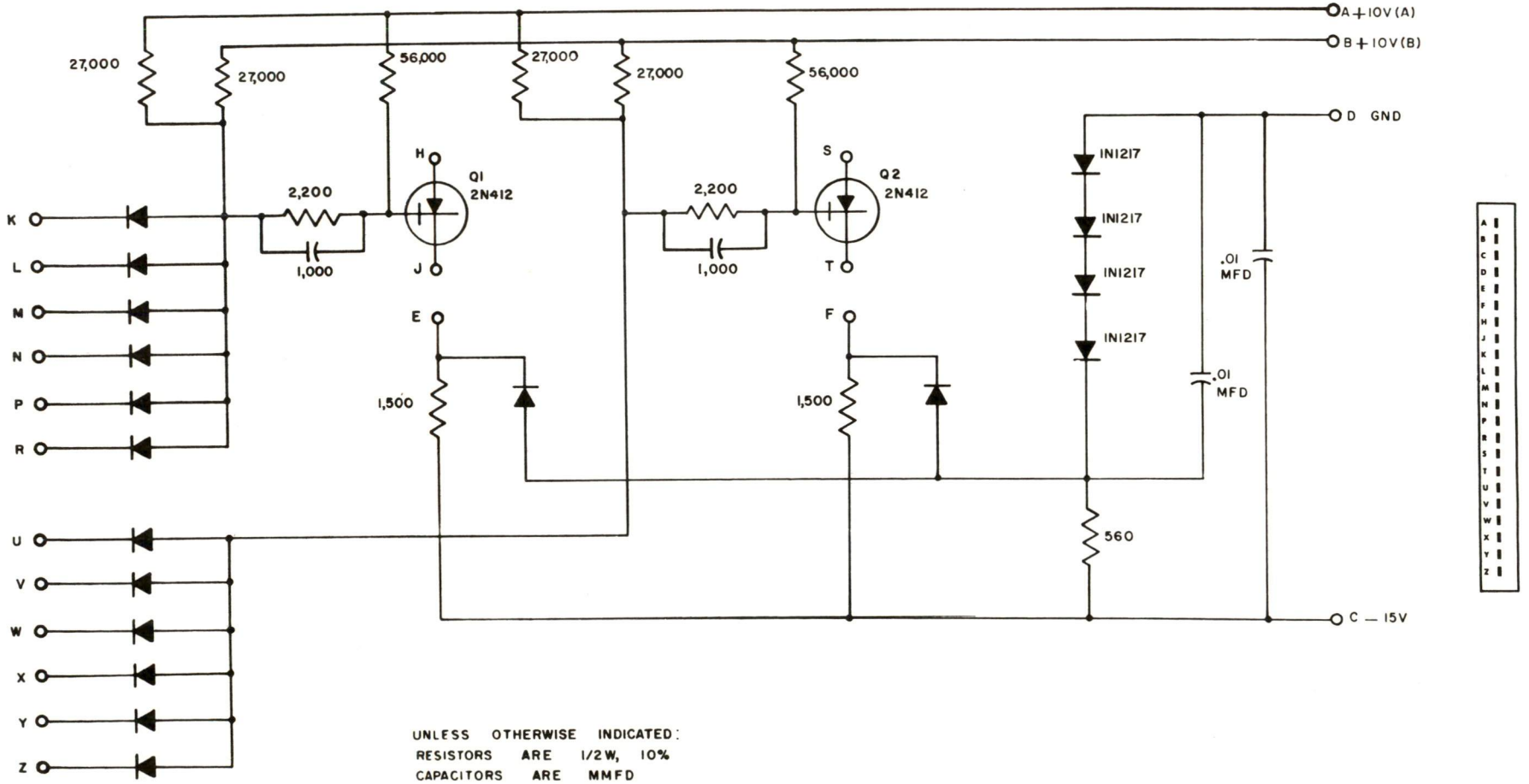




PIN 1 – +10V(A)
2 – +10V(B)
3, 4 – −15V
5, 6 – −3V
7, 8 – GND

UNLESS OTHERWISE INDICATED:
RESISTORS ARE 1/2W, 10%
CAPACITORS ARE MMFD
DIODES D1-D4 ARE IN1217 D5-D8 ARE IN1341

CIRCUIT SCHEMATIC
DIODE 4110 (D-E)



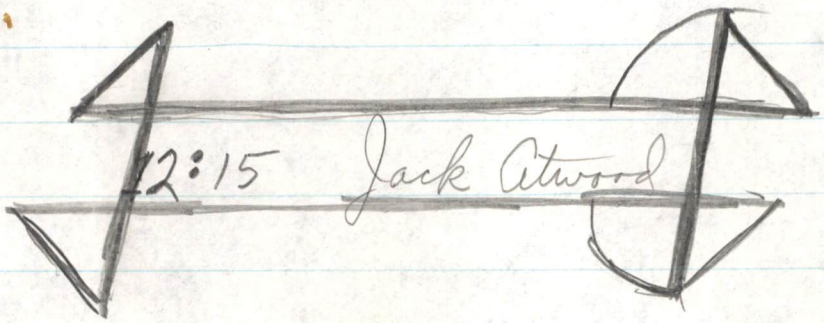
UNLESS OTHERWISE INDICATED:
RESISTORS ARE 1/2W, 10%
CAPACITORS ARE MMFD
DIODES ARE IN276

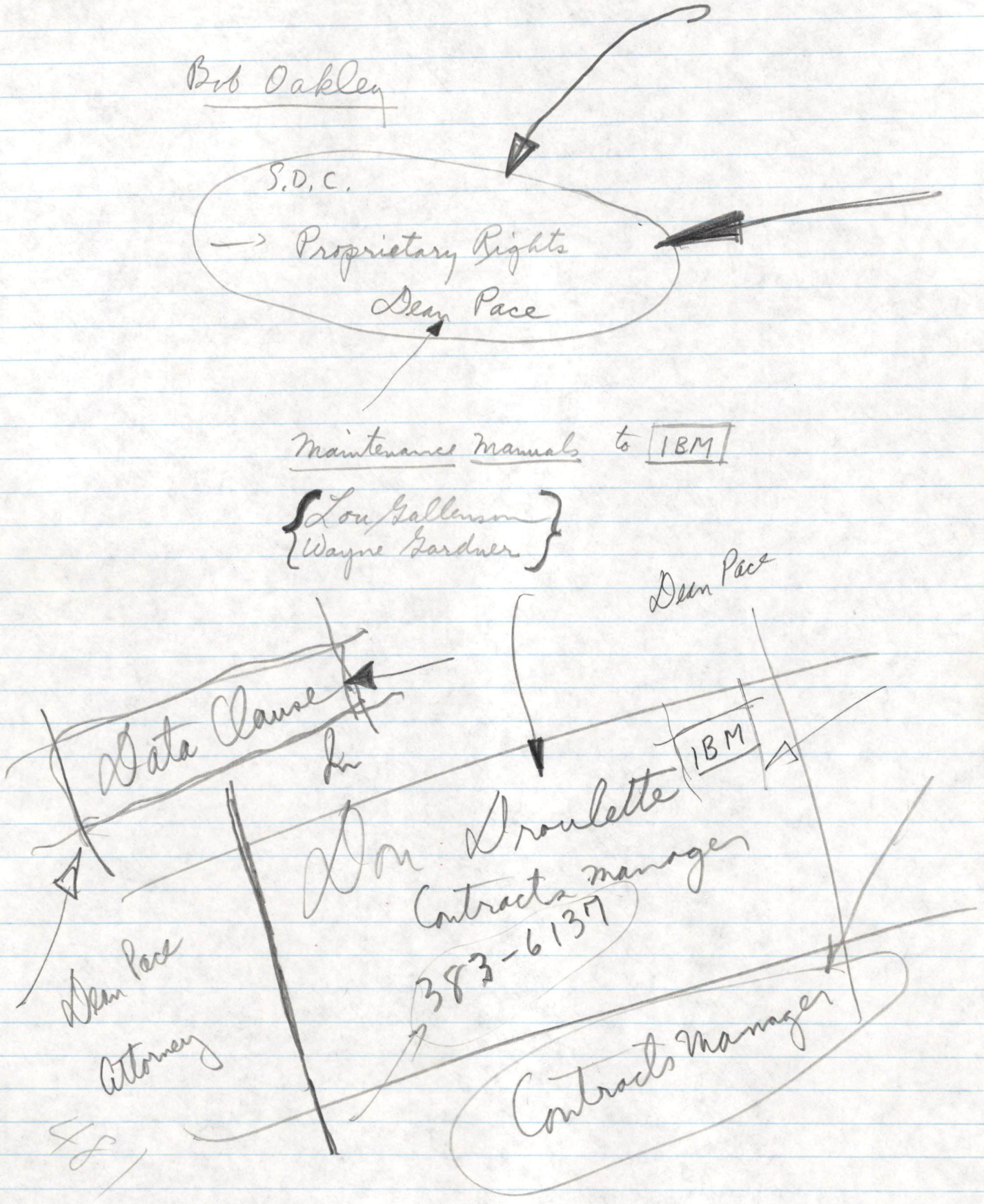
Don Pace

ex 305

EX 3 brack. 9/11

213 Santa monica




Bob Oakley
S.D.C.
→ Proprietary Rights
Dean Pace
Maintenance Manuals to IBM
{Lou Gallerson
Wayne Gardner}
Dean Pace
Data Clause
In
IBM
Don Droulette
Contracts manager
383-6137
Dean Pace
Attorney
Contracts Manager

dec INTEROFFICE MEMORANDUM

DATE October 7, 1963

SUBJECT DANTRAN

TO Elsa Newman

FROM Harlan Anderson

I understand that the spark chamber group at MIT has written a new relocatable assembler known as DANTRAN. I don't believe it is completely documented yet and there has been no indication that they are willing to contribute it to the PDP-1 User Library. However, it might be desirable to ask the people involved if they would be willing to report on it either in a Decuscope Issue or at a meeting sometime. The people who have done the work are Dick Peterson and Harry Rudlow.

Harlan Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE October 7, 1963

SUBJECT Programming Courses

TO Bob Beckman

FROM Harlan Anderson

Recently I learned that several people who took our programming course went away with undue reservations about the word length of the PDP-1. I think it would be very desirable if we could place some emphasis on use of double precision subroutines. It is particularly important to give some ball-park feeling for how much a typical program might be slowed down when subroutines are used. For example, if a double precision subroutine for addition takes a thousand microseconds compared with ten microseconds for a machine instruction, the slow down of addition, of course, is by a factor of 100. However, the total program running time will be slowed down by considerably less than 100 because only a very small percentage of the instructions in a program are actually doing arithmetic. Most instructions are used to do things like modify addresses, jump, testing for loop control, reading in data, etc. I think some emphasis on concepts like those above would be very helpful.

Now that DECAL is complete, we should be making plans for running classes on it.

H. Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE October 7, 1963

SUBJECT Industrial Research Magazine

TO Jack Atwood

FROM Harlan E. Anderson

I read in Industrial Research Magazine recently that they plan to publish a directory of organizations that provide research type equipment. The deadline for being included in their categorical listings is November 1st. Would you investigate this further and make sure we get listed?

Harlan Anderson

HEA:ncs

HRA

INTEROFFICE MEMORANDUM

DATE October 7, 1963

SUBJECT Training of Foreign Personnel

TO Works Committee

FROM Harlan Anderson

While on my recent trip to Japan and Australia, several questions concerning Japanese personnel and Australian personnel arose. The basic question is how far should we go in encouraging and supporting financially the training of people in these areas.

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Harlan Anderson

HEA:ncs

Cablegram

TO: D. H. Lord

FROM: H. E. Anderson

The Type 1572 is tested for a 10 volt change in common mode voltage and a 20°C change in temperature and it is required that the maximum equivalent input offset voltage ~~under the combination of these conditions~~ is 5 millivolts. FOR ANY TEMPERATURE This temperature change is from room temperature to plus 45°C. It has been my experience that in going to colder temperatures the common mode is changed very little and generally the comparator has begun to switch sufficiently faster that the resolution is getting better within whatever time you happen to be looking at it, i.e., if you are sampling the output after 1 microsecond or 6 microseconds or whatever time, you have more resolution within this time.

Generally, it's best for optimum accuracy to keep the 1572 in a relatively controlled temperature environment but if you keep your temperature within a maximum variation of 20° or 30° F generally speaking you will not find any difficulty.

WU4 PD INTL CHILTONBERKSHIRE VIA RCA SEPT 24 1420

HARLAN ANDERSON DIGITAL MAYNARDMASS

THANKS FOR HANDBOOKS AND DATA PLEASE INFORM ME OF

EQUIVALENT OFFSET VOLTAGE PER DEGREE FOR 1572 MODULE

D H LORD RUTHERFORD LABORATORY CHILTON BERKSHIRE ENGLAND

128P

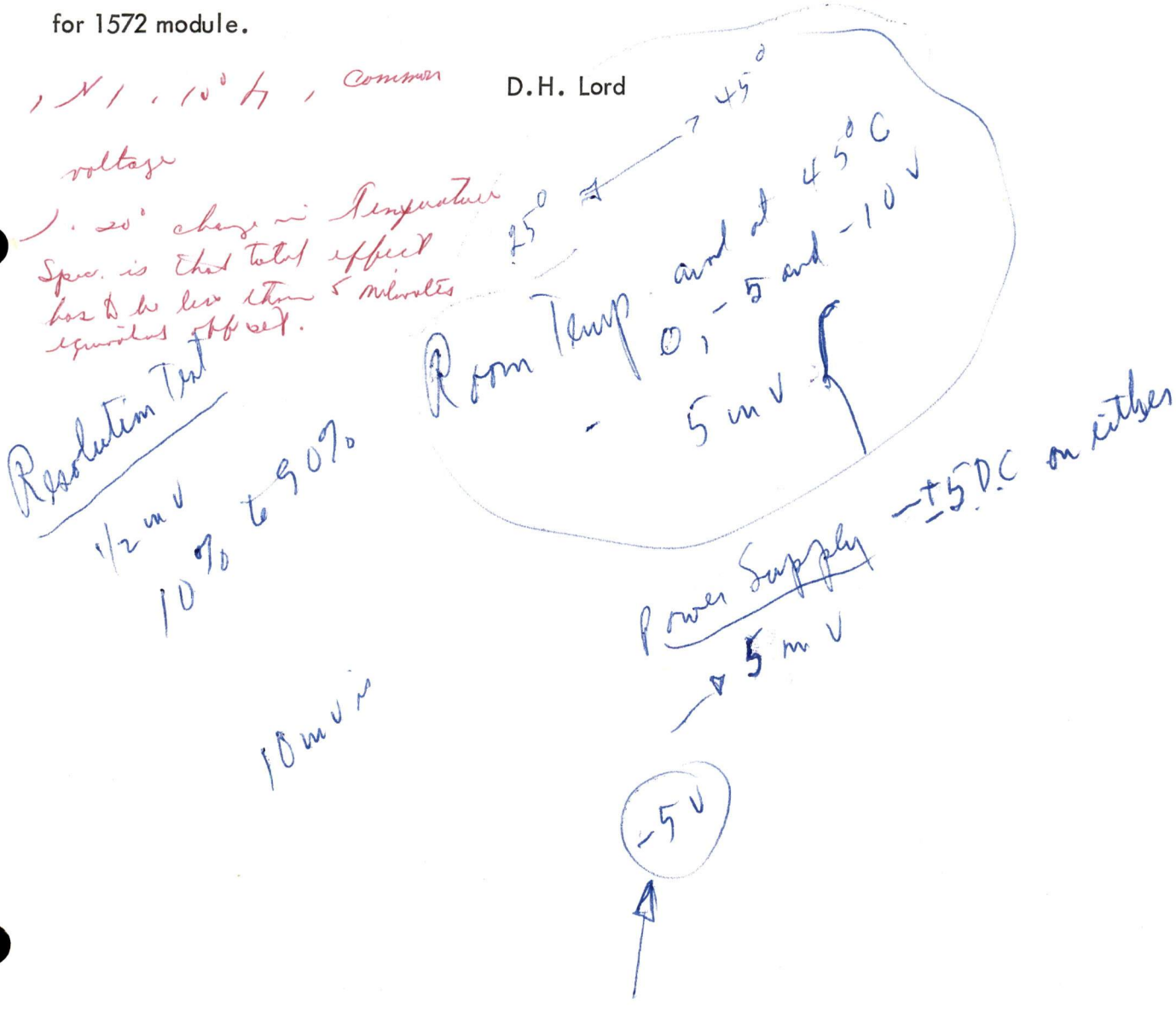
Cablegram from England

TO: Harlan Anderson

FROM: David H. Lord

Thanks for handbook and data please inform me of equivalent off-set voltage per degree for 1572 module.

D.H. Lord



AEC LRL LVMR

HIS IS DIGITAL EQUIPMENT CORP. MAYNARD, MASS.

MSG NO. M-348

ATTENTION MR. JAMES PANTON, PURCHASING DEPT.

SUBJECT PDP-5 QUANTITY DISCOUNT

THIS WILL CONFIRM OUR TELEPHONE DISCUSSION OF YESTERDAY CONCERNING THE PDP-5 COMPUTER YOU ARE CONSIDERING ORDERING FROM DEC. IF YOUR ORDER IS PLACED WITHIN THE NEXT 30 DAYS, THE FOLLOWING STATEMENT MAY BE INCLUDED AS A CONDITION.

> IF WITHIN ONE YEAR THE UNIVERSITY OF CALIFORNIA, THE AEC, OR THE GSA ENTERS INTO A MULTIPLE PDP-5 PURCHASE AGREEMENT WITH DEC, THIS PDP-5 MAY BE INCLUDED FOR DETERMINEING THE DISCOUNT LEVEL OF THE PDP-5,S IN THE AGREEMENT. THIS DISCOUNT APPLIES ONLY TO THE PDP-5, IN THE AGREEMENT, AND MAY NOT BE RETROACTIVELY APPLIED TO THIS PDP-5.

IF YOU HAVE ANY QUESTIONS CONCERNING THISPLEASE FEEL FREE TO CONTACT ME.

HARLAN E. ANDERSON

DIGITAL EQUIPMENT CORPORATION

END JSA

ACK ONE CLR GBO

GAWU

MR D H LORD

RUTHERFORD LABORATORIES

CHILTON

BERKSHIRE ENGLAND

VIA WU CABLE

TOTAL EQUIVALENT OFFSET VOLTAGE OF 1572 IS 5 MV FOR TEMPERATURES

FROM 25 DEGREES C TO 45 DEGREES C COMMON MODE VOLTAGE CHANGES OF

10 VOLTS ARE ALSO PERMITTED WHEN TESTING FOR THE 5 MV TOLERANCE

H E ANDERSON
VICE PRESIDENT
DIGITAL EQUIPMENT CORP
MAYNARD MASS
CLR

DI002 PD MAYNARD MASS SEPT 25
CLR

RDI002WU TXS

dec INTEROFFICE MEMORANDUM

DATE September 24, 1963

SUBJECT Invitations to be sent for DECUS Meeting

TO Elsa Newman

FROM Nancy Survilas

Andy would like the following two men invited to the November DECUS Meeting and also send to them the latest DECUSCOPE and the proceedings of the last meeting.

Mr. B. Glusovich
Edgerton, Germeshausen and Grier, Inc.
300 Wall Street
P. O. Box 1912
Las Vegas, Nevada

Mr. G. H. Woodmansee
Edgerton, Germeshausen and Grier, Inc.
Santa Barbara, California

Thank you.

Nancy

digital MEMO

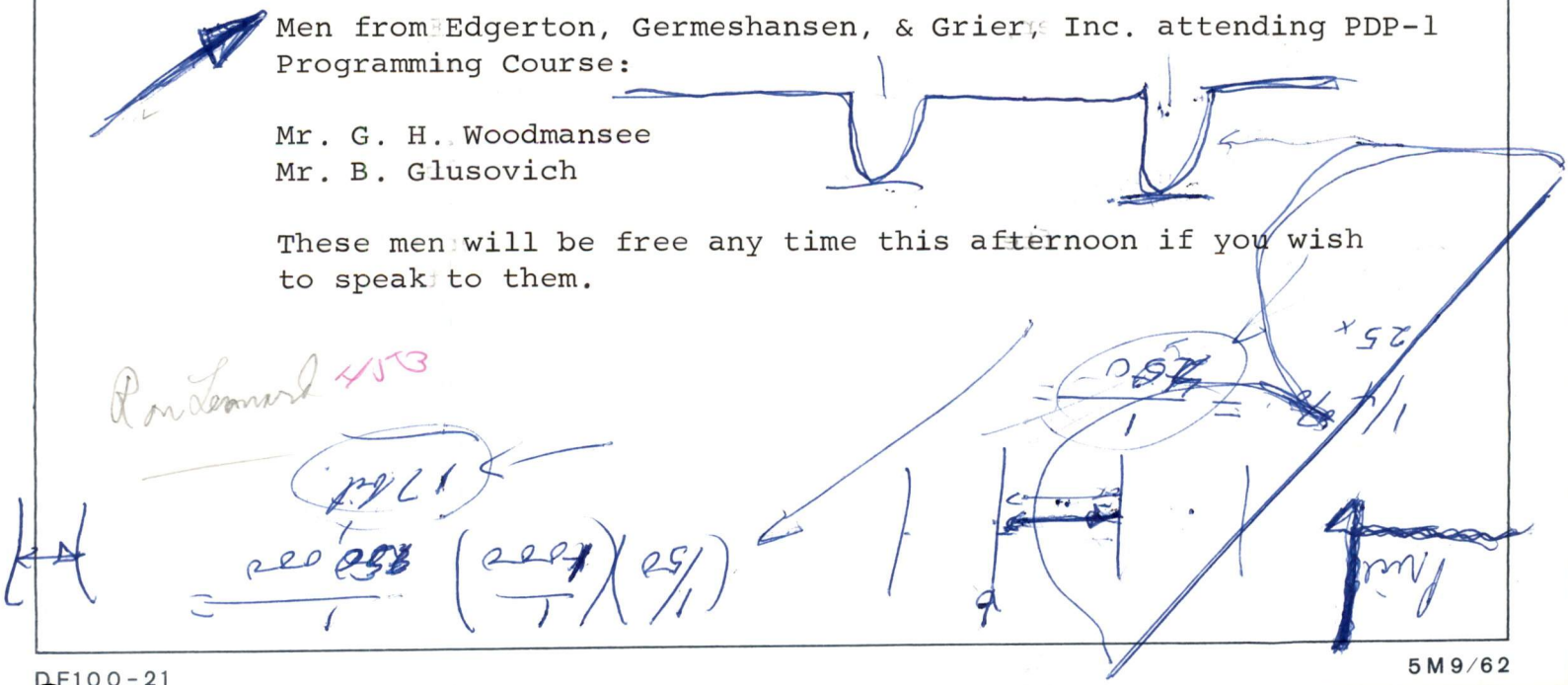
DATE 9/20

TO H. Anderson FROM Eleanor Barron

Men from Edgerton, Germeshansen, & Grier, Inc. attending PDP-1 Programming Course:

Mr. G. H. Woodmansee
Mr. B. Glusovich

These men will be free any time this afternoon if you wish to speak to them.

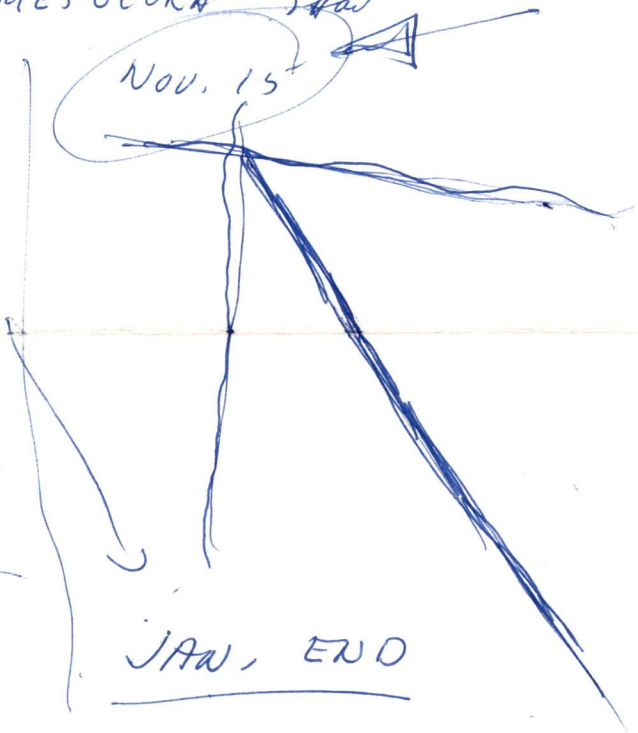


DF100-21

5M9/62

MESUCORA Show

Nov. 15th

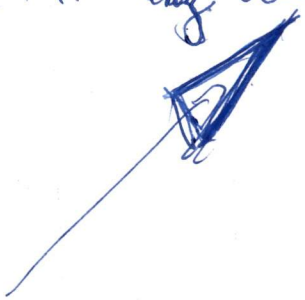


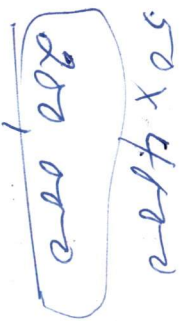
JAN, END

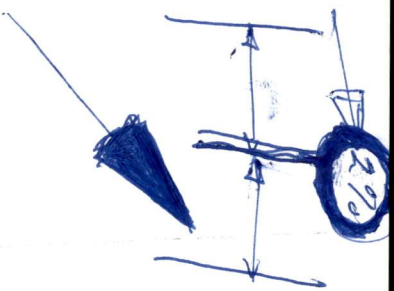
PHYSICS SHOW

3 to 6 weeks of programming

Eng. changes







EDGERTON, GERMESHAUSEN & GRIER, INC.

300 WALL STREET
P. O. BOX 1912
LAS VEGAS, NEVADA
EVERGREEN 5-4242

11 September 1963

Mr. S. Mikulski
Digital Equipment Corporation
Maynard, Massachusetts

Dear Mr. Mikulski:

This letter is to confirm our conversation of last week regarding enrollment within the PDP-1 course which begins on 16 September.

Mr. Brian Glusovich will be our representative from EG&G, Las Vegas in this course. If any additional preparation or information is required we would appreciate a return call.

Very truly yours,

EDGERTON, GERMESHAUSEN
& GRIER, INC.

Larry Wegkamp

Larry Wegkemp
Analyst Supervisor

LW:nlm

cc: Analysis File

INTEROFFICE MEMORANDUM

DATE September 24, 1963

SUBJECT Rikei Trading Company Territory

TO Jack Atwood

FROM Harlan Anderson

While I was in Japan, the people from Rikei Trading Company pointed out to me that in one of our announcements that we sent out concerning new offices, we mentioned that their territory was the Far East. Their territory, of course, is only Japan. This to us, of course, is a small difference but to them the Far East is a very real thing and they asked if we could correct this in future publicity.

Harlan Anderson

HA:jb

INTEROFFICE MEMORANDUM

DATE September 24, 1963

SUBJECT Rikei Trading Company

TO Dick Mills

FROM Harlan Anderson

While in Japan, the people from Rikei asked whether we would be willing to consider as an alternative to the Letter of Credit, a thing they call "Bill for Collection". I told them I didn't know but that we would look into it back here.

I suspect that this is merely an ordinary invoice but would you let me know if this is some special thing. Also, I would like to know what the cost to Rikei might be for having a letter of credit issued through a bank.

Harlan Anderson

HA:jb

INTEROFFICE MEMORANDUM

DATE September 23, 1963

SUBJECT Chase Brass and Copper Company

TO Stan Olsen

FROM Harlan Anderson

Several days ago Jack Gilmore of Adams Associates told me that he had been contacted by a Mr. James Smith of the Chase Brass and Copper Company. Their address is East 60th Street, Cleveland, Ohio. This man had been talking with John Ward at MIT and I believe also talked to someone at DEC at the suggestion of Ward. He needs a digital computer with several teletype inputs. This would be used in a brass foundry and would also have some direct analog inputs representing conditions like temperature of furnace, etc.

Adams Associates have made a proposal to do a systems analysis for this company and presumably will know whether they have gotten that job in the next several weeks. If they do, perhaps we can be helpful to them in evaluating which computer would be best for Chase Brass and Copper. If they do not get the study contract perhaps we should contact Mr. Smith directly sometime in the next month. It is possible that you already have information about this application but I wanted to pass it on to you in case you didn't.

Harlan Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE September 20, 1963

SUBJECT New Product Releases

TO Jack Atwood

FROM Harlan Anderson

During the Basel Conference I met a man named Eric T. Fearon who is the Editorial Director for ELECTRONIC EQUIPMENT NEWS which is put out by the Shaw Publishing Company, Ltd. Their address is Mercury House, 103-119 Waterloo Road, London S E 1. He requested that we send new product releases to him for his magazine.

He also offered to send us a complimentary copy of his magazine if we do not now take it.

I will attach the form to be sent to their Reader Service Department if you want to have a subscription for the company.

Harlan Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE September 20, 1963

SUBJECT Allied Research and Service Corporation of Boston

TO File

FROM Harlan E. Anderson

This is a newly formed company which is basically a consulting group. All of the present employees are from Foxboro Instrument Company. Vin Tivy is President. The other people employed by it are Bob Silva, Pem Drinker, George Walsh and Bob Smith. They are being backed by a man named John P. Chase who is an individual financier in Boston. His other interest includes the Chase Fund and Boston Capital Corporation (an SBIC).

The only known business that they have at the moment is a consulting contract of some kind with IBM.

HEA:ncs

INTEROFFICE MEMORANDUM

DATE September 10, 1963

SUBJECT Luncheon at the Boston Safe Deposit

TO File

FROM Harlan Anderson

The following were present:

Jay W. Forrester
School of Industrial Management, MIT

Vernon R. Alden, President
Ohio University

William W. Wolbach, President
Boston Safe Deposit

Nathan H. Garrick, Jr.
Investment Division of the Boston Safe Deposit

Godfrey G. Howard
Investment Division of the Boston Safe Deposit

Louis M. Rusitzky
Investment Division of the Boston Safe Deposit

Guinn Smith
Investment Division of the Boston Safe Deposit

INTEROFFICE MEMORANDUM

DATE August 12, 1963

SUBJECT Air Force Document Experiments at Bedford

TO Nick Mazzarese

FROM Harlan Anderson

On July 18, 1963 I was telephoned by Mr. Frank Hennesy a civilian at Bedford Air Base. I believe he is a somewhat non-technical man who contacted us about two years ago when he was working in the Planning Office for the Systems Design Laboratory. This is the lab that ended up buying a stretch computer. The Planning Office that he was part of has now been desolved since the lab has come into actual existence.

In his new assignment he is working with the Defense Documentation Center which is a successor to the old ASTIA (Armed Services Technical Information Agency). He is in charge of the New England office and is located in Building 1210. He telephoned to indicate that he would like to buy a PDP-1 computer with which he would conduct experiments in handling of document abstracts. Before he telephoned, he had been down to Kie Corporation to see the PDP-4 installation and knows about our PDP-1 installations at the Air Base. He indicated that they would try to use a computer to simulate document handling in an effort to experiment in this area. He had indicated that he would call me about a week after his original call to set up an appointment to come out and see us. He has not done so to date. Working with him is a fellow named Bill Bovonna who formerly was at Itek and worked with the PDP-1. I am not thoroughly convinced that this is a very likely situation but I wanted you to know the details in case he telephoned. Any computer that he might buy would have to be procured actually through the Central Air Force Computer Center, headed by Colonel Macloy at Hanscom.

Harlan Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE August 12, 1963

SUBJECT Luncheon Appointment at the Boston Safe

TO Ken Olsen

FROM Harlan Anderson

Vern Alden called this morning from Boston and asked whether we could have lunch at the bank on September 10th. The only problem was that the DEC Board Meeting on that same day was scheduled to be in Maynard. I accepted the invitation and asked Dorothy Rowe to change the location of the meeting to be AR&D when she sends out notices. Our Board Meeting will be at 2:30. You will receive a note from Mr. Smith who is now an officer of the Boston Safe and use to be a Dean, I believe, at the Harvard Business School.

Harlan Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE August 9, 1963

SUBJECT John McCarthy of Stanford

TO Nick Mazzarese

FROM Harlan E. Anderson

John telephoned me today and indicated that he had run an experiment recently to determine if they could utilize the interim display driving technique that he was planning on. You will recall his interim technique did not have a specific memory module allocated to display but instead used the normal memory without a memory switch. His experiment simulated the interference to the display that is caused by the memory swapping drum. The effect of memory being unavailable for 30 milliseconds, several times during each second, caused a very noticeable dark flash to the point where he feels his interim plan is totally unacceptable.

Therefore, he would like to again discuss a memory switch and a separate memory module for keeping displays fresh. He will be in Boston the week of August 12th and would like to discuss this with you further. He plans to visit us some time in conjunction with his attendance at the last week of the MIT Time-Sharing Seminar.

Harlan E. Anderson

INTEROFFICE MEMORANDUM

DATE August 6, 1963

SUBJECT New Memory Module for Kie Corporation

TO Bob Maxcy
George O'Dea
Jack Smith

FROM Harlan E. Anderson

cc: Bob Beckman
Don Smith

Charlie Adams telephoned me today and indicated that they would like to have another 4,096 word module installed on their PDP-4. I told him that they could have it within four to six weeks and he indicated that they wanted to enter a firm order for it as of today. I indicated that I was not sure what the mechanics of adding this item to their lease was but that George O'Dea would figure out whether it should be done by letter or an addenda or some other method and let Adams know.

This should be implemented by using two 4K modules rather than waiting for the new 8K memory technique. I would like to see this installed as soon as possible so that rental payments on it will commence with the rest of the equipment which has not yet been invoiced due to the delay in Microtape. It is to our advantage to have all rental payments for the different parts of the system commence on the same date if possible. In view of the fact the system is not on rental yet, we should not charge an installation charge.

I further indicated to him that it would take about another eight weeks to get an additional teletype interface consisting of another group of eight lines. They are not yet ready to commit themselves on this and will let us know later if they want to go ahead with it.

Harlan E. Anderson

HEA/mr

INTEROFFICE MEMORANDUM

DATE July 31, 1963

SUBJECT Tax Considerations for Educational Contributions and Discounts

TO Ken Olsen
Win Hindle
George O'Dea
Stan Olsen

FROM Harlan Anderson

There are two ways to treat lower prices for educational institutions. First, they can be considered to be contributions and second, they can be considered to be merely a sale at a lower than normal price and profit. If DEC's allowable contributions have been fully utilized in a particular year, then it is not in our interest to consider any further lower price transactions as contribution. It is apparently important to handle these transactions in a way which is consistent. The following three examples illustrate this point. All four have the following common assumptions:

1. Selling price of item is $100,000
2. Educational price is $50,000
3. Taxes are 50%
4. Cost of Manufacturing is $40,000

Example I

Assumptions:

1. Sale is classified as a discount sale (Contribution consideration not involved) –

Results are Income $50,000	Cost	$40,000
	Tax (50% of 10K)	5,000
	Total Cost to DEC	$45,000

Net Cash Profit $5,000 (after tax adjustments).

Example II

Assumptions:

1. Allowable contributions have been fully utilized on other transactions.
2. Sale is classified as a 50% contribution.

Results are Income $50,000	Allowable Cost	$20,000
	Tax (50% of 30K)	15,000
	Non Allowed Cost	20,000
	Total DEC Cost	$55,000

Net Cost to DEC $5,000 (after tax adjustments).

Example III

Assumptions:

1. Allowable contributions are available for this transaction
2. Sale is classified as a 50% contribution.

Results are Income	$50,000	Cost	$40,000
Tax Refund* (50% of 20K)	10,000		
	$60,000		
Net Cash Profit	$20,000		

*Tax Calculation:

Profit from sale part of deal is	$30,000	($50,000 - $20,000)
Deduction for Contribution is	50,000	
Net Deduction is	$20,000	
Tax (at 50%)	$10,000	

From the above three cases, it can be seen that we must not handle educational lower prices in such a way that they are automatically recorded as charitable contributions beyond the allowable amount available to us.

Ideally, we would treat them as contributions until we had used up our allowance and then treat any remaining ones as discount sales. Unfortunately, this would be somewhat difficult to administer in a way which would appear consistent on an income tax audit.

An important sidelight here is that free rental or discounted rentals do not qualify as charitable contributions. I believe that we are more likely to give

educational discounts whose sum may exceed our allowable charitable contributions in the future than they have in the past. In view of this, the subject presented here should be more fully discussed and a policy established for use in administering it.

Harlan E. Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE July 29, 1963

SUBJECT Chip Karmatz

TO Ken Olsen

FROM Harlan Anderson

Today Chip Karmatz called and said that he had been talking with Ted Merrill of the New York office of Business Week magazine and he is going to visit General Doriot on Tuesday morning and plans to see us on Tuesday afternoon. Chip thinks our chances of getting a story in Business Week magazine are quite good. He thinks the story should be centered around our new computer or if we came to any conclusions about releasing financial figures that would also make an interesting story.

I have asked Karmatz to send us a formal letter of proposal with a price for retaining him as a consultant and said I would talk to Jack Atwood before we formally proceed with him.

Harlan Anderson

HEA;ncs

dec INTEROFFICE MEMORANDUM

DATE June 3, 1963

SUBJECT Preliminary Description of PDP-5 Teletype Scanner System

TO Ken Olsen
Dick Best
Gordon Bell
Gerry Moore
Don Smith
Stan Olsen
Nick Mazzarese
Bob Cesari

FROM Harlan Anderson

Introduction

This memoranda describes a way of using a small general purpose computer such as the PDP-5 as a teletype scanner for receiving and transmitting information from a large number of teletype lines. It permits the computer to deal with the teletype lines on a bit by bit basis with partially assembled characters being stored in the central memory of the PDP-5. Completed characters would be transmitted onto whatever system is to utilize them. In the initial case being investigated, this is assumed to be a PDP-1 computer system.

The basic line sampling technique is the same one which is now used in the DEC single transmitter and single receiver units described in our technical literature. This depends upon having a stable timing source (such as a crystal clock) operating at a frequency of eight times the bit transmission rate of the teletype lines. The objective of this PDP-5 scanning system is to lower the total cost for transmitting and receiving teletype characters when a large number of lines is involved. A goal for this design is to be able to transmit or receive a total of 128 characters simultaneously and at a selling price which would be approximately $50,000. Before the technical feasibility of this can be completely established, computer program that goes with it must be investigated more carefully and perhaps written out in detail for the PDP-5. There will undoubtedly be many improvements that can be made on the basic design described here as it is implemented. There are many opportunities to exchange hardware for a computer program if sufficient computer time is available.

The basic block diagram of the system is shown in Figure 1.

Memory Organization

The way in which the characters being assembled are stored in memory is exceedingly important. For a 128 line system, there are 256 memory registers reserved for each of the eight clock phases. These 256 registers are organized as two word slots. The first word contains the line number and the second word contains

the character being assembled for the line indicated in the first word. Only lines which are active for clock phase one will be using memory slots in the 256 words assigned to phase one, etc. On the average one-eighth of the 128 lines will be in clock phase one. Therefore, only 32 registers of any clock phase will be active at any one time. The active registers will be a continuous group within the 256 word block. They can be thought of as a list where new slots are added on the end of the list as new line units become active and old slots which represent completed characters can be removed off the top of the list as the characters are transmitted out of the system. This means that the size of the active list can vary with time and it also precesses through the 256 word block associated with phase one.

The reason for this organization of the memory is to make it easy for the bit scanner to locate the partially completed characters at the right time to up-date them. The other clock phase memories work exactly like the one described only at a different time interval.

Line Unit

The objective in the line unit design is to make it the ultimate in simplicity in an effort to lower its unit cost. The present design is thought to be workable with two flip-flops and three inverters along with the receiver relays which are assumed to be outside the module for noise considerations. One complete transmitter receiver will probably take about eight pins and thus, it looks like two complete transmitter receiver units could be packaged on one module. This circuitry does not look like it will be the limiting factor in how many units can be put on a module.

The transmitter is nothing but a flip-flop. The receiver has only one special requirement and that is the ability to recognize the beginning of a character. This is accomplished by having a flip-flop in the receiver which is set in a zero state after a new character has been started and is reset to a one state after the complete character has been received. This is shown in Figure 4. The way it is shown the new character output gates the pulse into the flip-flop to clear it. It may be desirable to eliminate that connection and to have the computer have program control of the flip-flop. This would allow the program to turn receivers on and off at will which might be desirable so that the receiver does not receive what has been transmitted or for other logistics type reasons. This could easily be done as far as the line unit is concerned and does not increase its complexity.

Bit Scanner

The bit scanner is a special purpose device which deals with the line units on the one hand and with the PDP-5 memory on the other hand. It is initialized and put into operation by the PDP-5 program but its actual operation is carried out directly with the PDP-5 memory using the data interrupt facility with no program intervention.

When its operation is complete, it may initiate a program interrupt to signal the program that it is now done.

Its basic operation is centered on the two word slots. It processes all of the two word slots beginning at location N1 and ending at location M1. Processing involves the following: the first memory register of the slot is read into the bit scanner and since it is the line unit number, it sets up a selector in the bit scanner for the proper line unit. Next, the second word of the slot is read into the bit scanner. This is the character being assembled. It is placed in a shift register and the new bit from the selected line unit is also put in the shift register and the new character is shifted left one position and put back in the memory register from which it came. This sequence continues on all of the two word slots until the last slot of the list is reached, (M1). One way of keeping track of N1 and M1 would be like the method used in making a magnetic tape control where N1 is the initial value put in the location counter and M1 minus N1 is thought of as being the initial value of a word counter. It may be possible to eliminate both counters from the bit scanner by the following technique. If we are willing to stop all normal computing while the bit scanner has control of the memory, then the memory address register can be used as the equivalent of the location counter. The end of the list could be recognized by flag bit in the last memory slot which was placed there by the program.

The exact method of starting new characters has not been decided upon. At least two alternatives are available here. The first of these is merely to read from the line units the new character line in groups of 12 into the computer memory and let the computer make the list entry. This would require minimum activity by the bit scanner. The second alternative would be for the bit scanner encode the line unit number that corresponds to the line which has the new character and then transmit this to the computer. In order to center the sampling of the teletype signal, new characters should be handled by a clock phase four pulses after it has been recognized.

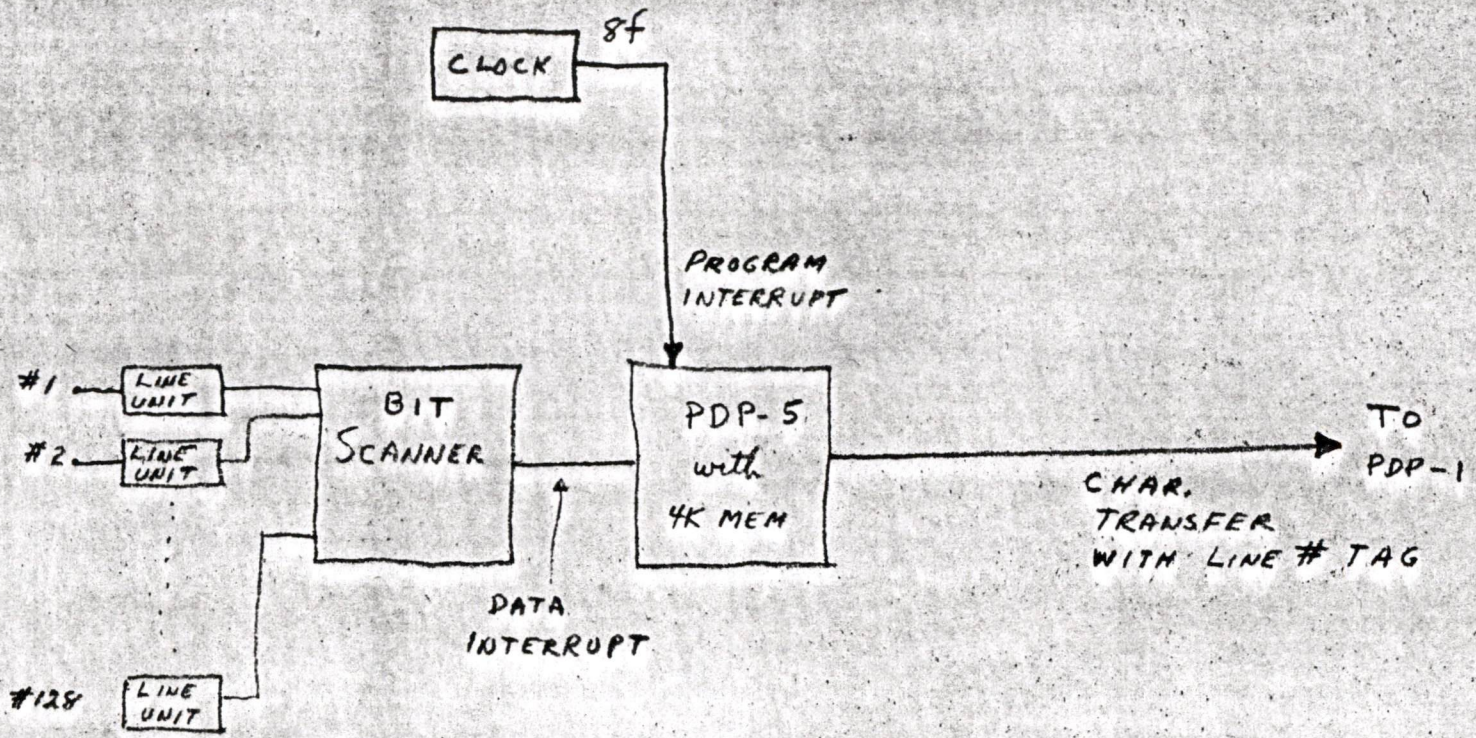
Recognition of complete characters looks like it is a natural function for the bit scanner to do. This can be done by placing a one in the shift register in the least significant bit at the beginning of the character. When that one has been shifted enough times to reach bit 9 the character is complete and can be transmitted to the outside. An alternative to this would be to have the program keep track of where the characters are in the list that have various numbers of bits already assembled.

General Comments

This concept looks very promising but more detailed investigation must be carried out in two principle areas. First the program must be investigated and second the bit scanner must be designed. A preliminary look at the timing shows that about 1/4 of the memory time will be required just for the updating of the characters. The other 3/4 of the computer time is available for the programmed functions such as starting new characters, perhaps transmitting completely assembled characters to the outside world, transmitting teletype characters to the line units, etc.

It looks like the line unit should cost no more than $100 per line.

SA-01C4E



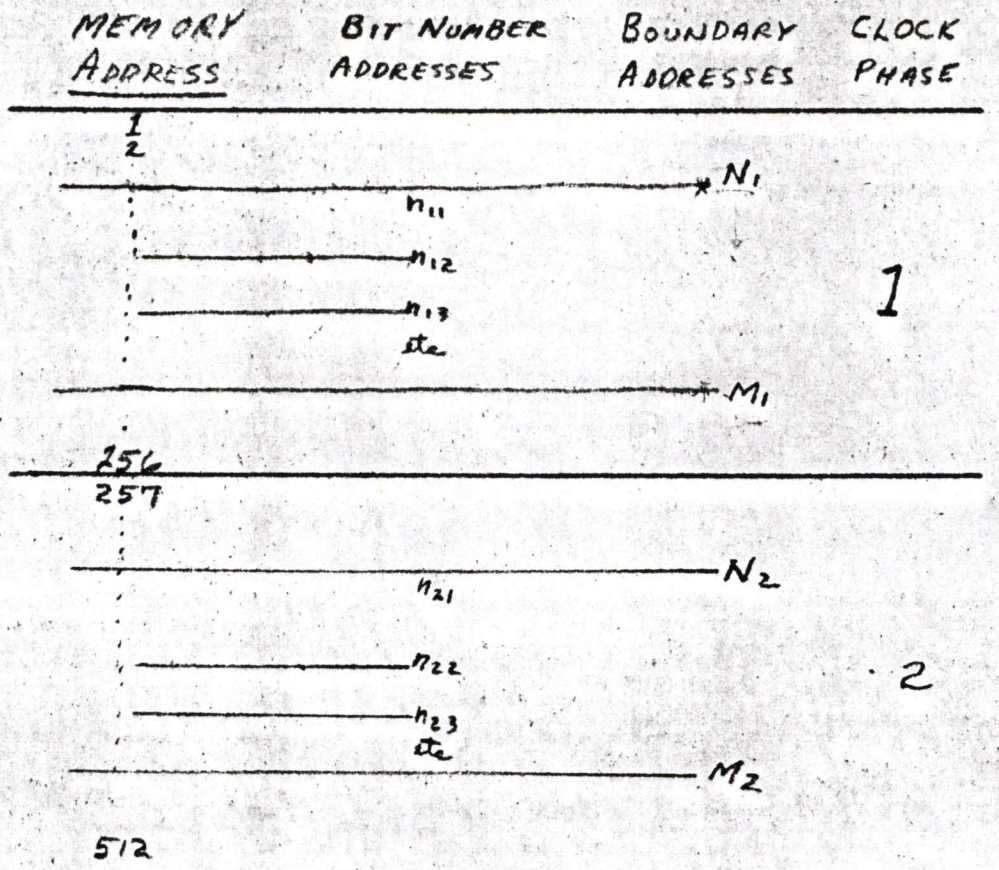
TELETYPE RECEIVER (128 CHANNELS)

FIG 1

SA-01C4C

HEA

SA-01647

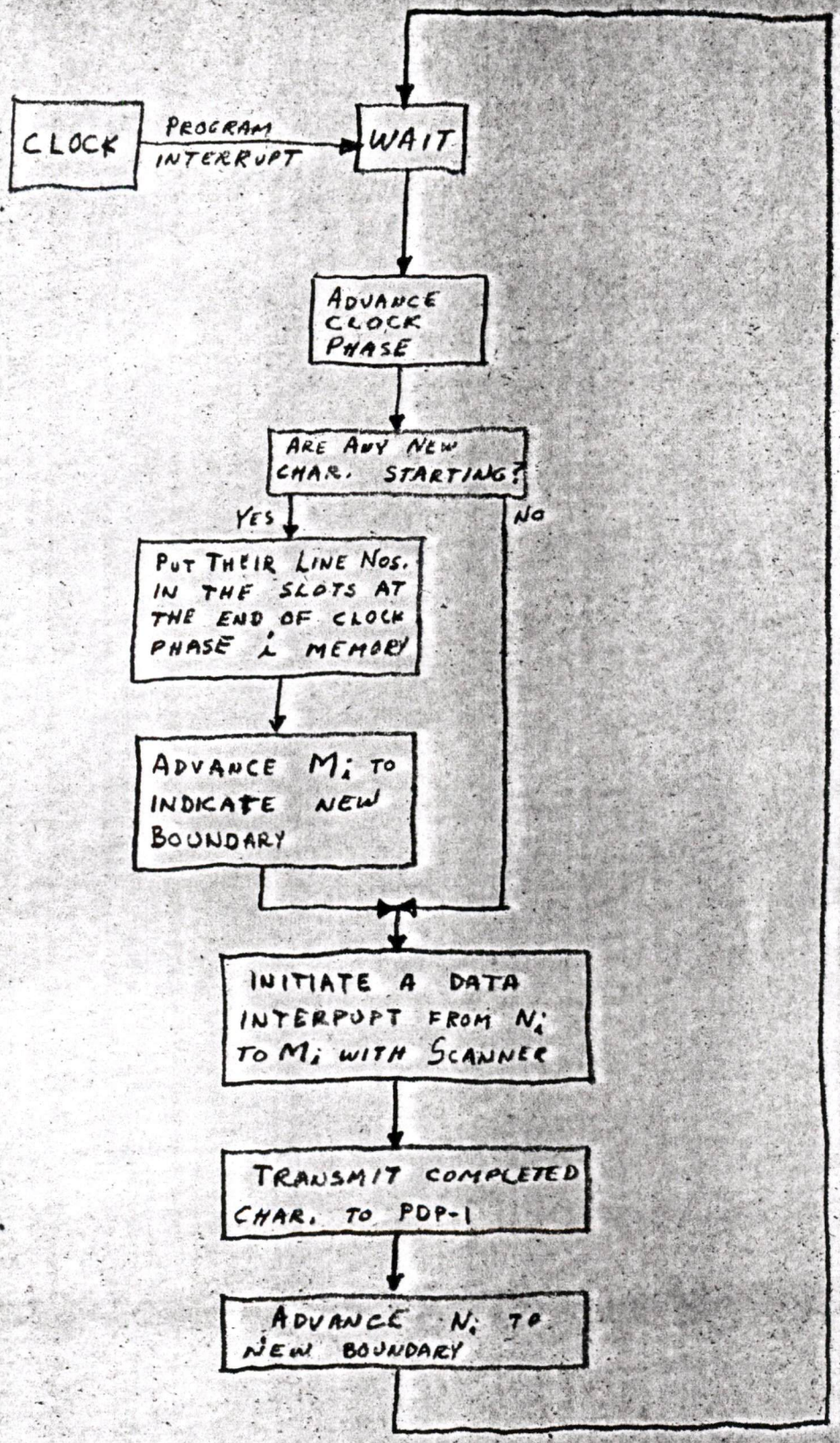


NOTE:
ALL MEMORY USED FOR RECEIVERS IS LAID OUT IN TWO WORD SLOTS.
WORD #1 IS THE LINE NUMBER (6 BITS)
WORD #2 " " CHARACTER (9 BITS)

TEETYPE RECEIVER MEMORY LAYOUT

FIG 2

SA-01647
H.E.A.
5-28-63



PDP-5 TELETYPE

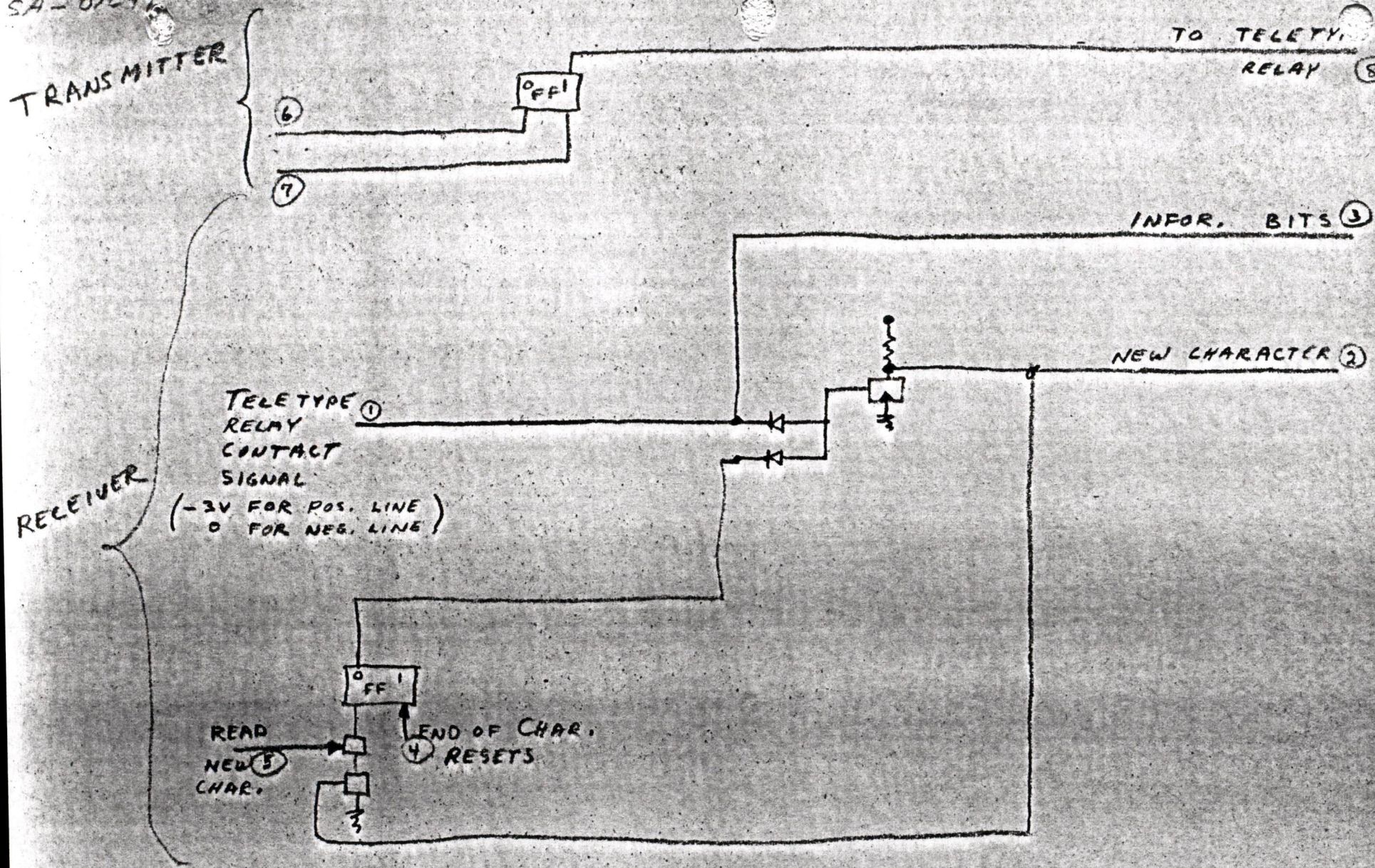
PROGRAM FLOW DIAGRAM

FIG 3

HEA
5-28-63

SH-01248

SA-01649



PDP-5 Teletype Line Unit

FIG 4

SA-01649
HEA
5-28-63

INTEROFFICE MEMORANDUM

DATE June 3, 1963

SUBJECT Henry McDonald, Bell Labs

TO Ken Olsen

FROM Harlan Anderson

cc: Dick Best, Gordon Bell, Bob Savell and Stan Olsen

I spoke with Mr. McDonald at Bell Labs today to ask if we could come visit him in about ten days to discuss his Vector Drawing Scope and other requirements. He indicated that he had given some further thought to our discussions in Detroit and was very much interested. He is planning to visit Spectran in Maynard on June 7th and thought he would visit us in the afternoon at 2 p.m. Spectran is making a part of a speech analyzer that Bell Labs is going to exhibit at the New York World's Fair.

He is now very interested in the PDP-5 as an off-line memory display and controller. This is an alternative to adding 32,000 words of memory to their IBM 7090 computer. It will consist of three major parts. The first of these would be the Vector Drawing Scope. The second would be the PDP-5 with the 4,000 word memory. The third would be a separate 16,000 word 12 bit memory which was set up as 2,000 word modules. All of this would have some electrical connection to the 7090. They would plan to attach their typewriter stations into this sequential 16,000 word memory through a PDP-5. In addition, the PDP-5 would read the light pen and store these responses in the memory. The strings of typewriter characters would also be stored in the memory.

He is working out a specification that shows how he would like to interrelate all of these things and is almost ready with it and will discuss it with us when he visits here on Friday. His telephone number at Murray Hill is 582-4235.

H. Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE May 23, 1963

SUBJECT Princeton University

TO Stan Olsen

FROM Harlan Anderson

While in Monterey last week I met a young Physicist named Pierre Pinoue. He is originally from Switzerland but has worked approximately a year at Berkeley. and is now at Princeton University. He is indicating that sometime in the future Princeton would probably be in the market for a large computer for the Physics Department. I don't believe that he is the right person to see about this and I don't believe it is immediate. However, it would be a good idea to keep in the back of our minds when talking over things with Princeton on the present computer. He indicated that they might be thinking of something in the CDC 3600 class but then who knows.

Harlan Anderson

HA:ncs
cc: Nick Mazzarese
Dave Dennisten

follow-up 5/22/63

dec INTEROFFICE MEMORANDUM

DATE May 8, 1963

SUBJECT TMC

TO File ✓

FROM Harlan E. Anderson

cc: K. Olsen
G. Bell

Today we were visited by Mr. Robert M. Ghen, President of Technical Measurement Corporation in North Haven, Connecticut. With him was Mr. Stanley Goslovich. The purpose of their visit was to explore ways in which we might work together and to get better acquainted with DEC. This is the company which has made the Computer of Average Transients (CAT), which is an inexpensive commercial version of the ARC. This is made by the Mnemotron Division which formerly was a separate corporation.

They have two other major types of products. The first of these is pulse height analyzers which were the subject of the recent Physics Conference in Monterey. The other is Telemeter Demultiplexing which is carried out by their Telemetric Division. Of their 6 million dollars of sales about 1 and 1/2 million will be in export business. They also indicated that they have a patent on the basic averaging technique which I find a little hard to believe. They presently have approximately 500 employees in the total complex and have opened a sales subsidiary in Frankfurt, Germany.

They showed considerable interest in the possibility of buying a computer from us to use as a component in a new type of pulse height analyzer. They were particularly interested in the PDP-5 and were given a copy of our internal preliminary specification on it. After reading this, I would expect someone from there will contact us to have detailed technical discussions which could lead to our submitting a proposal to them. In the reverse direction they are going to send us some detailed technical information about their digitizing front ends to pulse height analyzers. If these appear to be devices that we might be interested in, we might pursue them for purchase. I pointed out to them that in our other joint undertakings with people like Foxboro, and ITT, we kept the relationship strictly on a vendor supplier affair and recognized that at times we might be competing with each other. We attempted to make no constraining type implications or agreements on each other and the TMC people appeared to understand this and felt that it was a good plan. If we do not hear from them within a couple of weeks I think we should take the initiative and contact them to try to sell them a PDP-5 or maybe even a PDP-4. They were very impressed by our automatic module testing and were also interested in the possibility of using a computer like the PDP-4 in their business operation. These two applications would be secondary, of course, to their primary

interest of gaining experience in general purpose stored program computers. My own personal opinion is that if they do not somehow get involved with general purpose computers either with us or some other way, their business will start showing a decline in the next year. This is certainly a critical thing to the future of their company in my opinion.

A few more interesting technical notes to the pulse analyzer business are the following:

Some of the front ends to the pulse analyzers actually are coincidence detectors that have built-in delays for one of the inputs. The two inputs would come from things like scintillation counters placed at very precise angles relative to a nuclear source or an accelerator. The time intervals that are used for these coincidence detections are like 20 nanoseconds between the two pulses. Another interesting technique is the pre-loading of the core memory of the pulse height analyzer with the negative image of the background noise. Then when the actual experiment is run, the background tends to be eliminated and the result is the crew signal. This might be described as a one-shot average. Most of the output of their pulse height analyzers now is done with punch paper tape although some of the systems are equipped with magnetic tape units for which they have used the Potter. Also some of the pulse height analyzers have a modest amount of computation ability built into them.

H.E.Anderson

HEA:ncs

HE file

dec INTEROFFICE MEMORANDUM

DATE May 8, 1963

SUBJECT TMC

TO File

FROM Harlan E. Anderson

cc: K. Olsen
G. Bell

Today we were visited by Mr. Robert M. Ghen, President of Technical Measurement Corporation in North Haven, Connecticut. With him was Mr. Stanley Goslovich. The purpose of their visit was to explore ways in which we might work together and to get better acquainted with DEC. This is the company which has made the Computer of Average Transients (CAT), which is an inexpensive commercial version of the ARC. This is made by the Mnemotron Division which formerly was a separate corporation.

They have two other major types of products. The first of these is pulse height analyzers which were the subject of the recent Physics Conference in Monterey. The other is Telemeter Demultiplexing which is carried out by their Telemetric Division. Of their 6 million dollars of sales about 1 and 1/2 million will be in export business. They also indicated that they have a patent on the basic averaging technique which I find a little hard to believe. They presently have approximately 500 employees in the total complex and have opened a sales subsidiary in Frankfurt, Germany.

They showed considerable interest in the possibility of buying a computer from us to use as a component in a new type of pulse height analyzer. They were particularly interested in the PDP-5 and were given a copy of our internal preliminary specification on it. After reading this, I would expect someone from there will contact us to have detailed technical discussions which could lead to our submitting a proposal to them. In the reverse direction they are going to send us some detailed technical information about their digitizing front ends to pulse height analyzers. If these appear to be devices that we might be interested in, we might pursue them for purchase. I pointed out to them that in our other joint undertakings with people like Foxboro, and ITT, we kept the relationship strictly on a vendor supplier affair and recognized that at times we might be competing with each other. We attempted to make no constraining type implications or agreements on each other and the TMC people appeared to understand this and felt that it was a good plan. If we do not hear from them within a couple of weeks I think we should take the initiative and contact them to try to sell them a PDP-5 or maybe even a PDP-4. They were very impressed by our automatic module testing and were also interested in the possibility of using a computer like the PDP-4 in their business operation. These two applications would be secondary, of course, to their primary

interest of gaining experience in general purpose stored program computers. My own personal opinion is that if they do not somehow get involved with general purpose computers either with us or some other way, their business will start showing a decline in the next year. This is certainly a critical thing to the future of their company in my opinion.

A few more interesting technical notes to the pulse analyzer business are the following:

Some of the front ends to the pulse analyzers actually are coincidence detectors that have built-in delays for one of the inputs. The two inputs would come from things like scintillation counters placed at very precise angles relative to a nuclear source or an accelerator. The time intervals that are used for these coincidence detections are like 20 nanoseconds between the two pulses. Another interesting technique is the pre-loading of the core memory of the pulse height analyzer with the negative image of the background noise. Then when the actual experiment is run, the background tends to be eliminated and the result is the crew signal. This might be described as a one-shot average. Most of the output of their pulse height analyzers now is done with punch paper tape although some of the systems are equipped with magnetic tape units for which they have used the Potter. Also some of the pulse height analyzers have a modest amount of computation ability built into them.

H.E.Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE February 14, 1963

SUBJECT University of California (Berkeley)

TO Ken Olsen
Dick Best

FROM Harlan E. Anderson

Present Situation (2-14-63)

Tentatively decided on SDS 920. Total price of $183K. This includes 8K memory, 3 Tapes and Typewriter. Equivalent configuration of PDP-1 comes to 231K.

Ted is scheduling visit to Howard White who is the key man at Berkeley. This week Jerry Russell, the other key man at Berkeley is visiting on the East Coast. Present schedule is as follows:

Thursday, February 14	with Jim Kiseda of IBM in Pough.
Friday, February 15	with Dr. John Calkin at Brookhaven. Tel. Ya-4-6262 Ext. 417 or 409

Russell is thinking of coming to Boston next week if the weather is good and would probably respond to a telephone call from Ken or Dick Best.

It may end up that we are simultaneously talking with key groups from Berkeley on the same day and we should be careful to be coordinated.

H.E.Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE February 13, 1963

SUBJECT Princeton University

TO Jon Fadiman

FROM Harlan E. Anderson

Today I had a telephone call from Leo Seidlitz of Princeton University. His telephone number there is Wa-1-6600 Extension 404. He is interested in a black box to go between five Datex shaft encoders and an IBM 1620 Computer. The purpose of this black box is to provide the necessary interface to the 1620 including the selection system for the encoder. The overall thing that they are trying to accomplish is a two year interim solution until they get a PDP-R and a PDP-1 in operation. The shaft encoders come from a bubble chamber and the information that goes into the 1620 would be relayed to a 7090 at the main campus of Princeton. There would be no computation done on these inputs at the 1620. At the 7090 they would be checked to make sure that everything related to the bubble chamber was satisfactory and an acknowledgement or ok signal would be sent back to the bubble chamber control operator in almost all cases. At this point he would go on to the next phase of his experiment.

While listening to his description of his requirements, it occurred to me that the new ten bit alarm scanning system that Gordon Bell has been talking to Pat Greene about might do the complete job including the function of the 1620 better and cheaper. When I asked him whether he would be interested in having discussions along these lines he was very interested. He is sending us a brief paper which outlines the overall thing that they are trying to accomplish here. They do not now have the 1620 that would do this job but have been in the grips of the local IBM people for some time. I have promised Mr. Seidlitz that you would contact him on Monday, February 18th to make an appointment for someone in your area to come visit him. Before calling him you should read the paper that he is sending to my attention and you should review the status and concept of the ten bit alarm scanning computer that Gordon has been talking about. Since Gordon may not be here when you get back from Paris you can also get information about this from Alan Kotok.

The present line of thinking on this very small general purpose alarm scanner is that you and your people take it on as a product. As part of evaluating whether to take it on, you should see whether it would do some of the jobs you were presently considering such as the Dupont jobs, the job described above and any others that would fit into this category.

Please be sure to contact Mr. Seidlitz on Monday, to arrange for a time to meet with him.

H.E. Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE February 5, 1963

SUBJECT OAL Display

TO Bob Savell

FROM Harlan Anderson

cc: Dick Best
Ken Olsen

I have just finished speaking with John Shelderuck at OAL at Bedford and I established a time of 2 p.m. on Tuesday, February 5th for us to meet with them. He indicated to me that the name of the manufacturer of the monitor scope they are using is Electro-mec and that the Type Number is 2120. The way they have connected this to our Type 30 is by taking the output of the digital-to-analog converters and tieing it into the horizontal and vertical amplifier inputs of the Electro-mec unit. This unit has magnetic defluction and they, indeed, turn the intensity on and off. Right now they turn it on and off at the same time as the Type 30 so the two displays have the same information. It requires a 50 volt positive pulse to do this. The Electro-mec unit requires a separate power supply which is rack mounted.

To-date they are reasonably pleased with how this has worked out, although they do have some jitter. He indicated that on large characters (1/2 inch or 3/8 inch) the picture looks quite good. Also geometric shapes have worked out quite well.

H.E.Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE January 31, 1963

SUBJECT Stanford University

TO File ✓

FROM Harlan E. Anderson

I just spoke with John McCarthy at Stanford to see how their plans were coming along. He indicated that now that the money was available within Stanford for this teaching machine project of Professor Suppes, they were now taking a very close look at exactly what they should do. He indicated that this more detailed evaluation would probably take an additional week at least. He hastened to point out that this is not his money but is to be used by quite a group of people.

In the meantime, John has also gotten some funds from the Advance Research Project Agency (Licklider's organization).

He related to me his investigations of the quality of displays that could be generated for a multiple student teaching system. He assumed use of the character generator and that each scope would require 100 characters. He further assumed that there would be six scopes. He then assumed that there would be a display program involved in the time sharing and that it would not act like a typewriter but would take command four times each second for generating the complete displays for all scopes. This means that 600 characters would have to be generated. He figures this will take 72 milliseconds and an additional 30 milliseconds are required for the drum field swap. This total of 102 milliseconds has to be multiplied by four and gives you approximately 4/10ths of a second for the display.

They are concerned as to whether this much flicker is more than could be tolerated. Therefore, they are setting up a test program to see how a scope would look with this flicker on it. A man named Steven Russell is writing the program and they would like to have a spot where they could debug this program. The problems of access to the Livermore Lab are sufficiently great that they do not feel it is practical to do it there. Therefore, he was asking me if I knew of any computer setup in Los Angeles that they could use. I told him that our machine was a PDP-4 in our office and that other machines in the Los Angeles area belong to various customers. He thought he might contact BBN to see if he could get time there.

They are contacting Ampex for the audio portion of this teaching machine setup.

As a separate thing, John talked with Ben Gurley when Ben was in California recently about a display computer whose full-time job would be the refreshing of scopes. Ben had estimated that something like this could be built for $50,000. If this were available to operate on six bit characters and automatically make the scope character, John figures this would give him a 40-fold increase in speed. He forgot to mention increase over what.

John indicated that Control Data Corporation has come out with a new little console unit including a 7-inch scope using an electrostatic deflection. This scope requires 6 microseconds per character and mounted on the same table is a keyboard for use as an input to a computer. The whole thing is an attachment to a computer and the price is somewhat uncertain at this point.

My conclusion is because there is competition of one kind or another and John is only one person involved in this overall activity, we must do some aggressive selling here in order to get this job. I plan to contact John and perhaps go out to San Francisco in the next several weeks.

H.E.Anderson

HEA:ncs
cc: Ken Larsen
Stan Olsen
Ken Olsen

XLER

dec INTEROFFICE MEMORANDUM

DATE January 31, 1963

SUBJECT Sylvania

TO File ✓

FROM Harlan E. Anderson

I spoke with Dr. George Rosen at Sylvania's Advance Research Laboratory regarding their possible need for a PDP-1. His telephone number is TW-4-8444, Extension 414. He said that they do not yet have sufficient justification for a machine in-house. However, he is interested in renting time on an hourly basis to run a particular problem. He would be willing to do this here at Maynard and wanted to know what the hourly rate would be and whether there was a lower rate for second shift use. I have not yet given him an answer on that but should answer that next week. For this trial problem he would need about 100 hours of computer time over a period of about two months.

The configuration that he needs would include an analog-to-digital converter and he would like to have the capability of printing out on an Anelex Unit. The A-to-D converter would not need sample and hold and ten bits of accuracy is more than adequate and the speed would need to be about 10,000 conversions per second.

I plan to call Dr. Rosen early on the week of the 4th of February to pursue this discussion. My present thoughts are why don't we loan them a computer in their facility with an A-to-D converter and one mag tape unit and one Type 30 display. Then he could bring mag tapes out here to print on our PDP-4. The only reason for putting the machine down there is to try and generate enthusiasm among the other people at Sylvania. We have known that they have had general needs and interest for the PDP-1 for a long period of time but have never been able to materialize it into a sale. Perhaps this is the opportunity to do something similar to what we did at Raytheon.

H.E.Anderson

HEA:ncs
cc: Stan Olsen
Nick Mazzarese
Peter Bonner

dec INTEROFFICE MEMORANDUM

DATE January 24, 1963

SUBJECT Princeton University PDP-1

TO Nick Mazzarese

FROM Harlan E. Anderson

cc: George O'Dea

Probable Princeton PDP-1 Configuration

1.	Basic PDP-1	$120K
2.	Type 10 Mult. and Div.	10.3K
3.	2 - Type 12 Memory Modules at 30K	60.0K
4.	Type 15 Memory Control	10.0K
5.	Type 20 16 Channel Sequence Break	15.3K
6.	Type 30 CRT Display	14.3K*
7.	Type 32 Light Pen	1.3K
8.	2 - Type 50 Tape Units at 18K	36.0K
9.	Type 52 Tape Control Unit	38.0K
		$305,200

*This may be changed to an Ultra Precision CRT (Type 31) pending technical discussions between Bob Savell and Jerry O'Neil and Dr. Benoit of Princeton.

Mr. Shultz, who handles the business aspects of the Physics Group at Princeton said they would prefer to have partial deliveries and make payments as the equipment is delivered. He also indicated that he was meeting with AEC people to start getting their approval to make this a sole source procurement on Monday 28 January 1963.

H.E.Anderson

HEA:ncs

INTEROFFICE MEMORANDUM

DATE January 24, 1963

SUBJECT American Psychology Association Exhibit

TO Ken Olsen

FROM Harlan E. Anderson

cc: Nick Mazzarese
Bob Savell

Today I was visited by Charlie Brown and Jim Duva of the Operations Analysis Laboratory at Bedford. They came to try and convince us to cooperate in staging a demonstration of computer control psychology testing at the technical meeting of the American Psychology Association. This meeting will be held around the Labor Day week-end in Philadelphia and will be attended by about 3,000 to 4,000 psychology people. There are normally commercial exhibits and non-commercial exhibits associated with this convention. The non-commercial exhibits are rent free but are normally very limited in space. They would like to show a basic computer with three or four scopes with light pens and at least one character generator. They would treat each scope as if it were a test station for psychological testing of subjects. They would also like to have at least one magnetic tape unit.

We have worked out a system for slaving scopes to the DEC Type 30 scope. These scopes are manufactured by a company whose name they were not sure of but it was something like Typetronics. The slave scopes cost about $1700 each and are 14 inches. We already have one of these attached as a slave to the scope at Bedford. Their ultimate plan would be to drive them in parallel and to put a switching box in front of each scope so that it could be turned on or off; thus, giving the impression of different information on each scope. This would be equivalent to sequentially illuminating the scopes and when coupled with a character generator they hope to have virtually flicker-free operation for reasonable amounts of information on the face of the tube.

In addition to the above equipment, they would like to have the psycho acoustics lab that BBN has been developing for them attached to the PDP-1. This work is being done by Gerry Elkind and it is about equal in size to a PDP-1. It does such things as automatic calibration of audio oscillators, etc. It has devices called knob twisters which work directly from the PDP-1 and have flexible cables that attach mechanically to knobs of some of the instruments that they use.

These people have a nine minute film describing in general terms this psychology laboratory approach they are using. They would be willing to loan this to us if we would like to see it, or they would be willing to demonstrate their present state of activity. I said we would call them about the 1st of February to make a date for the following week to come see them. I have made no commitments other than to declare that we are interested in pursuing the discussion further. If they are going to have space at this show, they must put in their request before March. I believe we should look into the approach for slaving scopes to the PDP-1 scope to see if it is really desirable. I would like to have Bob Savell contact Charlie Brown and perhaps go over to see the demonstration.

They have built all of their utilization of the computer around Decal and are very pleased with it and apparently are making very good use of it. They apparently have used the instruction generator feature extensively to develop special language symbols for their application. They also have made extensive library tapes that allows non-programmers to utilize the whole system with great ease.

One of their demonstration programs involves using the scope as a typewriter. In this they show the keyboard at the bottom of the scope and the typed information at the top. This pseudo typewriter, of course, has many extra flexible features such as when you change to upper case all the keys take on the new symbols automatically. It will also modify our light pen in some way which I do not understand.

They also indicated to me that the Air Base plans to fund a contract with Ward Edwards at the University of Michigan so that he can purchase a PDP-1 computer for use in decision making research. We should figure out how to follow up on that one in the near future.

In addition they plan to order a significant amount of new equipment including the following:

Extra Core Memory
Memory Extension Control
Type 52 Tape Control
Two Additional Type 50 Tape Units
Magnetic Drum

The summary of all the above ramblings is that their work looks interesting and we should send a delegation of 4 or 5 people over to see a demonstration the first part of February.

H.E.Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE January 22, 1963

SUBJECT Astra, Incorporated

TO Gerald Moore

FROM Harlan E. Anderson

Wayne Brobeck who is one of our Directors from Washington, D. C. is also Director of a Company called Astra, Inc. in Raleigh, North Carolina. They have a member of their staff named Dan Weinberg who is active in medical electronics work in connection with Duke University. Some time in the future it might be desirable for you to see if we have any areas of mutual interest. I know nothing of Astra or of the work of Mr. Weinberg except that Wayne Brobeck has mentioned on several occasions that we might have mutual interest.

H.E.Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE January 11, 1963

SUBJECT Space War for Electronic Associates

TO John Koudela

FROM Harlan Anderson

Yesterday I spoke with Tom Truitt of EAI and asked him if he had played space war on the PDP-1 and he said no, because they did not have a tape for space war that would work on their machine. I assume that the difficulty is in the area of the tape not being for multiply or divide or their not having sufficient instructions on how to use it or something of that kind. Would you make sure that they have a tape that will run on their machine and that they know how to use it within the next week.

H.E. Anderson

HEA:ncs

dec INTEROFFICE MEMORANDUM

DATE January 11, 1963

SUBJECT DECUSCOPE for Electronic Associates, Inc.

TO Elsa Newman FROM Harlan E. Anderson

Would you please send all back issues of Decuscope to two people at Electronic Associates, Inc.:

1. Dr. Thomas D. Truitt, Director
Advanced Study Group
Electronic Associates, Inc.
Princeton, New Jersey

2. Mr. John Curtis,
Vice President of Marketing
Electronic Associates, Inc.
Long Branch, New Jersey

Thank you.

Harlan E. Anderson

HEA:ncs

cc: K. Olsen
G. Bell
N. Mazzarese
S. Olsen

Itinerary - West Coast Trip

(HEA, GB, NM)

Day	Time	Visiting	Where	Telephone	Hotel
Monday	3:00 p.m.	Dr. Lee Lusted	Oregon Primate Center Beaverton, Oregon	503 Mi-4-0111	Fairmont Hotel San Francisco
Tuesday	8:30 a.m.	Julian Feldman, Business Admin.	U. of Calif. (Berkeley)	Ex. 4041	
	10:30 a.m.	Howard White	U. of Calif. (Berkeley)		Fairmont Hotel San Francisco
Wednesday	9:00 a.m.	John McCarthy and Prof. Pat. Suppes	Stanford University Stanford, California	Da-1-2300 Ex. 2895 or 2970	(Probably) Thunder- bird In Los Angeles
Thursday		Bob Von Buelon	System Development Corp.		
			Eyeball Associates (Meeting Either L.A. or S.F. per Ted Johnson)		
	11:00 p.m.	Returning to Boston TWA #2			

ITINERAY WEST COAST TRIP
(HEA , GB, NM)

MONDAY 3PM DR. LEE LUSTED OREGON PRIMATE CENTER 503 Mi 4-0111
BEAVERTON, OREGON

FAIRMONT HOTEL IN SAN FRANCISCO

TUESDAY 8:30 JULIAN FELDMAN, U of C. (BERKELEY)
BUSINESS ADMIN. x4041

10:30 HOWARD WHITE U. of C. (BERKELEY)

FAIRMONT HOTEL IN SAN FRANCISCO

WEDNESDAY 9:00 JOHN MC CARTHY & PAT SUPPES STANFORD UNIV.
DA 1-2300 x2895 x2970

PROBABLY THUNDERBIRD IN L.A.

THUR. BOB VON BUELOW SYSTEM DEV. CORP.

EYEBALL ASSOCIATES
(MEETING EITHER IN L.A. OR S.F. PER T. JOHNSON)

RETURN TO BOSTON ON TWA #2 11 PM

cc K. OLSEN
G. BELL
N. MAZZARESE
S. OLSEN

YOUR ITINERARY

Date	Leave	Arrive	Air Line	Flight No.	Dep.	Arrival
2/18	Boston	Chicago	UNITED	715	8:00am	9:20am
2/18	Chicago	Portland	UNITED	833	10:00am	1:53pm
2/18	Portland	San Francisco	UNITED	779	8:15pm	9:37pm
2/20	SanFrancisco	LosAngeles	UNITED	795	8:15pm	9:20pm
2/21	LosAngeles	Boston	TRANSWORLD	2	11:00pm	8:26am

Travel Plans (Gordon Bell / H.E.G.)

Feb 18

UAL # 715

~~CA~~

Bos → Chic

8:00 9:20

UAL # 833

Chic → Portland

10AM → 1:53 PM

Feb 18

Port. → San Francisco

UAL # 779

8:15 PM → 9:37

Feb. 20

San Francisco → Los Angeles

UA # 795

8:15 PM → 9:20

Feb. 21

LOS ANGELES → NEW YORK

~~UA # 94~~ TWA # 2

11:00 PM → 6:50 AM

~~TWA # 2~~ TWA # 2

7:30 → 8:26

N.Y Bos