GENERAL ELECTRIC

SUBJECT DESIGN FOR TOMORROW - A STUDY IN CONTRASTS COPIES:

GRAPHICAL ILLUSTRATIONS

Memorandum to: H. F. Dickie

In order to pictorially represent the organizational structure and operation of a truly automated plant, the following exhibits will be used:

1) Flow diagrams--

A) Integrated operational flow--this will picture the movement of information, material, control and feedback through the basic manufacturing facility. It will be an operations diagram in that the planning functions will be divorced and separated. In order to visually emphasize the electronic, automatic nature of the various individual operations, a picture will be used as an illustration of each function. The connection between the areas will be either well defined colored flow lines or colored strips of magnetic tape, punched tape, telegraph wires, etc. The four basic types of flow--information, materials, control and feedback will be separately designated.

B) A detailed periodic operations chart will be prepared similar to the one above.

C) A planning function chart will also be shown. However, in this case pictorial representation will be omitted in favor of simple block designation.

2) A general writeup describing the basic organization plan and certain of the special impacts and relationships.

3) An annotated organization chart delineating the present functional activities in terms of the future organization. Possibly color can be used to represent present functions by grouping the individual activities. A nice relationship can be shown as to how the present functions are distributed under the new organization plan.

4) If still further detail is desirable it is suggested that specific function charts be prepared for each segment of the plant operation. This would involve the description of inputs, outputs and processes.

Burton Grad
Manufacturing Services
Production Control Services
Room 2401

September 7, 1955

BG/gc

Memo: H. F. Dickie

September 19, 1955

SUBJECT: DESIGN FOR TOMORROW - A STUDY IN CONTRASTS

Planning a completely automatic factory literally pulls the rug out from under our present organizational and managerial philosophy. Though decentralization may still be the watchword for manufacturing facilities, many functions and activities will tend to recentralize. We think here in terms of basic product research, basic equipment development both for factory and office processes, product sales, advertising, legal advice, salary structures, training programs and personnel development. But even more important, areas where judgment and intuition have reigned supreme will be exposed to the cold light of logic and numerical evaluation. This encompasses such diverse elements as measures of performance, degree of desirable standardization, risk-gain relationships for investment in facilities and inventory, market forecasts, etc. All these measures will have to be numerical since data as to their relative importance will be incorporated in the operational, day-to-day, decision-making processes.

Let's look at the individual plant for a moment. It will probably be characterized by a managerial dichotomy:

- planning
- operations

This separation effectively solves our present long-range vs. short range argument where operating people seem to have little or no time for the long-range functional planning needed to provide competitive progress.

At first review it appears that the following major functions will be required in each plant:

- product planning -- those elements related to product design, engineering and planning.
- systems planning -- those elements related to the programming, evaluation, and integration of the facilities provided, for maximum effectiveness in product manufacture.
- office operations -- those elements concerned with the direction and control of the manufacturing process and the data processing required for operational decision-making.
- factory operations -- those elements concerned with the physical

. processing of the product and maintenance of the facilities.

. sales -- those elements concerned specifically with obtaining orders for the product.

. employee and plant-community relations -- those elements concerned with personnel guidance and local communications.

The heart of the automated plant concept will be flexibility rather than stereotyped manufacture of unvarying products. On certain products rigid manufacturing processes will be most economical, but for industrial assemblies, this will generally not be the case. Though this will change the picture from one of long lines of single-purpose machines to something more closely resembling the job shop, it will reward us with the ability to react quickly to changes in customer demand. Naturally, the use of expensive electronic processing and control equipment will require operating the plant on a 3-shift, 7-day basis, and, just as there is a preventive maintenance testing periods on electronic computers today, so will there be marginal test operations for the whole factory, tomorrow.

There are two basic types of office function, each requiring a different concept of effective automation:

. Line Oriented refers to those elements which are integrated fully with the factory's main-line customer service purposes.

. Line Separated refers to those elements which are performed on a periodic or cyclical basis and are not an integral part of the main-line operation.

The technique known today as operations research will blossom into an entire planning philosophy---that of operations engineering or analysis. This mathematical, statistical, logical approach to problem solving will be the tool of the planning functions. No longer will this numerically-sound technique be used sparingly and infrequently but instead it will become the core of a revolution in management decision-making processes.

In order to explore the impact of this new concept it may be worth examining certain present day functions in this new light.

Production control, as one example, will lose certain of its physical elements.

. stockkeeping

. receiving

. shipping

. packing

. material movement

However, in spite of this it will still be production control's responsibility to lay the planning groundwork for adequate integration and automation of these elements. Naturally the paperwork aspects of these jobs will still be part of the office operations function.

The factory will serve as a basic information source to provide the office with data, but the factory will not do any data processing. It is visualized that all control--all automatic adjustment--will be initiated through the office activity where the data is digested, analyzed and decisions made. The first visualization of the automatic office tends to see a series of smallish, partially independent computers assigned to each element. However there will probably be a central high speed arithmetic - logical unit shared by the various elements on an instantaneous switching basis. The individual computers will probably each have its own input - output devices as well as tape reading, writing and storage facilities.

Cost accounting, for instance, will no longer tend to be just a static gathering of stale facts but rather a dynamic basis for decision-making. All cost determination data will serve to aid in making more effective decisions. Obviously, direct labor has a basis for product costs will be obsolete. But even more significant, the whole concept of overhead allocation will be reversed. In the plant of the future all human time (direct and indirect) will be charged directly to the product. With the new automatic information gathering and processing devices this becomes feasible for the first time. All the work, from unloading a truck to time sequence planning a new part, will be assigned to the appropriate product. Even the cost of machine time will be billed to each individual product at a rate dependent upon the initial cost of the equipment, actual maintenance expense, effectively useable lifespan of the machine, and the actual on-machine time for every part of that product. Everyone, from the general manager on down, will report his time per product.

Let's take quality control--no longer can the statistical approach be a matter of personal choice or fancy. In order to control automatic machines effectively it is an absolute must that there be integrated, operational feed-back. This indicates that quality control will operate at four different levels:

- factory operations--inspection and test of incoming, work-in-process, and finished material.
- office operations--the control and interpretation of quality experience and machine settings.
- product planning--this will include most of those elements presently called quality control engineering.
- systems planning--setting of effective control limits and long-range interpretation and analysis.

Quality control will also build reliability controls and auditing devices into

the office and factory equipment. In addition, preventive maintenance will be scheduled in terms of planned down time for systems testing both in the office and the factory.

One entirely new element for which there will be a need in our reorganized factory will be that of interpretation and translation. Each document which enters the plant, be it customer order, vendor bill, government regulation, price quotation or personnel data sheet, will have to be translated from the language of the printed word to that of machine recognition. These translators will only be needed on the input side of the program since the outputs will be directly readable by human beings. However, extreme care and effective verification and validation will be critical to the prevention of errors and mistakes.

Even the maintenance man of the future will hardly be recognised in light of the maintenance man of today. He will be first and foremost an engineer, a trouble-shooter. His job, like those of maintaining large scale computers, will be to diagnose trouble and correct it. His job will be made easier by having built in to the various machines error detection diagnosis equipment, so that productive time may not be lost in searching for the resistor that failed.

There may be a whole new look in the renewal-parts business. Since it seems undesirable to handicap product design by requiring that parts be capable of hand assembly, the concept of unit replacement becomes even more attractive than at present. The cost of troubleshooting, tear down, shipment, and reinstallation are significant that we may find throwing away product when it is no longer useable will be the rule rather than the exception. An example, of the design handicaps that are avoided is in the use of rivets or locking pins rather than screws and bolts.

The engineering problems of plant-wide parts standardisation will be of large magnitude and assigned to Product Planning. In addition, the machine design problem of providing "fail-safe" facilities will be a new headache for the Systems Planning people. Because of the importance of the long-range planning elements, it seems that all of the short-range day-to-day decision-making jobs should become part of the operations area.

The whole framework will be tied together by the concept of exception processing. Only that information which deviates from pre-established standards will be passed through the communications media. Instantaneous action and reaction will be the theme of the plant operation. Centralised policy and research with decentralised planning and operation will stimulate the long-range growth and effectiveness of our business operations.

Burton Grad, Specialist
Production Control Services
Room 2101

BG/s

PROPOSAL FOR INTEGRATED PURCHASED PART AND FACTORY PAPER-WORK VOUCHER PLAN

As a result of the ordering process, various manufactured and purchased parts are specified. The explosion and/or stock control operation have specified the quantity, the date due complete, and the drawing number of the part. In addition, the ordering process will often propagate "where used" information and an identifying shop order. The next stage is to translate this requirement into a factory or purchase order. Since our primary concern at this meeting is manufactured parts -- let us presuppose one of two solutions for the purchased items: a travel order card can be removed from file -- the various information noted above handwritten upon this card and then sent to Purchasing; the second alternative is: have the order card (either handwritten, punched, or punched tape) filed in Purchasing, whereby the only ordering problem might be to keypunch a card containing the known data and forward it to Purchasing... only one problem is then left -- how to know from the Parts List or Model List whether an item is purchased or manufactured and if it is on stock. We will return to this later.

Now for the manufactured parts: we often need paperwork to perform the following functions:

(1) withdraw the necessary "raw" material
  (1a) notify stock control of raw material withdrawal

(2) deliver the part to its initial location and each succeeding location.

(3) provide a blueprint

(4) provide a description of the operations to be performed.

(5) provide a pay voucher, operator's record card, and cost accounting document.

(6) provide a dispatch control card or cards.

(7) provide inspection vouchers

(8) provide a ticket for delivering the material to stock or to the shop order and assembly on which it is to be used.

(9) provide a progress or index file and a means for locating the part in process.

(10) provide a means for load analysis

(11) an identification tag

CERTAIN OBJECTIVES

(1) lead to a simple technique for preparing continuation vouchers

(2) be economical for succeeding functions: payroll, cost --

(3) provide for a simple, ~~analogous~~ similar plan to handle extra work vouchers.

(4) have easily prepared, easily read documents.

THE BASIC INFORMATION USED ON A MANUFACTURED PART

(1) material identification, quantity per part, where located

(2) oper. no., station location, price or time/unit, setup price or time, ~~planning~~ rate

(3) final deliver to location

Essentially this data is derived by planning and can be (and usually is) entered on the planning record or planning sheet. In addition, the planning sheet contains operation description, tools needed,

It seems feasible to propose that as the planning sheet is typed on a transparent Bruning or Ozalid master - or regular copy if Thermofax or Verifax are available -- a ~~selected~~ punched paper tape, carrying specific data, or punched card could be prepared containing only that information wanted by production control.

All master cards (either produced directly or through tape-to-card) would contain: part drawing no.

The first card would also have:

A unique operation number - identifying it as material
Material location (in lieu of a station no.)
Quantity per unit part (in lieu of price/unit)
Unit of measure of quantity
Unit of measure of unit part (E, C, M)
Material identification
Deliver to location

The second and each successive card would have:

Oper. no.
Station location
Price per unit part (time)
U/M of unit part (E, C, M)
Setup price (time)
Deliver to location

Final card would also have:

A unique operation number

To these masters in file a header card would be added for each order, containing quantity, date due, drawing no., assembly used on, and shop order.

Now depending on the scheduling system (whether just a finish date is used for dispatching or a start date or individual operation dates) the rest of the program is straightforward.

Each master card has four duplicates made containing fixed information plus quantity, due date, assembly used on, shop order, and possibly date duplicated. A special pw book is collated for each deck of master pw -- which depends solely on the number of operations. If the reproducer can be modified to supply a hold on the read side, then the entire book can be duplicated at one pass -- otherwise 4 setups are passed through and then collated.

FROM FIRST CARD } Mat'l withdrawal (duplicate for cost if necessary)
Part identification.
Release for processing
Progress notification

FROM EACH OPERATION CARD	Voucher and dispatch control card (duplicated for cost) Operator receipt Move card and progress notification Load analysis card
FROM LAST OPERATION CARD	Voucher and dispatch control (duplicated for cost) Operator receipt Finished stock delivery and progress notification Load Analysis card

In the finished parts stockroom in general, the part, if stock, goes to the stock location and the stockroom has a location card on file already. For parts made to individual customer order or special shop order, the parts should generally be filed and referenced through the next level assembly. Therefore, the stockroom should have a copy of each P. L. or model list and as a part comes through for the specific shop order, they should indicate on the P. L. the location of the part. This avoids the necessity of the stockroom maintaining a copy of every part received. This same finished parts stockroom procedure is directly applicable to receipt of purchased parts.

If this philosophy is followed, the purchased parts ordering plan is quite simple. In the M & O (material and operation) file where your masters were filed, a master would also be filed for each purchased part. Again, the header card would preface the master card and 4 copies would be reproduced

(1) purchase order card and acknowledgement for progress file maintenance

(2) Progress File - release to purchasing

(3) Ident tag

(4) Stockroom delivery card and progress notification

Copies 1, 3, 4 are sent to Purchasing, which stamps the purchase order on all 3 copies, circles the promise date, if ok or inserts new promise date, returns copy 1 to progress file and sends copies 3 and 4 to Receiving together with regular Receiving paperwork.

Burton Grad, Specialist
MANUFACTURING SERVICES
PRODUCTION CONTROL SERVICE
1/12/55

The concept of three levels of "Language"

It would seem that in the development of automatic programming languages it would be desirable to differentiate ~~between~~ among three levels — each of which is significant to the design of language which enables humans to efficiently convey their meanings — (and also serve as aids to logical thinking).

Specifically the lowest level seems to be that of format or structure. Our work in this direction has certainly been severely limited. The potentialities of adopting formats which imply the reasoning processes which humans use

is probably a necessity in any future ~~to~~ standard language. Highly appealing in this regard is an attempt to use the format of the truth table with some of the properties of Boolean Algebra Statements or regular algebraic statements. Work recently released by Dun Bran of Hunt Foods & Industries seem to indicate a new insight into these problems and should offer an opportunity for exploitation. In many areas of business life we have depended heavily on format to convey relationship & meaning. Accounting ledgers, Journals, Balance Sheet & Income Statements all illustrate the importance of format.

In virtually every professional field there has been some special work on formats to enable practitioners within that field to communicate more readily with one another. Industrial Engineers have math & statistical tables, we have many reference tables - square roots, logarithms, trigonometric functions - all of which have their readability or the convenience of a particular format. Most of the work in & with matrices - including the various mathematical programming techniques depend for their success on the topology of the language.

Many other formats can be seen - flow charts for computer programs & physical flow analysis - left-hand

- Right Hand Chart for methods Studies -

It seems to me that intensive effort aimed at developing an effective format (or formats) for stating the logic we wish to use in solving a particular human problem would be well rewarded.

~~At~~ The second level we are concerned with what I would like to call Operations - This specifies the instructions which can be used and the restraints which ~~will be~~ will limit the human use of the language -
This would be closer to the normal field of Programming Systems work -
Here we would state that certain kinds of tests could be made ($=, \neq, <, \leq, >, \geq$)

and that the comparison could be between two named fields or between a named field + an constant — The various arithmetic operations would also be defined — The internal information movement operations would be part of this level of the language —

At the highest level we would have Jargon — The specific choice of codes or symbols to represent the operations — The formal ~~statements~~ selection of actual field names — conventions etc

BIN RESERVE

A Bin Reserve stock control program is an extremely effective weapon in the application of "ABC" principles to stock control. "ABC" refers to the analysis of yearly purchases in terms of its dollar value so that primary attention may be placed on the "A" and "B" items where the greatest value lies. Bin Reserve involves the setting aside of a certain quantity of a part in such a way as to provide notification of the need for replenishment without the necessity of maintaining detailed withdrawal records.

The following advantages can often be realized in the proper installation of an effective bin reserve plan:

1. Reduction in the clerical expense of posting transactions.
2. Reduction in the stockroom expenses associated with the preparation of transaction documents, where floor stocks combine with Bin Reserve prove practical.
3. Reduction in the stockroom expenses associated with providing parts and materials to the factory or shipping areas, where window service or demand service must be provided.
4. Permit additional time to be spent in the analysis and control of "A" and "B" items, by higher caliber people.

Bin Reserve should be applied primarily to "C" items because only in this way can the non-profitable build-up of inventory be prevented. A corallary to this is that procurement quantities of the Bin Reserve items should be large in comparison to those for the "A" and "B" items. However, since these are, by definition, small value items, the inventory impacts will be negligible.

In determining the specific items to be placed on Bin Reserve, five factors should be considered:

1. The value of the item; this refers not to the value per piece but rather to the yearly value of the item. Even within the "C" item category preference should be given to those items of the lowest yearly value.
2. The handleability of the item; since large quantities will frequently be involved, it is important that the item can be handled in a convenient manner.
3. The space requirements for the part; this again relates to the ordering of large quantities. Bin Reserve is most effective when used for items of inherently small size. In addition, it should be noted that for parts of extremely small size such as washers, screws, and nuts, the value of not preparing withdrawals may be great enough to even permit the usage of fairly large storage areas.
4. The procurement cycle of the item; the longer the procurement cycle the larger the Bin Reserve quantity and therefore the less sensitive the control is to changes in usage. If the procurement cycle is erratic or non-predictable then large protective stocks are needed which may not be justified by the bin reserve savings.
5. The stability and predictability of the usage; if the usage of the item is of an erratic or non-predictable nature, bin reserve is not sufficiently adjustable to provide maximum operating efficiency.

A description follows of a simple Bin Reserve plan as used in a large job shop factory. It works well under the conditions existing and may well offer clues to other plants.

Using the principles outlined above it was decided to place 1600 items on Bin Reserve. The items which were selected were reviewed with the production units responsible for their stock maintenance. After agreement was reached that it would be advantageous to place these items on Bin Reserve the Inventory Control Analyst prepared for each item a Bin Reserve Tag

BIN RESERVE TAG

Identity

Name

Prod. Sect.

Location

Quantity Ordered	Reserve Quantity	Date Due	Date Received	Date Broken

Attach this tag physically to the reserve quantity. When this bin reserve is broken, immediately date this tag and give it to the "A" stockeeper.

Receipt Ack'd. Date

These were forwarded to the stockroom in blocks of 100 and the proper quantity was packaged, if available, with this two part tag on the package. If the material was not available the tag was returned with a recount posted to it; this would require action by the production unit to insure availability of the item. On each item that was packaged a recount slip was submitted to the production unit so that the records would be correct as of that date.

The package was located in the same tray with the loose quantity and these in turn were right in the regular stockroom areas. For convenience most of the Bin Reserve items were placed in adjacent racks but this was not essential to the system. For these Bin Reserve items it is no longer necessary to prepare withdrawal documents. All that is necessary is for the stockkeeper to remove the quantity desired from the tray.

When the loose quantity is used and it is necessary to break into the package reserve, the two part form is removed from the package; once a day these forms are taken to the production unit responsible for that item where an authorized representative signs that he has received notification of the package break. After the form is signed one copy remains in the production unit while the card copy goes back with the stockkeeper; this second copy is taped to the front of the tray as a record of the package break notification.

The original copy goes to the stock ledger clerk who posts the break and then turns the activity card and order card over to the stock order clerk.

Since the Bin Reserve package quantity was at least equal to the procurement cycle plus protective stock (in weeks) multiplied by the anticipated usage per week the notification came through in sufficient time to allow replenishment prior to the withdrawal of the protective stock quantity. In some cases the package quantity is increased based upon the way material is sent by the vendor. If the vendor packs 10 to a box, for instance, the Bin Reserve package would be a multiple of 10 such as 20, 30, or 40. For the purposes of this analysis procurement cycle is defined as the total time required from the discovery that an order is needed until the date that the approved material is available to the stockroom; this would include ordering, purchasing, vendor's cycle, transportation, and inspection release. Protective stock is the quantity which is set aside to provide insurance against late delivery or excessive demands; the size of this protective stock will be dependent upon the stability, the reliability, and the quality standards of the vendor as well as the stability of usage.

The order clerk will then re-compute the weekly usage and after placing the order initiate a new two part Bin Reserve Form which is sent to the stockroom. There, it is placed in the stock location file in front of the location card for that item.

When the material is received, the stockkeeper must check the file to determine the proper location for the item; when he does so he sees the Bin Reserve Form. When placing the material in its proper location the stockkeeper will package, in a box, envelope, separate bin or barrel, the quantity required on the Bin Reserve Tag.

The most common difficulty which is experienced in the operation of a Bin Reserve system is the failure of the stockroom to notify the production units upon making a package break. First of all the system described above makes it easy for the stockkeeper to make the notification since the Bin Reserve Form is all filled out and it is only necessary for him to sign and date it. Secondly, the placing of the card portion back on the tray provides an opportunity for auditing the effectiveness of the operation. This is done at present by a 100% audit every month. A list is prepared by location of all Bin Reserve items (using punched cards) and then a two man team checks each Bin Reserve item. If the item has either the package intact or a card on the front of the tray it is checked as OK; if not, a red check mark is used. At the completion of the audit all of the red check marked items are questioned with the production unit responsible. If they have not previously received notification of a

break this is done automatically as part of the checking process. If they have received notification, an effort is made to discover why the tag was not returned to the stockroom. This is a very simple insurance plan which, at low cost, guarantees that no package break can be made without failing to notify the production unit at least within one month.

A further advantage to using the audit approach for error control is that the items may be kept in the regular stockroom thereby providing for a cost advantage over keeping the Bin Reserve items in a separate locked area.

Another common difficulty with a Bin Reserve system is the handling of items on which the usage has decreased. In the example cited above this is taken care of by quarterly reviews of the activity cards for each Bin Reserve item. Those on which there has been no receipt of material or package break over a nine month period are submitted for recount and will then be considered for deleting from stock. In some cases an item which has not had any package break or material receipt over a nine month period may still be carried on stock because of order quantities.

Another difficulty is the handling of items which have increased usage. There is no automatic manner of providing this type of insurance, however, it should be possible by quarterly stock requirements explosions to determine if there has been a radical change in the rate of usage. A second safeguard is that procurement cycles as used in determining the package quantity are for normal circumstances. With effective expediting these cycles can frequently be reduced 50% or more. The protective stock quantity also provides a buffer to guard against increased usage. However, what this does bring out is the importance that should be placed on the paperwork dates of Bin Reserve items. On these even more so than on other parts it is essential that every effort be expended in meeting the scheduled date.

Finally, a lengthening of the procurement cycle will affect the operation of the Bin Reserve system since insufficient notification will be given of the need for a new order. One effective way of meeting this difficulty is by reviewing procurement cycle reports regularly to pick up those items on which the cycle has lengthened appreciably. Efforts should then be made to re-package a larger quantity for those Bin Reserve parts affected. This indicates one of the reasons for having periodic procurement reports issued. This should cover not only purchased items but also items which are internally manufactured.

All of the techniques described above can be applied equally well to internally manufactured items, allied plant items, and outside vendor items. The benefits tend to be realized in a greater proportion than the percentage of parts placed on Bin Reserve since these items are typically those which have heavy common usage of large quantities. It is recommended that in the installation of a Bin Reserve system sufficient time be allowed for employee training and education. To back this up it is essential that comprehensive instructions be prepared to describe the exact method of operation and that copies of these instructions be given to all stockroom employees working with Bin Reserve items. It is not wise to depend upon verbal instructions alone particularly with the employee turnover which exists in many stockroom areas.

The plan described above covered 20% of the stock parts in this job shop. However, even after increasing the order quantities and the protective stocks of the Bin Reserve items the inventory of these items was only 2% of the total stock inventory value. In addition the number of shortages on these Bin Reserve parts is far less than it was on the individual control basis.

Burton Grad, Specialist
Production Control Services Section
MATERIALS SERVICES DEPARTMENT

BG:D

3/11/54

Certificate of Completion

in

Electronic Computer Programming

THIS IS TO CERTIFY THAT

BURTON GRAD

HAS SATISFACTORILY COMPLETED COURSE 001: INTRODUCTION TO COMPUTERS

A REMINGTON RAND TRAINING COURSE IN ELECTRONIC COMPUTERS

In witness whereof this certificate is awarded

on this 12th *day of* MARCH 1954 *A. D.*

Remington Rand INC.

ELECTRONIC COMPUTER DEPARTMENT

Richard L. Woltman

Instructor

by

DIRECTOR OF TRAINING

NEW YORK

EL 123

GENERAL ELECTRIC

PRODUCTION TRAINING COURSE

This is to certify that B. Grad

has successfully completed a ten weeks'

Production Training Course presented by

the Turbine Division

DECEMBER 17, 1951

SCHENECTADY, N. Y.

D J McNamee Jr.

Prod. Con. Mgr., Tb. Div.

G. L. Keller

Mgr. of Mfg., Gas Tb. Dept.

Will Priessman

Mgr. of Mfg., Lg. St. Tb. & Gen. Dept.

file - PAL

Personal

March 31, 1959

Bain Travel Agency
Empire State Building
Room 2806
350 Fifth Avenue
New York 1, New York

Attention: Miss Barbara Dodenhoff

Dear Miss Dodenhoff:

I am returning Mr. B. Grad's cancelled airline tickets which covers the following:

March 29 - AAL #510 - 2:35 p.m. Buffalo - Newark
April 3 AAL #553 - 5:20 p.m. Newark - Buffalo

I am sorry to inconvenience you. Thank you very much.

Very truly yours,

(Mrs.) Patricia A. DeMild
Room 2409
PRODUCTION CONTROL SERVICE

pd/i

enc.

Personal

May 25, 1959

Forbes, Inc.
70 Fifth Avenue
New York 11, New York

Attention: Subscription Department

Gentlemen:

I am enclosing Mr. Burton Grad's check for six dollars ($6.00) as payment for one year's subscription to FORBES "Business and Finance".

Would you be good enough to send the magazine to the following address:

87 Barnes Road
Tarrytown, New York

Very truly yours,

(Mrs.) Patricia A. DeMild
Secretary - Burton Grad, Technical Counselor
PRODUCTION CONTROL SERVICE
Room 2409

pd/i

enc.

file
Personal

May 21, 1959

Professor William Spafford
Rensselaer Polytechnic Institute
Management Engineering Department
Troy, New York

Dear Professor Spafford:

When I returned from a trip covering most of our General Electric locations, I was quite chagrined to find a letter indicating that you were retiring and that I had already missed the testimonial dinner. In spite of missing this affair, I should like to add my few words of thanks for the stimulating experience of having been in your classes.

I was fortunate enough to have you teach some seven courses that I took at RPI. Your competence in so many fields was quite a revelation and your ability to help me grasp the technical content was also excellent. But I think far more important was the stimulus of your questioning and searching mind. Your ability to tear down the false gods that we built up, your wisdom in making us delve deeply into why we believed in something instead of just following like sheep, your enthusiasm, your obviously sincere interest in the students, and your willingness to participate in open discussions were to me the most rewarding aspect of having you as a professor.

Of all the things I learned at school the training which you provided in digging down to the root of difficult and complex non-mathematical problems has probably stood me in the best stead. For these reasons, I feel most fortunate of having had the opportunity to learn from you while at RPI.

Of course, I have one other major thing to thank you for. You were quite instrumental in my decision to go into the area of management research which at the time wasn't even recognized as a professional area. I'm also sure that your comments at the time of my interview

for General Electric must have had a great deal to do with my being offered a position. I have never regretted this course of action but rather have been continuously surprised at your own perception in seeing so readily the area in which I was best qualified to make a significant contribution and to provide me with a means of realizing my potential in this direction.

I sincerely want to thank you for all that you have done for me. I only regret that other students won't have this same opportunity in the future.

Very truly yours,

Burton Grad, Technical Counselor
PRODUCTION CONTROL SERVICE
Room 2409 - ext. 3530

BG/pd

Department of
Management Engineering
April 27, 1959

Dear Alumnus:

On June 30, in accordance with age limits set by the Institute, Professor Spafford is to retire as Head of our Department of Management Engineering.

In recognition of his many years of distinguished teaching and administrative work in building our undergraduate and graduate curricula to their present stature, we all, students and staff, feel that we want to pay some particular tribute and express our gratitude for his great contribution to the education and progress of each of us. Knowing that many of his former students and associates would like to participate, the following program has been arranged to make it possible. You are most cordially invited to join us in all or in any part of this program.

I. Testimonial Dinner

Date:	May 15, 1959	Place:	Troy Country Club
Time:	6:30 p.m.	Dress:	Informal
Charge:	$5.00/person	(Wives, too, are invited!)	

II. *Testimonial Letters (to be presented in a suitable folder)

Here is your chance to say that "Thank you" and all those other nice things usually saved until too late!

III. *Testimonial Gift

Its selection will depend upon the amount received.

*To maintain secrecy, send c/o Miss Rose J. Krugler, Admin. Asst.
Department of Management Engineering

Do plan to COME if you can! In any event let us hear from you by May 11 so that final arrangements can be made. Hope to see you!

Committee

John Girolmo
John Girolmo, Pres., E. D. S.

Henry A. Nejako Jr.
Henry Nejako, Pres., S. A. M.

Arthur Maffei
Arthur Maffei (Grad. Students)

R. L. Abel
R.L.Abel, Lt.Col.(USMC) (Nav. Officers)

E H Van Winkle
E. H. Van Winkle, (Faculty)

Personal

87 Barnes Road
Tarrytown, New York

November 2, 1959

DeVegh Mutual Fund, Inc.
26 Broadway
New York City, New York

Gentlemen:

Would you please provide for automatic re-investment of dividends and capital gains for the stock held in the name of Burtan Grad as custodian for Alan Irwin Grad, a minor under New York State Personal Property Law 8A.

The spelling of my name should also be changed to Burton Grad as custodian, etc.

Very truly yours,

Burton Grad

BG/pd

GENERAL ELECTRIC

Sta Personal
11

MANUFACTURING SERVICES

September 10, 1958

Mr. H. A. Goodwin
Accounting Operations
Building 5
Schenectady, New York

Dear Mr. Goodwin:

Please refer to my letter of November 11, 1957 to Mr. G. W. Cook, a copy of which is attached, concerning the temporary transfer of Mr. Burton Grad to Fort Wayne and then back to his home in Tarrytown.

In that letter, authorization was given to reimburse Mr. Grad for $269.00 for actual expenses incurred. As you will note in the next-to-last paragraph, it was stated that a trailer had been purchased to facilitate the move and had actually saved the Company considerable money. It was agreed that Mr. Grad would be reimbursed for the actual cost of the trailer as soon as it could be sold. The trailer has now been sold at a loss of $25.00.

Therefore, it is recommended that Mr. Grad be reimbursed at this time in the amount of $25.00, which will complete the Company's financial obligation for the above mentioned temporary transfer.

Very truly yours,

H. F. Dickie, Manager
Production Control Service

Approved C. W. Bryant
C. W. Bryant

HFD/mt
cc: B. Grad
Attachment

(Please read booklet MFG-P2 "Manufacturing Personnel Inventories & Placement Service" before completing)

MFG-P1.1
(Rev. 1-56)

1 Last Name	First	Middle Initial	1A Filing Numbers
Grad	Burton		

2 Send two (2) copies of Record (original plus one), each with photo and retain other copies as desired

3 Position	4 Department	5 Division
Specialist-Advanced Techniques	Materials Service	Manufacturing Services

6 Birth Date	7 Birthplace	8 Cont. Serv. Date	9 Marital Status (S M W D Sep)	10 Children	11 Other Dep.
4/16/28		2/14/49	S ☑ W D Sep	3	0

PHOTO
2" x 2"
(Glossy Print—White Background Preferred)

12 EDUCATION: (H.S., College, Univ. Trade, Tech., Bus., or Other)	Location	Course	From (Mo/Year)	To (Mo/Year)	Degree
Central High School		College Prep	1945		Grad.
Rensselaer Poly Inst.		Mgmt. Eng.	1949		B. Mgt. E.

STRICTLY PRIVATE

MANUFACTURING PERSONNEL INVENTORY RECORD

13 G-E EDUCATION: Give programs such as Apprentice, M.T.P. I or M.T.P. II, Test, B.T.C., M.T.S., Value Analysis, etc., and year completed.

Test
Effective Presentation
PBM - 1958

14 WORK EXPERIENCE: In chronological order. Show both G.E. and other companies. Include military service.

15 From to (Mo/Year)	16 Department & Location of G-E Component Name (& Subdivision) and Location of other Co.	17 Nature & Scope of Work (Give Title & Description)	18 Position Level Number	19 Name of Supervisor
6/45	U. S. Government	IBM General Clerk		
10/45	Washington, D. C.			
6/46	Texaco	Warehouse Man		
8/46	Albany, New York			
8/46	Miles Shoe Store	Salesman		
10/46	Albany, New York			
11/46	Thos. McAn Shoe Store	Salesman		
2/49	Albany, New York			
2/49	Major Appliance	Test: Quality Control Anal.		F. Satterthwaite
3/49	Bridgeport, Connecticut	Service Records on Automatic washes.		
3/49	Wire & Cable Dept.	Test:		TA Gilly
5/49	Bridgeport, Connecticut	Set Qual. Cont. Lab for Flavenol testing		
5/49	Wire & Cable Dept.	Test:		W. Arnold
8/49	York, Pennsylvania	Set Qual. Cont. Systems for incoming, in process, and finished asbestos wire.		
8/49	A&CS	Test:		R. Dortader
11/49	Schenectady, N. Y.	Sundstrand Drives and Hydraulic valves		
11/49	Large Steam Turbine Gen.	Test:		W. Klinkow
2/50	Schenectady, N. Y.	Establish means for measuring factory performance vs. schedule		
2/50	Large Motor Generator	Test:		T. Connor
5/50	Schenectady, N. Y.	Running trials, etc.		
5/50	Gas Turbine	Test:		
7/50	Schenectady, N. Y.	Comparative test of various designs		
7/50	Large Steam Turbine Gen.	Special Assignment:		E. W. Coutant
2/51	Schenectady, N. Y.	set up dispatching program for control mechanisms. Supervised three dispatchers in new control file.		
2/51	Large Steam Turbine Gen.	Special Assignment:		N. W. Coutant
6/51	Schenectady, N. Y.	supervised supply requisition group of 5 expediters		
6/51	Large Steam Turbine Gen.	Special Assignment:		
2/52	Schenectady, N. Y.	Procedures & Systems Analysis Maintained Central Production Records. Establish Production Procedures Function.		

(Please read booklet MFG-P2 "Manufacturing Personnel Inventories & Placement Service" before completing) MFG-P1.1 (Rev. 1-56)

1 Last Name	First	Middle Initial	1A Filing Numbers
Grad	Burton		

2 Send two (2) copies of Record (original plus one), each with photo and retain other copies as desired

3 Position	4 Department	5 Division

6 Birth Date	7 Birthplace	8 Cont. Serv. Date	9 Marital Status S ☐ M ☐ W ☐ D ☐ Sep ☐	10 Children	11 Other Dep.

PHOTO
2" x 2"
(Glossy Print—White Background Preferred)

STRICTLY PRIVATE

MANUFACTURING PERSONNEL INVENTORY RECORD

12 EDUCATION: (H.S., College, Univ. Trade, Tech., Bus., or Other)	Location	Course	From (Mo/Year)	To (Mo/Year)	Degree

13 G-E EDUCATION: Give programs such as Apprentice, M.T.P. I or M.T.P. II, Test, B.T.C., M.T.S., Value Analysis, etc., and year completed.

14 WORK EXPERIENCE: In chronological order. Show both G.E. and other companies. Include military service.

15 From to (Mo/Year)	16 Department & Location of G-E Component Name (& Subdivision) and Location of other Co.	17 Nature & Scope of Work (Give Title & Description)	18 Position Level Number	19 Name of Supervisor
2/52 5/53	Large Steam Turbine Gen. Schenectady, N. Y.	Super. Inventory Cont. & Systems Directed 3 clerks plus average of 5 MTP students.		N. W. Coutant
5/53 7/53	Large Steam Turbine Gen. Schenectady, N. Y.	Super. Prod. Control (central) responsible for 4 supervisors--50 employees. Covered Inv. Cont., Production Procedures, Audits and Measurements, and Paperwork preparation and service.		N. W. Coutant
7/53 1/54	Materials Service Schenectady, N. Y.	Special Assignment: on loan, Production Control--analysis of developments technique.		H. F. Dickie
1/54 9/56	Materials Service Schenectady, N. Y. & New York City	Specialist-Adv. Techniques Dev. Production Cont. Service Punched card & computer utilization Analysis of production systems. Preparation of manual on production scheduling. Programmed large scale computer and coordinated integrated warehouse processing project.		H. F. Dickie
9/56 10/57	Materials Service New York 22, N. Y.	Specialist-Automation Systems Project-Manufacturing Control Systems Development. Integrated exploratory research work at Specialty Motor Dept. in Fort Wayne. Provided technical guidance for group of 15-25 men engaged in extensive data gathering. Developed Product Structure & Information charting concept.		H. F. Dickie
11/57 pres.	Materials Service New York 22, N. Y.	Technical Counselor-Integrated Systems Project-Manufacturing Cont. Systems Research & Develop. Organized & directed research & development activities in Instrument Dept., West Lynn, Mass., Developed Operation Structure concept.		H. F. Dickie

20

ESTIMATE OF PROMOTABILITY

INDICATE: (a) Any positions for which immediately qualified. (For each "X" placed in the columns below, be certain that *Work Experience* and/or *Education* sections show qualifications—if not, explain fully in *Comments* section).
(b) Any positions for which will be qualified in future and number of years from present.
(c) Probable horizon and number of years if 5 or less—if more than 5 indicate by use of "?"
(d) *Function* or *Specialty* information in space provided where "*" or "**" precedes title.

	DEPT. LEVEL		SECTION LEVEL			SUB-SECTION LEVEL								UNIT LEVEL		
	Gen Mgr	**Individual Contributor	Mgr Mfg	**Individual Contributor	*Other	Mgr Mfg Eng'g	Mgr Mtl's	Mgr Qual Control	Mgr Facilities & Utilities	Supt	Mgr–Mfg Adm and/or Pers. Dev.]	**Individual Contributor	*Other	*Super-visor	*General Foreman	**Individual Contributor
Immediate																
Future																
Est. yrs to Accomplish																

21 *Function

22 **Specialty

23 What is the next job you would give this man or where does he appear on your "runner up" chart? When?—If known

24 What *immediate* job goal does this man desire? (In his own opinion)

25 What *ultimate* job goal does this man consider himself capable of?

26 Salary Quartile: Under Min. ☐ 1st ☐ 2nd ☐ 3rd ☐ 4th ☐ Above Max. ☐

27 Does he receive I.C. from any plan? Yes ☐ No ☐

28 TRAITS OR CHARACTERISTICS: (Show only if really significant)

Most Outstanding Favorable Characteristics

Characteristics Most Needing Further Development

29 SPECIAL CONTRIBUTIONS OR ABILITIES:

30 GENERAL HEALTH: Excellent ☐ Good ☐ Fair ☐ Poor ☐

31 HONORS: (Degrees, awards, patents, prizes, honorary fraternities, etc.)

Managers award 1956 Warehouse Integrated Data Processing Project

32 OUTSIDE ACTIVITIES: (Show past or present professional, military, civic, social, or trade org.—star* those current)

*Association for Computing Machinery, *Parent Teachers Association

33 COMMENTS:

34 Prepared by (Immediate Supervisor)			36 Reviewed by		
Name	Title	Date	Name	Title	Date
35 Reviewed by			37 Reviewed by		
Name	Title	Date	Name	Title	Date

1179- Salary Budget = Planned Expenditures

	Current rate/mo	date of change	new rate/mo
B Grad	1000	12/1	1100
DD McCracken	925	11/1	1025
TF Kavanagh	750	10/1	825
P Finnerty	375	—	—
RA Turner	620	?	

	With RA Turner ~~to~~ 7/1/58			Without RA Turner after 4/1/58		
	Salary per mo	Accum Salary per mo	Budget	Salary per mo	Accum Salary per mo	Accum Budget
JAN	3670	3670	3800	3670	3670	3800
F	3670	7340	3800	3670	7340	7600
M	3670	11010	4000	3670	11010	11600
A	3690	14680	3800	3050	14060	15400
M	3670	18250	3800	3050	17110	19200
J	3670	22020	4000	3050	20160	23200
J	3050	25070	3800	3050	23210	27000
A	3050	28120	3800	3050	26260	30800
S	3050	31170	4000	3050	29310	34800
O	3125	34295	3900	3125	32435	38700
N	3225	37520	4000	3225	35660	42700
D	3325	40855	4300	3325	38985	47000

No of employees = 5

Similar consultants' planning

concept for product characteristics of "Causal relation" —
(2) accidental relations

(Some prod. Struct. report on depts.)
Work sequence —
Prod., Proc.
scope structure
↳ write all equations —
must be able to call out all parts + assys
common parts summary,
Prod Structure — Resolution of redesign question
inclusion of cost —

- Decision on 704 (after lunch)
- Plans for 13th mtg —

Process structure — return
(TFU + Z to plan to see Bill Short

Review Questions

Person — Summ —
Chart — Diagram
—

- Compare Lindenberg. Kar–Lange material for inconsistency summarize Reg Def Syst —

characteristic

name — ~~natural~~

ARMCL — 27418

~~[illegible]~~ WAGNER — (3) 27

~~[illegible]~~ : — (3) 27

~~BASE~~ AESC
~~ARMASSY~~
~~Steel Plate~~
~~Paint Assy~~

Short	R	R	R	R	4
Condition: Kind of Inst.	MA	mA	MA	±A	Δ
RTG of movement	<15	>15 ≤25	>25 ≤50	>30	>30
value	300 RTG	26	13	26	3.5
Tolerance	±1 ±10%				
STD	1524, 1220, 5020				

10× 7 (140) (21)

50
52.5
57.5
58
57

2 (2½)
147
67
82

FEDERAL TAX ASPECTS OF EMPLOYEE TRANSFER EXPENSES AND ALLOWANCES

Since there are many situations where employee reimbursement of transfer expenses are authorized, the federal tax aspects of such payments are of interest to both management and the individuals concerned. Tax Accounting Service, therefore, has prepared an "opinion" which summarizes for our use the various current tax rulings.

Manufacturing Services is concerned with two different situations. The first deals with payments to a new employee when he effects a domestic move from one locality to another brought about by his new employment with the General Electric Company.

Revenue Ruling 55-140 which was published March 14, 1955 sets forth the position of the Internal Revenue Service in this situation. This is an extract of the ruling for your use:

"Section 24 (a) - Items Not Deductible: General Rule"

"Regulations 118, Section 39.24 (a) - 1: Rev. Rul 55-140
Personal and family expenses

"Expenses incurred by an employee in moving his family and household goods from one locality to another where he had accepted a new employment with another employer represent nondeductible expenses under Section 24 (a) (1) of the Internal Revenue Code of 1939 prohibiting the deduction of personal, living, or family expenses. Allowances or reimbursements for such expenses which are received from the new employer under the foregoing circumstances must be included in gross income. See Revenue Ruling 54-429, I. R. B. 1954-40, 15, for treatment of allowances or reimbursements for moving expenses of an employee who is transferred in the interest of his employer from one official station to another for permanent duty."

Based in part on this ruling, Tax Accounting Service believes that such reimbursements as paid for a domestic move represents taxable income to the new employee. This includes the actual cost of the move, personal and family living expenses at the new location,

and brokerage fees. The Company will report the payment on the employee's W-2 form and withhold income tax from it.

In the event the moving expenses were paid directly by the Company - instead of being handled as a reimbursement to the new employee - the tax effect would be the same. The amount paid would be taxable to the individual as compensation.

This means that such expenses, since they are considered to be of a personal nature, are not deductible on the tax return of the new employee. Management, therefore, in negotiating such special agreements for exceptional cases may wish to increase the reimbursement to include the tax withheld, so that the gross reimbursement less the tax withheld will equal the traveling and moving expenses incurred.

Many Manufacturing Services employees find it necessary to travel quite often on Company business. Reimbursed expenses of this nature are not taxable to the employee. This means that travel expenditures for Company business during a period when living allowances are authorized should be submitted on a segregated basis.

There have been several instances where Manufacturing Services have told new employees that their current location is satisfactory for their new job requirements, and a move to Schenectady headquarters is not immediately necessary. Here, Tax Accounting Service states that whether his reimbursed expenses in such a case are taxable is a question that can be answered only by reference to the facts of each individual case. In general, it would be their opinion that if, at the time the employee was engaged, there was a meeting of the minds that the assignment in his present location was "permanent" in nature, a subsequent move to a new Company location, even

though taking place shortly after his engagement, would properly be considered as a move by an employee from one Company location to another, with reimbursed moving expenses being non-taxable to the employee. On the other hand, if assignment in his present location was merely a matter of form, not having real substance, they believe the move would be considered to be in connection with accepting new employment, and reimbursed expense would be taxable to the employee.

Research Services has many instances where reimbursement allowances are authorized for new employees. The practice of withholding income tax from the payment is followed. It was mentioned, however, that many employees in preparing their tax returns, itemized in the returns the costs incurred in connection with moving their family and household goods from their old locality to the new General Electric location, and deducted the amount from their gross income. Internal Revenue has varied, depending upon district, from acceptance, to partial denial, to complete denial. An accurate and complete listing of such deductions in the individual return eliminates the possibility of either a fraud or negligent penalty, so that potential liability would be the additional tax plus 6 percent interest based upon the amount of the denied deductions. It should be stressed that such action is a matter of personal decision. Company action is concerned only with the legal obligation imposed by the Revenue Codes to report payment on the information return (W-2 form) and withhold income tax from it.

The tax aspects of the situation where an employee is moved from one Company location to another are treated under different interpretive Revenue rulings. In this connection, Tax Accounting Service is of the opinion that reimbursed moving expenses, living expenses,

and brokerage fees, etc., are not taxable to the employee. The Company does not report such reimbursements on information returns or withhold income tax therefrom. Revenue ruling 54-429, as well as Tax Accounting Services Bulletin: Significance of New Ruling on Moving Expenses, dated New York, November 12, 1954, are included for detail reference.

It will be noted that the current opinion of Tax Accounting Service with respect to living expense while awaiting permanent quarters at the new location seems to contradict Revenue ruling 54-429 which states:

> "Amounts received as allowances or reimbursement for meals and lodging of the employee and his family while awaiting permanent quarters at the new post of duty are includible in gross income of the employee."

Our opinion reflects a later decision by the Tax Court which by analogy is felt to include such living expenses as not taxable.

In addition to these reimbursible expenses, it is Company practice-if the employee is married or the head of a family-to grant a flat amount as reimbursement for all other expenses and losses to which he may be subject as a result of the transfer. A payment of this nature is reported as taxable to the employee and income tax withheld. However, Personnel Accounting Services Bulletin-Reimbursement of Expenses of Transferred Employees, dated New York, July 19, 1954 - states that the Company will recognize certain expenses for direct reimbursement, and, they are not taxable. The amount of such expenses will be paid separately and total amount deducted from the authorized flat payment.

Reference to the Bulletin should be made for the specific expenses recognized.

It must be realized that the indefinite areas of the Revenue Codes force the Internal Revenue Service to define the intent of Congress by means of administrative rulings which are subject to litigation and resulting judicial decision. Therefore, when unusual situations arise, reference should be made to Tax Accounting Service for an opinion.

L. G. Bratton

Attachments: Revenue Ruling 54-429
Tax Accounting Service Bulletin, November 12, 1954
Personnel Accounting Service Bulletin, July 19, 1954

LGB:bem

4/7/55

REV. 4/22/55

FEDERAL TAX ASPECTS OF EMPLOYEE TRANSFER EXPENSES AND ALLOWANCES

Since there are many situations where employee reimbursement of transfer expenses are authorized, the federal tax aspects of such payments are of interest to both management and the individuals concerned. Tax Accounting Service, therefore, has prepared an "opinion" which summarizes for our use the various current tax rulings.

Manufacturing Services is concerned with two different situations. The first deals with payments to a new employee when he effects a domestic move from one locality to another brought about by his new employment with the General Electric Company.

Revenue Ruling 55-140 which was published March 14, 1955 sets forth the position of the Internal Revenue Service in this situation. This is an extract of the ruling for your use:

"Section 24 (a) - Items Not Deductible: General Rule"

"Regulations 118, Section 39.24 (a) - 1: Rev. Rul 55-140
Personal and family expenses

"Expenses incurred by an employee in moving his family and household goods from one locality to another where he had accepted a new employment with another employer represent nondeductible expenses under Section 24 (a) (1) of the Internal Revenue Code of 1939 prohibiting the deduction of personal, living, or family expenses. Allowances or reimbursements for such expenses which are received from the new employer under the foregoing circumstances must be included in gross income. See Revenue Ruling 54-429, I. R. B. 1954-40, 15, for treatment of allowances or reimbursements for moving expenses of an employee who is transferred in the interest of his employer from one official station to another for permanent duty."

Based in part on this ruling, Tax Accounting Service believes that such reimbursements as paid for a domestic move represents taxable income to the new employee. This includes the actual cost of the move, personal and family living expenses at the new location,

and brokerage fees. The Company will report the payment on the employee's W-2 form and withhold income tax from it.

In the event the moving expenses were paid directly by the Company - instead of being handled as a reimbursement to the new employee - the tax effect would be the same. The amount paid would be taxable to the individual as compensation.

This means that such expenses, since they are considered to be of a personal nature, are not deductible on the tax return of the new employee. Management, therefore, in negotiating such special agreements for exceptional cases may wish to increase the reimbursement to include the tax withheld, so that the gross reimbursement less the tax withheld will equal the traveling and moving expenses incurred.

Many Manufacturing Services employees find it necessary to travel quite often on Company business. Reimbursed expenses of this nature are not taxable to the employee. This means that travel expenditures for Company business during a period when living allowances are authorized should be submitted on a segregated basis.

There have been several instances where Manufacturing Services have told new employees that their current location is satisfactory for their new job requirements, and a move to Schenectady headquarters is not immediately necessary. Here, Tax Accounting Service states that whether his reimbursed expenses in such a case are taxable is a question that can be answered only by reference to the facts of each individual case. In general, it would be their opinion that if, at the time the employee was engaged, there was a meeting of the minds that the assignment in his present location was "permanent" in nature, a subsequent move to a new Company location, even

though taking place shortly after his engagement, would properly be considered as a move by an employee from one Company location to another, with reimbursed moving expenses being non-taxable to the employee. On the other hand, if assignment in his present location was merely a matter of form, not having real substance, they believe the move would be considered to be in connection with accepting new employment, and reimbursed expense would be taxable to the employee.

Research Services has many instances where reimbursement allowances are authorized for new employees. The practice of withholding income tax from the payment is followed. It was mentioned, however, that many employees in preparing their tax returns, itemized in the returns the costs incurred in connection with moving their family and household goods from their old locality to the new General Electric location, and deducted the amount from their gross income. Internal Revenue has varied, depending upon district, from acceptance, to partial denial, to complete denial. An accurate and complete listing of such deductions in the individual return eliminates the possibility of either a fraud or negligent penalty, so that potential liability would be the additional tax plus 6 percent interest based upon the amount of the denied deductions. It should be stressed that such action is a matter of personal decision. Company action is concerned only with the legal obligation imposed by the Revenue Codes to report payment on the information return (W-2 form) and withhold income tax from it.

The tax aspects of the situation where an employee is moved from one Company location to another are treated under different interpretive Revenue rulings. In this connection, Tax Accounting Service is of the opinion that reimbursed moving expenses, living expenses,

and brokerage fees, etc., are not taxable to the employee. The Company does not report such reimbursements on information returns or withhold income tax therefrom. Revenue ruling 54-429, as well as Tax Accounting Services Bulletin: Significance of New Ruling on Moving Expenses, dated New York, November 12, 1954, are included for detail reference.

It will be noted that the current opinion of Tax Accounting Service with respect to living expense while awaiting permanent quarters at the new location seems to contradict Revenue ruling 54-429 which states:

> "Amounts received as allowances or reimbursement for meals and lodging of the employee and his family while awaiting permanent quarters at the new post of duty are includible in gross income of the employee."

Our opinion reflects a later decision by the Tax Court which by analogy is felt to include such living expenses as not taxable.

In addition to these reimbursible expenses, it is Company practice-if the employee is married or the head of a family-to grant a flat amount as reimbursement for all other expenses and losses to which he may be subject as a result of the transfer. A payment of this nature is reported as taxable to the employee and income tax withheld. However, Personnel Accounting Services Bulletin-Reimbursement of Expenses of Transferred Employees, dated New York, July 19, 1954 - states that the Company will recognize certain expenses for direct reimbursement, and, they are not taxable. The amount of such expenses will be paid separately and total amount deducted from the authorized flat payment.

Reference to the Bulletin should be made for the specific expenses recognized.

It must be realized that the indefinite areas of the Revenue Codes force the Internal Revenue Service to define the intent of Congress by means of administrative rulings which are subject to litigation and resulting judicial decision. Therefore, when unusual situations arise, reference should be made to Tax Accounting Service for an opinion.

L. G. Bratton

Attachments: Revenue Ruling 54-429
Tax Accounting Service Bulletin, November 12, 1954
Personnel Accounting Service Bulletin, July 19, 1954

LGB:bem

4/7/55

REV. 4/22/55

Personal

DISCOUNT LIST

FURNITURE - SHUFF FURNITURE COMPANY, INC. - Manufacturers on the premises of fine furniture and we have had many fine reports from members who have made purchases. We suggest that you visit their showrooms at 881 Broadway, New York 3, N. Y., SPring 7-4040.

SPIRO CARPET COMPANY, INC. - Franchised dealers for leading carpet and rug manufacturers - Excellent discounts - 15 East 31 Street, New York 16, N. Y. MU-6-2787-8-9.

AUTO PARTS - Republic Auto Parts, 260 West 52 Street, COlumbus 5-8222. Nationally famous lines of automotive parts - equipment - supplies.

TIRES - H. Chazen Inc., 314 East 46 Street, New York 17, N. Y., MU 4-1123. No charge for mounting. Leave your car in their parking lot in morning and pick up with tires changed in the evening. Liberal savings.

PHOTO SUPPLIES - MODERN PHOTO SHOP - 865 Third Avenue, Between 52nd and 53rd Streets - PLaza 3-6432. They pick up and deliver. Film left for developing before 10 a.m. ready same day at 4:30. Large size "duplex" prints 5-1/2¢ each. Fresh film size 127, 620, 120, regular $.45 each - special 3 rolls for $.85. Argus 300 watt Projector for 35 mm automatic - with carrying case - complete, List $66.50 - Special $41.50.

AVAILABLE TO ALL MEMBERS - Special courtesy cards which will allow you a savings at one of the neighborhood restaurants. These are available on the 17th Floor, Mrs. A. Dougherty, Ext. 2363.

FRENCH CONVERSATION COURSE TO G.E. CLUB MEMBERS - Beginners, Intermediates and advanced - Thursday of each week for 12 weeks - 1-1/2 hour classes - Cost for 12 weeks $24.00 (payments may be arranged). For further information call Doctor Frances St. Denis Bresinhan, CHelsea 3-4020.

Confidential Purchasing Guide for Use of Members. Discounts are not applicable on fair-trade merchandise.

DENTAL SERVICE, X-RAYS-PATHOLOGICAL LABORATORY TESTS - Dental needs can be taken care of, including bridge work and dentures at a substantial savings, as well as discounts on drugs, medicines, optical examination and glasses. Call W.F. Clyne, Ext. 3105.

MEN'S CLOTHING - SAPERSTEIN & VENTURINI, INC., 29 W. 21 Street, OR-5-1068. We have had excellent reports from our members since our connection with this concern. Everything they sell is manufactured by them. Their workmanship and materials are outstanding and prices for made-to-measure suits are far below what you expect to pay.

JEWELRY-SILVERWARE-DIAMONDS-WATCHES-REPAIRS - Liberal savings to all members. H. Astor, Inc. 1512 Third Avenue, near 85th Street, New York 28, N. Y.

List of present projects - status

1. Scheduling Manual -
write up complete resume of
plans
the garage to finish Dec 15 '54 ~~Start~~

2. ES+C Scheduling
finish programming CPT 7/19
debug programs 9/23 + 9/24 -
write up for future use
+ incorp into Sched Manual
Run actual schedule

3. LST-G Punched Card Stores Control
parallel operation on Aug 1.
Sept 13 '54 CPT 10/15

4. Synch + Spec Motor ABC analysis CPT 7/10
Punched Card Stores Control ?

5. LV Switchgear Eco Order Qty, stores record file Assumed CPT

6. Appliance Control document review looking toward punched cards - Resume Cpt 7/22 Assumed CPT

7. Specialty Transformer - Punched Cards Reg'ts determination
start Dec 1 '54

8. Welding - where used file, coding of RM - Assumed CPT

9. Gas Turbine Eco order Qty CPT 7/1

10. Drum Memory for Inventory Control
GEL / Fondek -

11. Scheduling on an electronic Computer
AGT - Grosch, Porter - mtg 9/20 9/21 CPT 10/15

12. Electronic Scheduling - Graham Auston (ERA HO 3) CPT - 11/1
13. Electronic dispatching -
14 Meeting of people in Electronics area - Out

Projects -

15. DC Motor Dept - Review prod cont system plans — Inactive
16. Hermetic Motor Dept - Rapid load determ + schedule adjustment — Inactive
17. Constant dept model for trial of new concepts - Heiser
18. Joint organization with Procedures for computer stimulation
19. Inventory Control Manual Issuance
20. Turnbull Components Department ✓
21. Production Leveling ✓
22. Establishment of project for Re-arm the cost of Plant Scheduling
23. Make or Buy Decision -

SPECIALTY TRANSFORMER PUNCHED CARD REQUIREMENTS DETERMINATION

Schenectady, June 17, 1954

Mr. H. F. Dickie
DEPARTMENT

Two meetings have been held to date with Mr. Otto Fultz of the Specialty Transformer Department in an effort to assist him in the preparation of detailed plans for initiating a punched card system for requirements determination. Another review is planned for Wednesday, June 23. Progress has been very slow to date since much of the original material has had to be revised. It is expected that this project will continue for a period of at least six months with meetings on the average of once every two weeks.

BG:D

B. Grad

SYNCHRONOUS & SPECIALTY MOTOR ABC ANALYSIS

Schenectady, June 17, 1954

Mr. H. F. Dickie
DEPARTMENT

The ABC analysis which is being performed has progressed very well according to Bruce Bradbeer. He feels that the final curves will be drawn and reports prepared by July 6. He seemed quite pleased with the program that had been worked out and will be going further into the stock control aspects probably in August or early September. He has informally requested my assistance on this phase of their program.

B. Grad

BG:D

LARGE STEAM TURBINE GENERATOR STOCK CONTROL ON PUNCHED CARDS

Schenectady, June 17, 1954

Mr. H. F. Dickie
DEPARTMENT

The stock control program is progressing very well with total conversion anticipated by August 1. It is expected that the mechanical system will operate parallel with the manual system for the month of August, and the present target date for stopping the manual operation is September 1.

B. Grad

BG:D

LOUISVILLE ELECTRIC SINK AND CABINET DEPARTMENT FACTORY SCHEDULING ON UNIVAC

Schenectady, June 17, 1954

Mr. H. F. Dickie
DEPARTMENT

The factory scheduling program has progressed virtually to completion with about two weeks work remaining. It is now planned that I shall spend July 12 - 16 in Louisville and July 26 - 30. They are assigning one of their procedure men to work with me full time in preparing a formal write-up of this project. It is expected that during the second of my two weeks there the whole program will reach fruition with the preparation of an actual factory schedule for the next 20 weeks as well as a machine load report for the same period of time.

B. Grad

BG:D

Schenectady, April 26, 1954

Messrs: DC Miller
EC Throndsen
RR Smith
→ B Grad

The following memorandum has been received from Mr. Bryant:

> "Mr. Vinson has to submit a report to the Advisory Committee for the May meeting. --- Please prepare and submit to Mr. McAleer a statement of accomplishments during the past three months, and significant items which should be of interest to the Advisory Committee."

Mr. McAleer requires this information from all the Sections by May 5. Will each of you please submit a report of activities and accomplishments to me by May 3.

H. F. DICKIE

call Conner. Review my letter [illegible]

ek

1. Planned & formulated ABC study with Sgnl. [illegible]
2. Reviewed & Recommended procedure for [illegible] requirements determination for [illegible] Dept.
3. attended [illegible] School for 2 wks.
4. Currently preparing Factory Schedule for [illegible] on [illegible]
5. Analyzed & Reported on use of [illegible] computers for stock Cont for Apparatus Sales - District Warehouses
6. Prepared & obtained formal approval for installation of stock Control on punched cards for [illegible]
7. Completed stockroom study for Gas Turbine. Submitted recommendations.
8. Continued Scheduling/[illegible] preparation
9. Assisted on redraft of [illegible] Cost Manual
10. Prepared a simple technique for [illegible] Qty determination for the Plastics dept to sell to its customers

(over)

Appliance Park, April 28, 1954

Mr. H. F. Dickie
SCHENECTADY

Subject: Quarterly Review of Activities

In accordance with your letter of April 26, 1954, I have listed below a statement of the accomplishments and significant items which occurred in my activities during the past quarter:

1. Planned and formulated the procedure for an ABC stock study in the Synchronous and Specialty Motor Department at Lynn River Works.

2. Reviewed and recommended a procedure for punched card material requirements determination for the Wire and Cable Department in Bridgeport.

3. Attended Univac school in New York City for two weeks to learn the basic principles of machine programming.

4. Analyzed and reported on the use of the magnetic drum computer for stock control as applied to the Apparatus Sales District Warehouses. From the data gathering, certain generalizations were made concerning minimum file activity needed to justify magnetic drum computers.

5. Prepared detailed recommendations and obtained formal approval for the installation of a punched card stock control plan in Large Steam Turbine Generator Department. Coordinated and directed the Turbine representatives in an actual trial run of this proposal and will continue to work with them until complete operation which is scheduled for September 1, 1954.

6. Analyzed and recommended practices for more effective stockroom operation in the Gas Turbine Department.

7. Continued the preparation of a scheduling manual by accumulating additional departmental case studies.

8. Assisted in the first redraft of the inventory control manual with emphasis on ABC analysis and order quantity determination.

9. Cooperated with representatives of marketing in the Plastics Department in preparing a simple technique for order quantity determination to be used by their customers.

10. Co-authored an article which was published in the April issue of Mill and Factory magazine on "The Cost of Carrying Inventory".

11. Had published article on "Cost of Carrying Inventory"
12. Completed Prel write-up + in process of writing paper with R-K use of computer for Job shop scheduling.
13. Completed Review + Recommendations for Gen'l Conduct use of Punched Card Equipment

11. Reviewed and suggested final improvements for the proposed punched card paper work processing routine in the Commercial Products Department at Bloomfield.

12. Completed a preliminary write-up on the mathematics and techniques of job shop scheduling. This is in the process of being reviewed with Remington Rand as to the possibility of performing the analysis on a high speed electronic computer.

13. Currently conducting a study which will result in the use of Univac to prepare a factory schedule and machine load analysis for the Electric Sink and Cabinet Department in Louisville.

Burton Grad

BG:cwi

Minutes of Staff Meeting Held in Mr. H. F. Dickie's Office on Sept. 7, '54

Present: H. F. Dickie
B. Grad
D. C. Miller
D. G. Ransom
R. R. Smith

Absent: E. C. Throndsen

The projects and consulting work of each member were brought up to date as follows:

R. R. Smith - Mr. Smith's present project is the workshop on mechanization which is to be held October 11, 12, and 13 in Schenectady at the Edison Club Annex. The General Chairman will be Mr. Folts, Professor of Industrial Management at Harvard Business School. There will be 62 participants - 39 for lot manufacturing and 23 for continuous flow. A follow-up letter is to be sent out to the participants and all non-participating Materials Managers - this to include a copy of the agenda and other highlights of the program.

At present the unit leaders have not been chosen. It was suggested that possibly a unit chairman with technical production knowledge together with a co-chairman versed in mechanization equipment would be a desirable combination.

Mr. Dickie mentioned the Business Week articles on "Employee Motivation" and requested Mr. Smith to look into the availability of reprints.

D. C. Miller - Mr. Miller reported that after October 15 his two MTP students would have completed their work with General Purpose Control. A write-up will be available comparing Trumbull's and General Purpose Control's scheduling procedures.

The present consulting jobs open are as follows:

1. Wire and Cable (Bridgeport & Lowell) - routines and personnel.
2. Appliance Motor (DeKalb).
3. X-Ray Department - new organization and systems. An Inventory Control and Systems Specialist has been incorporated in the organization.
4. Trumbull - has good forecasting set-up.

A project in Bloomfield's Commercial and Industrial Air Conditioning Department is under way.

Mr. Dickie mentioned that assistance to the MTP with Production subjects is essential as well as the development of more profitable and "meaty" assignments in the Production Sub-Sections of the operating Departments.

Mr. Miller will get in touch with Messrs. F. Lewis and G. Houston to discuss this further.

As consulting activities diminish, Mr. Miller will work more closely with the educational programs and activities conducted by Mr. R. R. Smith.

B. Grad - The "Scheduling Manual" is expected to be ready for distribution by December 15, 1954. Professor McGarrah has been contracted for part time work in order to see the manual to completion. Mr. Ransom is finishing the case studies and making arrangements for art and production work.

The project with Electric Sink and Cabinet working with the Univac is nearing completion. Some of the work is being done in New York at Remington Rand - all programs have not as yet been debugged. Approximately two full week's work is still to be done by Mr. Grad. The project should be complete by the end of 1954

The Stock Control project with Steam Turbine Generator is complete and will show a savings of $10,000 - 20,000 which is a 50% reduction with the elimination of Kardex girls. This will be written off complete in about two months when the girls have been removed from payroll. It was pointed out by Mr. Grad that Mr. Pruessman wishes to extend the punch card application to other Production Control functions.

Mr. Grad is conducting a meeting on September 20-21 in the New York office on "The Use of Computers for Scheduling". Notables in the commuter field within G. E. have been invited to attend. The main discussion will concern the scheduling of gears at Lynn. Mr. Smith will make arrangement to take photos and record happenings during this meeting. It was suggested by Mr. Dickie that a two or three page document patterned after Production Magazine's articles would be appropriate.

Mr. Grad mentioned that now might be the opportunity to finish the revision of the "Inventory Control Manual" if someone (such as an MTP student) could be made available to work full time.

E. C. Throndsen - Some of Mr. Throndsen's work was summarized by Mr. Dickie.

His consulting in A&OS is being followed up by summary meetings.

In the near future Mr. Throndsen will be conferring with the Simonize Company a customer of our Silicone Products Department. Silicone has requested assistance so as to determine their economical lot sizes to meet the requirements of the Simonize Company.

As consulting activities diminish Mr. Throndsen will work more closely with the programs and projects conducted by Mr. Grad.

H. F. Dickie - Thought should be given to a program of "Employee Motivation". The education of office workers is an important topic within the Production sphere. The sequence of such a program would be as follows:

1. Find out how time is spent and by whom (ratio sampling).
2. Attitude Survey.
3. Work Simplification (organization and procedures).
4. Mechanization.
5. Motivation - development of work standards, work tasks and measurements.
   Develop Historical and performance data.
   Develop financial and non-financial incentives.

Considerations should be given to a Personnel Development seminar at a later date to extend the thoughts presented at Association Island.

Mr. Dickie made the statement that violations in good concientiousness and hours worked was evident in the recent moving period.

D. G. Ransom
Office

III

~~#1. Dynamic Production Scheduling progress Report. Case of LM-G now targeted for late Dec or early January~~

2. Fact Sched on Univac
see proposal.

3. Proposal from ERA on model building to test sched proposal.

4. Implement sched actg. - rundown
Harris - study 3-5 depts -

→ 5. set up library of articles on Inv Cont + sched + leveling (mathematics)

6. Sched. Seminar - Feb. →

→ 7. Optimal Inventory (leveling)
[make write up]

~~8. Use next trainee for make-buy decision write up~~

~~9. Going to Tos School - 15th thru 19th~~

~~10. JCD~~
~~11. LST-1 — 90% on~~

~~To - national stock~~
~~discuss major~~
~~leader parts, etc.~~

Minutes of Meeting in Mr. H. F. Dickie's Office - November 1, 1954

Present: H. F. Dickie
B. Grad
D. C. Miller
D. G. Ransom
R. R. Smith
E. C. Throndsen

The participants of the recent Mechanization Workshop expressed a great interest to attend classes at I.B.M. Mr. J. J. Kenny of I.B.M. said that the interest and enthusiasm indicated that G.E.'s quota would be filled for one year. Because of this, it has been suggested that Mr. R. R. SMITH check into the possibility of I.B.M. conducting a meeting exclusively for G. E. personnel - how many can be accommodated and when it can be conducted.

Mr. Dickie suggested that it should be determined if only their Manufacturing Control Course or if Card Programming Calculators and I.B.M. 650 could be included. Inquiry should be made to make certain that no obligations would result and whether a fee would be required.

It was suggested that after the next Mechanization Workshop solicitation of interest should be sent to each Manager-Materials.

The last Workshop was spoken of very highly. A meeting of some of the Managers of Materials present was held after the last session. Those present were:

D. R. Holmes	-	Trumbull Components Department
J. F. Ponsillo	-	Specialty Control Department
G. H. Metcalf	-	Aeronautic and Ordnance
S. C. Manual	-	Laminated & Insulated Products
C. W. Bryant	-	Materials Services Department

The comments were that this was an excellent meeting and very constructive. Some constructive criticism was offered as follows:

1. The room at the Lexington did not seem adequate.

2. The presentations were weak. It was suggested that they be presented by having two representatives from each group rotate to each of the other groups. It was thought that this would create more discussions and better understanding.

3. It was surprising that more Materials Managers did not attend.

4. Case material was not received soon enough to receive proper prior attention.

The next Workshop is scheduled for January 11 - 12 - 13. So far, twenty-five (25) participants are registered. Eleven (11) more should be recruited in order to have

four (4) groups of nine (9) participants each.

The case study to be used has been started some time ago and is progressing rapidly. The case for this next Workshop should be in the hands of all concerned at least ten (10) days before the start of the sessions.

The unit leaders for these next sessions will be R. R. Smith, E. C. Throndsen, D. C. Miller, and B. Grad.

Suggestions are requested for the Scheduling Workshop to be held sometime in the future.

In the educational field, articles are planned by R. R. Smith for the Manufacturing Services Bulletin. The first of these will be on the Scheduling meeting held on September 20-21. Another writeup on Scheduling is to follow. It was suggested that an article be written on "Communication Systems" ("Gadjetry") and the necessity for effective communication.

Mr. Smith suggested that a special publication from this section be issued periodically to include new techniques and where employed, as well as suggested organizational patterns. This was thought by Mr. Dickie to be too big a project to do effectively. It was suggested though that a newsletter type publication might be issued to keep the departments posted of current happenings, thoughts and advancements in the Materials field.

Mr. Smith has posted a sheet where all can jot down suggestions as they are thought of for future discussion. These to be ideas that can be passed on to Materials Management.

MR. GRAD has open jobs which will last through November. His next project is a study of production leveling. Articles and data will be compiled so that a paper can be written on this subject in order to properly guide those interested. Publications and articles will be purchased for this purpose. Also, old articles on mathematical analysis of Production and Inventory Control will be purchased to fill out this library.

The entire scheduling function is to be examined. Suggestions of individual departments for study where areas or whole jobs can best benefit are requested. Trumbull Components Department was suggested as one possibility. The detailed scheduling problem must be examined and the best area must be determined i.e. dispatch or the detail that preceeds dispatch. A writeup will be submitted in the near future by Mr. Grad.

The title of the scheduling manual has been changed from "Production Scheduling for Profit" to "Dynamic Production Scheduling". The distribution date has been extended to January 15, 1955. Billing for the art and layout work already performed will be requested of The Studio LTD. by Mr. Ransom.

The I.B.M. system proposed by the Large Motor-Generator Department was suggested as being included in the manual. Mr. Grad is to obtain additional data so that some phase may possibly be included.

Mr. Grad is considering a showing of the performance of the UNIVAC to Managers of Materials in the near future. Managers who would best use results will be asked to attend. A general discussion of computers and their operation would be included.

The Large Steam Turbine-Generator stock record project is complete. Their savings are even greater than anticipated. The department will be pleased to have visitors to examine the system.

Remington Rand has submitted a proposal to build a model of a factory for scheduling. The program for this would cost $8,000, and take 3 man-months. Each individual test of a set of decision rules would take only 10 minutes.

Ken Geiser has been approached as to the useability of the network analyzer or a general purpose analog computer for factory model testing purposes.

Mr. Grad will be attending I.B.M. 705 school November 15-19.

Subscribing to certain magazines and other publications for office distribution was discussed. Some of these were as follows:

Fortune
Kiplinger Letter
Business Week
Wall Street Journal

Mr. Grad mentioned certain technical journals that he would like included. Lists of preferences should be turned in to Mr. Dickie so that final decisions can be made. Mr. Throndsen mentioned that a rack might be placed in the office so that current publications would always be displayed.

It was again suggested that the Consultants balance their time into education and advanced techniques.

Mr. Miller suggested that it might be worthwhile for the consultants to issue a monthly report summarizing the consulting within the various departments contacted.

It was decided by a vote that the office would substitute November 26, 1954 as a holiday in place of December 31, 1954.

D. G. Ransom

D. G. Ransom - Office

Quarterly Activity Report

December 3, 1954

To: Mr. D. C. Miller

1. Continued getting dynamic production scheduling ready for publication in February.

2. Worked in preparation of case material and proposals for first mechanization conference.

3. Conducted scheduling conference for Lynn Gear proposal using IBM 701.

4. Continued work with Large Steam Turbine - Generator Department in completing their stock control installation.

5. Continued work with Specialty Transformer Department on their parts explosion.

6. Continued work on Fact Sheet on Answer for Dishwasher + Disposall

B. Grad

dl

PROJECTS FOR THE YEAR 1954

December 23, 1954

Mr. H. F. Dickie

The following is a list of the projects on which work was done during the year 1954; they are segrated into major areas of endeavor and contain certain comments as to the specific problems and recommendations:

Projects:

1. Completed the review of the Gas Turbine Stockroom and recommended a series of procedures for improving stockroom operations, which included extensive revision of the receiving paper work and handling routine, including facilities re-arrangement. A basic plan was suggested for completely reorganizing the various stock rooms so as to tie them to specific portions of the manufacturing floor and encouraging the elimination of closed stock rooms. Further, suggestions were made to establish stock records centrally and to place as many items as possible on bin reserve. Other changes were suggested to the assembly and accumulation paper work system. Finally, there were suggestions for more careful and clear identification of the various parts used.

2. Initiated a study with the Dishwasher and Disposall Department at Louisville for scheduling the factory using Univac. The final results involved a complete explosion of a master schedule, a consolidation of like parts, scheduling of these parts in the factory and finally, a complete load analysis. This appears to be the first complete factory scheduling job finished on a large scale computer.

3. Initiated and completed a comprehensive program for mechanization of stock control in the Large Steam Turbine - Generator Department. This involved an approach to the problem, using the exception principle, which appears to be different from that usually followed in this type of punched card installation.

4. Established a project with the Specialty Transformer Department in Fort Wayne to mechanize requirements determination, and to more effectively labor load a portion of the factory. This project has now been virtually completed with our having participated in all of the basic flow charting and machine utilization plans.

5. Continued work on "Dynamic Production Scheduling" in preparing for publication in the first quarter of 1955. This included the gathering of case material by the use of MTP students and coordination with Professor R. E. McGarrah of Cornell in the preparation of material.

PROJECTS FOR THE YEAR 1954 (Continued)

Advanced Technique Development and Self Education:

6. Visited IBM at Endicott to review their proposed utilization of the CPC for production scheduling and inventory control. Also reviewed the use of the IBM 701 for long range scheduling of the collator manufacturing area.

7. Attended Univac School for two weeks and IBM 705 school for one week to learn the principles of computer programming.

8. Completed a preliminary write-up on the mathematics and techniques of a job shop simulation problem. This has been analyzed by Remington Rand's ERA Division and the price for setting up the programs has been quoted.

9. Evaluated new techniques for the determination of economical ordering quantities and new systems for material coding for mechanization; forwarded information to various departments on their use.

Information Dissemination:

10. Co-authored an article on "The Cost of Carrying Inventory" which was published in the April issue of Mill and Factory magazine.

11. Conducted a scheduling conference whose objective was to determine the procedure to follow as regards the recommendations made for use of the IBM 701 in the Aircraft Accessory Turbine Department. Made a formal write up of the results of this meeting for distribution and assisted in the preparation of a Manufacturing Services Bulletin article on this subject.

12. Participated in the preparation of case material for the First and Second Mechanization Workshops. Served as a unit leader in the First Workshop.

13. Spoke on mechanized stock control as applied to Large Steam Turbine - Generator at the Materials Managers meeting in April.

14. Conducted a demonstration of Factory Scheduling on Univac for Materials Managers or their representatives in eighteen departments.

15. Conducted MTP class in the production control phase for the first year.

16. Re-wrote three chapters of the Inventory Control Manual for future re-publication.

General Consultation:

17. Studied the application of office quality control for customer billing in the General Purpose Control Department. Recommended that since the desired quality level was so high, it would be inadvisable to go to a sampling inspection plan directly.

PROJECTS FOR THE YEAR 1954

General Consultation (Continued)

18. Worked with Specialty and Synchronous Motor Department in the initiation and planning of an ABC analysis of stock.

19. Conducted a study as to the application of a magnetic drum computer for inventory control purposes in the district warehouses. As a result of this study, obtained certain general figure to use as a guide in other proposed applications.

20. Visited with Silicone Products Department and suggested certain simple procedures for usage stabilization and for inventory control through ABC analysis.

21. Conducted a joint study with the Plastics Department in the establishment of a simple and effective order quantity table.

22. Recommended procedures for the Wire and Cable Department for simplification of the calculation of requirements for both materials and components. The alternatives included both a punched card proposal and a simple manual system.

23. Suggested final improvements on the proposed punched card paper work routine for the Industrial and Commercial Air Conditioning Department in Bloomfield.

24. Recommended an approach to ABC analysis and mechanization for the Distribution Assembly Department at Norwood.

25. Prepared an analysis for the Hermetic Motor Department at Fort Wayne, This covered a gradual approach for the introduction of mechanization to the department.

26. Reported to the Appliance Control Department in Morrison on the feasibility of mechanization together with specific requirements as to the type of program which will be required.

27. Participated in a meeting with various personnel of the Trumbull Components Department in Plainville in order to present to them some of the possibilities for utilizing large scale computers in their operation.

28. Submitted recommendations to the DC Motor Department for improving their proposed production control plan.

B. Grad

BG:AP

To: H. F. Dickie

Since we are approaching the end of our first full year of operation it may be an opportune time to discuss the organizational concepts under which we are operating.

I think that the prime difficulty in analyzing this problem is the establishment of proper objectives. These must be stated so as to maximize the contribution which our Section makes to the Company's progress. A basic restriction seems to be that we must operate on a pay-as-you-go plan and that pure research will not be supported unless there is direct tangible benefit.

There appear to be two major courses of action open to us at present. The first is to consult and assist departments which wish to improve an existing system or design a new system. This work could very well be directed toward making large cost reductions and it is conceivable that an impressive record could be made. An alternative approach would be to attack problems whose solutions have general applicability throughout the Company. In this case, it is quite likely that the immediate cost reductions would not necessarily be very substantial but the basic goal would be to derive benefits over a longer period of time.

Since we are not in the position of having a large enough supply of men to pursue both courses simultaneously, we must, to some extent, choose between these alternatives. Naturally we will have to do some general consulting as departmental needs develop, but it is my recommendation that our efforts be devoted as much as possible to the second plan. I feel we should attack problems which are of large size, have general applicability throughout the Company and whose benefits in the long run should be outstanding. This conclusion is based upon the principle of using our comparative advantage; I believe that we are the only ones in the production control area who can do this type of job, both from the standpoint of opportunity and ability. Here is the way that we can keep G.E. in the forefront production controlwise. Not through helping one department at a time solve its spe-

cific problems or by conducting somewhat vague inconclusive general education, but by advancing the art through new techniques. If a department wants to do some systems analysis - fine; let them hire their own Inventory Control & Systems Specialist - pay a good rate - and do the study. But let us be the ones who will do the research on basic operational problems. Of course, we should do these projects with a specific department, and let's take off enough cream to pay for the study, but we should remember that the goal should be solutions of general problems.

Certainly the selling of such a program will not be easy in that our management has previously indicated a desire for a short term payoff. But it seems vital to me that this possible change in the direction of our efforts should be thoroughly explored and if its adoption seems desirable we should strive to convince our management of the logic of the philosophy: we must serve as a guide and stimulus to the operating departments in helping them toward entirely new concepts of their function and method of operation.

Certain specific examples may be apropos.

1) The installation and use of computers certainly does not pay for itself over the first couple of years, but for many departments the ten-year savings will be very large.

2) Any general approach to scheduling which we devise may well require more, rather than less clerical personnel, but the payoff will come in the increase of business volume and improvement in profit margin.

3) Any investment of time and money in the building of special purpose computers will be difficult to justify for any one department, but a stock control machine or an automatic dispatcher should, over a period of years, pay many times for the original research and design.

With these thoughts in mind, it is my feeling that we should plan our consulting and educational activities to fit in with the basic objective:

Developing advanced techniques to solve large problems of general applicability.

This should be attacked through a team approach to a set of critical problems - working with one or more operating departments. Then upon completion of the project, the specific dissemination method would depend upon the nature of the problem.

PRODUCTION CONTROL SERVICES MEETING
Mr. H. F. Dickie's Office - 12/30/54

In Attendance: H. F. Dickie
D. C. Miller
E. C. Throndsen
B. Grad
R. R. Smith
L. Lawson

The following is a resume of the topics discussed

I Budget Items

Attention was directed to the following budget facts for the period ending November 29, 1954. Typing and similar services were $70 in excess; telephone and telegraph services were $263 in excess, and office supply and equipment $502 in excess. Salary payments through November were $17,892 below budget. As a net result of the expenditures during the first 11 months of 1954, six percent of the funds allocated are currently available for use. For information pertaining to the cost of telephone calls on leased wires see the attached list.

II General Points of Interest

Officials of the Crotonville school are selecting a manager since appropriations have been approved and bids are now being accepted. D. V. Smith will come under the jurisdiction of H. J. Wolte, Consultant - Purchasing Services. It is forseen that in the future, publication of the Services Bulletin may be designated to a more appropriate organization component. The Criteria Study clarifying and limiting functions in the manufacturing organization has been submitted and approved by J. H. MacDonald. In the scheduled review by the Company Services Staff, January 4, Mr. MacDonald will be our representative. The Production Scope Study which is next on the agenda will outline a procedure of deciding what department will make what product. Mr. Linder has been appointed to outline the approach. Facilities for making a study of the utilization of factory floor space in the company is also being established under J. H. MacDonald. The Employees Stock Bonus Savings Plan is now being reviewed because of the low percentage of the employees participating.

III Project Selection

A. Education - The March regional Manager of Manufacturing Meetings are rapidly approaching. We hope to have extremely good hour presentations at each meeting. Late in July there will be a two week MTP seminar for the trainees specializing in Materials Management. The project for non-financial incentives will also be crystalized in the forthcoming months. The Inventory Control Manual will be temporarily postponed. Scheduling Workshops will be planned for the fall of 1955.

With regards to the forthcoming Mechanization Workshop, Mr. R. R. Smith stated that data will be mailed out to each participant by December 31, so that it will arrive in ample time for thorough study prior to attending the meeting. The anticipated attendance at the mechanized workshop will total 68. Since 50 of these

participants will be representatives from the various departments over 60% of the 87 departments will have been represented in one of the two workshops. Leaders for the workshop will be briefed Tuesday prior to the meeting. Colonel Hulley will be in New York for one half day the week of January 3 to prepare to lead the Workshop.

B. Advanced Techniques - The Scheduling Manual is being prepared and Mr. Dickie requested that drafts be compiled and presented to C. W. Bryant for his approval two weeks hence. The Manual will go to the publisher March 15, 1955. Next week Mr. Grad and Mr. Miller will visit Bridgeport in regard to the inventory and systems job. During the Week of January 17 Mr. Grad will be in Louisville. Mr. Grad is next going to concentrate on the Leveling Project. This involves discussions with many people so that concrete results can be obtained.

C. Communications - Mr. Miller plans to concentrate his efforts in the area of communications.

D. Factory Dispatching - Mr. Throndsen in discussing his planned projects intends to concentrate on factory dispatching.

It was emphasized in concluding this discussion of future projects that we in Production Control Services should evaluate projects so as to concentrate and delegate our efforts where positive results can be obtained. It is desired to show tangible results in as many cases as possible.

In concluding the meeting it was stated that since time did not permit full clarification of future project selection ideas it should be discussed thoroughly at the next meeting.

L. Lawson

Subject: Personnel Planning 2/5/59

HF Dickie:

Conclusions

1. we should not hire a man primarily for educational work
2. we should try to hire a lower rated specialist (12, 13 rather than 15)
3. we should hire someone with skills in Manufacturing
4. The preference then is for an Industrial Systems Engineer

Recommended Names to Consider
(not in order of preference)

Don Knight - MAC
Larry Miller - IND CONT
Joe Reilly - MST
Joe Paulekas - MST
Don Radke - P Tof
Chan Oakes - Herm Mtr
Al McLeod - DT
Dick Clement - ? - DT
- Outdoor Ltg
Aldrich - KODAK
- IBM
Herb Nidenberg - AED Mfg Serv

ACTIVITIES

1. Spend 6 months on Educational work: Modeling Course, Pro-Con, etc.
2. Formulate new Research + Development program with Elton + Harry.

REASONS -

1. With Bob Smith returning approximately Aug 1 we would be overloaded on Educators if we got another one.
2. We are apt to be able to hold a lower-rated man longer by offering him promotion opportunities within the Service
3. To complement Harry we need someone with a research bent and mfg knowledge

Burton Grad

The specific personnel hiring plan should be based upon the alternative objectives and goal of our organization. It appears as though we will have two major areas of responsibility:

(1) to do the necessary Service work associated with the manufacturing control function

(2) to do the Service work needed for Integrated Systems Planning

Because of the uncertain financial situation we should plan to hire only within the current budget and toward building an organization of essentially the same size as present.

It also seems to me that we would be best served by hiring younger men at somewhat lower job levels in order to provide internal growth and development. For instance our present 7 man organization (excluding the manager) has 4 men with little direct promotion opportunity within Production Control Service. Now this approach has a higher risk - we may get a lemon (a'la McCracken), but the long-range benefit should be substantial

One possible organizational configuration might be as follows:

In order to support the current load of educational work I ~~should~~ would suggest that regardless of whom we hire he should be assigned to work on educational programs for the 1st 6 months. This would enable us to get the Scheduling - Simulation course underway and the ISP Summer Course.

We should preserve the programmer dollars to be used to hire necessary work.

We should still try to honor Everett Smith.

In hiring we should take a really top-notch man in either of the three categories rather than a second-rate in the others.

We should also consider the necessity for training home-grown men for our General Consultants (Mills + Thornton) and the System men (Kavanagh + myself).

Recommendations - (in order of preference)

(1) Researcher - mfg control systems

provide research and development in manufacturing control rules and concepts. To use simulation work developed by HM Markowitz, but to concentrate on basic rules logic and control systems development.

recommended level - 12, 13

Names - Don Knight (Med Ac)
Bob Fetter
Don Radke (Pur Trf)
Ross Nelson (UCLA)
Al McLeod (DIST Trf)
Dick Conway ? (Cornell)
Reilly
Paulson
Jim Jackson

(2) Consultant - Computer and System Applic

provide a general consulting servic
for various departments planning, designing
or installing mechanized manufactury
control (or integrated) systems. To use
material developed by ISP as well
as general knowledge of computer, punched
card equipment, etc.

recommended level - 14, 15

Names - Chick Canning
John Lubin
Jim Pontius (present level?)
Art Maynard
Tom Zebley
Culbertson (IBM)
} (IBM)
(Eastkod)
Gregory (Sylvania)
Larry Nidle
Fred Thompson

(3) Systems Engineer

participate in the design of integrated, automatic systems. A systems generalist. Become computer, mfg control and systems skilled

recommended level - 10-12

Names - Chas Oaker
Don Cameron
Herb Widenberg
Clyde Pendorn

STRICTLY PRIVATE

Subject: T. F. Kavanagh, Management Award

OFFICE - November 26, 1958

Mr. H. F. Dickie
OFFICE

I should like to recommend that Mr. Thomas F. Kavanagh be considered for a management award in 1958. His work on the Integrated Systems Project has been of outstanding caliber. He has contributed many new concepts and ideas. These have been far beyond what would normally be expected from his job. His unflagging enthusiasm, intense interest, devotion to work, and total systems grasp has been a major factor in the success of the Integrated Systems Project.

I should like to list a number of specific items which I believe qualify him for this special award:

1. There was a major snag early in the program concerning the manner of representing manufacturing engineering information. The product structure concept had been built for engineering data but it was not clear what to do with this information afterward in operation planning. By dint of special work and analysis, Mr. Kavanagh contributed significantly to the concept of operation structure which will apparently have a substantial impact on future operation planning, methods analysis and time standards work.

2. After the structure tables had been applied to product and operation structure it was Mr. Kavanagh who had the initial insight to clearly state for the rest of us the broad implications of this new method for formally stating logical decisions.

   He was able to immediately see the idea of information structure as a general principle for representing any decision. This stimulated others on the team to rethink their problems in the structure format and therefore increased the effectiveness of our program.

3. With the structure table concept in mind we still were not in a very enviable position in terms of potential programming effort required. Mr. Kavanagh contributed significantly to the development of the TABSOL concept whereby without specific programming it is now possible to solve any decision system which can be expressed in table form; even more important, the actual concept of TABSOL in terms of its flexibility, logic and extendability owes much to Mr. Kavanagh's suggestions, recommendation and leadership.

4. When Mr. McCracken left in early June of 1958 we had not even begun to program the material for the Integrated Systems Project. After trying to hire a computer expert on either a permanent basis or to borrow one on a temporary basis we found that we were still not covered when Mr. McCracken was ready to leave. We asked Mr. Kavanagh to step in and take full responsibility for the programming of this Project even though he had never prepared such a large program and was not familiar with the 702 computer which we expected to use. He has done an absolutely magnificient job in carrying out this assignment. His personnel relations with the programmers, his direction of their work, his integration of the various program elements have been of the highest caliber. The proof lies in the fact that the program ran as an entity on November 12, 1958, just a short five months from the day he was assigned to this area. This was done in spite of having to use a variety of programmers for relatively short periods of time; in spite of having the programmers working in Schenectady and having many systems problems to contend with. I believe it should be viewed as a major accomplishment to have completed a program of this magnitude with something like eight man months of total programming effort and just five calendar months from start to finish. To make the accomplishment even more impressive, the program is very perceptive, shrewdly conceived and shows a brilliant understanding of computer logic and the principle of using a computer as an element in a total data processing system.

In all of his work on the Integrated Systems Project Mr. Kavanagh has been extremely cooperative, imaginative and persevering. He has concerned himself not just with his own individual assignments but rather with the total program, with the integration of the entire system. I feel that without his help, without his encouragement, without his creative ideas the Integrated Systems Project would not have accomplished its objectives. For these and all the foregoing reasons I believe Mr. Kavanagh deserves careful consideration for a special management award in 1958.

B. Grad
OFFICE

BG/pf

file

Subject: Burton Grad's Time Sheet

Mr. H. A. Goodwin
Accounting Operations
Building 5 - Room 512
Schenectady, New York

Dear Mr. Goodwin:

Would you please add to Mr. Grad's time sheet the following:

December 13, 1958	10:00 a.m. - 4:00 p.m.	Worked - NYO
December 14, 1958	11:00 a.m. - 3:00 p.m.	Company Business
December 21, 1958	11:30 a.m. - 3:30 p.m.	Worked - NYO

If you have any questions regarding the above please don't hesitate to call me on extension 3530.

(Miss) Patricia A. Finnerty
Secretary to Burton Grad, Technical Counselor
Production Control Service
Room 2409

pf/i

Personal file

Subject: Burton Grad's Time Sheet

February 24, 1959

Mr. H. A. Goodwin
Accounting Operations
Building 5 - Room 512
Schenectady

Dear Mr. Goodwin:

Would you please add to Mr. Grad's time sheet the following:

February 21, 1959	7:30 a.m. - 10:45 a.m.	Company Business
February 23, 1959	10:00 a.m. - 3:30 p.m.	Worked

If there are any questions regarding the above, please don't hesitate to call me on extension 3530.

Very truly yours,

(Mrs.) Patricia A. DeMild
Secretary to Burton Grad, Technical Counselor
Production Control Service
Room 2409 - ext. 3530

pd/i

Personal

JUN 2 1959

HOUSEWARES AND RADIO RECEIVER DIVISION
GENERAL ELECTRIC

Bridgeport, June 1, 1959

Mr. B. Grad, Technical Counselor
Production Control Service, Room 2409
New York Office

Dear Bert:

Many thanks for the list of suggested ideas for the General Electric "health room". I have taken the liberty of sending your letter, together with a copy of this acknowledgement, to Mr. W. R. Webber, Commercial Engineer, Automatic Blanket and Fan Department.

Cordially yours,

G. W. IRVINE

GWI:nz
cc: W.R.Webber
Att.

file
Personal

May 21, 1959

Mr. G. W. Irvine
Automatic Blanket and Fan Department
1285 Boston Avenue
Bridgeport 2, Connecticut

In line with our conversation, I should like to submit to you some ideas concerning the possibility of General Electric designing and marketing an all electric "health room" for the home. This would take the place of the conventional bathroom and would bring electrical appliances into one room in the house that has been essentially ignored electrically. Most of the ideas require the integrated planning of small electrical devices and these would probably have to be sold through contractors for incorporation in new houses and in major remodeling. I am also sure that some of the ideas are quite harebrained but I have included them for your Division's consideration.

1. A compressor for the toilet to eliminate the antiquated tank. This concept has not been changed in over fifty years. It would certainly seem ripe for improvement.

2. A toilet seat cover sanitized by ultra violet lights and slightly heated.

3. We might substitute plastics which are silicone coated for the various procelain fixtures. This might prevent "ring around tub", etc. Another thought might be a soft plastic tub to eliminate the danger from falling.

4. Provide a system of fan venting, an ozone generator for odor control, radiant heat panels for temperature maintenance plus high level lighting including specific fixtures for tub and shower.

5. An electrical hot air drying system to be used for the hair, face, hands and even conceivably for the whole body.

6. For both sink and bathtub we should be able to provide for automatic control of water temperature, water pressure and water level. This might include an electrical adjustment for spray distribution on the shower.

7. Hydrotherapy attachments for tub and sink.

8. An electrical massage unit which folds up in the wall. This might be similar to the Stauffer equipment.

9. Built in electric shavers for men and women.

10. Electric tooth brush with replaceable bristles somewhat like the dentists have.

11. Electric tooth paste, soap, shampoo and cosmetic dispensers.

12. The possibility of a waste disposal system on the toilet to reduce pipe size and water volume requirements.

13. An electric cosmetic application unit including lipstick application, eyelash curlers, face massage units, curling irons, etc.

14. An electric clothes lint remover.

15. A dehumidifier which might be drained through the sewer system.

16. A magnetic lock on the medicine cabinet with some type of trick closing device to prevent children from using it. The cabinet might include slide out shelves or revolving shelves and it might have a refrigerated compartment for medicine storage.

17. Automatic level adjustment on sink and possibly toilet for different height people especially children.

B. Grad, Technical Counselor
PRODUCTION CONTROL SERVICE
Room 2409 - ext. 3530

BG/pd

Personal

cc: G. A. Hagerty
C. F. Hartel
C. C. Lasher
E. B. Montgomery

GENERAL ELECTRIC

COMPUTER DEPARTMENT

MAR 3 1958

Phoenix, Arizona
February 27, 1958

Mr. B. Grad
Technical Counselor
Production Control Service
Materials Service
Manufacturing Services
570 Lexington Avenue
New York 22, New York

Thank you for your letter of January 2 to Mr. C. C. Lasher on your idea regarding the application of magnetic ink for time clocks.

This is an excellent idea for a product for IBM who manufacture time clocks, and would be sold to their customers who have IBM systems where this product could be effectively integrated.

This could be a good idea now for the Computer Department if the two conditions cited for IBM were true for General Electric Company.

This idea will be considered for our future applications of computers in industry. There are still some problems associated with the encoding of numeric characters with magnetic ink by means of a ribbon, which would be one way this could work in time clocks. The idea should prove useful on future applications when our customers have magnetic character recognition equipment tied in with computing control and data-processing systems.

C. F. Chartrand
Specialist - Product Planning

CFC:mac

GENERAL ELECTRIC
MANUFACTURING SERVICES
MANUFACTURING PERSONNEL DEVELOPMENT SERVICE DEPARTMENT

MANUFACTURING TRAINING
A Foundation for Leadership

Schenectady, October 24, 1955

Mr. Burton Grad, Specialist
Manufacturing Services
Production Control Services
NEW YORK OFFICE

Dear Burt:

Thanks for your offer to help in our recruiting.

We have your name on the list and expect to call on you before the recruiting year is over.

Best regards,

Laird

Laird H. Wallace, Administrator
College and Internal Recruiting
Manufacturing Training Program
Bldg. 36, Room 108, Ext. 3028

LHW/mr

File bcc -
C Katz
H Cantrell
T Kavanagh

January 5, 1960

RE: Ser 732 COD-7
December 29, 1959

Mr. Albert E. Smith
Department of the Navy
Bureau of Ships
Washington 25, D. C.

Dear Mr. Smith:

I would like to express my appreciation to you for making arrangements for us to present our structure table material at the next CODASYL meeting. Unfortunately, I have not been able to obtain release from the General Electric Company to present this material. I will therefore have to withdraw my request.

Your consideration on this matter is extremely pleasing and I certainly hope that we can contact one another professionally in the not too distant future.

Very truly yours,

Burton Grad, Technical Counselor
PRODUCTION CONTROL SERVICE
Room 2409 - ext. 3530

BG/pd

file

January 11, 1960

Mr. H. F. Smiddy, Vice President
Management Consultation Services
35th Floor
Building

Dear Mr. Smiddy:

I want to thank you for the wonderfully stimulating conversation which we had. My only regret is that this didn't happen two months ago. I started getting and reading the books and articles which you suggested. I'm sure that I will have food for thought for many years to come.

I also had the opportunity to talk with Carl Germeck and Mel Hurni and find that their direction and philosophy certainly reflect many of the comments which you made to me. Although I have decided to leave General Electric, I believe that your contribution to me has been very valuable.

Thanks again.

Very truly yours,

Burton Grad, Technical Counselor
PRODUCTION CONTROL SERVICE
Room 2409 - ext. 2549

BG/pd

write up comment of Short Interval
Control as being an inherent
characteristic for ~~the~~ data processing
some time / space has a greater $\frac{O}{n}$
hence too much assist for some
in line flow without Buffers

also - Wards Sears etc
30 min interval etc.
John Blair also.

also Prentfort

for presentation

1. On line - rapid reason flow of data + decisions no batch - faster, better service
2. Flexibility - programming can be modified by systems personnel to accomodate ~~to~~ business advances and improvements.
3. Compatibility - planned integration of all functions - logical common language for inputs + outputs - tied closely with mfg plans.
4. Building Block principle - System designed from a series of machine building blocks - modular design.
5. Management by Exception - logical, careful selection of significant data for reporting + immediate management analyses + action.
6. 3-5 year ~~objectives~~ - Advanced system for 3-5 installation, ~~~~ feasible within this period.

for presentation

7. Management Control - Key factors can be
monitored and modified by responsible
managers.

6.

Consider floating pt arithmetic -

for combined mult + addition

for time + qty :

Load analysis

Parts Reqt determination

Risk - Gain Curve

discount future profits

predictable expense & income based on parametric analysis

obsolescence growth curve

(1) Technical content

(2) Job Review by end of year

(3) Regular move to new location

(4) Right to publish material on philosophy
t/o techniques
with Company review

(1) Really associated with Program since March, 1956

(2) Came to Prod Cont Service 7/1/55

(3) Level 10 established 1/1/54 } 2 yrs 11 months.

(4) Level 12 " 12/1/56

(5) Compare Job level + pay level with trainees off program (3 yr service) at $7500
Level 7-8-9

only $3000 pay spread
" 3-5 levels difference
with 8 yrs vs 3 yrs service

in effect $3000 represents additional value of 5 yrs service.

(6) No quarrel with job content as such - but merely on basis of what else is available - and where does this lead me:

(1) Technical coordination - total business
(2) " " - main line system
(3) " " - all mfg control + selected engrg, mktg, accounting;

(7) If transition desired this is the only logical cut-off point for next 18 months - would, of course, provide necessary time for conversion - probably 3 months should be adequate - would want two people too - Project manager, new technical specialist - full access to mfg lab, fiscal control, etc - to present ideas.

basically, work is reasonably well documented through process charts, final reports, file memos. In addition to Canning has broad knowledge of ideas -

(8) Much of money spent was directed toward charts which can be analyzed by any suitably qualified technical man. Theoretical suggestions are pretty well understood by Bonton, Mundel, and Canning.

(9) My original job commitment was only until Jan 1958 - this means on or the year.

(10) Another move - after original plans to work out if New York failed to function is most undesirable from a personal and family standpoint.

(11) To be subordinate to the Project Manager drops me one organizational level, but to also face the possibility of being technically responsible to another consultant or Specialist is quite unacceptable.

(12) The Basic Question still is: where does all this lead me - what can I look forward to in manufacturing in five years?

(13) I believe I've earned the right to have a job offered to me and the privilege of seeing what else is available in my immediate field of interest.

LEASED WIRE DATA

To emphasize the telephone expenses, it was stated that the leased wires cost less, however the calls are still paid for on a minute cost basis. The list that follows gives the wires leased and representative costs.

Schenectady	17 cents per minute
Lynn	15 " " "
Syracuse	20 " " "
Washington	16 " " "
Bloomfield	
Pittsfield	
Philadelphia	
Fitchburg	
Bridgeport	


INVENTORY CONTROL
WORKSHOP
GENERAL ELECTRIC
INVENTORY CONTROL
WORKSHOP
GENERAL ELECTRIC

Inventory Control Workshop I
Gould House, Ardsley-on-the-Hudson, N. Y. --April 7-11, 1958

Roster

1st Row (left to right): Andrew W. Flood, Pierre Jasmin, Carl Fimmano, C. Robert Cagle, William J. Medler, Linley H. Gibbs, Jr., H. Ford Dickie.

2nd Row: Vaughan J. McWherter, John G. Bradley, George R. Kaup, William J. Scott, James E. Lucas, David R. Walsh, Edward F. Hoy, Thomas A. Thorne, Burton Grad.

3rd Row: Donald C. Miller, James R. Mundy, C. Willard Bryant, Leonard A. Stolzberg, Victor C. Uhlman, Thomas Minifie, Elton C. Throndsen, Alan J. Rowe, Robert R. Smith.

RRSmith
4-29-58

Inventory Control Workshop II
Princeton Inn, Princeton, New Jersey--June 2-6, 1958

Roster

1st Row (left to right): Raymond G. Heath, Jack C. Morrow, James A. Moriglioni, Victor H. Smith, Freeman V. Disbrow, C. Willard Bryant, William H. Grimsley, Joseph A. Cote, Raymond F. Arata, Albert M. Farley.

2nd Row: Donald O. Knight, Harry S. Handline, William F. LeBon, Jr., Richard R. Henry, Wilfred C. Hugli, Jr., Walter J. Hoey, Donald C. Tiebout, Jr., Peter Johnson, Joseph T. Reilly, Joseph P. Paulekas.

3rd Row: Elton C. Throndsen, Robert R. Smith, Robert F. Handschuh, H. Ford Dickie, Robert H. Dewhurst, Alan J. Rowe, Peter E. Mayhew, John F. Lubin, Sheldon L. Force, Carl B. Anderson, Roy J. Chandler, Harry G. Begor, Charles A. Santucci, Walter L. Harris, Donald C. Miller.

RRSmith
6-13-58