digital INTEROFFICE MEMORANDUM

DATE: June 29, 1967

SUBJECT: Report From Third Meeting on Sales Activity Reporting

TO: Ken Olsen
cc: See distribution list on last page

FROM: Ron Smart

1. Central Sales Activity File

The file, its updating by salesmen, and reports to be produced from it were discussed. There was general agreement on the usefulness and practicability of the project. A pilot run will commence in a few weeks, based on punched card sorting and a relatively simple listing program. The schedule is to establish feasability with the input from 10 or 20 salesmen, commencing in July. It is expected to have all salesmen in the system by October, with a general program producing basic reports and an updating program to simplify monthly input to the file, which by then will be on magnetic tape.

Those concerned will be contacted during July to establish the format of the basic reports.

An example of the proposed basic report format is attached. The sequence of items in the report will, of course, be different for marketing people, field sales people, sales department, etc.; however, for simple processing the content and format of the line items will remain the same for all reports.

Processing will consist simply of extending each line item ($ times probability) and summing over line items, to provide estimated total business within various catagories (by office, by product line, by salesmen, even by probability range to give frequency distributions). More elaborate reports and those based on historical data will be done by hand on the basic listings initially.

2. Review of Present Reports

2.1 Monthly "thermometer" charts were tabled, updated to May 67. These show bookings against budget for each office, region, etc, by product line.

2.2 Quarterly charts of forecast, bookings and figure of merit against time for each office, region etc. These are being updated and put onto slides quarterly. The next showing will be in July.

2.3 Regional Managers Monthly Report. These are a commentary on the most significant events in the region, and are produced separately for each product line. There is still some work to be done to standardize content and these are expected to come in from all regions by July.

2.4 Listings from Accounting Department.

2.4.1 Bookings

Produced monthly by product line for each office with regional etc. total. These are being converted to consist of list price less quantity, OEM or special discounts. They are "accepted" orders as recorded by accounting, not customer P.O.'s before acceptance. The foreign bookings are to be the same quantity, i.e. must not include freight etc. nor any subsidiary uplift. Specifically they are not to be the "less 26 per cent" or 24 per cent figure as billed to subsidiaries. Subsidiary bookings data will be taken from the monthly MSR's which must only include confirmed orders (i.e. those with a DEC order number issued) and must take into account order changes, cancellations, etc. It was agreed that foreign bookings would be reported currently, not lagged by 2 months.

Quarterly and YTD totals will be done by Accounting Department in due course, to reduce the processing to be done in the Sales Department.

2.4.2 Quarterly Customer Summary ("Recap")

Listing of domestic customers and their total quarterly bookings, separately for each office. There are roughly similar reports produced by Sales Department (Brad Towle) for subsidiaries.

2.4.3 Expenses

Domestic monthly cost center reports as produced by Accounting Department are further summarized by Sales Department to produce simple office managers control feedback. Subsidiaries do their own reports and break these down by Sales and Field Service. Accounting will be breaking down domestic expenses by Sales and Field Service in future.

2.4.4 Manpower Reports

There is a weekly proof listing by which bad time-reporting can be monitored and corrected. The monthly report of direct sales labor by product line for each office, is subject to considerable processing by Sales Department, to arrive at a report for the Product Lines. The subsidiaries MSR's also require considerable processing. Some additional help from Accounting Department will be considered in this area (Dave Packer).

2.4.5 Sales Figure-of-Merit Produced Monthly

This report is to come in two forms, slightly different from what is now done. The changes are to give a more reasonably smoothed monthly figure and to provide a YTD figure for comparison against budget. (3 months bookings/ 3 months expenses lagged 2 months) and (YTD bookings/ YTD expenses, lagged 2 months).

3. General Comment

Dave Packer reported that the historical bookings can now be analyzed by option and that very shortly, it will be possible to similarly analyze the backlog.

The next meeting will be called in July when the pilot run has been made with the Sales Activity File.

Ron Smart

cc: Win Hindle
Stan Olsen
Ted Johnson
Harry Mann
Howie Painter
Dave Packer
Don Sommers
Clayton Rix
Bob Collins
Bill Farnham

Example of printout of an item

Current date	Region	Office	Salesman	Item sequence #	Prospect Name		product	Value	probability	date expected	Status code	Telephone calls / visits / Letters in $ period	competition	comment	(Value × probability)	Computed by status code ≥ 7 only
11/67	37	51	914	123	UNITED CORP.	ROCHSTR.	10	$ 450,000	70%	4/68	3	201	CDC 3200	EXAMPLE ONLY	$ 315,000	

total probable Value — $ 3,729,000

Note. ① totals will be available by Salesman, by office, by product, by month expected etc. or by combinations of these

② there is a "status code" to differentiate between different types of items :-

9 means DEC order # assigned
8 " customer P.O. received
7 " awaiting P.O. to release machine on Quantity (OEM) agreement.
6 " " " against LOI.
5 " " " " VI
4 " " " for system under very active consideration
3 " general prospect
2 means the item refers to a whole quantity agreement, the date expected is the signing of the agreement date.
1 means project canceled or funds lost
0 means lost to competition

digital INTEROFFICE MEMORANDUM

DATE: June 29, 1967

SUBJECT: PRESENTATION TO BOARD OF DIRECTORS' ON JULY 25

TO: Ken Olsen
Harry Mann
Stan Olsen
Nick Mazzarese
Win Hindle
Pete Kaufmann

FROM: Ted Johnson

The presentation to the Board of Directors' on July 25th is proposed to be as follows:

I. Organization Chart (overall)

   A. Functional and organizational relationships in field and with plant
   B. Map of offices and areas

II. Regional Organization Chart

   A. A typical region
   B. Chart showing profile (composition) of applications and other resources in a typical region

III. DEC Sales Engineer

   A. Characteristics of sales engineers at DEC
   B. Chart of salesmen by age, education, salary level

IV. Sales Expense Program

   A. A chart of expenses (Fiscal Year 1968/1967 - Budget/Actual)

V. Bookings - Fiscal Year 1967/1968

   A. By product
   B. By area

VI. Sales Reporting

VII. Field Service (past, present, future)

   A. Organization
   B. Characteristics
   C. Profile of field service engineers
   D. Budget

VIII. Long-Term Plans and Considerations

Please advise as soon as possible on this content. Is it too comprehensive? Is it what is wanted?

Ted

ecc

memo to Ken file

6/29/67

KEN,

Here are some copious notes on the wire-wrap machine that you were investigating last year.

The methods which we were looking into were as follows:

1) Moveable rack and pointer
   a) Synchronous motor
   b) Thompson rollers
   c) Cam, mounted at base of rack
   d) follower

2) Rohlix linear actuator

I hope these notes will be of some assistance in recalling the ideas.

As ever,

Roger Williams

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MAYNARD, MASSACHUSETTS

METHOD #2 (FOR LOCATING WIRE WRAP GUN AT DESIRED POSITIONS)

ROHLIX (LINEAR ACTUATOR)
BARRY CONTROLS

A) .0001 BACK LASH
OPERATES LINEARLY ~~OF~~, WITHOUT ROTATION OF OUTER HOUSING, ALONG FIXED ~~SHAFT~~, ROTATING SHAFT

B) METHOD OF APPLICATION
1) FOR POSITIONING GUN ALONG VERTICLE COORDINATES

2) WIRE WRAP GUN TO BE FASTENED TO ROHLIX UNIT

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MAYNARD, MASSACHUSETTS

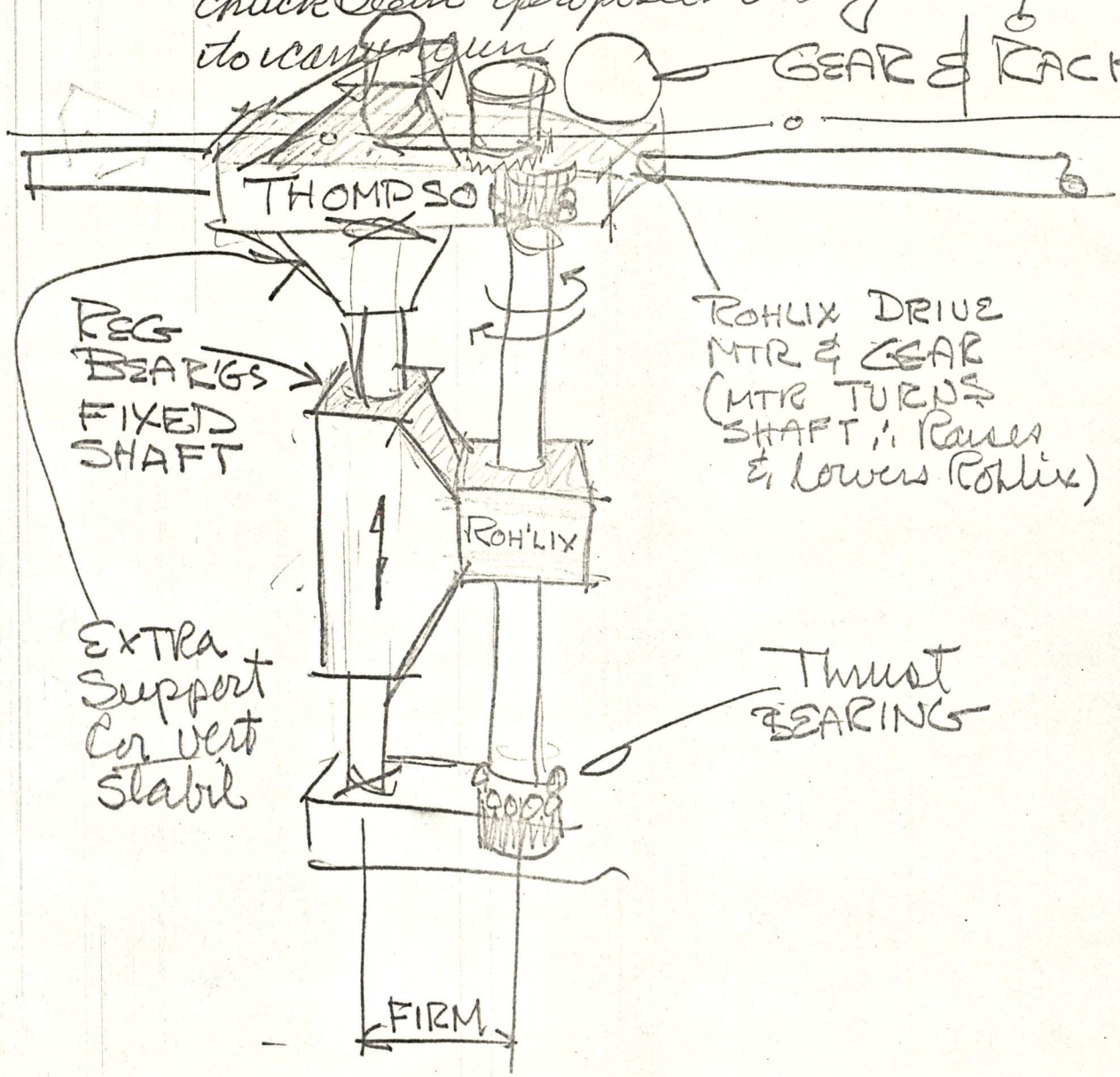
Simmons mach / Beth & Ordway

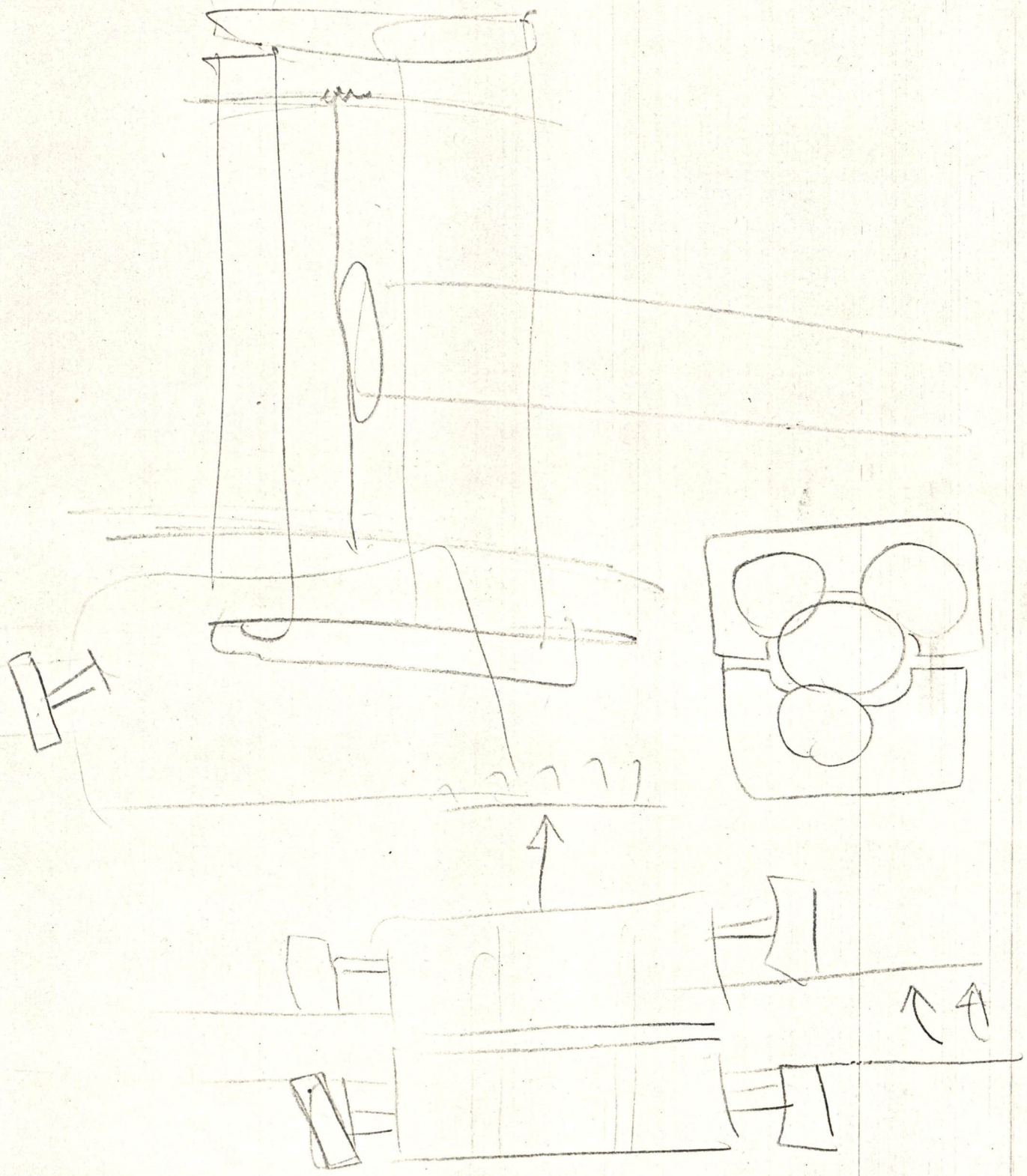
3-21-66

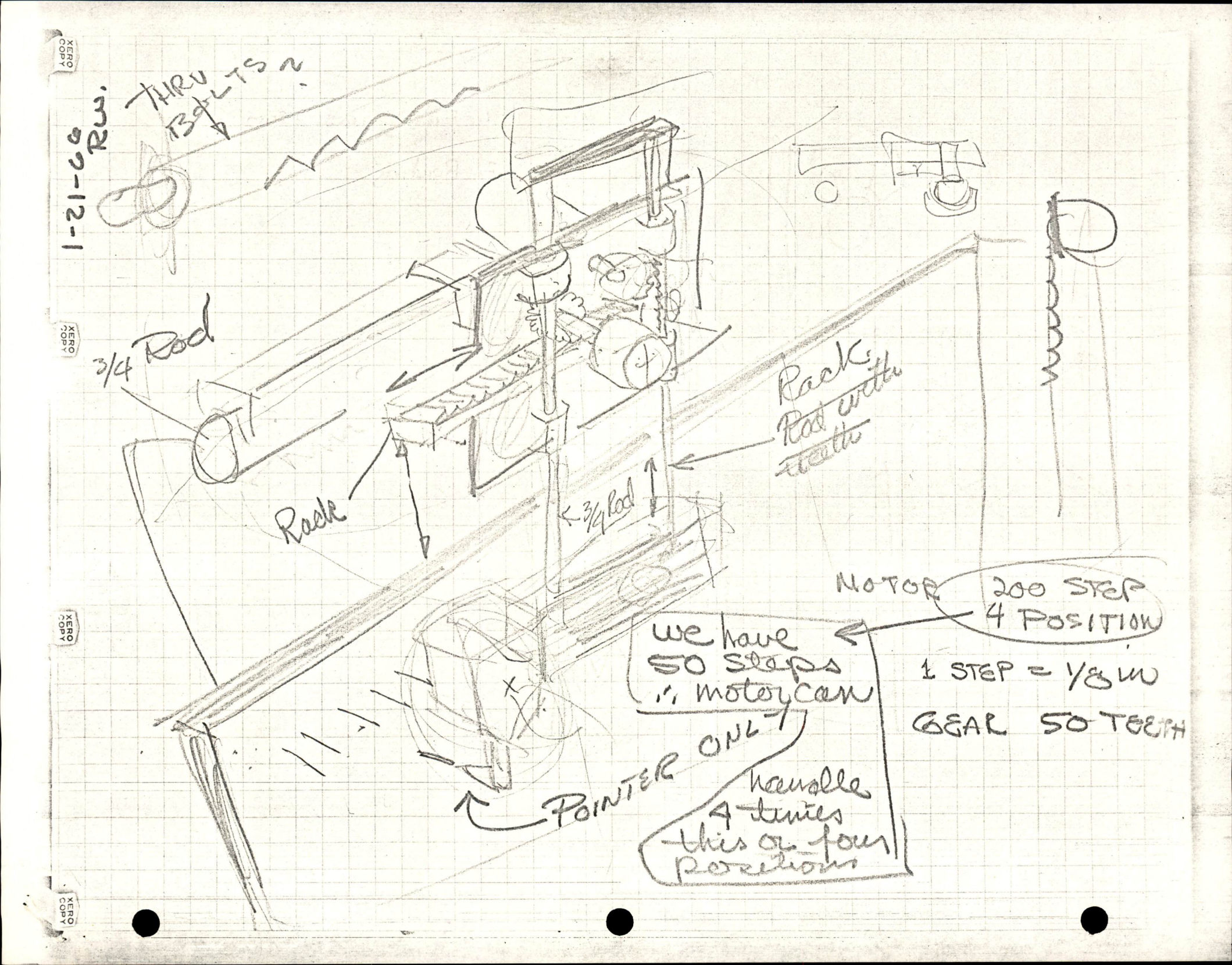
Subj – wire wrap

Purp. – investigate possibility of using "Roh'lix" linear Actuator (purch Barry Controls) for carrying wire wrap gun around the board

Read: can get a similar arrangem – Chuck Stein proposed using → gun & 3 wires to carry gun

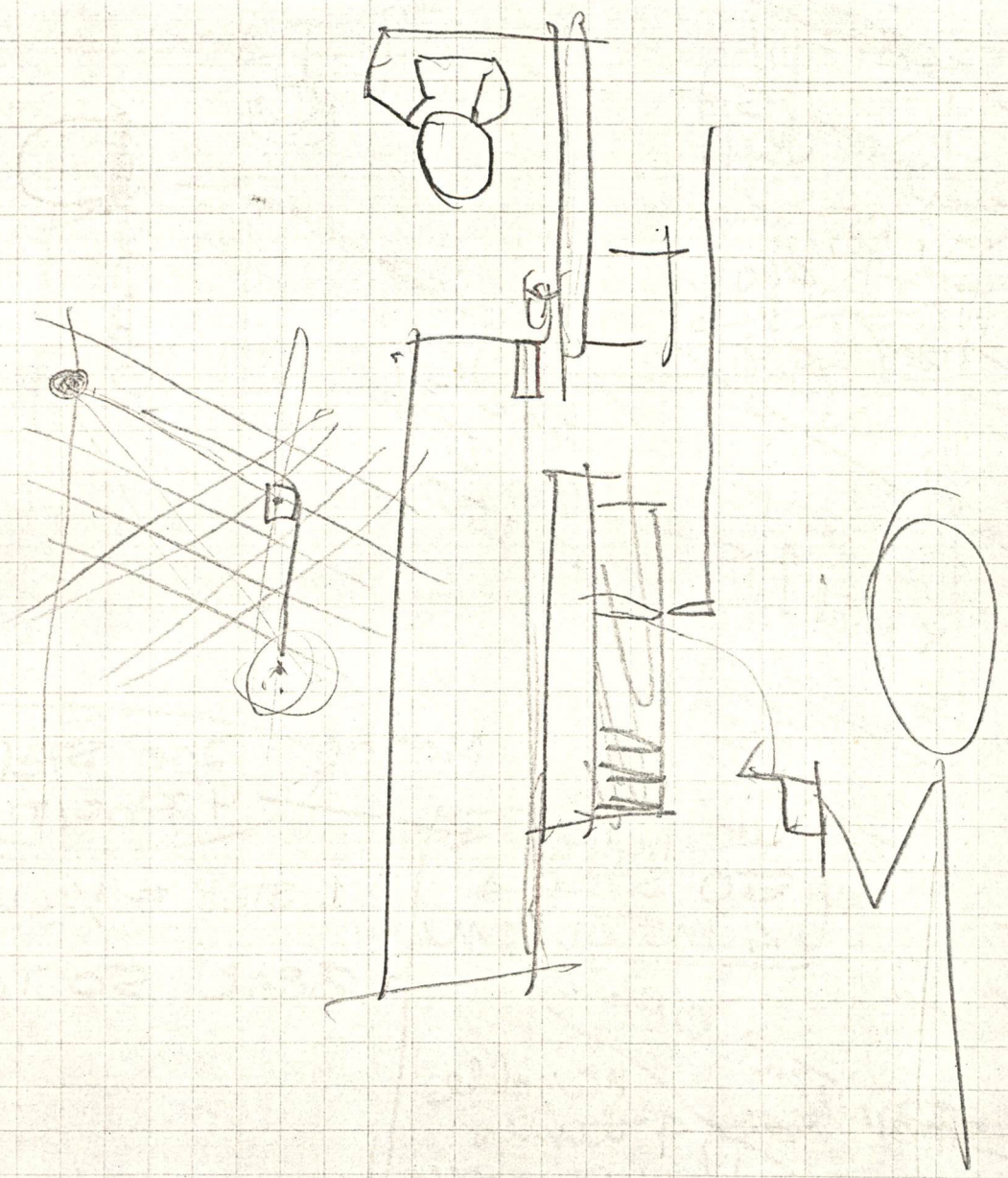


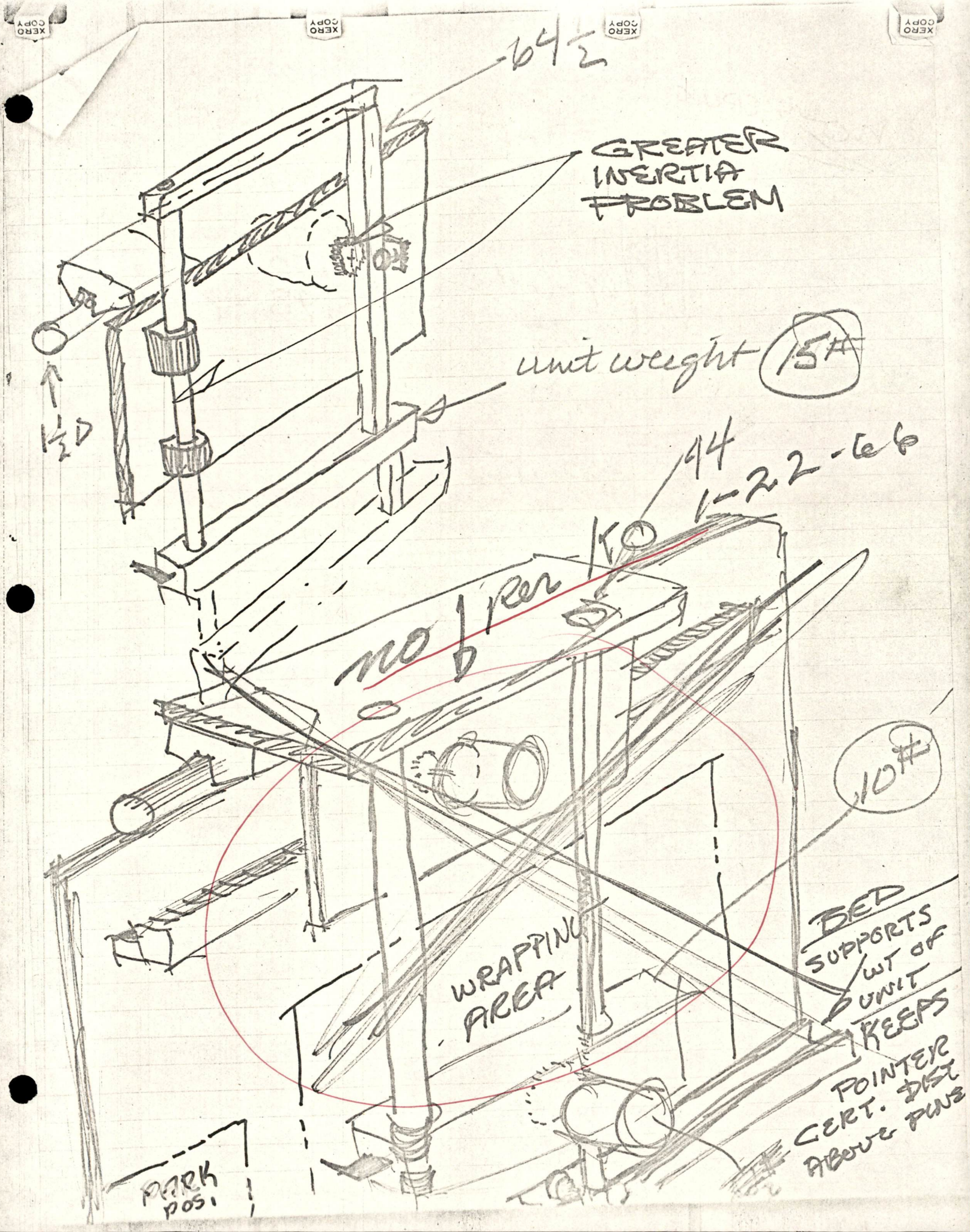


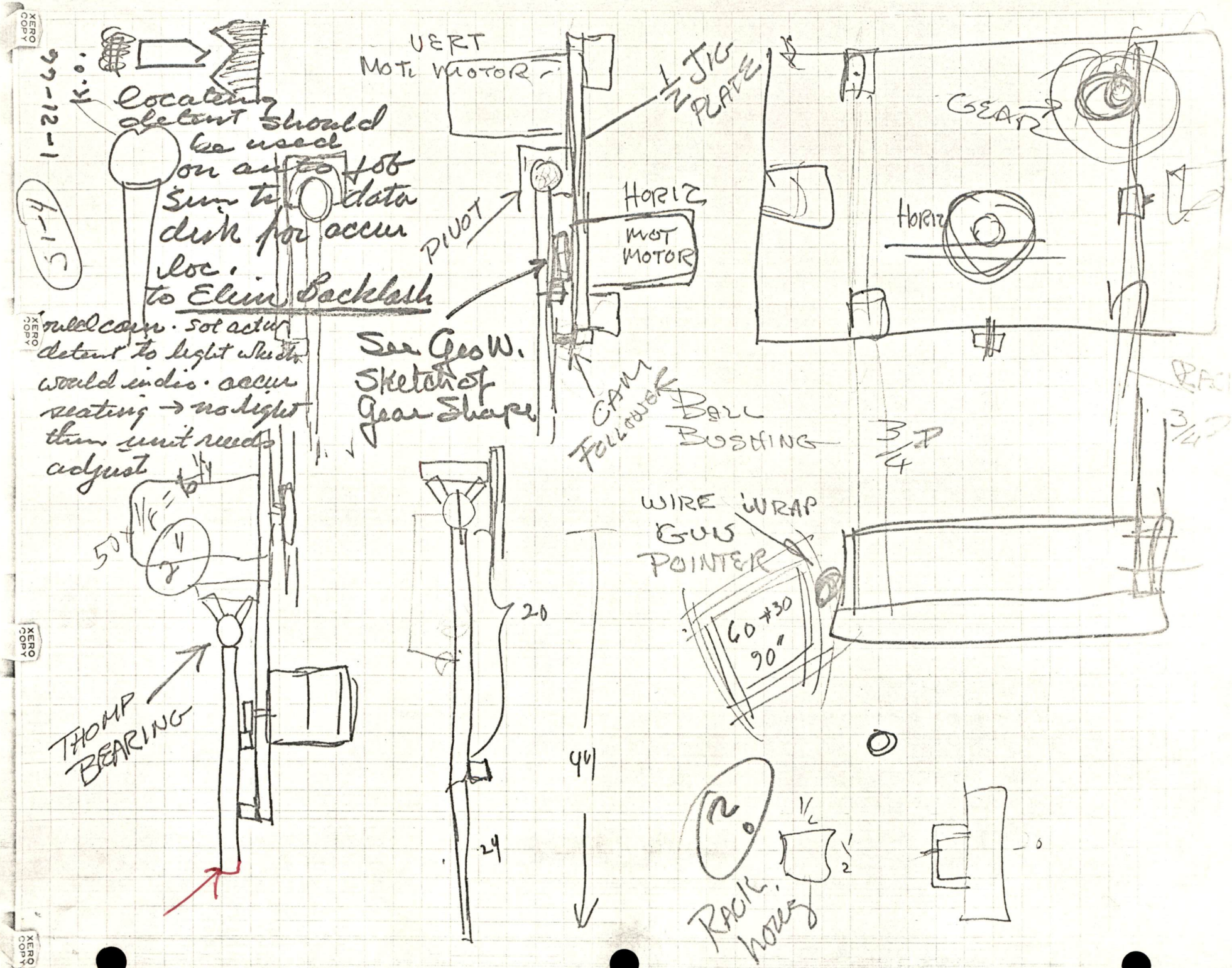

1-21-66 RW.
THRU BOLTS 2
3/4 Rod
Rack
Rack Rod with teeth
3/4 Rod
MOTOR
200 STEP 4 POSITION
1 STEP = 1/8 IN
GEAR 50 TEETH
we have 50 steps in motor can
POINTER ONLY
handle 4 times this or four positions

1. Findingpins FROM - TO

2. Routing

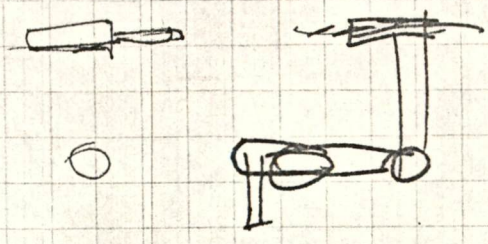


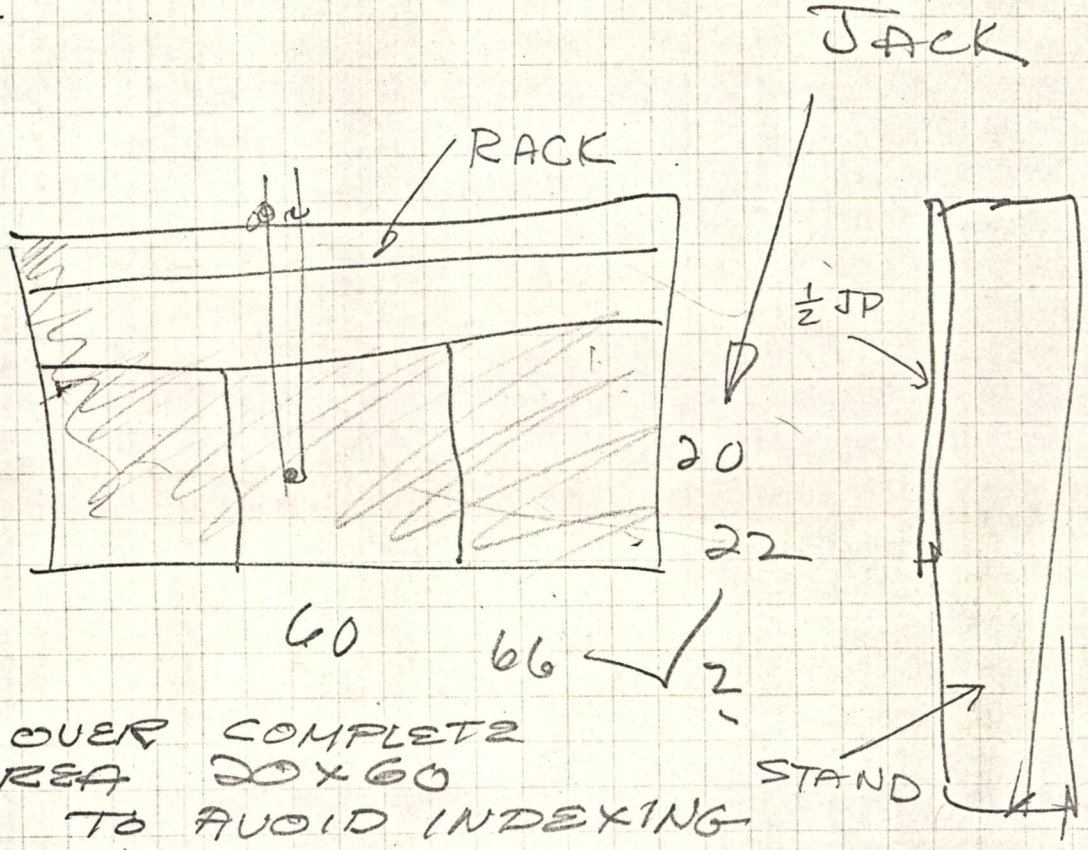

64 1/2
GREATER INERTIA PROBLEM
unit weight 15#
1/2 D
44
1-22-66
no liner
10#
WRAPPING AREA
BED SUPPORTS WT OF UNIT KEEPS POINTER CERT. DIST ABOVE PWB
PARK POS.


1-21-76
Location detent should be used on auto tie to data disk for accu loc. to Elim backlash
could cause sol actu detent to light skirt would indic. accu seating → no light then unit needs adjust
See Geo W. Sketch of Gear Shape
VERT MOT MOTOR
PIVOT
HORIZ MOT MOTOR
CAM FOLLOWER
BALL BUSHING
3/4
GEAR
HORIZ
WIRE WRAP GUN POINTER
60 #30 90°
THOMP BEARING
20
44
24
RACK HOUSING
1 1/2
1/2

SZ-4

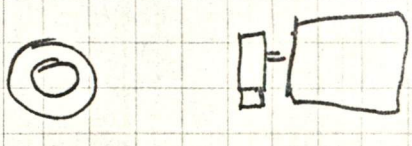
1-21-66
K.O

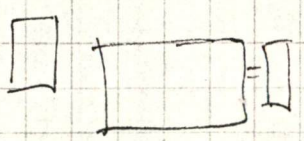


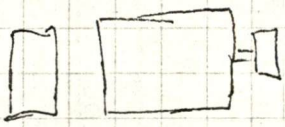


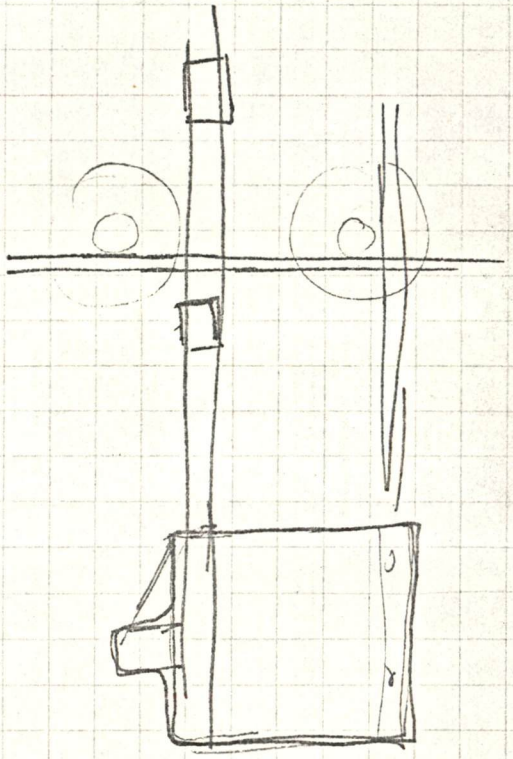
1. COVER COMPLETE AREA 20 × 60
TO AVOID INDEXING & DOING 3 STAGE AREAS

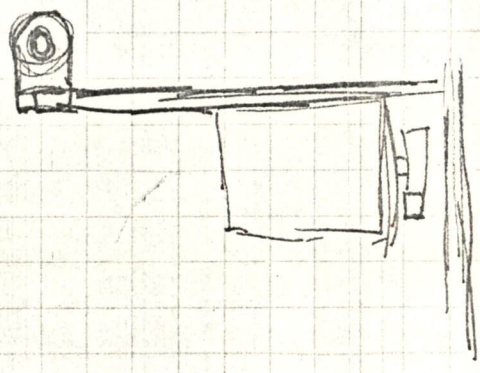
SZ-4 1-21-66
K.O.

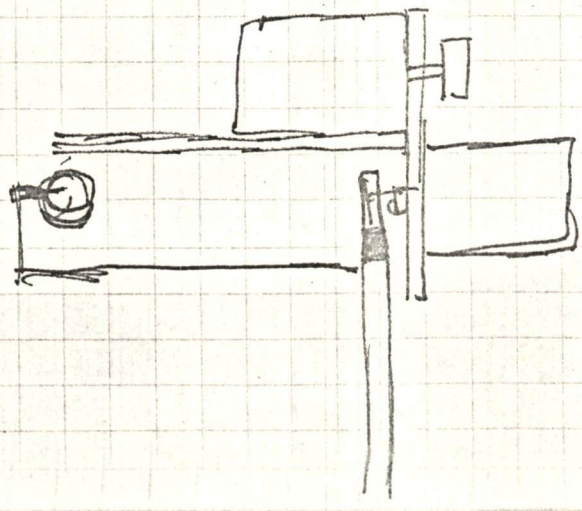


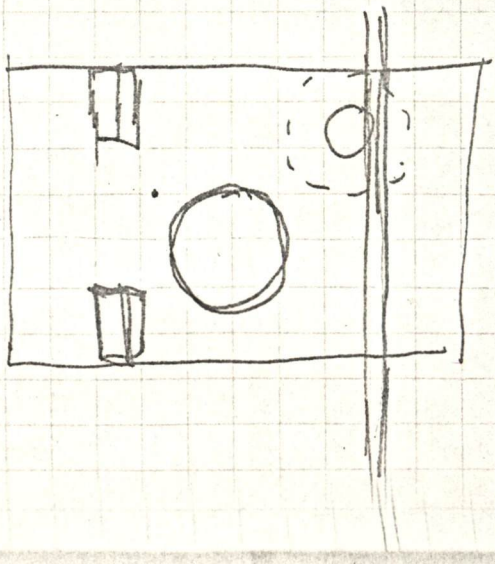




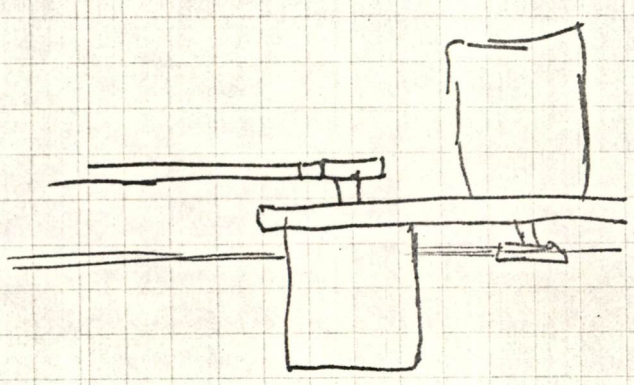


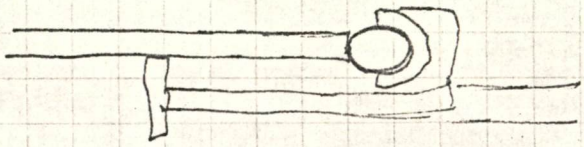


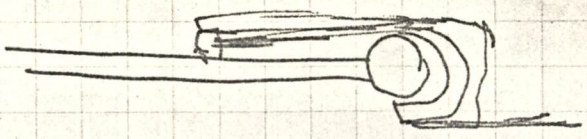


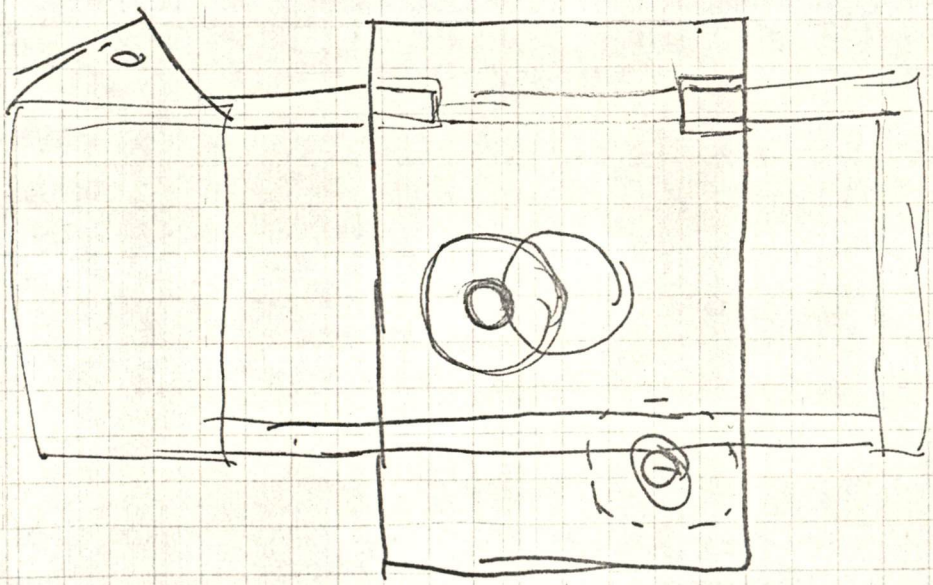


S4-4 1-21-66
K.O.

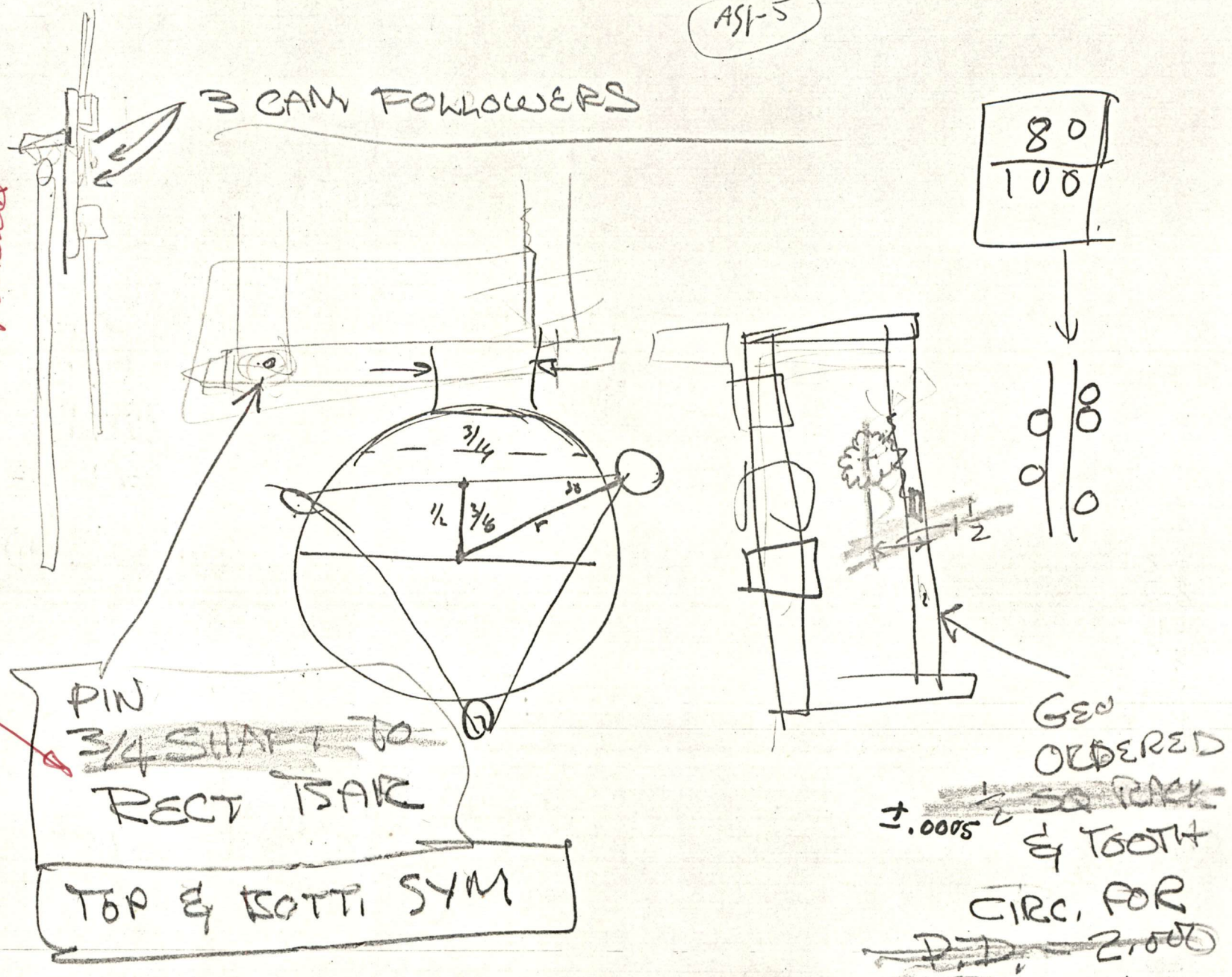








ASI-5



Shaded background is yellowed on original & indicate importance

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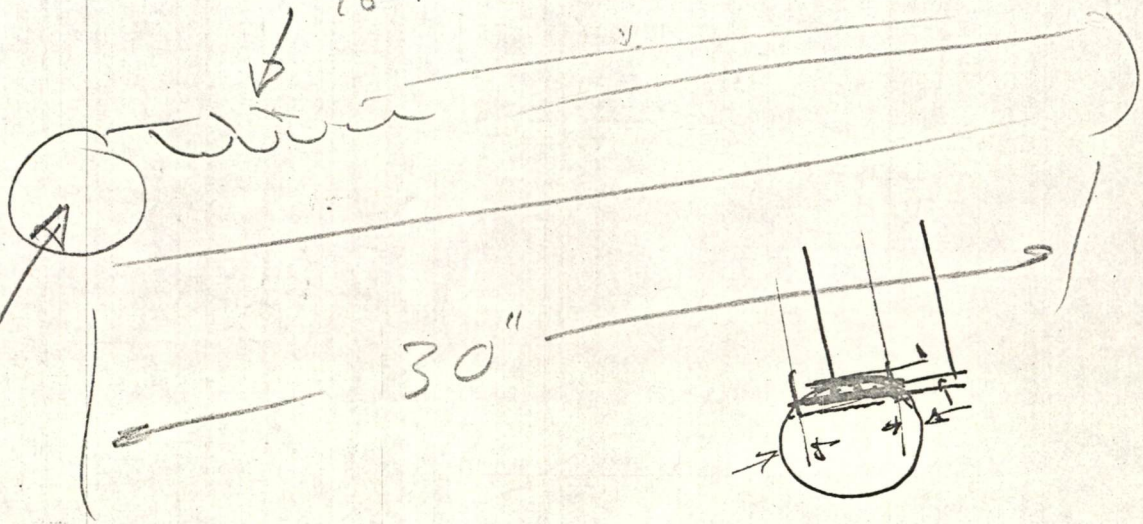
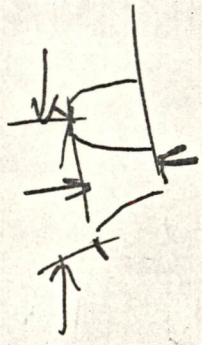
MAYNARD, MASSACHUSETTS

1/21/66

VCOM,



3/4 DIA. GROUND & POLISHED



16.55 ea

COMPLETE,

(5)

Leo.

WORCESTER GEAR,
MR. MATUZIC

755-3109

1-21-66 AS4-5

≠ 20° FULL DEPTH INVOLUTE GEAR

PG 656 MACH HD BK

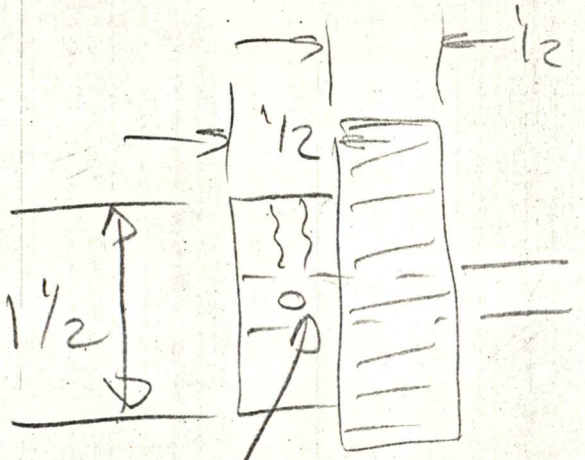
~~DIST FR CTR~~ DRIV GEAR TO RACK

½ PITCH DIA.

½ a = .03978

½ + ½ P_D - .03978

" LONG



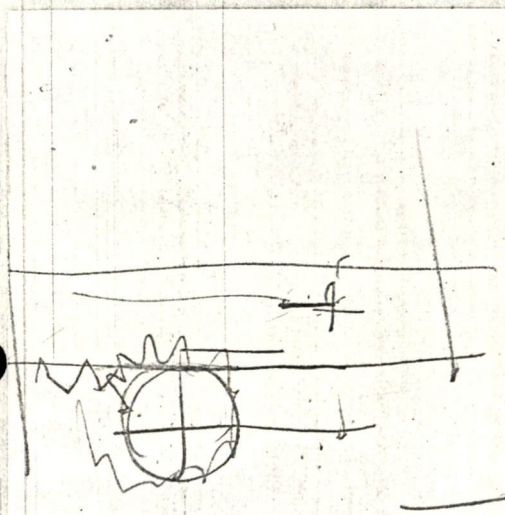
50 TOOTH DRIVING GEAR

AS2-5

.375
.376 BORE

(2) NO. 10 SET SCREWS AT 90°

12-21-66 (AS3-5)



.3183 × .125

1 5 9 1 5
6 3 6 6
3 1 8 3

.039 7 8 7 5

6 → 8 → 48 → 12 → 3

.079 chk = ✓

39 → 12 → 3

← ADDENDUM

.039 7 8 7 5 OD = PD + 2 × ADD

.039 7 8 7 5

.079 5 7 5 0

1-24-62

Rack & Pinion

CIRC = $2\pi R = 50 \times \frac{1}{8}$ ×50

$R = \frac{50}{2} \times \frac{1}{\pi} = 25 \times .3183310 \times .125$

$R = 25 \times \frac{1}{\pi} \times \frac{1}{8}$

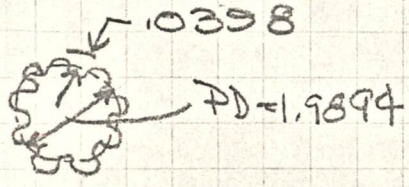
$D = 50 \times \frac{1}{\pi} \times \frac{1}{8} = 1.976$ SL. ROL

.125
× 50
6.250 = CIRC. < (CIRC FOR 2DIA = 6.2832)

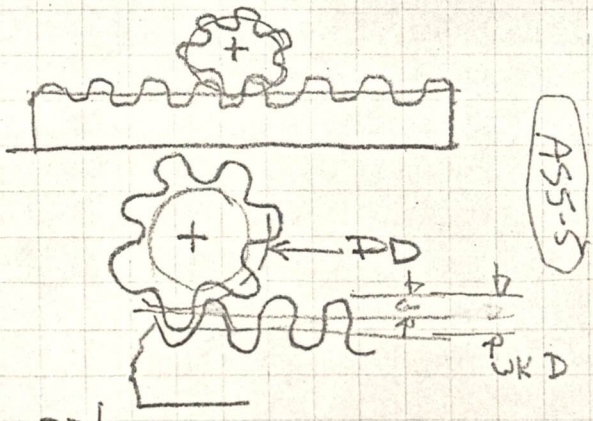
① $C = \pi D$
② $D = C/\pi$ = where $\frac{1}{\pi}$ =

.31831
6.25
159155
63662
190986
1.9894375 = PITCH DIA

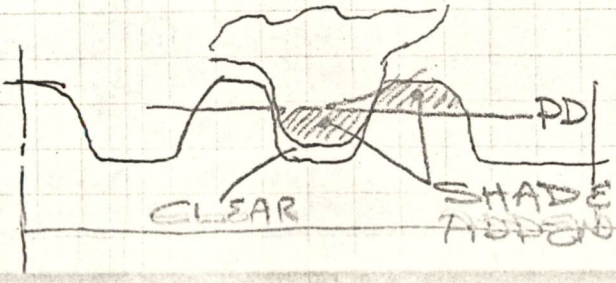
P = 50 @ 1/8 PITCH CTRS
CIRC = 1/8 × 50 = 6.250
PITCH D. = C/π = 1.9894375 = 1.9894
ADDENDUM = (.3183)(.125) = .0397875 ≅ .0398
[P]

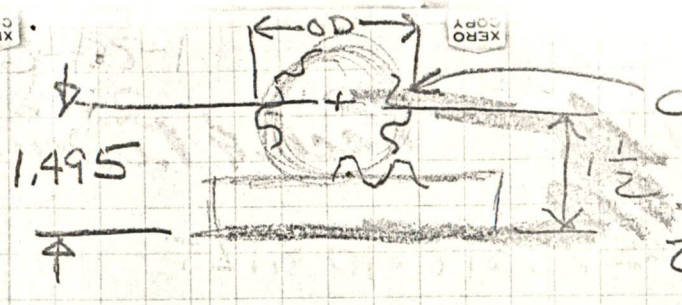


WKG DEPTH = .6366 → ③
.125 ⑧ → 24 → ⑥
31830
12732
6366
.07957750 → 33 → ⑥
CHK = √



.0796
.0398
.0398





OD = .0397875
.0397875
1.9894375
2 | 2.0690125
1.0345062 = R
ADDEN — .0397875
℄ TO EDGE RACK = .9947187
.5000
1.4947187

approx 1 1/2

OD = 2 = 2 1/16
R = 2 = 1 1/32
ADD = 2 = - 1/32
1.000
.500
1.500

℄ TO TIP TOOTH W OF RACK

1-28-66

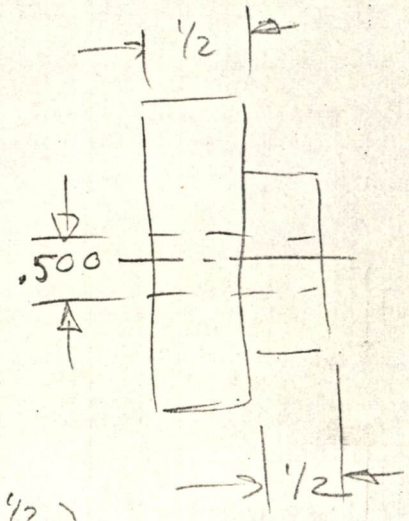
Judy,

G35 ME G30

Worcester Gear

Information from G. Wood

in 1/8 pitch gears

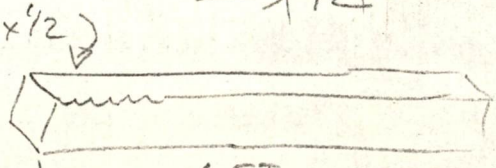


11/555.1212

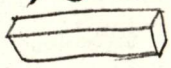
Worcester Gear Co.

755-3109

Mr. Matusik.



$150 cutter (?) follows.



Accuracy — accumulated .0005/ft.

commercial. — within .005

crs.

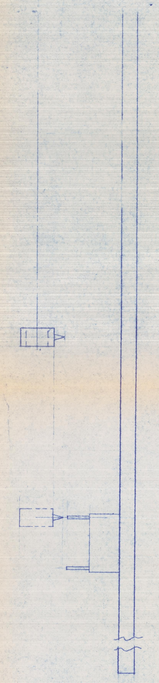
Quantity	Rack (6 ft)	Gear (50 teeth)	
1	$41 (ex stock)	$38	firm
10	18.90	$13.50	within 20%

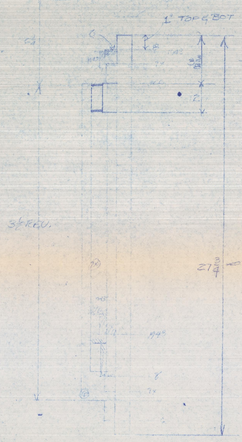
REV LTR

DO NOT SCALE PRINT

NOTES:

CHANGE NO	DESCRIPTION	DATE	APP





SIDE VIEW OF REL. BETWEEN 1ST BLOCK (TOP) & MTG BRKTS FOR -1943, 7%, 8, & PROPOSED G (SCALE = 1/4)

HOLE LEGEND					
	SIZE	QTY		SIZE	QTY
G			A		
H			B		
J			C		
K			D		
L			E		
M			F		

UNLESS OTHERWISE SPECIFIED
GRINDING-IRRESPECTIVE OF THE LAY √
MICROINCHES
TOLERANCES
FRACTIONS ±1/64 DECIMALS ±.005 ANGLES ±1/2
MATERIAL
ROCKWELL SURF TREAT

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digital EQUIPMENT CORPORATION
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TITLE
FOR
REV LTR

28.6.67
MSG NO R- 3160.
TO KEN OLSEN

FROM JOHN LENG

CONFIDENTIAL
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RE YOUR MSG 2108.

WE HAVE WITHDRAWN OFFER AND WE HAVE FORMALLY TERMINATED HIS EMPLOYMENT, THEREFORE I SUGGEST THAT YOU DO NOT SEND TELEX.

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dec INTEROFFICE MEMORANDUM

DATE June 28, 1967

SUBJECT PLANT TOURS - CUSTOMERS IN TRAINING

TO K. H. Olsen FROM Bob Lassen
cc: W. Hindle

We are now giving plant tours to customers who are attending our Training classes as suggested to you by Evelyn Dow.

This was an excellent idea, and the Training people are enthusiastic.

As a general comment, I am extremely pleased with the progress of the Training Department and particularly with the work of Jimmy Davis and Dave Edwards.

These two men are doing an excellent job of planning the company's future training needs with the product group people, and they are maintaining the degree of flexibility needed for quickly planned special courses when needed.

Still to be resolved are the company's future overseas training and domestic field training requirements. We are working on this, and I am confident that we can prepare necessary programs and provide whatever support that is needed.

R°T°L.

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8882269 DECO D

THIS MESSAGE IS C O N F I D E N T I A L

6-27-1967 K-500/739

TO: KEN OLSEN
FROM: JOHN LENG

REF: YOUR MSG 2093

WE ARE DISCOURAGING B.H. FROM COMING. HE HAS BEEN TOLD CLEARLY THE REASONS FOR ACTION. A DE V AND LAWYERS ADVISE STRONGLY AGAINST SAYING ANYTHING AT ALL TO HIM. HE WILL TRY AND USE IT AGAINST US.

WE DID NOT ACCEPT TERMS. THEREFORE WE TERMINATED OFFICIALLY. HE IS AT PRESENT CREATING PROBLEMS. A.V. WAS TO PICK UP CARDS TODAY. PLEASE AVOID ALL CONTACT WITH B. H. AT PRESENT. DETAILS WILL FOLLOW.

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8882269 DECO DO

digital INTEROFFICE MEMORANDUM

DATE: June 27, 1967

SUBJECT: SPARE PARTS SALES

TO: Ted Johnson FROM: Jack Shields

cc: Ken Olsen

I have strong feelings that Field Service should provide and expand, where necessary, spare parts sales for the company. I think there are other thoughts about how to handle spare parts, so I would like to present my reasoning.

1. Spare parts are presently set up for and handled by the Field Service organization. There have been no complaints (that I'm aware of) about the service or the efficiency of this organization, yet the profit ratio ranges from 100 to 600%.

2. Setting up another area for spare parts sales would create redundancy in the stocking of spares and reduce the optimization of inventories. This redundancy could very well eat up any additional profit by an increased spare parts sales program.

3. Spare parts are presently sold through Field Service and credited to the proper product line. Therefore, management has accurate information as to spares profit on a product line basis. This could be a consideration in the total profitablity of a product; e.g., if spare modules are credited as module sales and not to the appropriate computer product line, we tend to develop a false sense of accomplishment in module sales which never would be obtained if the computer product were not developed. It is important to know this and just how much spares income each product line develops.

4. Spare parts sales could very well be detrimental to corporate profits on a long term basis if there is separate product responsibility for this type of service. Examples are:

   a. Presently we push maintenance contracts.

b. If our customer elects not to purchase a maintenance contract, we then sell spare parts.

c. If spare parts were pushed too strongly or given the highest priority, we would lose substantial Field Service income with approximately the same profitability. We would also lose long term continuous income provided by maintenance contracts. (Spare parts sales is a one-shot affair; the average maintenance contract life is greater than five years.)

I feel that Field Service has the capability, organization, strong desire for customer satisfaction, and motivation to handle spare parts sales. Field Service wants to and can do the best possible job for the company in this area.

JJS:ned

digital INTEROFFICE MEMORANDUM

DATE: June 26, 1967

SUBJECT: VISIT WITH AGA

TO: Ken Olsen FROM: Jack Shields

A meeting was held on the 21st of June with the AGA people to discuss service problems. Those in attendance were Gunnar von Feilitzen, AGA Vice President, Medical Division; Nils Gottberg, Managing Director of Autokemi; Torbjorn Svedberg, Service Manager, AGA Medical Division; Kai Smith, AGA Engineering; and Leif Olsén, Autokemi programmer. Representing DEC were Bill Newell, Sven-Olof Martin and Jack Shields.

I opened the meeting with a general discussion of Mr. von Feilitzen's letter of June 9th to Ken Olsen. We reviewed the problem of application of ASR-33 and the use of ASR-35 with a PC02 combination. AGA was upset about the fact that not only had they had 33 problems, but the late (one year) delivery of the Model 35 and special interface forced them to use the 33 during this interim. Then they found that the 35 reader was not suitable and they also need a PC02 reader. We told them that we suspected that there may be some program difficulty in the use of their statistical program with the 33 and our people in Reading were looking into that problem at this time.

We reviewed the present staffing situation for service in Sweden and informed AGA that we had another man for Stockholm in training in Maynard who would arrive in mid-August. We also told them we had ads out for two more people and as soon as we could find qualified people they would be hired.

We pointed out that Frank Eagan from Maynard had been at AGA for two weeks and was there prior to von Feilitzen's writing to Ken. Mr. von Feilitzen had not been aware of this and was a little bit embarrased about it.

We reviewed the amount of support we had already given to AGA and felt that we had demonstrated strong commitments to provide service support on their machines.

We agreed that Frank Eagan would stay and clean up any outstanding problems on the machines, go over each PDP-8, take margins, etc., to be sure that each machine would operate properly.

In addition to this, we offered to teach a teleprinter course, model 35 and 33 to the AGA and Autokemi people because teleprinter training in Sweden (Standard Radio, etc.) was practically non-existent, and this problem had been discussed in the past with Kai Smith on his recent trip to the U.S. I might point out that all of the steps which we outlined for AGA had been previously taken by Bill Newell (with exception of the special teleprinter course) prior to Mr. von Feilitzen's writing.

We discussed the availability of service for the Autokemi systems in the U.S. as their first installation will be in Oakland, California at the Kaiser Foundation. I mentioned that I would bring our Palo Alto people into the picture on this installation and felt confident that we could give AGA good Field Service support and make this a model installation.

We also reviewed our response time in the U.S. and cautioned AGA about providing adequate backup systems should these installations require special response time situations.

We reviewed our warranty and installation policy with AGA and they were happy with our policy of one installation and the fact that they could elect to have this installation at the customer site.

We reviewed our spares situation and informed AGA of the steps we had taken in automating our logistics program.

GENERAL COMMENTS:

1. Mr. von Feilitzen was not completely informed of the situation and the problems were overstated in many cases.

2. Leif Olsén (AGA programmer) seems to be the main source of complaint on our products. He had a chart which indicated up or down status for the computer systems. Down would be shown as a red mark for the day.

2. (Continued) When we asked Mr. Olsen for more details, we found that if he was running a teleprinter in an off-line statistical test and it misprinted once, he said that day would get a red mark. Kai Smith was surprised at this and felt that this was an over-critical evaluation of the systems performance. AGA also stated they had not had problems in their on-line hospital systems when used with the Auto Chemist.

3. We still have problems primarily with use of the ASR-33 and DEC-tape compatibility which must be resolved. We promised Frank Eagan would stay and clean these up.

4. The problems were compounded by the fact that we do not get good inputs from Autokemi users when problems occur. They have girl operators who may run a tape and something happens. We then get a service call. However, no logs have been kept. The girl cannot be found, and if she can, she doesn't know what the program was or what actually went wrong. We made AGA aware of this problem and they said they would concentrate on working on it.

5. Along with our own problems, we are faced with internal problems of the AGA/Autokemi operation, the general training of a new OEM customer with untrained operators and users. This is going to take considerable time and effort.

   I feel we can do the job but must stay on top of these problems continually. AGA will require more attention and help in the future months.

6. I understand that AGA (primarily Military Division) may be having financial difficulties, and in view of the fact that so far no Auto Chemist systems have been delivered or generated [illegible] cash flows into AGA, considerable pressure is being generated by the AGA Board of Directors. (This assumption was somewhat re-enforced by a comment which von Feilitzen made to me at lunch about their Board of Directors recommending that they look at new equipment.) von Feilitzen is on the spot, and I am sure that DEC is being held responsible to some degree for the success of this project. Mr. von Feilitzen commented that in spite of the comments from the Board of Directors, he felt our equipment was what AGA should use and we could do the job for him.

7. I found that the AGA and Autokemi people were so polite and understanding that it was very difficult to judge the magnitude of the problem in their eyes and whether they were truly satisfied with the steps we had taken. I plan to keep in contact with von Feilitzen, Bill Newell and John Leng until this present crisis abates and continue to work out a more suitable long term program.

   At the end of the meeting they stated they felt confident the problems would be corrected and this would be a successful venture.

JJS:ned

CC: Ted Johnson
John Leng
Nick Mazzarese
Mike Ford
Bill Newell
Ron Smart
Mort Ruderman
Rjell Reistedt
Sven-Olof Martin

file

digital INTEROFFICE MEMORANDUM

DATE: June 23, 1967

SUBJECT: INTERNAL CIA

TO: Ken Olsen
cc: Executive Committee Members

FROM: Bob Collings

With respect to your memo of June 22, 1967, I would like to recommend that as a first step we acquire a subscription to the Wall Street Transcript. As you know, the WST contains most of the write-ups and in-depth research studies conducted by the financial community.

Keeping "tuned in" to this source of information can provide us with three distinct benefits:

I. An insight into the program, plans, and interests of our competitors. The attached write-up on Control Data is such an example. Other reports on IBM, SDS, and Honeywell are available and probably will continue to be on a regular basis because of the financial community's keen interest in the computer industry.

II. An insight into the programs, plans, and interests of both existing and potential customers. The article on University Computing Corp. was an example of how the WST could be used to identify potential customers. Attached is a recent discussion of Foxboro. (Earlier another write-up was sent to the Executive Committee.)

III. In addition, the WST can provide a monitor on what the various financial firms are saying about DEC. Since April 1, 1967, DEC has been mentioned (often only very briefly) more than ten times. The WST is probably unique in providing this capability.

The WST is quite expensive at $180 a year. However, the potential benefits it can provide are quite substantial. Over the past two months, I would estimate that the WST has provided an average of one very good article a week. At this rate, it would appear to be well worth the price, and I would suggest that we acquire a subscription.

Bob

jeb

THE FOXBORO COMPANY

Remarks of Rexford A. Bristol, President,
Before The Boston Security Analysts Society
May 25, 1967

Ladies and gentlemen, we are delighted to be here today. I imagine all of you have noted our prediction of the company's sales and earnings for 1967. No doubt, you've made your own forecasts, too. Based on our performance thus far this year, I see no reason to change the position we've taken. We anticipate shipments to rise about the same this year at last, putting us in the neighborhood of $130 million.

In 1966, our net income was 9.1 percent of sales. This year, faced with increased costs of personal services, materials and taxes, we expect either to maintain or fall only slightly below that percentage.

A great deal has changed at Foxboro since my last appearance before you in May, 1959. A few comparisons between our 1966 and 1959 results will demonstrate the company's progress.

Our sales have almost tripled.

Earnings have more than tripled.

We have developed a global sales and manufacturing capability. Our 1966 sales outside the U.S., for example, were greater than our total corporate shipments in 1959.

Our technology has expanded in proportion.

Obviously, we've done more to the company than merely change the chrome on the fifty-nine model. This sixty-seven version incorporates a great many improvements under the hood which have helped our performance in recent years. These moves promise continued mileage in the future.

Purpose Constant — However, one constant — our company purpose — has remained unchanged. We have always tried to provide the technical leaders of our customer industries with the highest quality products and services. The prices we charge are designed to balance the needs of our customers, our employees, our stockholders and the growth of the company.

We have chosen to concentrate on well-integrated areas in the process industries rather than push a hasty selection of seemingly attractive items. We have never sacrificed quality for expediency. If we can't make a technical contribution, we don't manufacture the instrument or system.

It is more costly to us to be a technical leader rather than a follower. But we have found that our customers want products that contribute genuine innovations to the control field. Our customers know they can rely upon Foxboro products for the performance and features that meet their needs.

We have, within the limits of profitability, put our people and facilities where our customers need them. We offer the same quality products and service from Quebec to Queensland.

As we have grown, the decisions to deploy our resources in a profitable manner have, unsurprisingly, become more complex. Today, every significant move requires studies of the economies of many nations, studies of capital investment trends and the availability of capital and skilled labor and many other factors.

Our determination to approach these decisions in an organized, profitable manner has wrought the single, greatest, difference in the Foxboro of today over the Foxboro of yesterday. Today, we are more than ever a planning organization.

In recent years, we have established the functions of corporate planning, marketing and product planning to sharpen the direction of our research, development, engineering, manufacturing, marketing and sales efforts.

We have added able outside directors to our board, men with knowledge of many facets of business and a desire to make positive contributions to the company's progress.

Management Growth — Since 1959, we have taken great strides forward in developing our present and future administrative manpower. We are resolved that our future lies in the ability of our younger men to accept responsibility and to make correct decisions.

We have a manpower development program that outlines broad, but specific, areas in operating and staff activities. We assign real decision-making responsibility right down the line to men who, though comparatively youthful, have a surprising amount of experience in their fields and in the company.

At the same time, older members of management, working closely with the younger men, provide continuity of the outlook which has generated a successful past and promises fresh approaches to the future.

We are pleased with the results of this program, not only because of the quality of leadership being demonstrated by the younger group, but because most of the young men came up through the organization. This program extends down through the entire company. As men move up, their successors step into line.

We have carried this planning to the field. In the United States, we have realigned our sales and service organization into five natural market areas. We have systematically extended this philosophy outside the U.S.

In 1959, we had manufacturing subsidiaries in Canada and Great Britain and a licensee in Japan. Today, new European area companies serve customers on the continent from plants in The Netherlands and France.

A new company and plant in Australia broaden our coverage in Asia and the Far East. We have a plant in Mexico. Individual sales managers direct our activities in the Middle East and Africa, in Central and South America.

We have staffed our companies with nationals who know the technology, the markets and customs of the areas they serve. In addition, highly competent engineering and sales firms represent us in 31 key nations where we do not have our own people.

Global Service — Many of our customers have worldwide operations. Consequently, our area people are responsible not only for the successful operations of their own companies; they are organized to combine their efforts on multi-area jobs and provide maximum service for our customers, with resulting benefits to the parent corporation.

We are especially pleased at the manner in which our area people are using the services of the new staff groups. Our field people are providing valuable inputs on product needs and economic trends. This information enables our corporate specialists to chart the company's product, personnel and investment needs more clearly throughout the world.

This team effort is enabling us to obtain maximum mileage from our dollars in a highly technical industry which requires 80 to 85 cents of investment, and sometimes more, to obtain a dollar of sales.

We must see that new products appear globally in a sequence that provides new sources of income for ourselves and new benefits for our customers. The product development and manufacturing must be coordinated with the availability of capital. Then, the manufacture and sale of the new products must be started as simultaneously as possible at our various companies to speed our penetration of global markets.

The pace of innovation is continuing. One third of our sales in 1966 were of products developed in the past five years. We do not see this tempo slowing.

The traffic in new products is not one-way from the U.S. A consistency transmitter developed by our British affiliate has been well received by the pulp and paper industry on this continent. We are also marketing a very fine recorder developed by our Japanese licensee.

What are these products?

Basically, we manufacture electronic, pneumatic, mechanical and analytical instruments and control systems. Our electronic instruments have come on strong in recent years. Someday their sales will match our pneumatic and mechanical shipments. We are convinced, however, that pneumatic instruments will continue to provide excellent service for our customers and profits for us for a long time. We gear our research accordingly.

Electronic Breakthrough — Our electronic line consists of analog instruments and control systems using analog instruments and of digital computers. Last year, we achieved a major breakthrough when we introduced a redesigned version of our popular line of small-size, electronic Consotrol controllers, recorders and supporting instruments.

Customer response to the new Consotrol instruments has been excellent. In the first six months of the new line's life, we sold more new equipment than in the previous two years. And we expect to do better as our production increases.

In process control, digital computers are maturing from fads to operating tools. Today, our customers insist upon an answer to these questions — have you installed a system? Is it working? How well? Our answer is: Our systems are installed and they are working very well.

We have sold computer systems to the chemical, petroleum, power, food, cement, metals and textile industries. Although we are emphasizing systems' development rather than sales volume, this year we will ship a record — for us — number of computer systems.

We are gathering knowledge of various applications. We are acquiring experience in the conduct and execution of systems' contracts. We feel this is the wisest approach to what we think will become one of the most important methods of process control.

Our work in the computer control field is complicated somewhat by the fact that our customers' technologies are progressing, too. Sometimes it's pretty tough to get them to freeze their specs long enough for us to fit the bits and words into a program.

Whither The Computer? — We are also faced with the interesting question of whether or not the electronic data processing computers that everyone uses are the answer for process control. Process control systems require a relatively simple computer because most of the activities are input, output and priority, with little computation. The central processor makes logical comparisons of information supplied from the process and reacts to the priority of events in the process. We are still acquiring our computers from outside suppliers.

The growing importance of linking data computers with control computers in management information systems is another influence on the design of process control systems and computers which we are studying.

Foxboro analytical instruments measure the composition of our customers' product streams at various stages of the manufacturing process. We have numerous exploratory programs underway in this field which we think will broaden our product line.

You can't control a process without valves. We don't manufacture valves, but we are continuing to work with our suppliers to improve the valves we sell with our control loops and systems.

Integrated circuits and fluidics are heading the fad parade today. At present, we manufacture neither. However, we use some integrated circuits in our electronic instruments and we are exploring fluidics and "ICs" to determine how they fit our future.

The accurate blending of the components of wet and dry products is important to the product quality and profits of our customers. We are supplying an increasing number of blending system controls to customers in the chemical, petroleum, food and cement industries, to name a few. We look forward to continued innovation in this growing market.

Happy Marriages — Generally, we see an increasing interdependence of design between digital and analog techniques that will enable us to take advantage of the best operating features of both. This will continue a pattern of previous happy marriages of pneumatic with mechanical, and electrical with electronic design.

I imagine you're wondering who's going to use these innovations?

The same industries we've served for so many decades, plus others. Competition among our customers breeds new business for us, not only from new plants, but from modernization programs designed to increase the efficiency and output of older installations. The desire of the peoples of the world for higher standards of living is creating an increasing demand for our customers' products, with benefits for Foxboro.

Throughout the world, the chemical, petrochemical, pulp and paper, petroleum, and gas production and transmission industries have long provided our greatest dollar volume. However, textile, power, cement, and food, mineral and metal processing are all increasing the use of automatic controls to cut costs and improve production. This interest comes from the top and the middle, with management often insisting on improved control methods, while their operating people have decided to try something new.

Specifically, we are supplying instruments and controls for some of the world's most exciting industrial projects: for the gigantic plant in Canada which will extract oil from sand; for power plants fueled by atomic reactors; for the Trans-Alpine pipeline; for the Europipelines from the newly discovered North Sea oil and gas fields; for chemical, petrochemical and petroleum applications our customers won't let us talk about.

We also feel that our rising volume of sales and the broad spectrum of customers we serve add sometimes unnoticed dimensions of stability to our business — a business many people consider cyclical and largely dependent upon capital investment patterns.

Growing Sales Base — Sales of new replacement instruments, accessories such as recorder charts, and other supplies and repairs are growing steadily and providing a widening annual base for us. Obviously, the more Foxboro systems and instruments installed in the field, the greater the number of replacements and services that will be needed later.

We have found that modernization and new construction cycles in various industries do vary from year to year, nation to nation and global region to region. We have the flexibility to reorient our men and facilities accordingly to obtain better sales and profits than would be the case if we were wedded to one industry, one nation or one continent.

The growing interest in the control of all forms of pollution of our environment offers us other opportunities. We have many decades of experience in the control of the treatment of municipal and industrial water and wastes. We are now conducting an intensive market survey to determine the role of Foxboro in the control of air pollution.

Man's search for water is another area of potential growth. We have supplied the controls for about three-fourths of the world's desalination installations. The ultimate size of this market will be determined by the success that equipment manufacturers have in developing a process that makes it economical to use desalination to supplement existing water supplies. Areas with no water at all, of course, will have to use desalination.

Oceanography is much in the news, but the widespread use of process control instruments in this area will depend upon the large scale commercial exploitation of the ocean's resources. We are alert to all possibilities.

By now perhaps you've decided that our own and our customers' search to find better ways of doing new things assures a promising future for the instrument industry. This is our feeling, too. Why?

Eyes Front — Looking ahead a decade, we see a favorable global economic picture blurred from time to time by fluctuations, corrections or whatever you wish to call them.

North America, with the most sophisticated industrial technology in the world, offers steady growth for our sales.

Europe, now aware of the need to change traditional industrial methods, offers a much larger market potential for us. There is a good possibility that capital investment in Europe will overtake the U.S. during the '70's. Incidentally, we are prepared to take full advantage of the business opportunities afforded by the entry of Great Britain and the rest of the EFTA nations into the European Common Market, if this should occur.

Japan will continue its expansion. The remainder of the Far East has excellent potential, but its future depends upon two problems: obviously, peace will have to return to some areas; and other governments will have to offer more stability and less red tape if they are to attract the private capital which can develop the nations' excellent resources and create markets for Foxboro products.

Africa is making progress, but less political fluctuation is required if more private capital is to enter the picture and create a larger demand for our products.

Economic development is uneven in Central and South America, but the potential is excellent. The less-advanced nations are conscious of their industrial opportunities and are working on them.

A vast market for our products exists behind the Iron and Bamboo Curtains. The establishment of free trade with these areas would be a blessing to the future of mankind as well as to Foxboro.

That, ladies and gentlemen, in broad strokes, is a portrait of Foxboro, 1967-77. It has been a pleasure to join you in this house dedicated to the enjoyment of the delectable and noble oyster. I can only hope that we have come up with some pearls for you.

digital INTEROFFICE MEMORANDUM

DATE: May 5, 1967

SUBJECT: Article on Control Data Corporation

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

FROM: Bob Collings

CONTROL DATA CORPORATION

Speech by William C. Norris,
Chairman of the Board & President,
At The New York Society of Security Analysts
April 7, 1967

It is very pleasant to be here again to speak about Control Data. Our previous appearances before your group were in 1961 and 1963. At the time of our 1961 appearance, our annual sales were about $16 million, in 1963 they were right at $70 million, and today are above $200 million.

Since this rate of growth was made possible in large part by the rapid growth of the computer industry, a brief comment first on future industry growth seems appropriate at this point even though you are no doubt aware of the prospects for continuing growth in the computer industry.

In my 1963 talk here, I emphasized that the world's appetite for computers appeared almost insatiable, and that, although there undoubtedly would be a gradual decrease in the rate of growth for this market, the needs and projected new applications made it impossible to predict a plateau for it at that time. After three and a half years, the market growth prospects appear about the same, with one possible exception.

There is a major obstacle of a programmer shortage facing the industry. There have been a number of recent articles in business publications regarding the programmer shortage, so I won't go into details. I will have more to say later on a number of aspects of market growth, and will also mention one important program in Control Data for helping to alleviate the programmer shortage.

At this point, it might be helpful if I give you an overview of the rest of my talk, which will primarily be about those things that I believe are most important to the future.

Specifically, I will talk mostly about very large computers, our Data Centers, our 3100-3300 series of computer systems, our peripheral equipment, space and defense business, the Control Data Institute, international operations, and finish up with brief comments on our broad capabilities and the outlook for the future. Mr. Rogers will then cover financial areas.

Very Large Computers — Taking very large computers first, I would like to observe that they are very significant as an important product area, but also are a fountainhead of publicity. The fact that the Control Data 6600 is the most powerful computer in the world is widely known and has attracted a great deal of attention to Control Data all over the world.

We started the basic development of the 6600 about six years ago, and there were many very difficult problems to be surmounted. It has been offered for sale for about three years.

Based on what we know today regarding increasing customer acceptance and what we estimate of the future, it appears that the 6600 and its somewhat smaller and compatible companions, the 6500 and 6400, will have long product lives.

The hardware and software which we are now offering is highly satisfactory. We have hardware and software additions under development — some of which are without precedent and which will increase the thruput severalfold and open up new applications.

The 6000 series system concept is quite different from those offered by our competition, so that we have not only a unique system but the world's most powerful one. We also have under development an even more powerful system.

We believe we can maintain our leadership for quite a number of years, at least, because of the great technical difficulties and long lead times involved in developing reliable large-scale computers.

As I mentioned a few minutes ago, the 6600 development was started about six years ago, and we believe the product life of the 6600 is just starting. We believe the market for super computers will continue to grow at a healthy rate. We have noted in recent months new applications areas opening up. Present users of 6600's appear to have ever-increasing computer requirements.

There are an increasing number of problems to be solved which demand the very large computer; however, there are many more problems which can be solved on a less powerful computer.

There is a growing acceptance of multiple access processing, which permits several users to interact and communicate with a central computer.

There are many flavors of multiple access processing, which range from a number of users in a large corporation or government organization sharing a computer to the so-called "Computer Utility." The latter term implies a large number of commercial subscribers receiving service from a central computer.

It is well-known in the computer industry that the cost: performance ratio of large machines is substantially superior to that of smaller machines. Therefore, the hardware used in the multiple access facility, or computer utility, should be the largest machine which can be loaded up in order to achieve the best cost-performance ratio.

The software to achieve a multiple access processing, or time-sharing as it is more often called, is complex. I guess from here on I will use the phrase time-sharing more.

We have time-sharing software under development for the 6600 which we believe will, along with the unique systems concept of the 6600, provide truly superior operation for the computer utility as well as for the large corporation or large institution that wants to take advantage of the many benefits of a very large centralized computer operation.

We also plan in Control Data to install a number of 6600's in our own Data Centers. The first 6600 was installed in Los Angeles in March.

A year ago we had a 6600 installed in the Los Angeles Data Center which was initially used primarily for software and market development. We had planned to leave it there, but a customer talked us into delivering it to his shop to meet an urgent requirement.

Data Centers — Since I have gotten off on Data Centers to an extent already, I had better complete my remarks on that subject.

We are greatly pleased with the progress of our Data Centers Division. The profitability is good and still increasing.

We have seven centers in the United States with large computers — either the Control Data 3600 or 3800. Tied into these major computers are remote centers with smaller computers in a number of cities, including Detroit, Chicago, Long Island and Cincinnati.

Overseas we have Data Centers using medium-sized computers in Germany and Italy.

A substantial and growing number of customers of our Data Centers have small Control Data computer terminals on their premises which are connected through telephone lines to the large 3800's at the Data Center.

In addition to contributions to profit, our Data Centers are very helpful in our equipment marketing efforts. For example, because of Data Centers, we can offer the customer the option of the use on intermittent, temporary or permanent basis of much of our equipment.

In other words, the customer can lease from Control Data today for a few minutes, a few hours or days, months or years. There is integration of the efforts between our Data Centers service salesmen and equipment salesmen. This has meant increased efficiency for both activities.

In summary, we look forward to continuing profitable growth in our Data Centers.

3100-3300 Series — The other computer product which I will cover is our 3100-3300 series. These are medium-sized systems. We have very extensive software with the 3100 and 3300, which includes what we think is the best time-sharing software now available in the industry.

These computers have enjoyed excellent acceptance in the newer areas of applications of computers involving combinations of communications, display, data collection, analog/digital conversion, optical character reading, process control, and other techniques and equipments. The largest example is the order from the Post Office Department for $22 million. This application involves data collection, communications and computing.

Not only are substantial market areas emerging from these newer applications, but these are the fastest growing parts of the market, and Control Data is in a very favorable position to sell in them because we have a broad range of computers, ranging all the way from small to medium to large and super.

Peripheral Equipment — Our expansion program during the past few years has anticipated the rapidly growing markets for peripheral equipment, and today our diversified peripheral line is second largest in the computer industry.

The demand over the past six months has been strong, particularly for Control Data tape transports, card handling equipment, printers, disk storage drives, large disk files, electronic displays, data collection devices, and extended core storage.

The current demand for our peripheral equipment is not only one of the brightest spots at present, but bodes well for the future since it is estimated that by the earlier 1970's, 70 percent of the dollar volume in a given computer system will be in peripheral equipment.

The success we have experienced in selling peripheral equipment to other major computer manufacturers is probably the most significant endorsement of its quality. The backlog of orders from other manufacturers is at an all-time high.

Eight of the world's ten largest computer manufacturers have purchased Control Data peripherals to use with their systems.

Sales direct to users of competitive computers are also increasing. A number of our peripheral units are plug compatible with equivalent IBM units. The most important peripherals currently in this category are our magnetic disk storage drive units and the electronic output display equipment. One of the brochures placed at your table describes one of these products.

Space and Defense Business — This brings me to our space and defense business.

First a word of explanation — I am speaking now about specialized computer requirements by the Government. Of course, we sell our standard computer products for space and defense uses, but, in addition, about 15 percent of our total revenue this year came from special computers for space and defense. This business is growing.

While the gross profit on the special computer systems is not as high as on the standard, the return on investment is attractive. There are also substantial improvements to our standard products which result from advances in the general technology made in the special computers.

One of the important current efforts is our participation in POSEIDON, which is the follow-on for the POLARIS missile program. Control Data is proud of the fact that we have provided computers for the fire Control Systems of each POLARIS nuclear submarine.

Recently the company has been selected to design and manufacture the next generation of fire-control computers for the POSEIDON missile. POSEIDON will replace POLARIS.

Another important program for us is our participation in the PHOENIX missile program. This came as a result of our pioneering efforts in the field of microelectronics. We have developed a complete line of very small, very powerful computers, and it is one of these that will be used in conjunction with the PHOENIX Air-to-Air Missile — the primary armament of the F-111 B Fleet Defense Interceptor aircraft. This computer occupies about a cubic foot of space and requires only 149 watts of power.

5360 — Research and development in miniaturization is continuing and is resulting in smaller and smaller computers. The Control Data 5360 Aerospace Computer, for instance, while not quite as powerful a machine as the PHOENIX Fire Control Computer, occupies only slightly more than ½ cubic foot of space, weighs approximately 30 pounds, and requires only 100 watts of power.

In addition, we have a new computer in the prototype stage that measures only 4" x 4" x 9" and uses only 7 watts of power.

These military microminiature computers, as they are called, may well be the forerunner of a family of computers which will find application in the home, the office, the school, and many other areas of our everyday life where the larger commercial computer, as we know it today, is not a practical or economical solution.

International Operations — Some words now on our international operations. A recent analysis showed that over 30 percent of our standard EDP products are sold outside of the United States. The analysis also showed that the profitability of our overseas business was essentially the same as domestic sales.

Our overseas business is growing somewhat faster than our domestic. In those countries which have modern industrial development — such as France, Australia and Israel — so that large computers can be used profitably, Control Data has made a much deeper market penetration than in the United States.

Control Data Institute — Next on my list today is Control Data Institute. This is a for-profit trade school on a national basis which basically provides training in programming, operating and maintaining computers. We have units located in Minneapolis, Los Angeles and Washington, D.C., and are in the process of opening up more.

The minimum entrance requirement is a high school diploma. After about nine months to a year of training (depending on the course taken), persons completing the basic courses can get very well-paying jobs in the computer industry as junior computer programmers, computer maintenance technicians, computer test technicians, or computer operators. We will also soon be offering advanced courses.

In this era of tight labor generally, and in particular the programmer shortage, I guess I won't have to try very hard to convince you of the great benefits developing for our customers and Control Data.

Substantial savings result each time Control Data hires one of the CDI graduates. These savings come mostly from recruiting costs, training costs, and also cost of salaries that we pay if we hire green trainees from other schools and have to train them on our computers. There are similar benefits for our customers in CDI.

Since we advertise through mass media, such as radio, to recruit students for the school, we are getting the name of Control Data much better known. We have almost daily radio advertising in the three large metropolitan areas of Los Angeles, Washington, D.C., and the Twin Cities.

Broad Capabilities — Next I will make a few remarks on our broad capabilities since time doesn't allow me to cover all other computer products, such as the 1700, and individual peripheral items.

Because of the broad range of equipment and technical skills which we have in Control Data, we can handle the broadest range of applications in the industry.

For example, we were the only company which had the capability in house to perform the total contract for NASA/Langley on the large computer complex on which bids were submitted last summer and which was awarded to Control Data.

Incidentally, when completed, this installation will represent, as far as I know, the most powerful interconnected complex in the world. There are other places where there are more large computers; however, they are operating independently.

This broad applications capability has opened to Control Data big doors in many important organizations in other parts of the world.

We have recently installed a 3300 for South African Iron & Steel Corporation (ISCOR). This system, when completed, will consist of three 3300 computing systems at two locations connected by communication links.

This is one of the world's most sophisticated industrial systems, and by far the largest on the continent of Africa. It involves a great variety of peripheral equipment and will be used in the total management of the ISCOR enterprise, with applications ranging from personnel administration to order logging and inventory control.

Ultimately, ISCOR plans on-line process control systems that will be tied into this overall management system as well.

A similar type of system has recently been ordered by a Dutch company.

There are, of course, many other installations I could describe if time were available — such as the $6 million French Power Bureau 6600.

Outlook for the Future — Finally, then, to conclude with some words on the outlook for the future. Since virtually all parts of the company are enjoying profitable growth now, I believe this should continue for quite a while. All indications are that the market for computers will continue to grow for an indefinite period.

We are in an excellent position, with our products and data centers, to adapt to the trends in the growing marketplace. We believe that our Control Data Institute will help in a major way to fill the needs for large numbers of additionally required people for both Control Data and its customers in a more timely and economical way than is available to our competitors.

The future is not for me to see, and therefore I cannot state accurately what the situation will be in five years or so; however, I believe that we are at the beginning of a great era in computer input and output peripherals and very large computers. I believe that Control Data will play a leading role in both.

CONFIDENTIAL

digital INTEROFFICE MEMORANDUM

DATE: June 22, 1967

SUBJECT: Scientific Data Systems, Inc.

TO: Executive Committee FROM: Harry S. Mann

All of us have made many comments about SDS and the manner in which they have been reporting operating results. Based on data supplied in their latest Prospectus dated May 17, it appears that, for the present at least, the bulk of the advantages they have gained from their accounting practices have been dissipated.

The major advantages they gained during 1966 from accounting treatment was to increase revenues and decrease sales expense and depreciation expense. Sales and profits were enhanced last year by treating long-term leases as outright sales to the extent of $2,600,000 and by selling leases to the extent of $14,700,000. Sales expense was reduced by $355,000 by deferring some of these expenses and depreciation was decreased by $102,000.

These accounting practices have had a short-term salutary effect, as is usually the case, but for the first quarter of this year, are negligible. In spite of the washout of these artificial effects, SDS has shown improved performance during the first quarter of this year compared to last year's figures which were inflated, as shown above.

The value of goods and services shipped during the first quarter appears to be approximately $16,500,000 when put on a basis comparable to DEC (restating new equipment shipped on leases to the equivalent sales piece). Since practically all of their business is domestic, it corresponds to our domestic revenue of $8,000,000. In other words, in the same market area, we are doing about 60% of their volume. One a worldwide basis, we are doing 78% of their volume.

SDS reports a backlog of $61,000,000 at the end of March, while we reported something less than $15,000,000. Their statement describes these as "firm orders on hand for sale or lease." Even if a substantial portion of this backlog is less firm than our standards, it still appears to provide SDS with a good base on which to continue at a higher rate. They do state, however, that production delays have extended lead times considerably.

During the past 18 months, at least, our growth has been determined by our capacity to produce and service equipment. I get the feeling that we are rapidly achieving a balance between capacity to produce and service on the one hand, and book business on the other. In view of the long delivery times being quoted by SDS, we should gain some advantage in booking new business.

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It may also be necessary to reconsider our posture on leasing. I have not felt any pressure in this area and would like to avoid it if possible. We could enter into arrangements to sell leases similar to those of SDS if leasing became necessary. They report 41% of their business is on a lease basis.

SDS shows a profit before income taxes of 13.2% of net revenue in the first quarter of 1967, compared to 20.0% in our case. The major differences are:

	SDS	DEC
Cost of Goods Sold	53.4%	48%
Selling and Marketing	10.0	12
Engineering and Research	8.6	12
General and Administrative	15.0	9
Profit	13.0	20

We should be cautious in comparing the above percentages in view of the fact that we don't know how some of their expenses are cataloged. For example, is programming cost part of engineering or general and administrative? Are the equivalent of Product Line personnel part of sales and marketing or G&A? It does appear reasonable to conclude that they spend less on engineering than we do, more to produce their product, and more for administrative effort.

In summary, it appears that the advantage SDS gained in 1966 from sale of leases and accounting "hanky-panky" will not be repeated this year. In spite of this, they are showing some improvement over last year in volume and profit. We are doing better, by far, in the profit area than they, but they continue to be ahead of us in volume, especially taking the domestic market by itself. We should examine our bookings potential carefully.

HSM/ml

digital INTEROFFICE MEMORANDUM

DATE: June 21, 1967

SUBJECT: PHILLIPS

TO: Stan Olsen
John Jones
Ron Smart
Ken Olsen

FROM: Ted Johnson

Gerry Moore finally managed to see Van Ommering at Phillips, who is intrigued by our latest offer. Gerry offered to provide a full-time Account Representative if they went our way which I think is justifiable. He mentioned that Digitronics is included in the quantity discount planning and will be a key point of resistance in changing at this point.

If there is anything we can do to approach Sonnenfeldt, please take action as soon as possible.

mr

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digital INTEROFFICE MEMORANDUM

DATE: June 17, 1967

SUBJECT: POSSIBLE MANAGER PROSPECT FOR GmbH

TO: John Leng
Graydon Thayer

FROM: Ted Johnson

cc: Ken Olsen

I met for an hour in Huntsville with Doctor Helmut Krenn. He is the classmate of Dr. Steipe and he recommended that I see Dr. Krenn.

Dr. Krenn is an Austrian, 43 years old, PhD in Physics from the University of Vienna, and speaks English very well. He worked for Siemens in Munich in the area of logic and circuit design from 1955 to 1961. He seems to be quite knowledgeable in the area of communication systems and processor design. He came to Huntsville in 1961 and has spent most of his time in the Computation Laboratory where he has taken on management responsibility over Engineering and Programming for the Data Reduction Branch and for the Digital Projects Branch so that he has had experience with many large and small machines. He spent 6 months with Project MAC, October'64 to March '65 - he gained broad experience in the area of time-sharing. He is currently interested in the problems of on-board computers for long-range space flights.

I was assuming that, from previous communications, he would not be a candidate for the management position and that his background was not that appropriate, and that he was possibly too German in his approaches, having not worked for American private industry. I largely changed my views after meeting with him and I think he is worth pursuing. Some of the factors and problems are:

1. He is making over $19,000 and does not feel that he could go to Germany for much less than that. I suggest we think in terms of $15 - $17,000.

2. He is not certain he wants to leave his current activity if he gets the new on-board computer assignment.

3. He's become less certain that he wants to go back to Germany, and doesn't know whether he wants to cope with the German mentality. He is quite sure that he prefers the American mentality, and is concerned about the amount of criticism and harassment one is exposed to when dealing with Germans. This is a very interesting point and, in my opinion, is at the root of our problems with our German operation today, where I feel our people are too junior to cope with the class system and tactics of German managers, especially in industry. They need a more senior person who can command respect and authority on their behalf, but who also understands American ways and means.

4. He has not worked in a sales environment before but, as he pointed out, in his management role, he has been doing a lot of selling and I have the feeling that he could probably adapt very well.

Although not terribly aggressive, he is a very nice-appearing man, excellent manners, if somewhat dramatic, and communicates very effectively. My first reaction was that he talked too much and went into too much detail and explanation, but I think this is sort of a German characteristic and, in fact, I found him a very efficient and comfortable conversationalist.

One advantage of considering him in this position is his strength in both the industrial and the physics areas, and in his friendship with Leo Steipe, whom I think would effectively be very helpful in helping us teach him how to be an effective sales manager. We would have to explore Krenn more thoroughly to determine whether or not he is that flexible. Perhaps John Leng would want to have Jean-Claude Peterschmitt meet him while Jean-Claude is here. I think we could arrange for Dr. Krenn to visit us sometime in July.

mr

Resume Attached

PERSONAL HISTORY

Personal Data

Name	Helmut N. Krenn
Address	1106 Hewitt Street, Huntsville, Alabama
Date of Birth	January 23, 1924
Place of Birth	St. Valentin, Austria
Citizenship	Austrian
Married, two children	One born in 1956; One born in 1958
Highest Degree	PhD in Physics, University of Vienna, Austria
Languages	English, German

Education

1930-1934	Elementary School
1934-1942	Realgymnasium (comparable to High School)
1942-1946	Military Service
1946-1952	University of Vienna, Physics and Mathematics
1952	PhD, Doctor Thesis: Rotatioen von Elektrolyten in Magnetischen Feldern. Field: Physical Chemistry.
1952-1953	Studies on Theory of Statistics, teaching practice for a degree in teaching
1954 (Feb.)	Lehrbefaehigung fuer Mittelschulen (degree in teaching)

Activities

1954	Statistician with the "Osterreichische Institute fuer Markt- und Meinungsforschung", Vienna (Institute for Market and Opinion Research)
1954-1955	Instructor at the "Fachschule Kuchl bei Salzburg" (Engineering School)

1955 - 1961

R & D ENGINEER with the SIEMENS HALSKE AG, Munich, Germany:

Circuit-, logical-, system-design, and part time occupation as Instructor in Evening Schools: Muenchner Volkshochschule and company-sponsored courses for engineers of the Siemens Halske AG. Subjects: Electronics, Transistor Circuit Design, Mathematics.

1955

Development of instrumentation (oscilloscopes and signal generator for TV broadcasting stations).

1957

Logical design of a control unit for a typewriter and papertape input-output to a computer. Transistor circuit design for the interfaces with the mechanical I/O equipment.

1958

System design of an airline and railroad seat reservation system.

1959

System design of a communication processor, which connected the public teletype network (up to 100 lines) or other remote stations of different speed with a general purpose computer. The task included: specifications of the system requirements; development of the concept; selection of the hardware for the processor, the conversion equipment (serial/parallel) for the interface with the teletype network; specification of the corresponding software; supervision of the logical design of the processor and the teletype interfaces; specifications of the test procedures and the test equipment.

1961 - 1962, June

US ARMY, ARMY ORDNANCE MISSILE COMMAND, Huntsville, Alabama, USA:

Feasibility studies on future missiles; considerations on the application of hybrid computation techniques.

1962 - Present — NASA, MSFC, COMPUTATION LABORATORY, Huntsville, Alabama, USA.

1962 — Chief of Engineering and Programming for the Data Reduction Branch.

Directed the activities of 50 engineers and programmers in the task of connecting analog- to -digital conversion equipment and PCM ground stations to a large computer; in the development of a control unit for automatic scheduling and controlling these input devices; and in modifying the executive program of the computer.

1963 — Chief of Digital Projects Branch

Organization and Mission of the Branch

The Computation Laboratory is divided into four branches, each acting as an independent computer center serving one discipline. This branch performs programming for scientific problems, system programming, operation of several large computers, and system engineering.

Its hardware consists of some 20 computers ranging from two 7094s and several medium sized machines, to small computers of the IBM 1130 class. Nearly half a million dollars are expended in monthly rental.

The large machines are operated under a "closed shop" concept by a group of 100 programmers, 10 system programmers, and 30 operators.

Computer programs for the following wide range of scientific problems have been developed: Trajectory calculations and space vehicle simulation, structural design, heat transfer, automatically programmed tooling. The branch is engaged in two applications of "on-line process control:" Experimental tests of stress or heat transfer characteristics of shell structures; automatic check-out of flight components.

In addition to the management of the branch, the chief is also responsible for specifying hardware requirements. Five system engineers assist him in performing hardware studies, integrating special hardware into a standard computer system, specifying software requirements and supplying cost and schedule estimates.

Special Assignments and Training:

A two week summer course in management improved my understanding of modern management concepts and their practical application.

As a result of my proposal of a time sharing system for our branch, the Director of the Computation Laboratory delegated me to the Massachusetts Institute of Technology, Project MAC, for the period from October 1964 till March 1965. In order to obtain a broad experience with this extensive time sharing system, I devoted my time to the following aspects of the Project:

I gained a user's point of view by programming from a remote station supported by a "remote acces language" which allows file generation and manipulation, and calls translators, compilers and loaders.

Next I acquainted myself with a number of "Problem Oriented Languages," such as "STRESS, 'MAP,' 'STATIST,' 'LISP," etc.

Further I studied the "Compatible Time Sharing System," the MAC computer's operating system, in some detail.

Finally I reviewed the operation's statistics in order to evaluate the efficiency of the system in terms of machine utilization. In this connection I became acquainted with research efforts in memory segmentation and with methods for response time prediction of time shared systems.

Significant Contributions.

The experience gained from the Project MAC assignment resulted in the following contributions:

1. I directed a study of the entire Laboratory's future computer requirements which culminated in a proposal to replace the variety of 30 machines by one single "Central Facility:" A system with at least two identical processors, able to perform the throughput of ten 7094 IIs, connected to some 150 remote stations ranging from teletypewriters, graphical I/O devices to fast printers and card readers. The Director has committed the Laboratory to this concept and is in the process of acquiring a 10 million dollar facility.

2. Initiated several system studies (one completed) in order to determine how the functions of computer controlled processes can be divided among the "Central Facility" and the remote stations.

3. Identified the need for "Problem Oriented Languages" in order to improve man-machine communication through the use of remote stations. Initiated and directed the development of a programming system for trajectory calculations and space vehicle simulation. This system (MARVESS) employes program modules representing various physical effects or mathematical procedures to construct higher level modules and finally a hierarchically structured, complete program. Introduced "STRESS," a language for stress analysis of frame structures, to the using engineers and proposed the development of a similar language for the analysis of shell structures.

C - Executive Comm.
Dr agenda 6/16

digital INTEROFFICE MEMORANDUM

DATE: 6/16/67

SUBJECT: ESTABLISHING POLICY RE NONCONFIRMING ORDERS

TO: KEN OLSEN

FROM: KEN LARSEN

Would you please ask the Executive Committee to consider establishing a policy that would permit a field office to accept small orders without confirming paperwork.

Many companies can submit Purchase Order Numbers for amounts up to $500.00 without confirming copies. With this policy, they can reduce their paperwork burden and cost of processing a purchase order. Some of the Purchasing Agents become indignant when advised that DEC requires confirming copies of all orders.

A maximum amount for verbal orders is regulated in most states to $500. It would simplify the order processing for both us and the customer if we could accept orders to this amount.

KL:mmg

Ken L

digital INTEROFFICE MEMORANDUM

DATE: June 16, 1967

SUBJECT:

TO: Ken Olsen

FROM: Pete Kaufmann

Have been interested for sometime in hiring Woody Chapman, who is the Manufacturing Manager at Sanders, whom you referred to.

He is presently in the 20 to 25K bracket and would only consider a move which involved considerable stock options.

I had lunch with him today again and he is interested in DEC and I plan to stay close to him.

Haven't the right opportunity for him at this moment but when I do will be back to see you.

Pete

Pete

jab

digital INTEROFFICE MEMORANDUM

DATE: June 15, 1967

SUBJECT: SALES REPORTING AND ANALYSIS

TO: Ken Olsen
Win Hindle
Stan Olsen
Harry Mann
Pete Kaufmann
Nick Mazzarese
Ron Smart
Bob Collings

FROM: Ted Johnson

This memo outlines some general philosophy on sales reporting and sales data. I wrote it after a meeting on this subject, May 19th in Ken's office. Ron Smart has outlined the results of that meeting in other memos and we are nailing down key reports and procedures. I would like to see us develop basic reports that will be consistently made and consistently of interest.

As of now, basic formal reports are:

1. Call reports from salesmen.

2. Monthly Regional Manager reports which include forecasts.

The points discussed were raised at the meeting.

1. SHARE OF THE MARKET

Digital has, to a large extent, been creating new markets for its products. This fact, coupled with the fact that our niche in the industry is not well defined by currently existing marketing surveys, makes it quite difficult to come up with any useful data, other than to very roughly compare the potential of one area versus another. At this point in our growth, whenever we review electronics or computer statistics, we arrive at the conclusion that we are not market or competition limited, per se, and, in fact, the sales successes are related to our effort and effectiveness in reaching the right customers. A great deal of ability rests with our sales engineers who are, in a large measure, responsible for developing these new markets and educating potential computer users into the use of our computers and modules.

A great deal of interest resides in our department and in the field in collecting meaningful statistics and data, newspaper comments, competitive comparisons, etc. We have collected a great deal of this information in various ways and, from time to time, have used it to test our own knowledge and intuition about various markets. I quite agree that we should be working on collecting this information and that its importance will increase in time. At the present time, it is useful in terms of background information. I also believe there is a danger in exaggerating the

importance of this kind of data. Having expressed that as an opinion, we would very much like to consider how we could organize this information and present it to Marketing and Management of the company. A great deal of the effective information we have been getting on market share and penetration has been from our competitors and customers. This information is directly available to our sales force, and accumulates as a result of opportunities we have to get an insight into how our competitors are doing.

2. RFQ's

Responding to formal RFQ's is only one part, and often a small part, of our total sales process. At any given time, the numbers of RFQ's we get in from government agencies is a rough measure of money available, and direction of spending. We have looked at the whole quotation process as a useful indicator, and a number of offices have developed proposal and project files, which they use to follow up quotations made to customers, and to measure their success in closing these sales opportunities.

Often we prepare quotations on an unsolicited basis when we see a real interest. Quotations are made when a real sales opportunity exists and represents our chance to outline equipment we have to fill the need and to stress the advantages our equipment has. The activity in an office tends to vary from a period of intensive sales development and quotation preparation, to periods of activity in closing out the proposal and project files, when the emphasis is on getting the orders closed and less time is available for formal quotations. We will look hard at this process to see how useful a measure it is, as well as measures that are best evaluated over a period of time. The first basic information you get is whether or not an office is generating enough quotations. Offices that have tended to do a good job in writing quotations and sending unsolicited letters of quotation to customers, have been generally effective.

Four of the present key regional offices are very active in their proposal systems; these are New York, Canada, San Francisco and England. All four have somewhat different systems but the same principle exists, namely setting up a filing system for proposals which allows follow-up, comments and reports to be attached and systematically reviewed until finally the proposal is either closed out with an order, or is a lost sales opportunity. We have been discussing this at the Regional Managers' Meetings and are in the process of moving to have all of the offices set up their own project files. It will be very easy to get information on lost orders and quotation activity. At that point, the main problem will be coordinating that information in a useful and systematic way. There is a tremendous danger of setting up too many systems of measurement on the sales force because of the amount of red tape it generates at that end, and questionable usefulness at this end. It is my opinion that this information is most useful for the people responsible for getting their budgets fulfilled for the various regions, and the Regional Managers are working very hard to establish ways to control and measure their performance.

We need to work generally on the whole quotation process and control of response to formal RFQ's. We are doing so at the present time since the system had tended to get a little confused. Basically, we feel proposal responsibility rests in the field offices. We look forward to getting a contract administrator-lawyer into the company to help us develop efficient boiler-plate and make sure we are following good practices and watching over terms and conditions.

3. ORDERS LOGGED

The possibility exists for formalizing a report from the proposed systems outlined above. (2) In addition, our call report emphasizes our competitive position and one of the reports which should be generated by this system should be a report closing out a sales opportunity. These reports are collected by the Regional Managers and key reports are sent to the appropriate marketing man who is vitally interested in the competitive position of his product. Because of the very dynamic interface we have between marketing people and the field, the marketing people are kept currently informed of developments on the part of competition. Effectively, the salesmen have a very open communications path to marketing and we do not need to rely on data processing approaches to keep track of our competition. The best receivers we have on the competitive position are our sales people and, if anything, I see exercising this system more and try to find a simple way to coordinate their inputs and using only those formalized data collection systems which are necessary.

4. FREQUENCY OF CALLS

District and Regional Managers have freedom to use the Weekly Call Summary Report. This is a report prepared by each salesman listing the calls he has made and the nature of the call (telephone, visit). This also indicates the potential of the account and the product interest. It was found that this report can be very valuable to the supervisor in the field but, after a certain period of time, would seem to lack usefulness back in Maynard. The performance of salesmen are reviewed by myself with the Regional Managers, or by Regional Managers with District Managers, and this kind of reporting is used when needed to get a measure of the way a salesman conducts and plans his week. We are putting a balanced stress on organization and sales techniques. Certainly, a first sales technique is planning one's time to make sure you are covering enough good accounts. The frequency and number of calls made to different customers is useful information when it is considered with the product, account, and area responsibilities of the individual salesman. Selling process is one of a balance between developing new account interest and following-up, and closing, business opportunities we have been working on. It would be very difficult within a narrow window to make any comparison between salesmen on this basis, since it does not lead to a direct conclusion as to what dollar or quality business the salesman is working to bring into the company. It is also a matter of different styles and techniques used by different salesmen. The only criterion I have found in common with good salesmen is that they are competent technically, that they take care of their customers, they are trusted by their customers, and they use their time well. Personal visits, telephone calls and letters of quotation are only tools at a saleman's disposal. Persistency and a sense of timing dictate the use of these tools and vary from one situation to another, and from one salesman to another.

5. FUNDING SOURCES

The people who have been watching funding sources most closely are marketing people. Some examples of this are NIH funding in the biomedical area, oceanography, etc. Individual account representatives establish the funding characteristics of their individual accounts and are instructed to keep tuned in to the buying practices of their customers. We have probably been considerably weaker than our competition in the area of defense and perhaps even atomic energy funding cycles because of the differences in our business. This difference can be seen clearly in the role our Washington office plays, compared to the role of our competitors.

The funding source is one of the items to be filled in on the sales call report, and the source of funding is the first item we have been stressing for two years to be reported in the call report itself. We can improve our sensitivity to some of the funding characteristics of government buyers; Canada, for example, has taken very good advantage of this with module sales at the end of their fiscal year. We have generally been successful closing out more business in the last quarter of our fiscal year with government buyers. This has largely been a function of working throughout the whole year, however, to keep these prospects aware of our products until which time funds become available, or appropriate projects were created. We tend to stick with good prospects and not bounce from one funded project to another.

We are organizing a sales training course this summer which will include trying to establish some ways of developing an awareness of ways to qualify prospects and be alert to situations where people are funded and able to buy. Every successful salesman will have to develop an ability to systematically determine where money exists, and the need exists for our products.

6. BACKLOG AND SALES FORECAST

I put these together as two items which we need to do a better job on. With our budgeting process, every office has a quota that they have said they'll obtain for the fiscal year. A very simple way to forecast by product at any given time, is to get reports against the year-to-date forecasts. At our level of development, and broad geographical distribution, we can rely on this information to be a good indicator for short-term business and this forecasting will get better in time as people work with their budgets. The marketing people have this capability at their disposal at any time and I want to encourage them to go to the Sales Department to get this information so that when we ask for this kind of data, it is viewed as a requirement, and not a random input. In general, I think a three month forecast is what both Marketing and Production need through the fiscal year. I think this is an item we should discuss at the Marketing Committee. We would be prepared to present our bar charts and sales forecasts to the Marketing Committee every month. I would hesitate to close the marketing people out from feeling a direct interest and getting this information because background information is required to make these forecasts meaningful and the marketing people are in the best position to collect the most information on their particular product line. Exercising sales/marketing relationship on forecasting (and backlog) could be one of the best developments from the Marketing Committee.

7. LARGE CUSTOMER REVIEW

A great deal of our business comes from working with large accounts. We have agreed on a system of assigning definite account responsibility and this is consistent with our whole program of moving toward account responsibility as much as possible (a lot of our planning for each fiscal year is based on the potential offered by these key customers and then supported by new business which we feel we can develop). This should be made part of our forecasting procedure. We will develop a separate memorandum outlining how we will make sure we are following up large account prospects.

8. OUTLINE OF CURRENT SYSTEM

1. Generate bookings by product quotas from the field offices.

2. Send out bookings runoffs to these offices and plot their performance each month by product.

3. Discuss this performance with the Regional Managers in the field at Regional Managers' Meetings.

4. Simultaneously develop expense budgets.

5. Send out overhead center reports and comments on what expenses they should be making an effort to bring in line.

6. Developing field guidelines and ideas on how to run offices in sales areas more efficiently (figure of merit).

7. Requiring salesmen to keep notebooks to record their sales discussions and ideas and generate call reports for review by the supervisors and marketing personnel (see call report system memorandum).

8. Discuss sales techniques as well as technical products at the various sales meetings.

9. Developing an interest on the part of the individuals in the field to become more efficient and professional.

10. Working on a new forecasting system which will be more useful to more departments of the company (including discussion with Dave Packer on how data processing might help us in this area).

11. Clear up channels of communication, encourage people to develop a sense of urgency about getting in ideas and opportunities, as well as needs, to solve customer problems.

12. Hold frequent Regional Sales Meetings where Marketing people have full opportunity to discuss competition, product reception, and market penetration with all of the sales people.

13. Generate a report on the manpower effort to keep track of where the effort is going

and report to product lines on how the various offices are doing for their products so they are alert to the need to sell their products to different offices and inform me, and the field managers, of problems they feel they might be having in any particular area.

I have been somewhat surprised that there is not more pressure on me, and the Sales Department, to get information on forecasting from some of the product lines. We have generally resisted over-formalizing and loading the system down with unnecessary paperwork. Sales people always resist writing reports and their inputs here are often well taken. I don't believe we can measure the effectiveness of the system by the numbers of pieces of paper generated, or the numbers and titles of reports. The important thing is that we all work together to determine what information we really need. I mentioned that a great deal of information is already available, and the quality is high.

mr

dec INTEROFFICE MEMORANDUM

DATE June 14, 1967

SUBJECT DISC MEMORY

TO Ken Olsen
cc: Loren Prentice
Ken Fitzgerald

FROM Jim Jordan

The approach taken by Ken Fitzgerald on the disc memory in styling and engineering seems to be successful. The engineering is beyond the scope of my ability to comment. The styling is within my realm of interest. It strikes me that the disc memory, like many of the other components of the computer system, exists for the system to function as a whole. It should, therefore, be no more emphasized than, for instance, the central processor or the core memory. In this case, it is a component and receives no special attention. As a part of the whole, it has a sense of unity and purpose that is not disproportionate to its place in the system. An important point to consider in the emphasis or lack of emphasis of any part of a system is the flexability that is gained or lost by emphasizing the component by way of some decorative treatment.

As more components are produced in line with the concept of a total systems approach to computers, it will be increasingly difficult and visually undesirable to give each component the emphasis that we might wish to give it if it were our only product.

It is perhaps more beneficial to concentrate on one aspect of the system and develop the visual emphasis there, while at the same time, subordinating the items of secondary importance. Some components, of course, will have to have special attention and cannot be completely anonymous. In this regard, I am thinking of the papertape reader and punch, the dectapes and the scope. In other words, to prevent visual anarchy, the system should be as simple as possible with as little emphasis made of component parts as possible, and, for the time being at least while we are still utilizing the console as much as we do, it is a good focus of attention. The secondary emphasis should be placed on peripherals which must be manipulated and all other components of the system which should be invisible. To this end, I feel that the disc is successful because of its anonymity.

Jim

/pgj

Ken Olsen

digital INTEROFFICE MEMORANDUM

DATE: June 13, 1967

SUBJECT:

TO: Executive Committee FROM: Harry S. Mann

The attached recent report from Kiplinger indicates that the profits squeeze apparently is here to stay for some time. I think it would be interesting to each member of the Executive Committee to at least be aware of what other companies appear to be doing in this area. With the extra pressures on us for abnormal salary and fringe benefit requirements in our industry, it appears that the only other avenue open to us for economy is being smarter in our operations than others and to tackle some of the things which have been proposed in this Letter.

ml

Encl.

THE KIPLINGER WASHINGTON LETTER

Circulated privately to businessmen

THE KIPLINGER WASHINGTON EDITORS

1729 H St., N.W., Washington, D.C. 20006

Dear Sir: Washington, May 26, 1967.

With the idea that your company may be in a squeeze on profits, we have been talking with executives of large firms and owners of smalls to see what they are doing to get more profit out of a dollar of sales. Some of the steps may sound familiar...you already may be using them. Or perhaps you are overlooking a few...and hence losing some profits.

First, a general word of advice that we heard time and again. The squeeze is NOT temporary...it won't vanish any time soon. Wage rates will continue to rise, and demands will get bigger. Other costs also are climbing and show no signs of peaking out. So best thing to do is lay out a program of profit improvement, a fancy way of saying not to slash into fat and muscle indiscriminately.

Trimming of real labor costs is the main target of all programs. Most firms we talked with are figuring out ways to stretch work forces.

New machines and more automation. Applies to every department... production, materials handling, accounting, sales, shipping, warehousing. But a growing caution on hasty installation of computers. Many companies rushed into them, then watched costs pile up until bugs were ironed out.

New look at assembly lines, giving workers MORE operations to do. Seems to contradict the trend toward super-specialization via automation, but the idea is that employes will take more pride and care in workmanship and will boost output if they are contributing more to the final product.

Also a tightening-up on pilferage...frequently a profit robber. And a closer check on absenteeism...the phone-in-sicks, goof-offs. This is important where office workers are involved, for costs can rocket.

More care in hiring...screening carefully despite labor shortage.

Talking up cost-cutting and better work. A number of companies tell us workers do respond when it is made clear that they also benefit.

Improved internal procedures are getting more attention too.

Better scheduling...into plant, within plant, and out of plant.

Limiting use of copying machines...some find abuses "scandalous."

Jacking up management...top to bottom, down to the supervisors. Additional responsibilities are being added so as to make men go further.

Cleaning out dead inventories. "Amazing how they just pile up." Tie up valuable space, capital to carry them, time to keep track of them.

Improving products...no lack of demand for the new and the better.

Pressing salesmen to sell...especially the high mark-up lines.

Finally, plans to raise prices are widely evident...easiest way to cover higher costs. Fear of losing out to competition isn't strong because "competitors also will have to raise prices for the same reason."

When the price increases? You can see some being posted now. More will come later this year when the economy begins its new surge.

digital INTEROFFICE MEMORANDUM

DATE: June 12, 1967

SUBJECT:

TO: Ken Olsen

FROM: Ed Harwood

Regarding your question concerning what happened to the "9" and how can we prevent it from happening on future projects?

I could summarize all the problems into three reasons for being late.

1. Engineering approximately three months late on options causing excessive mods during production build up period. Now up to ECO #74.

2. Miscalculation of manpower requirements on my part.

3. Late arrival and lack of training of bulk of new technicians.

I have more detailed information about the problems if and when you might want to see it.

As to how to prevent the problems, the most important thing is for all involved to be more concerned with their own problems and stop worrying about everyone else. Engineering worries about Production Engineering and Production, and is usually late. Production Engineering and Production keep worrying about Engineering and consequently don't do all they should in their own areas. In other words, everyone who makes commitments should have the responsibility and support to keep those commitments.

Enclosed is the original schedule from which all the plans were formulated.

PDP-9 SYS

APRIL | MAY | JUNE | JUL | AUG | SEPT | OCT | NOV | DEC | JAN | FEB | MARCH | APRIL | MAY | JUNE

MEM
IN FRAME
TO MAN FRAME
SHIP W/S CON
SHIP FSCC

PROTO 1 I/O
NO C.P. OPTIONS
W.L. DONE IN FRAME
FRAME IN HOUSE
SHIP TO WESCON
RETURN TO DEC
WIRE TC02 IN 340 UNIT
TC02 RUNS
UNIT TO FSCC

CP
BINNED BITS
W.L. FRAME IN HOUSE

MECH
COMPLETE CAB
MEMREL HOUSE
MFG 67 8115
RUNS

EAE RUNS
ALL OPTIONS RUN
TO PROG
EAE RUNS
API RUNS

PROTO 2
2 C.P. OPTIONS +

DIAGNOSTICS (CP)
ALL OPTIONS CORRECTING
FRAME TO SMITH
PART 1
INSTR. TEST
PART 2
CHECKER BOARD
EAE?
EX MEM? API?

CP OPTIONS

DECTAPE
DESIGN & BUILD JOMADA
KLUGE
TC02 ON 7A RUNS
MAINT. SOFTWARE DONE
PROD TC02 RUNS

PROGRAMS
diagnostics for TC02
HARWOOD Hardware modules & readin printer
PROBLEM WITH DECIO BOARD
GET PROTO 2s
SHIP NEW SOFTWARE

MAG TAPE CONTROL
ON TO 7A
NEED DIAGS
MAG TAPE CONT READY

12/11
POWER ON FIRST "9"

PRODUCTION
WRAP 2
TO C.P. 1
SHIP 1
4
4 BASIC 2 EAE
ALL C.P. OPTS + DECTAPE
4 BASIC 2 EAE 2 DECTape EAE MEM PARITY
4 BASIC 6 every
15 every
FIRST MAG TAPE 20 every

EXTRA 8K
START 8K
EAE WORKS OFF LINE

MB+1
MEC
EAE
API
PARITY
P.F.
34 DISP

MEM. PROT.

SHIP MENTS
2 BASIC
4 BASIC
6 EAE API
4 EAE API XMEM DECTAPE
4 EVERY
+1
+1
+1
+1

Harwood, Hantman, Seligman, Jones

4-6-66

digital INTEROFFICE MEMORANDUM

DATE: June 12, 1967

SUBJECT: Capital Equipment Budget for FY 1968

TO: Ken Olsen FROM: Harry S. Mann

I would like to schedule a meeting to review our capital equipment budget for FY 1968. I am most anxious to get this firmed up in the near future since it will have an important effect on the amount of money we will need to borrow.

Our budget, as proposed by the various Executive Committee members, aggregates $2,400,000. In addition to this, the carryover of work in progress from FY 1967 will be in the neighborhood of $180,000. I think it is safe to assume that an equivalent amount would probably be carried over from FY 1968 to the next year so, for purposes of cash flow and planning, I think we can just concern ourselves with the $2,400,000 figure.

The amount suggested is startling, to say the least. We will have spent approximately $825,000 in FY 1967 just to give some basis of comparison. Another comparison, which is indicative of the magnitude we are talking about, may be made between the $2,400,000 figure and the total original cost of all capital equipment now in use in the company. This latter figure is about $2,900,000. In other words, we are proposing to spend almost as much for capital equipment in FY 1968 as our entire investment of equipment, leasehold improvements, etc., still in use, cost us since the beginning of the company.

To give you a little preview of the breakdown of these proposals, we attach a schedule showing the amounts on a quarter by quarter basis and the person who submitted the proposal.

ml
Encl.

TOTAL EXPENSE PER CAPITAL BUDGET AS OF 5/31/67

BUDGET FOR FY 1967

		Total Spent
Leased Equipment (Depreciation expense for year $114,396)		($77,692)
Adds this year FY 67	$208,984	
Dispositions of equipment on lease prior to 7/2/66	(286,676)	
	(77,692)	
Leasehold Improvements		67,660
Manufacturing Equipment		464,217
Flip Chip Manufacturing Equipment		40,388
Office Equipment		38,099
Demo and Training		57,742
Construction in Progress		6,875
Money Spent in the 1967 Capital Budget		597,289
Expense from 5/31/67 to 6/30/67		50,000
Estimated Total Expense for the Year FY 1967		$647,289

PROPOSED CAPITAL EQUIPMENT BUDGET FY 1968

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter		Total
N. Mazzarese	$11,617	$13,519	$11,616	$5,255		$ 42,007
Leases	11,000	(11,094)	7,000			6,906
					$ 48,913	
S. Olsen	60,732	88,125	59,741	118,500		327,098
Leases	----	105,000	25,000	25,000	482,098	155,000
P. Kaufmann	227,025	508,489	120,300	96,350		952,164
W. Hindle	131,735	127,695	23,830	6,505		289,765
Leases	16,000				305,765	16,000
T. Johnson	19,985	24,560	33,875	8,050		86,470
H. Mann	9,790	6,910	8,800	7,500		33,000
Leasehold Improvements	458,750	31,000	1,000	1,000	524,750	491,750
	946,634	894,204	291,162	268,160		(2,400,160)
Carryover from 1967 on approved proposals as at 6/8/67						179,312
						$2,579,472

digital INTEROFFICE MEMORANDUM

DATE: June 12, 1967

SUBJECT: Scientific Data Systems

TO: Ken Olsen FROM: Harry S. Mann

I would like you to consider this as just a preliminary report on the performance of SDS as shown in their Prospectus dated May 17. I want to do a more thorough job on this and give you a further report.

The most significant thing to talk about is a comparison between the first quarter of their FY 1966 and the corresponding quarter for FY 1967. They report the following figures for these two periods:

	1966	1967
Revenue	$12,017,000	$14,394,000
Net income after taxes	747,000	1,063,000

On the face of it, this seems to be a favorable trend in both volume and profit with profits rising at a faster rate than in 1966. I think these figures, relative to each other as regarding 1966 vs. 1967, are reasonable in that they probably did show this much growth in these two areas. The absolute values, of course, are subject to considerable debate and speculation. One thing which contributed substantially to their improvement in 1967 over 1966, as far as profits are concerned, was a reduction in engineering and development expenditures this year. The reduction amounted to about $400,000 which had an effect of increasing income this year by approximately $200,000 over last year after giving affect to taxes; since their total change in income was only $300,000, you can see that the bulk of the change comes from reducing engineering effort. Certainly for the long haul, this is a dangerous trend.

They did re-state 1966 figures to put the marketing and sales expense on the same basis as they reported in 1967. It appears that the advantage that they gained in increasing profits in 1966 by this technique has pretty well run its course since they only picked up an additional $66,000 before taxes in 1967 as a result of this hanky-panky.

The absolute size of their sales in both years is subject to considerable study and evaluation. In both years, they sold some leases to a finance company and reported these sales as complete new equipment sales. I don't think that the principal is dead necessarily, but it does tend to inflate the revenue in any one period. It so happens,

however, that in 1967, they only sold $1 million worth of leases compared to $2,200,000 for the first quarter of 1966. In effect, this means that their volume in 1966 could be considered inflated possbily to the tune of $1,200,000, making the year-to-year change even more dramatic than was reported. On the other hand, they also follow the practice of taking long-term, non-cancellable leases and treating those as income in the period that the lease becomes effective. This has the effect of bringing revenue and profits into the statement before it is really earned. I certainly think that this is a doubtful practice and can get them into future trouble. In this case, there were practically no leases so treated in 1966 but approximately $2,100,000 was applicable to the sales reported in FY 1967. This trend is exactly opposite to the one I mentioned above for the sale of leases to the finance company.

On balance, then, it appears to me that you might logically say that SDS had a growth in the first quarter of this year over the first quarter of last year of approximately $1,500,000 or about 12½% with a profit increase principally as a result of holding back on development work. I will advise you further upon my return.

ml

dec INTEROFFICE MEMORANDUM

JUN 13 RECD

DATE June 9, 1967

SUBJECT

TO Ted Johnson

FROM Ray Lindsay RL
Pittsburgh Office

You sent me a memo from Ken Olsen pertaining to the sale of about 200 SDS machines to Westinghouse here in Pittsburgh. I talked to Ken briefly last time at the plant and gave him the background again on why we did not get the sale.

Since that time, I have talked to the head of the Department involved with the SDS machines to find out approximately how large this order was. They definitely do not have any plans right now for even reaching 50 machines, and as far as I could tell, SDS has been lagging on both the hardware and programming facilities.

This is not to say I would not liked to have the order and that SDS is not delivering. They do have two or three computers in-house at the present time and the biggest problem is with programming. I do call the people over there every so often to see if they are unhappy, and again some day we may do business with them.

cc. K. H. Olsen
Ted

Ken Olsen

digital INTEROFFICE MEMORANDUM

DATE: June 9, 1967

SUBJECT:

TO: Executive Committee
Mike Ford

FROM: Ed Harwood

Attached is a review report on the 8I Mechanical Design.

8I MECHANICAL DESIGN REVIEW

For the purpose of this report we have not rehashed the design problems relating to the table mount. It is our feeling we should proceed with the cabinet version while rescheduling the design of the table top.

Before we leave the table top we ought to itemize some of the unresolved areas.

1. Type of cover - Plastic or aluminum?
2. Cooling - How to get air out.
3. Cable exit and entry.
4. Places to hold machine for carrying.
5. Support while machine is tipped for service.
6. Problems of mounting supply in teletype stand.

The committee reviewed the cabinet mounting procedure and is satisfied it will be adequate and inexpensive. The T Bar has been eliminated and replaced with two slides on the cabinet frame. This mount is compatable with Budd and Emcor cabinets. A pair of slides will cost $43.00.

The flat console with PDP-10 type rocker switch is being designed and should cause a two - three week delay in their schedule.

We will have a 40 block mock up in Budd or Emcor by June 15th.

The power supply design is still up in the air and could present problems. The power supply will not slide out.

The kick panel will slide out with the C.P.

The cabinet version can have long doors or individual cover panels.

The module hold down system has been designed (similar to the "9").

Mechanical Engineering should give much more consideration to cabling from 8I to other sliding options.

A table can be purchased at extra cost for our cabinet.

Howie has strong feelings concerning the decision to do nothing about a table top version until we have strong inputs. He says he has strong inputs now from Teradyne and Berkely Scientific and would like to be able to deliver table top 8I by March, 1968.

The most important problems still to be solved are:

1. Our ability to automatically wire wrap our new connectors. We were unable to wrap the prototype at Raytheon and are having it hand wrapped at Sanders. The present connectors do not meet the specs on pin size or spacings.

2. The PC board manufacture of plated through boards. We do not expect our facility to be in operation until October.

digital INTEROFFICE MEMORANDUM

DATE: June 8, 1967

SUBJECT: Technichom Visit for OEM Module Potential

TO: Ken Olsen
Dave Denniston
Roger Handy
Mort Ruderman

FROM: Fred Gould

The purpose of my visit was to make Technicom's Management aware of our capabilities in module manufacturing.

Technicom presently manufactures five different sizes of modules, four of which are discrete components and are redundant in function. Two types, one of discrete and one using DTL IC's, are just starting into the production cycle. Total usage of all types is 5,000 to 10,000 boards a year. It is difficult to accurately estimate from their information as sales figures are not freely disclosed.

I met several project people, but their enthusiasm was not apparent and are obviously the wrong people to approach on the subject of replacing their design with DEC's package.

I did succeed in meeting with the buyer for electronics and he promised to allow me to bid on the first production buy of IC logic based on our M Series package.

In summary, we won't go anywhere here talking to engineering people. Mr. Whitehead will have to issue a mandate instructing them (the project engineers) to look at one source rather than five separate sources before we are received without suspicion.

If the opportunity arises, I suggest Mr. Whitehead be informed of the situation in a casual manner. He was not available to me during the visit and as a policy does not see salesmen.

Our Dave Dodge in the local office will follow up with a visit to see the buyer, William Krapp, in an effort to expedite their RFQ.

/mp

INTEROFFICE MEMO

June 8, 1967

Technicon Visit for OEM Module Potential

Ken Olsen
Dave Denniston
Roger Handy
Mort Ruderman

Fred Gould

COPY

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/mp

Ken, 1/23 Engineering had not been informed that Mr. Whitehead was interested in considering module mfg. If this is clear it will smooth the way for a second call.
Fred

INTEROFFICE MEMORANDUM

cc: Harry Mann

JUN 13 REC'D

DATE 7th June, 1967.

SUBJECT

TO Ted Johnson

FROM John Leng

Met Peter Ford on the way to the airport this morning (1st June). He is due to go to San Diego shortly to work with the General Dynamics people with their display equipment, i.e. Stromberg Carlson. He said that General Dynamics had been forced to sell one of their large companies due to anti-trust laws, or some such thing and were anxiously looking for an acquisition in the computer industry.

Apparently, recently they tried to acquire Control Data Corporation and may still be interested. Apparently, we should expect an approach from this company within the next few weeks with a view to acquisition. I assume that we have two places for them at the end of the queue.

Route to Ken Olsen

JL/hc

dec INTEROFFICE MEMORANDUM

DATE 7th June, 1967.

SUBJECT

TO Ken Olsen

FROM John Leng

c.c. Ted Johnson
Gerry Moore
Jean-Claude Peterschmitt
Tom Dalzell

Enclosed is a letter of complaint together with my reply.

This fellow is very ambitious and sensitive. However, I don't have a high regard for any of his documents; I suspect others in our Company feel the same way.

However, some of his customers believe in him and we should therefore try and be as diplomatic as possible.

JL/hc

JL/hc

8th June, 1967.

Mr. R. H. Williams,
Managing Director
Messrs. Computer Consultants Ltd.,
G.P.O. Box No. 8,
19 Roumania Drive,
Llandudno,
Caerns.

Dear Mr. Williams,

Thank you for your letter of May 26/67. I was very disturbed to hear that some of our people were sending you rude letters.

Naturally, I am anxious to find out the reason why, and you can be assured that this will receive our immediate attention.

Thank you for bringing this matter to my notice.

Yours sincerely,

JOHN LENG
European Regional Manager
D.E.C.

30 MAY 1967

Computer Consultants Limited

Established 1957

G.P.O. Box No. 8,
19, Roumania Drive,
Llandudno, Caerns.

Telegrams & Cables:—COMPUTERS ENFIELD
Telephone:—ENField 7185
Llandudno 75171

26th May 1967

J. Leng, Esq.,
Regional Sales Manager,
Digital Equipment Corporation (U.K.) Ltd.,
3, Arkwright Road,
Reading,
Berks.

Dear Mr. Leng,

We have for some reason been receiving extremely rude letters from the Digital Equipment Organisation, from several parts of the world and this has now reached a stage when I am getting a little cross about it.

As you know we send out our publications promptly because in our particular field this is very necessary due to the rapid dating of information.

We give ample opportunity for people to say if they do not want the publication and after having sent it we bill them politely two or three times.

What has been happening now is that the books have been returned after a very considerable period of time, when frankly I cannot believe that they have not been made use of, or secondly they have not been returned at all and ours accounts not been paid. On top of this we get these rude letters.

May I ask you to be kind enough to draw the attention of your President in America to this state of affairs which unnecessarily prejudices the relationship between us. Also if you will ask him to be kind enough to have something done about it. I do not want to take the extreme step of making an example of this sort of thing in our Restricted Confidential Memorandum. If it does go on I am going to do so.

Rude behaviour usually is an indication of weakness of some sort or other.

With kind regards.

Yours sincerely,

Managing Director.

RHWILLIAMS:cw

digital INTEROFFICE MEMORANDUM

DATE: June 6, 1967

SUBJECT: PDP-8I DESIGN REVIEW

TO: Executive Committee FROM: Henry Burkhardt

This report is a summary of the comments of the Design Review Committee. The PDP-8I is a well organized project. There are several points, however, that should be made:

1. General Organization

The transfer bus organization of the PDP-8I has been well thought out and carefully implemented to take advantage of existing technology. In addition to providing the most economical system within the marketing constraints, this organization has several additional advantages. The processor has been divided into several functional modules for the registers and their data paths while the control has been implemented from a small number of distinct standard modules. The EAE has been simulated on a PDP-8 and the algorithms verified. The increased speed of the EAE (7-8 microseconds) should solve some of the data-break problems with high-speed devices.

2. Modules

The committee approves of the basic packaging scheme employed, ie. the use of special functional modules and the small number of distinct standard modules. The L series is well organized and many of the concepts employed should be considered for the M series.

The module manufacturing process should be clearly evaluated to determine if there are any potential problems due to the mixture of integrated circuitry and discrete components.

3. IC Tester and AMT

Since the PDP-8I registers key function timing chain and 804 options are now on functional modules, many of the system checkout responsibilities have been shifted to the module test area. The committee suggests that requirements in this area be carefully evaluated. Production of the PDP-8I hinges on successful completion of the integrated circuit tester and an AMT with diagnostic capability.

4. Memory

The new memory design and packaging scheme should solve most of the problems that have been encountered in large (>16k) PDP-8 systems. The basic asynchronous timing scheme minimizes the need for adjustments in the system and should contribute to improved ease of checkout and maintenance. This scheme also allows the same processor to be used with a number of memory speeds which will give us improved product flexibility.

The committee would like to see the memory extension control modified so that references to non-existent memory banks will not hang-up the system. This will simplify some of the diagnostic programs.

5. IO Bus

The committee agrees with the use of a strobed bus as opposed to the DC transfer used in the PDP-8. The elimination of single-shots and the improved noise rejection are obviously desirable.

The PDP-9 is using a similar bus system and several timing problems have been encountered. We feel that this area requires further testing and detailed worst-case analysis.

The marketing decision to use a negative level bus should be examined in conjunction with the marketing goals for the M series module line.

6. Console

The change to a higher (20-35) voltage across the console switches and a longer (100 milliseconds) filter time should reduce noise problems. Bringing the step counter and the states of the 3-cycle break system out to the console will improve checkout and maintenance.

7. Wire Wrap

We feel that a training program for wiremen in the use of the new 30 gauge wire should be instituted before the need for them grows.

8. Documentation

We hope that the prints can be converted to the new standard (if and when it does become standard). The problems encountered with the PDP-8/S prints should be kept in mind. In general, the prints are quite readable. Some consideration should be given to the training of field service, personnel and technicians in the MIL-806 symbology.

Henry

CC: Mike Ford
Ed de Castro
Dick Mangsen

digital INTEROFFICE MEMORANDUM

DATE: June 6, 1967

SUBJECT: Cost Summary: Spring Joint Computer Conference

TO: Ken Olsen
Win Hindle
Nick Mazzarese
Stan Olsen
Harry Mann
Tim McInerny

FROM: Bob Dill

Several times a year we plan to review the costs of trade shows. The analysis just completed shows these results.

A total of 68 people attended this show from DEC facilities. The detail costs are as outlined below:

Plane, motel, car expense	$4,500
Hotel	1,700
Booth	3,000
Freight	1,100
Salary	6,800
Overhead	3,400
Atkins & Merrill	2,100
Literature	?
Telephones	200
Photos	100
Drayage, Cleaning, Assembly	2,100
Total Cost	$25,000

The budget for this show was $6,000 covering the hotel, booth, freight, Atkins & Merrill, telephones, photos and drayage.

While there was an overrun on the budget, it is significant to note that large costs of this show are as a result of the personnel attending and their related costs. Three items (Salary, Overhead, Plane and motel) total $14,700 or 56% of the total costs. While these items (Salary, Plane, etc.) are budgeted in the cost centers, it is very easy to lose sight of the true costs of trade shows.

ml

INTEROFFICE MEMORANDUM

DATE June 6, 1967

SUBJECT BOOKINGS/BILLINGS GRAPH

TO Ken Olsen
Stan Olsen
Ted Johnson

FROM Frank Kalwell

Attached is a copy of the graph reflecting the Module Bookings-Billings for the year to date (through 5/27/67).

Thought this would be of interest to you.

Frank Kalwell

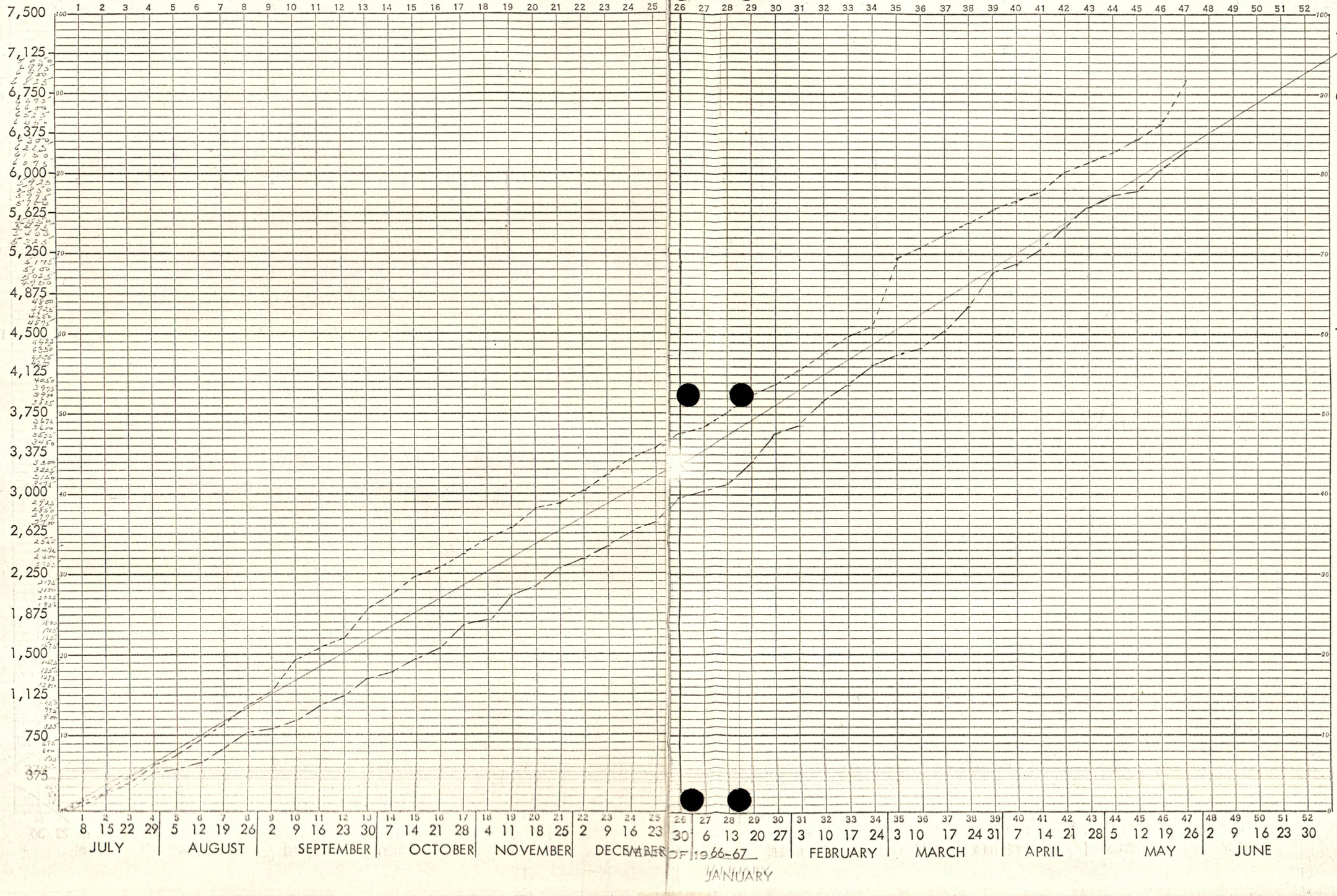
jeh

COMPANY CONFIDENTIAL

BILLINGS — ———— — — ———— — — ———— —

MODULE SALES FORECAST ————————————————

BOOKINGS -



YEAR OF 1966-67

July-Sept

1.6

Oct- DEC

1.7

Jan-March

1.8

April-June

2M

TOTAL 7.1

COMPANY CONFIDENTIAL

INTEROFFICE MEMORANDUM

DATE June 6, 1967

SUBJECT Manufacturing Costs of TU79

TO Win Hindle

FROM F. Nardo

The costs for mechanical parts were given in quantities of 25. Price breaks are at quantities of 25, 50, 75, & 100 units. The quantity discounts were 20% of the 25 unit price for 50 units, 30% for 75, and 35% for 100 units.

I. Modules

Type	Qty.	Unit Cost	Total Cost
G084	9	8.40	75.60
G287	5	24.81	124.05
W501	16	7.35	117.60
R202	2	9.60	19.20
R121	10	6.17	61.70
R107	14	8.42	117.88
R205	5	11.12	55.60
R203	3	10.33	30.99
R302	12	18.37	220.44
R603	6	10.59	63.54
R123	4	6.55	26.20
R002	1	1.93	1.93
R113	7	7.05	49.35
W040	7	10.90	76.30
A601	3	13.54	40.62
A502	4	22.99	91.96
A702	2	16.16	32.32
R151	1	10.44	10.44
R284	1	12.06	12.06
R111	1	4.66	4.66
R405	2	11.99	23.98
R401	1	14.47	14.47
R303	1	14.97	14.97
R602	4	9.39	37.56
R601	2	9.42	18.84
W505	1	11.39	11.39
W050	3	4.69	14.07
R001	1	1.66	1.66
			1369.38
			1478.93*

*An increase of 8% of Module prices was recommended by Accounting.

(Cont'd)

Type	Qty.	Unit Cost	Total Cost
EOT Card	1	12.50 (approx.)	12.50
Delay Card	1	12.50 (approx.)	12.50
Capstan Preamp	1	60.00 (approx.)	60.00
Capstan Servo Power Amp	1	69.30	69.30
Reel Servo Power Amp	1	50.00	50.00
		Total Module Cost	1683.23

2.0 Cabinet Costs

1	Cabinet Frame (without fans, plenum door, brackets)	$ 101.00
2	End Panels	90.00
1	Rear door ass'y	35.00
1	Vacuum Tank Ass'y	60.00
1	Vacuum Motor Cover Ass'y	10.00
3	Window, Handle, & Spaces	19.35
2	Channel Ass'y	36.40
8	Window Channel Accessories (Brace, Buffer, Holder, Ball)	7.30
2	Micro Switch Holder & Cover	2.00
2	Right & Left Face Panel	10.00
1	Center Panel	9.00
1	Chassis Slide (Rework)	5.00
2	Center Support Angles	12.00
1	Horizontal Support Angles	3.00
1	Fan and Housing	50.00
2	Gussets	6.00
	Total Cabinet	456.05

2.1 Tape Deck Assembly

1	Tape Deck	110.00
1	Capstan Pulley	30.00
1	Pulley Clamp	8.00
2	Tachometer Pulley	40.00
1	Pivot Arm	13.50
1	Adjustment screw ass'y	4.95
2	End Cap.	8.00
1	Wavey Washer	.08
1	Tape Cleaner	13.50
1	Write Lockout Switch Ass'y	30.00
1	EOT ▷EOT Ass'y	20.00

2.1 Tape Deck Assembly (Cont'd)

1	Support Bracket	6.75
1	Pivot Arm Cover	6.30
4	Shock Mounting Brackets	7.50
4	Shock Mounting Supports	7.90
4	Shock Mountings	8.00
1	Connector Bracket	1.20
2	Connector Blocks	11.70
2	Pivot Arm Stop	3.00
6	Tape Guide Posts	93.00
1	Pivot Pin	.60
1	Reel Support (Fixed)(Die Cost included)	30.00
1	Reel Cover (Die Cost included)	14.75
3	Retainer Studs	1.50
1	Capstan Motor Mounting Bracket	17.50
1	Fixed Plate	5.00
1	Support Bracket Head (Die Cost included)	24.00
2	Guide Post Ass'y	50.00
1	Moveable Support (Die Cost included)	22.75
1	Reel Support & Ext. (Die Cost included)	27.75
1	Can Lock Handle (Die cost included)	12.00
1	Regulator and Gauge	7.00
2	Filters	10.00
1	Vacuum Motor	16.00
1	Vacuum Gauge	7.00
2	Reel Motors	200.00
1	Photo Circuits Motor	750.00
1	Recording head (7 channel)	650.00
1	Compressor	35.00
2	Reel Brakes @ 55 ea.	110.00
		2414.23

2.2 Indicator Panel Assy

1	Benelex Control Panel	31.50
2	Benelex Mounting Bracket	3.00
1	Bezel	9.00
1	Screened Panel	35.00
1	Hold down Bar	2.00
2	Hold down Brackets	2.80
1	Selection Wheel	7.65
1	Indicator Dial King	2.40
1	Selector Knob Numbers	1.50

2.2 Indicator Panel Ass'y (Cont'd)

1	Support Bit	1.40
1	Nut Bracket indicator light	1.25
1	Reflector Bracket	1.35
1	Casting	10.00
1	Printed Circuits Board	10.00
26	2313 Light bulbs @ .25 ea.	6.50
	Ass'y costs 4 hrs. @ $8.00	$ 32.00
	Total Cost of Indicator Panel	$157.35

3.0 Power Supplies & Controls

1	728	73.99
2	778 @ 108.21	216.42
1	841A (approx.)	51.00
		314.41

4.0 Logic Panels, assembled, wiring blocks similar to PDP-10 Console $300.00

5.0 Cables $200.00

6.0 Checkout
Tech. 3.50 + 200% OH = 10.50/hr. or 420/wk.
8 MW for 2 drives or 4 MW/drive = $1680.00.

7.0

2	Vacuum Column Ass'y	$ 140.00
1	Column loop Switch	40.00
1	Glass support	10.00
1	Glass	10.00
1	Glass Retane	3.00
		$ 203.00

Cost of Tooling	500.00	
Paint	150.00	
Chromecoating	75.00	
Anodizing	85.00	
	810.00	for eighty units
or	10.00	spread over the cost of units.

Total TU79 $7418.27

Of this total cost approximately $1534.00 is affected by vendor price breaks. Therefore, $5884.27 would be the base price. Since $1534.00 is the cost for 25 units, the following is a breakdown of cost for additional units:

25 Units	50 Units	75 Units	100 Units
5884.27	5884.27	5884.27	5884.27
1534.00	1230.00	1075.00	1000.00
7418.27	7114.27	6959.27	6884.27

The cost of checkout and assembly will decrease somewhat as we build more units. The goal has been set at 4 per week. If this occurs the cost of checkout will decrease by an amount of $840.00. A look at the 100 unit figure could then very well be $6044.27.

digital INTEROFFICE MEMORANDUM

DATE: June 5, 1967

SUBJECT: Employees' Expense Accounts

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

FROM: Harry S. Mann

There has been a certain amount of pressure and considerable interest expressed in the use of some general credit card for employees, such as the American Express Card. At the same time, there has been pressure that the company should have some sort of insurance program. In the event a card is lost or misplaced, the holder of the card is liable for up to $100.00 for fraudulent use of the card.

In the way of review, I would like to point out that the company currently provides credit cards for people who have frequent use of services for airline travel, car rentals, and telephone calls. In addition to this, we have a mechanism for providing employees with travel advances when they are leaving their office for any overnight trips. We expect the employee to generally pay small incidentals out of his own pocket in the area in which he works and to then put in an expense voucher to be reimbursed for these amounts. The latter is not universally followed and certainly we recognize the need for exceptions even though amounts are small.

Over and above this service provided by the company, apparently a number of employees have found it preferable , from their point of view, to use American Express Cards, or other credit cards, rather than take advances from the company on a field fund basis. This, of course, has been done on a personal decision basis.

If we were to follow the suggestion of at least some people to provide company-paid cards and the related insurance, we would face a cost of approximately $20.00 per year for each card issued. I would estimate that we would be called upon to issue at least 400 cards under such a program. Therefore, it would have an annual cost to the company of $8,000.00. I seriously question the need for this type of expenditure and feel that the use of credit cards in lieu of taking cash advances should continue to be a personal decision by the individual and he should bear any personal expenses that he incurs related to that decision.

Frankly, I find it hard to justify in my mind this type of expenditure in light of the services currently be rendered. An expenditure in this magnitude is equivalent to hiring a competent clerical person including salary, fringe benefits, and other related costs.

ml

INTEROFFICE MEMORANDUM

DATE 5th June, 1967

SUBJECT DEC European Manufacturing - Planning Outline (Revised)

TO

FROM Rod Belden

Why Manufacture in Europe?

1. Lower Cost of Goods Sold from:

   a) Lower labour costs
   b) Reduced import duties and clearance charges
   c) Reduced freight/insurance
   d) Lower parts costs (a few items and metal work)

2. Protect a growing market from national resistance

3. Hedge against government imposed economic restrictions or devaluation.

Decisions basic to Manufacturing Plans:

1. What products to manufacture.

2. Where to manufacture them.

3. When to start

4. What technology to use, advanced or last year's.

5. How big a plant should be planned.

Factors for Evaluation of above:

1. Products.

   Labour content; material content
   Expected product life and lifetime market size.
   Firmness of engineering design
   Ease of assembly and checkout.
   Availability of local components.
   Profitability of the product.

2. Where.

   Labour supply (technical, managerial, assembly).
   Facilities cost and availability and location.
   Transportation available.
   Political climate.
   Regulations on imports, exports.
   Local components and materials available.

Wage levels plus cost of living
Legal regulations and corporate taxes
Special cash grants
Growth and expansion potential
Language and cultural differences
Nearness to largest markets
Local financing opportunities
Other companies in the electronics industry nearby
Social taxes and regulations.

3. When.

Availability of a capable manager
Favourable economic climate
In conjunction with market development

4. Plant size.

What will the maximum worldwide demands be on the plant during the first 3 to 5 years.
How fast a pay-back on the investment is required.

INTEROFFICE MEMORANDUM

DATE 5th June, 1967

SUBJECT Summary of Germany/Netherlands trip from P. Kaufmann/ R. Belden.

TO K. Olsen FROM R. Belden

Pete and I spent 3 days on the Continent hearing the experiences of several American-backed companies that have established manufacturing plants on the Continent during the past few years. In 2 days in Germany and one in the Netherlands, we visited several plants, American Chamber of Commerce branches and an American Consulate:

- Gerro Karton GmbH
- Foxboro (Nederland) N.V.
- I.B.M. (Typewriter Assembly, Amsterdam)
- Honeywell GmbH (German headquarters)
- American Chamber of Commerce branches in Dusseldorf, Frankfurt, The Hague.
- U.S. Consulate in Dusseldorf.

The purpose of the trip was to gather information and impressions. The questions of what, where and when to expand our production in Europe will continue to be reviewed as the European market develops. It is unlikely that we will propose additional expansion of European manufacturing during 1967, other than that already planned for Reading checkout.

Impressions.

Both the German and Dutch Governments are extending aid and assistance to foreign businesses. Both countries have development areas, where new industry is eligible for liberal grants, allowances and tax incentives. In Germany, the electronics industry is centred in the Frankfurt-Munich areas. In the Netherlands, Amsterdam and the North is the electronics sector.

The labour supply in both countries is tight. However, for the time being the Netherlands has an extra of 1% unemployment over Germany. In both countries (and for that fact most countries in north western Europe) the cost of labour is roughly the same. For a skilled assembly labourer the cost including 30-45% surcharge for benefits is approximately $1.20 per hour. In both countries national unions dominate the wage scales and job classifications. I.B.M. has, and Foxboro will, negotiate their own company-wide terms with the Government and thereby avoid the presence of local unions. Women labour is not yet prevalent by U.S. standards in the industrial sector as by tradition women have stayed with the arts and crafts trades.

Women are gradually being attracted into industry at the same rates and skills as men.

All the companies we talked to began their operations with local assembly and checkout of American provided parts. As they grew they adopted local components and re-engineered the product as necessary. It appears as if the electronic parts used by both Foxboro and Honeywell are now more than 50% provided from European suppliers. At I.B.M. it was clear that most of the metal fabrication was done locally.

There appears to be little difficulty shipping parts between the Netherlands and Germany. However, companies in both these countries still find problems (small details) in exporting to France and Italy. Modern airports in both countries are equipped with customs staffs experienced in electronic parts.

In the Netherlands, Foxboro chose its location (where they bought land and built their own plant) primarily on the basis of establishing themselves in a small community where there was potential labour available. Foxboro went so far as to assist in re-zoning the city for industrial usage and has now bought land in advance for the next 10 years of expansion. Foxboro's strongest European market was then, and remains today, Germany. Soon after Foxboro opened in Soest (near Utrecht) High Voltage Engineering opened a plant near Amersfoort (a site Foxboro had considered but turned down). Both I.B.M. and Honeywell chose their locations on the strength of the local market.

None of the companies we met indicated any substantial difference in productivity in their operation and the equivalent counterpart. We did get the impression, however, that for the European plants the number of overhead and staff personnel was higher than would normally have been used in America.

The organization of Honeywell, Foxboro and I.B.M. was an integration of manufacturing, engineering and support services. In all cases the senior man or Managing Director was American who had been in the country for at least 5 years. In a couple of cases these men were looking forward to returning to the States home offices and the centre of activity.

We found the executive secretaries of the American Chamber of Commerce offices in The Hague and Frankfurt extremely knowledgeable men. Both were nationals who had been in business before retiring, and seemed to have insight into the problems of American companies entering their countries. Mr. Paul Baudler in Frankfurt mentioned several problems he had observed in American companies starting in Germany. He stressed the importance of choosing the manager (if he is American) who is prepared to stay with his family for several years, living with the social and economic differences. In Germany in particular the quality of the manager is important because of the persisting German attitude which responds to a dominant manager

(Geschaftsfuhrer) rather than the concept of group management. Baudler indicated that Honeywell will likely put a computer plant in Germany in the near future. All of the American Chamber of Commerce offices and the Consulate provided us with what appears to be good surveys of economic characteristics, labour, tax tariffs and location surveys for their areas.

Although it was difficult to assess, people had these impressions about other countries. The Dutch were especially good people to work with in international trade and have a good reputation for high quality workmanship. The French nationalism is causing enough friction with companies that they are not planning major expansions in the near future. German labour is immobile and so far only a small percentage of women have been attracted to the factory.

Electronics companies with factories established on the Continent include:

Netherlands:

Honeywell
I.B.M.
Tektronix
Univac
Foxboro
Bull General Electric
Cutler Hammer
Baird Atomic
Friden

Germany:

Ampex
Beckman Instruments
Consolidated Electrodynamics
I.B.M.
Amphenol-Borg
Hewlett Packard

Next Steps:

Pete and I will continue to gather background information on the economics of adding a plant to the Continent. The rate at which we go ahead will be determined by the rate the market develops. Attached is a revision of our planning outline for this project.

digital INTEROFFICE MEMORANDUM

DATE: June 1, 1967

SUBJECT: PDP-7 Installation at the University of California, Berkeley.

TO: John Jones
Ken Olsen
Stan Olsen
R. Dejohn
K. Larsen
L. Portner

FROM: E. Dow

In reference to the recent letter from Mr. David Auslander of the University of California, Berkeley, the following seems to be the situation:

1. Mr. Auslander has been in frequent contact with our Palo Alto office. Mr. Richard Dejohn has given him a great deal of time and assistance.

2. Mr. Auslander's DECSYS problems can be attributed to:

   a. The state of the documentation of the DECSYS System.

   The documentation is difficult to follow (i.e., it is difficult for a person who is unfamiliar with DECSYS to operate DECSYS successfully and easily). This is partly due to the documentation and partly due to the poor user design of DECSYS.

   b. The Software itself suffers from poorly coded DECtape handling routines. The System does not handle errors well, nor does it allow the user to handle them intelligently. It has poor search and turn around capabilities.

3. The installation has suffered and apparently still does suffer from hardware problems.

4. As an installation they are rather unorganized. There is no one person who is responsible for the operation of the hardware and/or Software. Tapes and documents are uncontrolled - anyone can add to or remove from the available material.

5. It seems obvious from the amount of grief experienced by this installation and from the amount of time Richard Dejohn has contributed to their efforts to make good use of their installation, that we need:

   a. Additional Software Support people on the West Coast.
   b. Some assistance from the Software Maintenance people, i.e., some of the problems corrected here at Maynard.

6. I have supplied Mr. Auslander with additional documentation for DECSYS, some internal documentation and program listings that are pertinent to the Software involved. We have DECSYS modifications to be tested and an Extended Assembler that we will attempt to put in the DECSYS tape as per Mr. Auslander's request. The success of the above, however, depends upon several things. Namely:

1. adequate working PDP-7 time
2. adequate personnel time

These imply, ofcourse, that the present PDP-9 development work can be transferred to a working PDP-9 with Dectapes; that the present acceptance procedure for the purchased PDP-9 Software (compiler, etc.) can also be transferred to a PDP-9; that PSI (contractor for the compiler etc.) will be able to do their remaining work on a PDP-9; that Field Service has adequate time available to them to perform whatever maintenance the PDP-7 Dectapes and paper tape reader require; that the tape preparation group has adequate PDP-7 time to perform whatever editing, assembling and other routine tasks we may require.

ED/gm

Ken Olsen

digital INTEROFFICE MEMORANDUM

DATE: June 1, 1967

SUBJECT: Retirement Committee

TO: Executive Committee FROM: Win Hindle

cc: Bob Lassen

We need a formal Retirement Committee to administer DEC's Retirement Plan. This Committee must be named by the Board of Directors, but we have to take some action before July 1 and I propose we name a Committee now for ratification by the Board in July. I propose the following Committee:

Bob Lassen
Harry Mann
Win Hindle
Cy Kendrick
Henry Crouse

This proposal is on the June 5th Executive Committee agenda.

bwf

Ken Olsen

SEMICONDUCTOR PROCUREMENT

June 1967

The enclosed is a result of the Purchasing Department's negotiations with semiconductor suppliers for the significant portion of our transistor requirements.

The negotiations were managed by Paul McGaunn and Robert Hughes.

Henry Crouse

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TABLE of CONTENTS

I. USAGE HISTORY:

Our current usage rate of plastic transistors is approximately 750,000 to 1,000,000 units per month. The actual usage for the period January, 1966 to June, 1967 was approximately 8,000,000 pieces.

II. USAGE PROJECTED:

At an anticipated increase of about 30% our anticipated usage for the eighteen month period commencing July 1, 1967 would be 12.4 million devices.

III. BIDDING LIST:

The following companies submitted proposals on the procurement:

Fairchild Semiconductor, Mt. View, California
Motorola Semiconductor, Phoenix, Arizona
Texas Instruments, Dallas, Texas
Transitron, Wakefield, Massachusetts
Raytheon Co., Mt. View, California
General Electric, Syracuse, New York
Sprague Electric, Boston, Massachusetts
Micro Electronics, Ltd., Hong Kong

IV. CRITERIA for SOURCE SELECTION:

The criteria for selection were that the vendor be able to meet the needs of Digital Equipment Corporation, provide good technical assistance when required, secondly we set a worst case cost goal of $0.15 for the majority of the devices. The average price for the majority of plastic devices last year was $0.25.

V. GOALS:

1. Assurance of Supply
2. Lowest Cost of Acquisition
3. Stocking Arrangement to Reduce Digital Equipment Corporation Inventories

VI. BID SUMMARY:

See Paul McGaunn for complete bid summary.

VII. CONCLUSION:

To place contract with Fairchild, Texas Instruments, Motorola, the volume assignment is as follows:

Fairchild: 4,700,000 devices consisting of 13 different types.

Texas Instruments: 2,025,000 devices consisting of 9 different types.

Motorola: 3,450,000 devices consisting of 11 different types.

Average unit price for the device contracted for are as follows:

Device	New Price	Old Price
DEC 3639B	.11	.25
DEC 3639C	.12	.25
DEC 6534B	.15	.25
DEC 6534C	.13	.25
DEC 6534D	.12	.25
DEC 2894-1B	.13	.25
DEC 2894-1A	.42	.55
DEC 2894-2B	.20	.25

Device	New Price	Old Price
DEC 2894-2A	.50	.55
DEC 2894-3B	.12	.25
DEC 2894-3A	.28	.55
DEC 4258	.12	.35
DEC 4274	.12	.28
DEC 3568	.14	.22
DEC 3009B	.12	.25

VIII. SAVINGS:

$1,288,750.00

IX.

PROCUREMENTS

	Texas Instruments		Motorola		Fairchild		No. of Unit Purchase
6534B			150,000	.15			150,000
6534C			50,000	.13			50,000
6534D	200,000	.12	800,000	.12	750,000	.11	1,750,000
3639B	500,000	.115	800,000	.115	1,000,000	.105	2,300,000
3639C	700,000	.125	800,000	.125	1,000,000	.115	2,500,000
3009B	100,000	.14	100,000	.12	300,000	.12	500,000
2894-1A	25,000	.42			100,000	.43	125,000
2894-2A					50,000	.50	50,000
2894-3A	100,000	.28			150,000	.28	250,000
2894-1B	100,000	.14	250,000	.13	300,000	.13	650,000
2894-2B			100,000	.20	100,000	.19	200,000
2894-3B	200,000	.13	300,000	.12	300,000	.11	800,000
DEC 4258	100,000	.12	100,000	.13	300,000	.12	500,000
DEC 4274					300,000	.12	300,000
DEC 3568			100,000	.14	150,000	.14	250,000
DEC-1			1,000,000	.045			1,000,000
DEC-2			1,000,000	.07			1,000,000
	$272,500.00		$559,500.00		$632,500.00		12,575,000 =
							$1,464,500.00

Device	Usage 1966	Quantity Procured	Actual 1966 Price	Actual 1967/68 Price	Delta Per Item	Net Saving Per Item
DEC 6534B	300,000	150,000	.25	.15	.10	15,000.00
DEC 6534C	300,000	50,000	.25	.13	.12	6,000.00
DEC 6434D	300,000	1,750,000	.25	.12	.13	207,500.00
3639B	2,500,000	1,750,000	.25	.11	.14	235,000.00
3639C	New Device	2,300,000	.25	.12	.13	299,000.00
3009B	125,000	500,000	.25	.12	.13	65,000.00
2894-1A	88,000	125,000	.55	.42	.13	16,250.00
2894-2A	30,000	50,000	.55	.50	.05	2,500.00
2894-3A	200,000	250,000	.55	.28	.27	67,500.00
2894-1B	250,000	650,000	.25	.13	.12	78,000.00
2894-2B	65,000	200,000	.25	.20	.05	10,000.00
2894-3B	500,000	800,000	.25	.12	.13	104,000.00
DEC 4258	New Device	500,000	.35	.12	.23	115,000.00
DEC 4274	New Device	300,000	.28	.12	.16	48,000.00
DEC 3568	New Device	250,000	.22	.14	.08	20,000.00
DEC-1	New Device	1,000,000	---	.045	---	
DEC-2	New Device	1,000,000	---	.07	---	
						$1,288,750.00

PRICE DELTA BY MACHINE

Device	PDP-8 Qty	PDP-8 Δ		PDP-8/S Qty	PDP-8/S Δ		PDP-9 Qty	PDP-9 Δ	
DEC 3639B	683	.14	95.62	620	.14	86.80	1,596	.14	223.44
DEC 3639C									
2894-1A							151	.13	19.63
2894-1A	46	.12	5.52	8	.12	.96	30	.12	3.60
2894-2A	1	.05	.05						
2894-2B	78	.05	3.90	60	.05	3.00	45	.05	2.25
2894-3A	39	.27	10.53				68	.27	18.36
2894-3B	88	.13	11.44	8	.13	1.04	394	.13	51.22
DEC 6534B	39	.10	3.90	261	.10	26.10	55	.10	5.50
DEC 6534C									
DEC 6534D									
DEC 3009B	57	.13	7.41	21	.13	2.73	983	.13	127.79
DEC 4258									
DEC 4274									
DEC 3568				77	.08	6.16	4	.08	.32
Net Saving Per Machine			$138.37			$126.79			$452.11

digital INTEROFFICE MEMORANDUM

DATE: June 1, 1967

SUBJECT: ATTACHED LETTER

TO: Ken Olsen
Win Hindle
Brad Towle

FROM: Ted Johnson

This is the latest input from Hugh Donaghue, the CDC lobbyist in Washington, D.C. on the policy of sales to physics people in France.

mr
enc.