Personal Record of

L. D. Stevens

from December 29, 1954

to _____

Personal Record:

December 29, 1954

Went to Los Angeles with Jim Beaumont to look at the ElectroData magnetic tape unit. My observations on this unit are covered in a letter dated 12/30/54 to R. B. Johnson. We also saw the IBM personal automatic computer which is under construction at Electro-Data.

January 5 through January 13, 1955

Was in New York - WHQ - in meeting with Product Planning and engineering managers on the Random Access Program.

January 14 through January 16, 1955

Upon return from New York started 24-hour operation in testing disk storage unit. Had our first successful full file operation on Sunday, January 16, with a storage unit test set, only two bad magnetic spots in the complete file.
Mr. T. Buley from the Poughkeepsie laboratory has been in San Jose during the past week to assist us in planning our operations around the Type 475.

Monday, January 17, 1955

Conference with Buley deciding upon many detail phases of cooperative operations between our group and the 475 group in Poughkeepsie.

Tuesday, January 18, 1955

Continued the conference with Buley about cooperative relations with Poughkeepsie. Discussed customer engineering procurement with Beaumont, Haanstra, and Haug. Talked to Ernie Friedli about getting a cost man here who is capable of estimating both model costs and ultimate costs. Friedli reports that he will be back in San Jose on February 7th.

January 19, 1955

Discussion with Haug, Haanstra, and Noyes on assignments and activities between now and February 1. Decided the most important things to be done were to get two storage units operating. Made some rough plans for presentation of Random Access Program to McDowell.

January 20, 1955

Spent most of the day in preparing presentations for W. W. McDowell. Some discussions with project engineers on future assignments and program about which no positive conclusions were reached.

January 21, 1955

Spend the day in demonstrations of the Random Access File to W. W. McDowell and J. W. Birkenstock. Discussions in the afternoon with McDowell, Birkenstock, Johnson, Gifford, Haug on the problems relating to management cooperation and furtherance of the Random Access Accounting Machine program. At the time it was pretty well agreed that an over-all coordinator in WHQ would be a desirable thing.

January 24, 1955

Discussions with Haug, Haanstra, Toben, Noyes on synchronizing versus buffer and other problems relating to machine organization. Requested these people to turn in to me late this week their own planned program both personnel and time for the coming year.

January 25, 1955

Attended 100% Convention in San Francisco.

January 26, 1955.

Spent the greater part of the morning with J. A. Haddad and R. B. Johnson discussing the Random Access program. We discussed manufacturing phases as well as development phases--the activity. The following tentative conclusions were made: At least two of the existing storage units will probably be shipped from San Jose when we have them completely tested to our satisfaction. Discussions last week with EDPM people (Charlie Bashe) have been stopped by Mr. Haddad.

We discussed the synchronizing problems and the core buffer, and Mr. Haddad's feelings were clearly expressed in terms of the core buffer since this was an operating component which we could depend upon.

It was felt on the production activity that San Jose would most likely have the responsibility of producing machines at a nominal rate of

possibly one per month until production could be transferred to Poughkeepsie or Endicott.

Other topics were discussed with Mr. Haddad but no conclusions were drawn at this time.

Talked with Ernie Friedli on the telephone and he is having some difficulty in getting the cost estimator. I advised him to contact Jim Troy at WHQ for assistance.

Spent the majority of the afternoon in discussion with Haug, Haanstra, Toben, Woodbury and Noyes, about our commitments for development by September. We agreed that our objectives would be simplified to include only the most basic and simplest machine to be in operation in September, optional features would be "debugged," and that no guarantee for operation of these optional features in the September machine could be given. This would be worked out in some detail on Thursday.

Thursday, January 27, 1955

Spent most of the morning with Mr. Haddad and Mr. Johnson in discussions on the Random Access Program in some technical detail.

Demonstrated the storage unit to Ray Retterer (WHQ). Spent considerable time discussing with Retterer, Johnson, Haddad, Gifford, the banking problem as it relates to RAMAC.

Had a session with all project engineers and Haddad to cover in detail our technical program and to answer for him any questions he might have.

Had a session with project engineers to discuss preliminaries of Product Planning meeting set for February 3 and 4. Discussed a letter which Mr. Rubidge has written to Mr. Palmer stating rather violent criticism of the machine's capabilities.

Friday, January 28, 1955

Mr. Andy Burgoyne from Washington Federal Service, and Mr. Jack Stinson from the Santa Monica office were in the Laboratory, and the greater part of the morning was spent in discussing various aspects of random access accounting as it is applied to the Air Force supply system. Mr. Haanstra gave these people a rather complete description of the machine.

The afternoon was devoted to further discussions with Mr. Haddad, and I left early to take him to the San Francisco airport.

January 31, 1955

Had a conference with project engineers to discuss the programs of each in some detail.

Spent some time with Rey Johnson discussing advanced machine development.

February 1, 1955

Met with Haug, Haanstra, Leary, Lesser, Toben, Woodbury, to discuss the list of features which Product Planning has supplied and and categorize these into one of four categories.

Spent some time thinking about the synchronizing problems.

February 2, 1955

Epent part of the day in preparation for visit by Product Planning. The remainder of the day was devoted to normal contact with people.

February 3 and 4, 1955

Meeting with Product Planning people--Rubidge, Crawford, Kelly, Nolan--to review the machine specifications and applications thinking. Complete agreement was reached and major differences previously appeared as a lack of adequate communications. The bank job was programmed with machine modifications in mind, and appeared satisfactory. The various desired optional features were classified into the following four categories:

1. Basic machine which will be in operation at least by September.
2. Optional features which will be included in the design of the basic machine but will not be checked-out until the release model.
3. Features which will not be included in the basic design and not included on the release model.
4. No.

The following features were placed in category 2:

(a) Immediate access equipment
(b) Continuous scan and comparison
(c) Additional storage tracks

The following features were placed in category 3:

(a) Multiple access stations in the same machine
(b) Multiple machines on the same file
(c) Increase in character rate
(d) Use of more than one storage unit

We agreed to attempt copy ad and in general transcriptions at copy speeds when information is aligned on the drum.

February 7, 1955

Worked with Ernie Friedli, Roy Haug, and Trigg Noyes on the production and release engineering parts of the random access program. Monday afternoon I attended a conference with Bergfors, Hermes, Hoagland on the advanced random access development.

February 8, 1955

Continued discussions with Friedli, Haug, Noyes.

February 9, 1955

Talked with Haddad and Troy in New York about production schedules. It appears that our thinking on Monday and Tuesday and planning agrees with current thoughts in New York for construction, something like 25 machines in San Jose during the first three quarters of 1956. It appears this is a job for San Jose irrespective of any decision to produce the machine elsewhere.

Talked with Haddad in the afternoon and discussed the conversation with Rey Johnson on the subject of optional features on San Jose constructive machines. Haddad feels there should be no optional features on any machines made in San Jose, and that the September date should be advanced to such a time that our machine would provide the minimum acceptable device that is marketable. I have to be in New York on Monday to discuss this condition, and return with a firm plan agreed to by all.

February 10, 1955

Johnson talked with Palmer and discussed the forthcoming meeting on Monday as well as the forthcoming meeting on in-line processing systems Thursday and Friday of next week, and it was decided that there would be no Monday meeting if there was no Thursday meeting. Shortly after this conversation, Frank Welsh called and said there would be no seminar.

February 11, 1955

Normal activity today. Nothing occurred which merits reporting.

February 14, 1955

Talked with George Kress about cover design for the storage unit. Talked with Haddad about conference in New York. Caught the 9 o'clock p.m. plane for New York.

February 15, 1955 and 16, 1955

Conference in New York with Product Planning people, and Engineering Management and Sales Management to discuss optional feature requirements. It was resolved that all machines would be identical and would have inquiry ability as well as five (5) additional storage tracks, but that the necessity for continuous scan and compare would be eliminated.

Meeting with Mr. McDowell, Mr. La Motte, Mr. Wesley, Mr. Haddad, Mr. Gifford, on the 16th, at which Mr. La Motte appointed Mr. Wesley as WHQ coordinator to the Random Access activity and charged us with the obligation of having the machine for sales at least by September regardless of the cost.

Mr. Birkenstock informs us that all Product Planning responsibilities related to Random Access activity are to be centered in San Jose and Mr. Gifford from henceforth and hereafter. Mr. Nolan is to be transferred to San Jose to assist Gifford and they will build a staff to adequately handle all Product Planning phases of RAMAC.

Spent some time with Palmer, Haddad, and Troy, as well as Hank Matthews, Clint Abrams, and other Engineering Management people in individual discussions.

February 17, 1955

Returned to San Jose and began reviewing assignments and activities of people. Set up a task force for the disk to drum transfer problem under St. Clair.

February 18, 1955

Continued review of assignments and set up a task force on disk storage unit testing program under Dickinson.

February 19, 1955 (Saturday)

Spent half a day clearing off my desk and preparing for Monday visit by Wesley and Faw.

February 21, 22, 1955

Spent time with Wesley, Faw, Johnson, and Gifford, and members of the project in describing the machine, our proposed program, and our current status. There were no serious criticisms of any activity or proposed plan. We will hear from them in the very near future as to how much our plan can be knitted with the 475 program, and have full instructions on how to proceed. We will supply them with cost figures as soon as they can be obtained.

February 23, 1955

Spent a little bit of time reviewing with Faw and Wesley our discussions during the past two days. Talked with Rey Johnson and Jim Beaumont about additional manpower requirements and got agreement to shunt 6 engineers from the Poughkeepsie program to the Random Access activity as well as to employ 10 additional technicians.

Agreement was also reached that Hodges would be assigned as full time assistant in manufacturing phases both development and production in RAMAC.

February 24, 1955

The larger part of the day was spent with George Basile and John Wiseman from Product Tests in describing the machine and component work which we are doing. It was decided that John Wiseman

March 3, 1955 (Thursday)

Spent some time catching up on correspondence.

Had a group meeting with Haug, Gifford and Lesser on autonomous input output.

Interviewed some prospective secretaries. Selected one.

Spent some time with John Wiseman from Product Testing Department discussing the 'pros' and'cons' of the product test activity.

Talked with Haddad in New York.

Spent some time with Pete Luhn reviewing the machine in our status.

March 4, 1955 (Friday)

Another meeting with Gifford and Haug on autonomous input output.

Attended the monthly staff meeting.

Talked with Ted Buley on the telephone. He will be here Monday night.

Spent some time with Ray Morris, the estimator who is here from Poughkeepsie, discussing the cost position.

George Kress called about his activity on industrial design. He will be out here next week.

Spent some time with Pete Luhn discussing a more detailed organization of the machine.

Worked with Jack Masterson on the drum early readout problem.

Talked with R. B. Johnson and John Wiseman on product test. Decided we would play it by ear until the course of action was clean.

Spent some time with Greg Tobin in synchronizing.

Ernie Friedli returned from the east and reviewed briefly with him the status of the problem.

March 5, 1955 (Saturday)

Meeting with Friedli, Haug, Tobin and Hodges where we discussed our problems in general and most specifically the synchronizing problem.

Called Max Femmer in Poughkeepsie to get a field for problems associated with cores buffer. He will call me back on Monday morning to discuss in more detail.

Reviewed in detail the problem status with Friedli from our position. Got from him a rundown on his activities in the east.

Contacted John Haanstra in Fresno for a meeting Monday morning which could lead us to a decision on synchronizing or non-synchronizing machine.

March 7, 1955 (Monday)

Meeting with Haug, Haanstra, Woodbury, Noyes, Tobin, Friedli and Gifford to review in detail the various approaches to machine design which could be taken assuming that electrical synchronization is a failure on a long term basis. Each of these alternatives was reviewed in considerable detail and the whole day was spent in this review. In addition an evening meeting was held.

Ted Buley arrived from Poughkeepsie in the evening. We arrived at a decision / that the best course of action would be to proceed with a 100 column core buffer in place of the single character register now located in the machine. This was reviewed briefly with Johnson and Gifford.

During the day at various times telephones conversations were held with Max Femmer and his group in Poughkeepsie and Al Mussel in Endicott. Mussel was requesting confirmation of the 14th for the arrival of a estimator and in discussing this with Friedli we decided to postpone this until May or June.

Had a discussion with Beaumont on space requirements for development model assembly.

March 8, 1955 (Tuesday)

Continued the meeting with Haanstra, Haug and Lesser asking in Kean, Taylor, St. Clair and Bixby in their turn and asking them to evaluate the effect of the 100 column core buffer on the work which they have done.

Spent a little time with Friedli and Noyes on the storage unit and decided that it would be acceptable for the storage to effectively be split in half so that one side represented a utility space for air compressure, clock heads, clock amplifiers, and so forth, leaving the other side free for a maximum of three access mechanisms.

Meeting was adjourned at three p.m.

Spent some time with Friedli who had talked with George Kress and most definitely Kress and Figgens will be in San Jose next week.

Roy Deolph brought the quarter size scale models of the machine components over to be photographed.

March 9, 1955 (Wednesday)

Had a group meeting with Haug, Haanstra, Kean, Bixby, St. Clair and Taylor to discuss their evaluation of the effect of a core buffer on the machine organization. It seemed within reason and would allow a much more definite possibility of success and the following assignments were made. St. Clair and Taylor are to be in Poughkeepsie on Monday. These two will be completely responsible for getting the core buffer and integrating it into the machine as soon as possible. With the assistance of Trig Noyes and Wes Dickinson the following reassignments were made. Jim Heywood was asked to take over the arthrimitic work which Taylor has been doing and Davis was requested to take over Heywood's storage unit test set work. Schlaepfer will work with St. Clair on the clock phase. The following assignment changes were made. Toben was requested to handle the power supply with the assistance of George Plotnikoff and Shugart was assigned to assist Dave Kean in the processing unit running circuits.

Talked with Jerry Haddad on the phone. He was in Beattie's office in Poughkeepsie. Told him of the decision to go to cores and asked him to see that all assistance possible was given our people in doing an expeditious job. He agreed to discuss this with those concerned people in Poughkeepsie.

Had a telephone conversation with Jim Troy. He gave an advanced warning of a letter which is being prepared now from the controller's office stating the following. That a sales work order for $700,000 has been approved and that San Jose engineering is directed to pro-

vide the following "RAMAC" machines. One in September which can remain in San Jose for engineering use. One in October which will be sent to Poughkeepsie for use on the bank job. One in November for product test. One in December for the Air Force Supply. Two in January for the sale show and field tests. Two in February on customers contacted. Two in March on customers contacted. In line with this schedule the following schedule for 475 shipment to San Jose has been authorized. One for April, one for July, one in August, one in September, two in October, two in November and two in December. In addition we will get as many other 475's as are required for any continuation of the program.

He saved until last the fact that the machine will most likely be publicly announced about the end of March. He and WEsley are fighting this and may have succeeded in having it announced strictly as an Air Force Supply program machine. But there is a likely possibility that we will have a full scale announcement as a commercial machine.

Spent some time with Bill Woodbury discussing his areas of interest and where he might make the most contribution to the program. No decision was arrived at but he agreed that we should let things ride as they are until some time next week.

Spent some time with Gifford discussing the arrangement of the quarter size scale models.

Spent some time with John Wiseman and the other gentlemen from product test and the following arrangement was agreed upon. The product test would have a storage unit complete for performance of a formal test about the first of June. At which time the engineers would have two complete storage units available. One would be for the machine, and one for product test. We discussed the storage unit test sets available and they decided that they would build their own.

March 10, 1955 (Thursday)

Talked with Ted Buley shortly in the morning to discuss his

participation in the program.

Took photographs with Curt Erickson of special configurations of the machine.

Talked with Beaumont about classification of the customer engineers which have been transferred to the Lab and their pace scales.

Had a serious conference with Gifford at which he registered his objections after serious consideration on his part of our decision to integrate the 475 with the processing unit in preference to autonomous input output arrangement.

Called a meeting between Bixby, Gifford, Lesser, Haug and Leary to discuss this and instructed Bixby to leave adequate room in the 475 for the addition of a 100 column drum rather than the current 80 column drum, as well as for the addition of all input output analysis. It was agreed by all concerned that this was the least we could do to not predicate against a change to autonomous input output in the future. Bixby will put the group control analysis in the 475 as a minimum.

Had a conference with Hodges and Haug on technicians and model makers assignments. The following technicians were assigned. specific areas of interest. Chadly to storage unit testing. Moore to access mechanism. These two people are responsible to Wes Dickinson. Griffen to Dick Weeks and responsible for the construction of the new storage unit test set. Laybourn to Hodges and he will be responsible for a wiring room. It was agreed that the model makers would be under the supervision and control of Dean Hodges and that Charlie Morgan would be asked to follow the work in the shop as foreman.

Talked with Max Femmer in Poughkeepsie. He agreed to have some of his people work closely with Taylor and St. Clair on their areas and to assist them in everyway possible to get the buffer constructed.

Had a short session with Taylor, Haanstra and St. Clair to discuss the arrangements which I had made for them in Poughkeepsie and to

tell them that no matter what they had to do it was all right so long as it got us a core buffer within the next month and a half.

March 11, 1955 (Friday)

Talked with Mr. Mac Dowell who had some questions to ask about the limits to the machine as related to the bank application. Also he wanted to know what fundamental limitations of the storage unit are not included in the machine and printer limitations. I was unable to answer these questions and agreed to write a memo to Mr. F. T. Wesley as soon as they could be determined.

George Basil called and said that John Wiseman would remain in San Jose for another two or three weeks. That Shirel Bailey would arrive on Tuesday and would be our permanent (relatively) product test man. Jerry Merka will be leaving on Thursday or Friday.

It was agreed that during the next few months the product test people in San Jose would be assigned just as any other engineers on the test program.

Had a session with Dickinson, Noyes, Haug, Haanstra on the storage unit testing operation. It was decided that the life test on the access mechanism would be transferred to a design and that a three shift testing operation would commence on Monday. Dickinson and Chadly will be on the first shift, Malcolm White on the second shift, and Weeks, Wiseman and Merka on the third shift. The rest of the storage unit testing crew, consisting of Moore, Griffen, Davis would be on the first shift. work on the storage unit test set and access mechanism modification.

Had a short session with Friedli, Tate, Bixby, White, Toben and Buley on 475 requirements. It was agreed that no decision would be reached until Monday at which time we would clean up 475's design position.

March 14, 1955 (Monday)

Had a session in the morning with Gifford, Toben, Leary, Lesser, Bixby and Buley. Input output decision was made specifying the main in which the input output would be connected to the machine. The output analysis will be in the 475 and the punch will connect from the 475. Multiple line printing sequence unit will be in the 475 and as much input analysis as necessary in addition to group control will be in the 475.

Mr. Seader and Mr. Shew and Mr. Fox were added to the staff. Seader and Shew were assigned to storage unit testing and Fox was assigned to Noyes.

March 15, 1955 (Tuesday)

Talked with Wesley, Palmer and Troy today in status of the program and agreed to send Wesley a bi-monthly status report.

Had a meeting on the inquiry station with Haanstra, Weeks, Gifford, Leary and Lesser to pin down this item.

March 16, 1955 (Wednesday)

Had a meeting in the morning with Johnson, Hodges, Friedli, and Beaumont about space requirements for engineering manufacturing. It was agreed that we would get a decision from Johnson by Friday of next week.on our request for 8,000 square feet minimum space.

Had a meeting with S. H. Bailey on product test program. Was agreed that we would supply them with a storage unit in final form by June 1.

Started the development report write-up and helped with specification write-up.

Talked with Jim Taylor in Poughkeepsie about their problems there and things are looking much better. He had a shop order assigned in Poughkeepsie and the number is 7030-22-80X-00.

A session was held on checking philosophy.

March 17, 1955 (Thursday)

Talked with Frizzel about Bob Laybourn coming to Poughkeepsie and being there for one week. He agreed to direct him to the appropriate people.

Completed the development report.

Had a meeting of the storage unit test set group to get their program well in line. It was decided to stop the third shift for one week while Dick Weeks finishes storage unit test set design and Seader gets in position to operate on the third shift.

Had a meeting with Noyes, Johnson, Haanstra and Dickinson on the re-packaging of the access electronics and the sector location electronics. It was agreed that a repackaging would be done under the supervision of Dickinson with Moore and Ewing doing the work.

March 18, 1955 (Friday)

Spent the day with Haddad, Figgens and Kress on industrial design problems.

March 21, 1955 (Monday)

Talked with Ernie Friedli and he had found that the 475 would probably not go into production were it not for the RAMAC program due to a increase in costs, service time and tooling program. This information came from H. A. Faw.

Had a session with St. Clair, Kean, Haug and Haanstra on the core buffer. Had a little description of what the status is. Decided that we would wait for the return of Jim Taylor to start the mechanical design.

Talked with Haddad on the telephone about the cover probelm. Insisted that we maintain a reasonable cost in final cover design.

Spent sometime with George Kress talking theabove over with him.

Vic Molzahn reported to work and was assigned to Greg Toben.

Received a wire from J. H. Trout that Bell, from Customer Engineering, would arrive March 23.

March 22, 1955 (Tuesday)

Ernie Friedli called again. He was in Endicott today. Said the plan schedule for the first 475 for San Jose was for October rather than July as outlined in Wesley's letter. He has been asked by Troy to work on this full time to see that the schedule for 475 matches with ours.

Talked with Ted Buley on the telephone. He has been appointed co-ordinator of San Jose and Banking activities in Poughkeepsie. They call the banking machine the BARAMAC.

Spent some time with Bailey on product test manpower.

Asked Wes Dickinson to make voltage variation measurements and consolidation on storage unit.

Called Wesley to get his feelings on Industrial Design operation and how far we should go. He feels that we should go all-the-way to make a brand new idea in IBM packaging.

Had a short get together with Greg Toben and George Plotnikoff on the power supply and contacted people from Inet and asked Greg to go ahead and get power equipment in as soon as our specs were firm enough.

Talked with Haanstra a little bit about the inquiry operation at which no decision was arrived. Also discussed the disk circuitry which Schleapfer had been working on under St. Clair. Haanstra would like to have Schleapfer transferred to Kean and I agreed to this if Kean is agreeable.

Talked with Al Stone in Pasadena, who will be here Friday to renew Customer Engineering problems with Mr. Bell.

Talked with Laybourn in Poughkeepsie and he is coming home.

March 23, 1955 (Wednesday)

Spent the day with Mr. Bury and Mr. Gifford on acquainting Mr. Bury with the problem so that he might more reasonably make decisions relative to the advertising department.

Had a request from Wilbur Renner of Endicott relative to application to the disk storage unit from the 650. He requested that technical specifications for engineering planning be supplied him.

Haddad called to remind me that the covers had to be designed in such a manner that they can be loaded into an airplane so that that they can be set up with a reasonable amount of effort and initial installation.

March 24, 1955 (Thursday)

Short meeting with Haanstra, St. Clair and Taylor on mechanical design of the core frame. Lynott was assigned to follow through on this in Poughkeepsie next week with Jim Taylor.

Meeting with Haug, Haanstra and Gifford on the checking problem and the utilization of the inquiry station for initiating operations after a core stop. It was decided that the Cardatype was no longer required and that the inquiry operation should become a supervisory control position as well. The column control unit for adapting the Cardatype seems satisfactory for this position in conjunction with a receiving typewriter, a type 24 keyboard and appropriate switch controls.

March 25, 1955 (Friday)

Meeting with Jake Bell from Customer Engineering in Endicott, and Ernie Friedli and Al Stone in an attempt to arrive at Customer Engineering Training Program and manual preparation. Proposed program has been documented in summary by both Stone and Bell.

Talked with Jim Troy about the cover design man for assistance in San Jose. Found that I had to be in New York on Monday to defend RAMAC against file computer competition from Rem. Rand.

Had a meeting with Noyes, Friedli and Harker on the drum manufacturing problem. Talked with Ernie Nelson in Endicott about the drum plating which we would like for them to do and he agreed to help Lynott on his arrival there Monday.

Spent some time with John Sponsler reviewing our patent position.

Talked with Haddad to get a little preview of what Monday might bring. He advised me to bring as much documentation as possible.

Had a review of assignments with Haanstra and Noyes and a review of progress. It was decided that Weeks would return to I.A.S. activity as soon as possible

March 28 through 31, 1955 (Monday through Thursday)

Was in New York working on the RAMAC file computor comparison with people from Sales Management and Engineering Management. In addition, quite a few other things were accomplieshed, one of them being that I now know something about the file computor.

April 1, 1955 (Friday)

Returned to the Lab and spent most of the day reviewing activities of the past week with people here.

April 2, 1955 (Saturday)

Short meeting with Haug and Haanstra, attempting to lay out man power requirements for technical support on construction of the main frame.

April 4, 1955 (Monday)

Mr. Al. Musal and Mr. Jim Cahill from the Endicott organization arrived today to assist us in reviewing our status and obtaining information relative to ultimate returning temination by Mr. Faw. We reviewed some of the factors which were necessary for us to discuss for the arrival of Mr. Faw on Thursday of this week.

Haanstra and Haug reviewed with me their reasons which they would like to modify the basic circuit design and I agreed with their reasoning. Circuits will be modified to take standard voltages in all parts of the machine.

One of our weak areas is that it seems we must get firm bids on manufacture of 10 - 50- 75- 100 sets of parts.

April 5, 1955 (Tuesday)

Talked with Jim Troy and requested assistance from Endicott and Poughkeepsie for two people. One man to take cabling coordination and manufacture, and a second to assist in lay out of a supervisory station. The second man would be a good relay circuit designer. He agreed to work on this Friday when he was in Endicott and also to determine if Merritt Olsen would have a chance to look at the supervisory control panel which Kress has laid out for the

RAMAC. He will call us and interview several candidates for these two jobs.

Worked with Al Musal and Jim Cahill on the cost.

Reviewed with Ernie Friedli his activities in New York during the past week. It was agreed that a more definite settlement of responsibility must be defined between Friedli and myself.

April 6, 1955 (Wednesday)

Worked with Al Musal and Jim Cahill on RAMAC plans and cost.

April 7, 1955 (Thursday)

Mr. H. A. Faw arrived. The day was spent with Mr. Faw, Mr. Musal, Mr. Cahill and Mr. Friedli discussing the proposed method of operation in San Jose and estimating the money involved.

April 8, 1955 (Friday)

Continued discussion from yesterday and documented elsewhere a schedule and summary conclusions of the meetings during the past week. It appeared from Mr. Faw's standpoint that the machine would be about $3,000 per month which is probably on the high side. It was concluded that existing facilities are capable of producing two per month and it would be recommended that additional permanent facilities be added to bring the capabilities up to five machines per month in late '56.

April 9, 1955 (Saturday)

Worked in the morning cleaning out my left-hand desk draw so that Miss Little will have a job to do.

April 11, 1955 (Monday)

Sometime was spent with Ray Johnson reviewing the status of the program.

Talked with Jim Troy about requesting help from Endicott and Hank Reitford and Larry Swank are being transferred to San Jose on a temporary basis for about

two months to assist in relay layout and cable layout respectively. In addition we discussed the qualifications of Mr. H. E. Treece and it was decided, after a discussion with Ray Johnson, that Mr. Treece would be a valuable asset to the Lab at a somewhat later date at which time we would contact Ralph Walker for further information on Mr. Treece's capabilities.

Talked with Steve Blackford from Endicott. He is working with Mr. Avery on attachment of a RAF to the 650. Mr. Blackford will be in San Jose on Thursday and Friday of this week to get a little better picture of what the storage unit involves. He will return to Endicott and complete the proposal now under preparation and if this proposal is successful he will most likely return and assemble the storage unit for shipment to Endicott.

Talked with George Kress about the situation on the cover design. A Mr. La Date from Allstate Engineering will be here on Monday the 18th to assist us in design of the covers. These covers will be designed so that installation can be accomplished by two men in one day. Mr. La Date replaces Mr. O'toole who did not buy the financial arrangements which were offered him. Mr. Gerhart will return on Monday also. The proposed cover design will be presented to Mr. Watson on Wednesday of this week.

April 12, 1955 (Tuesday)

Sales class of twenty-one plus salesman started today. Spent most of the morning in introductory sessions. with these people.

Talked with Jim Troy on the phone. He said Hank Reifort and Larry Swank would report to San Jose on Monday.

13 April, 1955 (Wednesday)

I don't recall any significant activities.

April 14, 1955 (Thursday)

Had a meeting with Johnson, Poole, Beaumont, Haug and Friedli to discuss the space problem for special production and it was decided at this time that we would move to Julian Street in the factory area for special pro-

gram facility.

Talked with Jim Troy. He said he would arrive Monday. Made reservations at Rickey's.

Mr. McDowell called and requested information on what we could do to have a storage unit in New York for demonstration as soon as possible. Haddad called a short time later and said that this was all off and not to spend any time worrying about it.

April 15, 1955 (Friday)

Talked with Dick Figgins about the covers and he said Clarence Zierhut would be back in San Jose Tuesday morning.

April 18, 1955 (Monday)

F. J. Wesley, J.J. Troy and J. B. Green arrived at the Lab and most of the day was spent in discussion and reviewing our space problem. They were completely opposed to Julian Street as a possibility for the special production facility.

Larry Swank and Hank Reifort arrived.

Al Musal called and said Reinhart would be here on Monday, April 25th.

April 19, 1955 (Tuesday)

Spent the day in discussions and reviewed with Jim Troy, Jim Green and F. J. Wesley on the progress, as far as development status and special production status are concerned.

April 20, 1955 (Wednesday)

Continued discussions with above people. Decisions as a result of these conferences will be documented elsewhere. The space problem, however, was resolved that we would attempt to obtain the Doyle Building, so that that building and 99 Notre Dame would house special production until such was a permanent facility.

April 21, 1955 (Thursday)

Spent most of the morning cleaning up my desk and discussing the preceding day's conferences with Roy Haug and of what our plans are to be from here

out. Will probably go to New York in the middle of next week to formalize our plans on special production problems.

April 25, 1955 (Monday)

Spent some of the morning with Charlie Bashe from Poughkeepsie discussing Random Access equipment on the 702.

April 26, 1955 (Tuesday)

Spent majority of the day with Johnson and Friedli on production problems trying to decide precisely how we are going to operate in San Jose. No definite conclusions were arrived at but at least our positions were made clear. Johnson decided that he, alone, would go to New York since his activities were to be somewhat more broad than pilot production.

Had some discussion with Kress and La Bate about assistance on the covers. Also there was a disagreement between myself and Kress on the detailed mechanical arrangements in the lower sections of the covers.

April 27 and 28, 1955 (Wednesday and Thursday)

No notes taken of my activities of these two days.

April 29, 1955 (Friday)

Had an extended discussion with Sterling Reinhart about the estimating job in San Jose.

May 2, 1955 (Monday)

No notes were taken of today's activities.

May 3, 1955 (Tuesday)

First day of class for the potential check-out people was started with Haanstra leading off on the accounting control unit. Leonard Meyers was transferred to the project and assigned to cover activity. In addition Roy Dedolph was assigned on the same job.

May 4, 1955 (Wednesday)

Spent the greater part of the day in walking around the Lab talking with various people on the project to determine our status.

Ray Johnson called Beaumont to say that the announcement of the storage unit had been made to both the field and released to the press, with the photograph of Wes Dickinson and the storage unit, on the effective day of May 5th. Ray will return tomorrow with a story for local publication.

May 5, 1955 (Thursday)

Attended the RAMAC class in the morning. The rest of the day was spent in normal supervisory activities.

Friday May 6, 1955

Attended the monthly staff meeting at which Wes Dickinson was promoted to Staff Engineer along with Pecchenino and Muffley.

Major topic of discussion at the meeting concerned the severe budget limit under which we will be operating for the remainder of the year.

Spent the rest of the morning with people from Zellerback Paper Company. A Mr. Brown and Mr. Flashman were down. They were shown the storage unit and some discussion about its application with Gifford and Perkins.

Al Sharp, Tear and Paul from the Alken Construction Company came by at my request and we talked of the problems involved in tearing down Gifford's and Stevens' offices to make a model room. It was arranged that as soon as we could move out they would come in to do the remodeling.

Saturday May 7, to Saturday May 21, 1955

During this period have been involved in several major activities.

1. Supervision of the assembly of the machine which a great part of the time has been devoted to.

2. Preparing and planning for move into the new assembly area.

The class in the morning describing the machine has been attended regularly by all concerned and is drawing to a close.

We are looking forward to a visit next week by Mr. Mair, Mr. Becker and Mr. Troy. At which time it appears that important decisions may be made relative to manufacturing aspects of the RAMAC. Let's hope so anyway.

May 23, 1955 (Monday)

Spent major part of the day with Jim Troy reviewing the RAMAC program status in preparation for Tuesday's visit here by Mr.Mair and Mr. Becker.

May 24, 1955 (Tuesday)

Spent the day with Mr. Becker from Endicott and Mr.Mair from Poughkeepsie and Mr. Jarretts from WHQ. In a metting inMr. Johnson's office, at which Beaumont and Friedli were in attendance, discussed in some detail the status of the development program and the manufacturing program. Mr. Mair is very much in favor of a manufacturing facility in San Jose to manufacture RAMAC on a long pull. The following tentative program was discussed. That the nine machines to be manufactured by Engineering, 75% of the activity would be supported by Engineering and 25% supported by Manufacturing. Following these nine machines manufacturing program of twenty-five machines through the third quarter of '56 which manufacturing would do 75% of the work, Engineering 25%. The last quarterof '56 fifteen machines would be manufactured from tools by 100% manufacturing crew. In 1957 a minimum of 250 systems and a maximum of 550 systems are porposed with an additional 100 to 200 extra storage units. Tooling pre-analysis will begin very soon with design to commence as soon as possible, with tool release to be finished in October of '56 and tooling procurement to be complete by May '56. This program is anything but final. It is simply an indication of the thinking of this group on this day.

May 25, 1955 (Wednesday)

Spent the day in normal supervisory activities.

May 26, 1955 (Thursday)

Spent part of the morning with Bill Simmons from WHQ and Gifford discussing some of the things which we believe should be added to RAMAC.

Talked with Bob Avery on the 650 RAM completion and results of this conversation will be documented in a letter to Avery.

Spent some time this afternoon with Mr. McDonald of the P G & E newspaper. He was interested in seeing the file.

May 27, 1955 (Friday)

Had a call from Bryan Phelps requesting the attached information on the RAMAC.

Had a stort meeting with Product Test reviewing the status and test results.

Had a group of people in from S R I, including Mr. Calhoun, Mr. Bennett and three other gentlemen whose names I can't recall and the storage unit was discussed in some detail with them as well as the RAMAC system.

A little after three an accident occurred in the machine room when the split spacers were assembled in the disk unit with only an upper and a lower disk. The shaft was rotated and the centrifugal force caused the assembly to partially explode. Wesley Dickinson and Leonard Seader were injured. Wes's nose was fractured and a small cut on the side of his temple. Len had a cut on his arm which severed the tendon to his thumb.

May 31, 1955 (Tuesday)

Had a staff meeting this morning concerning safety and a review of the accident which occurred Friday to be sure that changes will be made which will prevent its occurrence and others of this nature in the future.

Reviewed with Ray Johnson what the psychological features of this accident might have on the program and what we might do to lessen such repercussions.

Mr. Maddox and Mr. Blair, two photographers from Los Angeles arrived in preparation for the Benton & Bowls representative who will be here tomorrow. Art Samuels was here. Spent some time discussing two problems with he and Ray Johnson. He is responsible for the establishment of an I B M Laboratory in Zurich Switzerland and would like to to know some of the problems in organizing a small laboratory. He is also responsible for establishing post doctural fellowship and would like to contact local universities to see what their reaction to this program might be.

An appointment was made with Paul Morton for tomorrow to have lunch with him to discuss this.

27 ... 1955

5-27-55

1. Maximum Impulse Rate

The maximum impulse rate per second of successful electrical or mechanical impulses in any given circuit or mechanical linkage in the machine and which are used to operate a given control device or to transfer characters between two given parts of the machine or system.

@ 83 Kc
© char. Rate 10.4 Kc.
(d) Core 12 Nsec R/W.

2. Non-Arithmetic Storage

Storage of any type not specifically or permanently assigned to arithmetic functions but which is a permanent part of the machine expressed in the number of arithmetic or numeric characters or the binary equivalent thereof.

5,000,000
370 - 500
305 - 1000 Prog
1000 gen.
100 core
- 200 auth -

3. Gross Storage

All storage including non-arithmetic storage which is a permanent part of the machine expressed in a number of arithmetic or numeric characters or the binary equivalent thereof.

4. Electro - Mechanical Control

Yes, if primary control functions in machine are electrical, mechanical or a combination thereof.

Combination

No, if these functions are performed by electronic means.

5. Central Arithmetic Unit

Yes, if the central arithmetic unit performs arithmetic functions as in the 604 and larger calculators.

No, if there are various counters or related devices throught-out the machine which have the ability to add or carry out more complex arithmetic functions as in the 405.

yes.

June 1, 1955 (Wednesday)

Went to Berkeley and Stanford with Ray Johnson and Art Samuels to discuss post-doctoral fellowships with Turman, Morton and Kip.

June 2, 1955 (Thursday)

Worked with Gene Caffrey and Frank La Baron from Endicott and Poughkeepsie Manufacturing on RAMAC production survey.

June 3, 1955 (Friday)

Normal supervisory activities.

June 6, 1955 (Monday)

Went to plant with Gifford to discuss possibilities of utilizing and application at the card plant for testing RAMAC. Leary and Barnes will go over and study and select the best of the applications.

Ray Johnson informed me today of change in status to Manager of Production Design and Haug to Assistant to the Manager in Charge of Advance Development. These will have no effect immediately but should be worked on.

June 7, 1955 (Tuesday)

Normal supervisory day.

June 8, 1955 (Wednesday)

Started a review of the other projects in the Lab. Spent the afternoon at Julian Street.

June 9, 1955 (Thursday)

Continued review of other projects. Spent morning at Julian Street.

June 10, 1955 (Friday)

Normal day.

June 13, 1955 (Monday)

Spent the morning with Ray Johnson discussing the area of activity which Production Design involves.

Talked with both Wesley and Troy. With Wesley discussed the fact that he had referred in one of his memos to a permanent Customer Engineer representative in San Jose, and that such was not the case. He was going to check with Mr. N. C. Henderson and determine why a man had not been assigned to replace Jake Bell.

It appears that several decisions effecting our operation are in the offering in New York this week. These are: Manufacturing, Sales Price, and Announcement Date of RAMAC.

Talked with Troy on the RAMAC costs estimate. Told him that it would be slightly late in his two weeks request. Indicated that we would like to see a manufacturing decision by us toward manufacturing storage units only in San Jose if he was agreeable. He was. He indicated that power supply parts might be diverted from 650 Production to RAMAC Development Supplies.

Had a meeting in the aftermoon with Ray Johnson, Roy Haug and Jim Beaumont which will be a continued Monday affair to discuss common problems and personnel assignments.

Had a meeting with Friedli, Hodges and Stone to understand the Engineering Manufacturing Personnel problems.

June 14,1955 (Tuesday)

Spent a little time with G. J. Toben reviewing his possible future assignment with Woodbury telling him my understanding of this job.

Had a meeting with Stone, Friedli and Noyes discussing the Engineering change procedure. Dick Fox was assigned by Noyes to Friedli's group to head the Engineering change activity.

June 14, 1955 (Continued)

Meeting with Haanstra, Haug, Toben, Dickinson, Noyes, Friedli and Stone to discuss the pre-release procedures on electronic drawings. Jack Allen and Per Meidell were assigned to formalize the procedures. Caroll Brown was assigned to reviewing the eight-position pluggable test unit drawings.

Took some photographs for Mr. G. Dick in New York for advertising purposes and agreed that we would call him by Friday June 24th, if the covers were to be on the machine by July 1.

Had meeting on linear displacement mechanisms.

June 15, 1955 (Wednesday)

Meeting with Haanstra, Haug, Nlan and Gifford to discuss features for development on RAMAC. Spent most of the morning in this meeting the results of which have been documented by memo for file.

Talked with C. E. Frizzel in Poughkeepsie about Jim Correathers and it is tentatively planned that he report here August 8, which is a little late. I asked Frizzel to try to make it earlier.

Had a meeting with Haanstra, Haug and Toben on shift work which is starting Monday. Three shifts will go on the control unit and two shifts will be going on the 370.

Spent some time with Beaumont, Noyes, Haug, and Turner on the new purchasing set up.

Had a meeting with Beaumont, Johnson, Haug and Ferguson discussing the development work.

Had a meeting with Crooks, Beaumont, Haug, Friedli and Leary to discuss space arrangements. It was agreed that Crooks' space layout was excellent and should be satisfactory for all concerned.

June 16, 1955 (Thursday)

Discussed cover design with Friedli on 323 and 370. He has letter from Endicott stating that 323 and 370 covers will be available August 1.

June 17, 1955 (Friday)

Talked with Johnson and Friedli on manufacturing activities and decisions which are being made in New York. Troy was called and it appears that RAMAC will be announced about August 1.

Machine de-bugging started inall sections today.

Attended a demonstration of Hauserman movable partitions.

Had a meeting with Ralph Marrs to discuss the Customer Engineering Education and Manual program.

Had a meeting with Friedli and Stone and Hodges to discuss their needs for additional manufacturing personnel. It was decided that if 6 technicians and 6 modelmakers could be assigned that an additional 5 technicians and 14 mechanics would have to be employed to complete the job.

June 20, 1955 (Monday)

Met with Johnson, Beaumont and Haug and the normal Monday management meeting occupied the morning.

Had a get to gether with Friedli and Hodges on the personnel for manufacturing. It was pretty well agreed that we would have to employ additional manufacturing people.

Had a call from Jim Weidenhammer in Poughkeepsie concerning arrangements to be made for study of the RAMAC so that the bank sorter might be integrated with it.

Bob Furr will be out soon to work on this.

Had a short meeting with Beaumont on personnel classification codes.

June 21, 1955 (Tuesday)

Assigned Curt Erickson to construct some model quarter scales of the file .

Talked with Bob Furr. He Will arrive in San Jose at 7:15 tomorrow morning.

Talked with Wes Dickinson starting on the file. It was agreed that he would

start two shifts as soon as the file and test set were operative.

Spent some time with Commander Dupzyk concerning a seminar which the Navy is having on Engineering problems in San Francisco.

A meeting was also held with Snackel, Lawson and Friedli and Johnson to discuss the Engineering - Manufacturing problems on the RAMAC and the firm decision was related that a factory will be built in San Jose to produce the storage unit and a new factory in the middle west to assembly RAMAC.

Wednesday June 22, 1955

Spent some time with Gifford talking over the problems in feature development for RAMAC as they relate to man power and things which should be done.

Bob Furr arrived from Poughkeepsie and some time was spent with him understanding the bank sorter.and document recorder.

Talked with Jim Beaumont and Al Stone on Stone's request for additional drafting personnel.

June 23, 1955 (Thursday)

Talked with Wesley on the phone and he gave me the following schedule for RAMACS and RAMS during the next three years. These represent sales department requests for pricing.

RAMAC	30 - 40	1956	— 100 RAMS - ABOVE THE 10 -
	250	1957	
	600	1958	
RAM 650	60	1956	
	120	1957	
	120	1958	
BARAMAC	0	1956	
	200	1957	
	450	1958	

Apparently plans for Engineering-Manufacturing as well as Manufacturing are being finalized by J. J. Troy in New York right now and are due for completion by July 5.

Talked a little with Friedli and we are inclined to think that we should talk to Troy tomorrow morning about this and to see if we can be of assistance.

June 24, 1955 (Friday)

No notes taken and I do not recall any significant activities.

June 27, 1955 (Monday)

Spent the morning in the weekly management meeting,and most of the afternoon in working with Ralph Marrs on the Customer Engineering Program. During the day the machine room was rearranged and photographs were taken for the Advertising Department.

June 28, 1955 (Tuesday)

Went to Moffett Field for the triannual inspection.

June 29, 1955 (Wednesday)

Spent most of the morning with Johnson, Beaumont, Friedli reviewing our very critical situation in manufacturing personnel. Assigned Jeff Hotham to head the group of Technicians in assisting the electrical drafting work which must be done. The group consists of Griffin, Stanich, Schooler, Franchini, Herd, McWhinney, Gonzalez and Laybourn.

June 30, 1955 (Thursday)

Most of the morning was spent with Johnson, Haanstra, Bailey, Dickinson and Noyes in a discussion of the errors which are currently occuring in the file. Wes Dickinson has tabulated the following rsults from the month of May:

, 495,000 reading access and a total of 419 stoppage.
These 419 stoppage may be broken down in the following manner:

176 due to bad spots
105 due to phasing difficulties
58 due to incorrect writing
27 due to broken leds
11 servo errors
1 wrong address
4 test sets
1 power supply
36 unknown

Maintenance during the month of May included 2 pinions 7 broken leds cleaning track null relay, replace pin and disk detent and disk detent switch adjustment.

A solution to the phasing difficulties appears to have been found by Leonard Seader in his new auto phasing circuit. The file has gone through four complete consecutive passes with no error whatsoever Another feature of this phasing circuit is that it apparently avoids the Schmitt Sharpo's patent. Called John Clark over to have Len Seader describe the circuit to him to get his opinion about this.

Ralph Marrs started the first orientation class for Field Engineering today.

July 1, 1955 (Friday)

Talked with Johnson about starting RAMAC II, which would consolidate into one system development many of the existing projects of the laboratory.

July 5, 1955 (Tuesday) to July 27, 1955 (Wednesday)

On July 6, Mr. Allen Mann from SKF was in the building and considerable time was spent discussing RAMAC with him.

During this period considerable discussions have been held concerning the financial situation of the Lab.

Len Seader's phasing circuit was discussed withthe Patent Department to determine their opinion on whether it avoids the Schmi tt Sharpless patents.

The week of July 11 through the 14th Mr. Wesley, Mr. Haddad, and Mr. Grim from W H Q were here and various meetings were held during that week to try to determine our status of future program. Sales Engineering problems were reviewed with Mr. Grim. Mr. Wesley was primarily interested in program status and program costs.

On Wednesday July 13, Mr. Charles Phillips from the Department of Defense visited the Lab and had a rather complete description of RAMAC.

On July 19th Frank Paul, recently appointed RAMAC Manufacturing Coordinator, arrived in San Jose.

On July 19th, also Mr. Cunningham and Mr. Anderson from the Air Force Statistical Department visited the Lab and were given complete descriptions of RAMAC by Mr. Gifford and myself.

On July 21 a meeting to attempt to settle Industrial Design questions was held with Mr. Friedli, Mr. Toben, Mr. La Bate and Mr. Meyer. It was decided that Mr. La Bate would complete his work and leave San Jose August 12th. That Len Meyer would continue on and that a complete set of release prints for covers would be available by September first and that November first two sets of covers would be fabricated. It was decided that all nine machines to be built by Friedli would be grey.

During the last week a great deal of time has been involved in moving from our old location to the north side of the building.

Vacation was over on the 22nd and the machine room is now back on three shifts.

On the 27th the file and the RAMAC was made operative with the new test set and the new phasing circuit of Seader's. It was decided last week that clock amplifier and clock head would be eliminated by Len Seader's self-clock scheme.

11/27/55 (1)

Trig & Ellis - John -

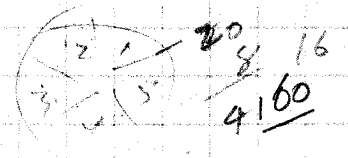
4 × 5 (20)

RAM -

1. Current design - And simple Modifications
2. Redesign - Version - → - production design
3. High - Capacity file →

1. Disk array - (2) accum Elec (3) accum Mech (4) Frame Summ

1. Disk array



(a) Drive change -

(b) Sector Head - (This change now)
(c) Wind shields and lgr - (This change now).
(d)

2. Accum Electronics

(a) Packaging -
(1) Relay gate for one, two or three -
(2) Electronic data in more producable form

(b) CB Limit -
use of pick and hold rather than latch

(c) Checking -
(1) Address register
(2) Read back Check - ~~-~~ program -

(d) Re read on single error - or else put in stored check on reading from file - which will ~~~~ eliminate redundancy bit in file and possibly part redundancy field at individual

Checking -

Program check:

Processing Unit.
↓ Redundancy ch. on contacts
Address Buffer → ↓
↓ → point for point on contacts or redundancy
Address Register
↓ → guarantee - null chts. and reference supply.
Position Mech.
↓ Sector
Actual - data in Record.

→ overall read back check is not good enough if consistent errors are occurring in adr. buffer timing set up.

7+11

M. White - assisting ~~for~~ Findlay - Sched. for repackage.

★ Shere - Experimental work on Engr. File —

Davenport - Engr. Change Repackage

★ Meidell - Fusing - (Hoanita) - (possible replacement).

★ Allen - Heads - and continue (double density)

Moore - Work ~~with~~ with Shere

★ Chadley? - possible assignment in test equip. or Mfg.

11/28/55

(3)

Haenstra —

Change meaning of CF - Read file -
Redundancy in such unit in R99 799.
This would mean assigning an track

Seek Read } PB,
Seek write }
write seek read.

Lynott - working on way with Moore
Carriage - Gilovist

D. Johnson - Coating - 3Ø ~~motor~~ motor - disk array

Gillham - CB unit.

---

(3) Access Mechanism
(a) hinged to allow service - (Now)
(b) Experiment with new arm and carriage design - all al.
(c) considering for double ~~[illegible]~~ density detent

(4) Service -

(a) compressor on floor.
(b) Symmetrical ~~[illegible]~~ = frame
(c) 60 × 28 frame
(d) Consideration to separate P.S. combined switchbox
(e) standard caster.

Haanstra
Heywood
Kean

Haanstra - Heywood

11/28/65

Taylor - Machine de-bugging.

Sheygart - " " "

Flynn - " " su

★ Davis " "

Bixby 370 - de-bugging

Scoden " "

P. White - floating -- need new man. -

★ Schlaepfer - drum - Ckt work)

Plotnikoff - 370 - de-bugging

Tate - 370 -

★ Mc Whinney - drawings - - (get Man to work with)

★ Golub - Stone

★ Ewing - Stone

★ Van Minlo - diagnostic program

★ Bennett. -

Miedell. -

St. Claire. drum -

ENDICOTT

19 dd

11/29/55

Bob Bennett - Ramac class.

R B Johnson - Point 1 comm. Gorby.

J. D. Fernbach - No PFE as yet.

E. K. Friddle - Program resp. div. discussion

(2)
11/28/55

370 - "323" - Taylor -

Core Buffer - } Seader →
Drum & Ckts - } Schlaepfer

Power supply -

? Superstation - Flynn. (Bixby) -

? File - Davenport.

Gun control - Heywood.

Program - (basic sequence) Shugart.

Arithmetic & } Davis
Info transfer - } -

Paper work coordination - Chang.

Mechanical components.

4-DE 115

11/29/55

Ideal Crew for 1st Machine

Heywood - Kean.	Molzahn -
Shugart	
Bixby	Dawson -
Tate	Handloff +
Flynn.	
Taylor.	Shew
Klein -	Ewing
Carothers	Chadley.
	Haynes.
	Golub -
	Glass.
	Klein
	Ogren
	Cowden
	Herrera
	Muir . 12/16

R B Johnson. (Mc Donnells call 11/29/55)

Hanlon Friday Dec 2

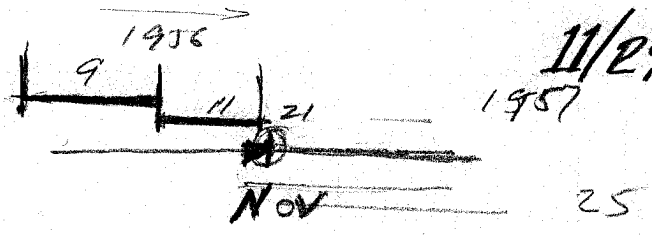
Handloff - Dec. 9.

Glass - Reviewed program -

agreed course will be given -

~~I~~ S.J. should stand together - on all decisions

J. O'Donnell



11/29/56

12/1/55

1. Called Bill Soberg - He was not in - left word for him to call me when he returns - expected tomorrow afternoon

2. Called Carl Sundberg

3. Called J. Haygen about Coordinating Reproducers

4. Mailed Royalty Conv. - First Meeting ~~in~~ Jan - first week

5. Met with Gifford - Haeuter, - Heywood.
1A Spec

6. Fernbach returned.

Co — 9 ①

12-1-55

Discussion (Haanstra - Heywood Gifford
of Ramac 1A.

1. Input - output
2. File - ✓ 6 digit
3. Processing unit - Drum, Core, Control.
4. Basic Circuits ✓
5. Super Stations.
6. Packaging -
7. Power Supply
9. Drum.

I. Input - output.

Card Reader - 370 - 528 - 533 - 514 M - 535

533 - ~~cut~~ will run reader at speed to allow ~~accurate~~ accurate branch time and use one Head.

There is some investigation required to determine asynchronous ability of Clutch on 533.

plugged or Not plugged on input.

Desirable to have plugged so that input may be spread to match accumulators - 80 → 160 -
No selectors

Read on 1st Sta - Check on 2nd Sta
Card Not available until passes 2nd Sta.

12-1-55 (2)

Retract all above - on plugging -

since problem on checking is not compatable with plugging - or both have to be plugged.

* It was decided -

① No plugging - but must be considered as potential optional feature (after external pressure)

②. complete 80 col. checking - 80-80 -

<u>Group</u> <u>Control</u>. -

10 cols of group compare all 80 brushes are available - (This will be reviewed later).
3 levels Maj., Min., Int.

Might have optional in groups of 10 -

Infer 40 V on brush hubs
③ Subject to Review -

Three input tracks are required. ~~[illegible]~~ checking costs the additional track and scan equipment.

Hollow are determining on whether checking is available

Card feed failure indication will be provided -

Offset feature would be desirable but not available at present on 402 feed.

Stop in stacker to raise cards from hopper removed help on error on card feed.

Paper tape should be considered optional.

1. Printer - 370 - 403 - 407

- Not full alph -
- 5/32 spacing
- No spec char
- Zone problem
- 88 Type bars
- No checking -

to much money - for printer) anyhow would allow only 75-80 lines

1 printer Std.
2 printer optional.
407 as optional -
what is involved.

No card feed.

Emitter probably doubled -
Considered gating of emitter -
or use of spec 10 pt emitt - carry to
528 char

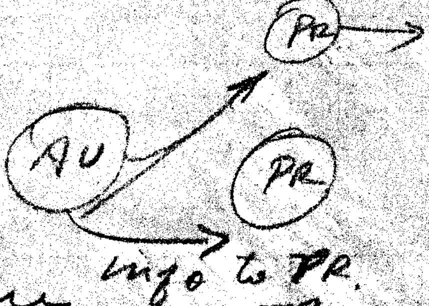
Nothing
- ~~zeros~~ zeros supp -
- spec. char. ~~[illegible]~~ insertion.
- print suppression
- Line format arrangement - (plugging - of field to paper

Format & choice between - lines - (from seperate records)

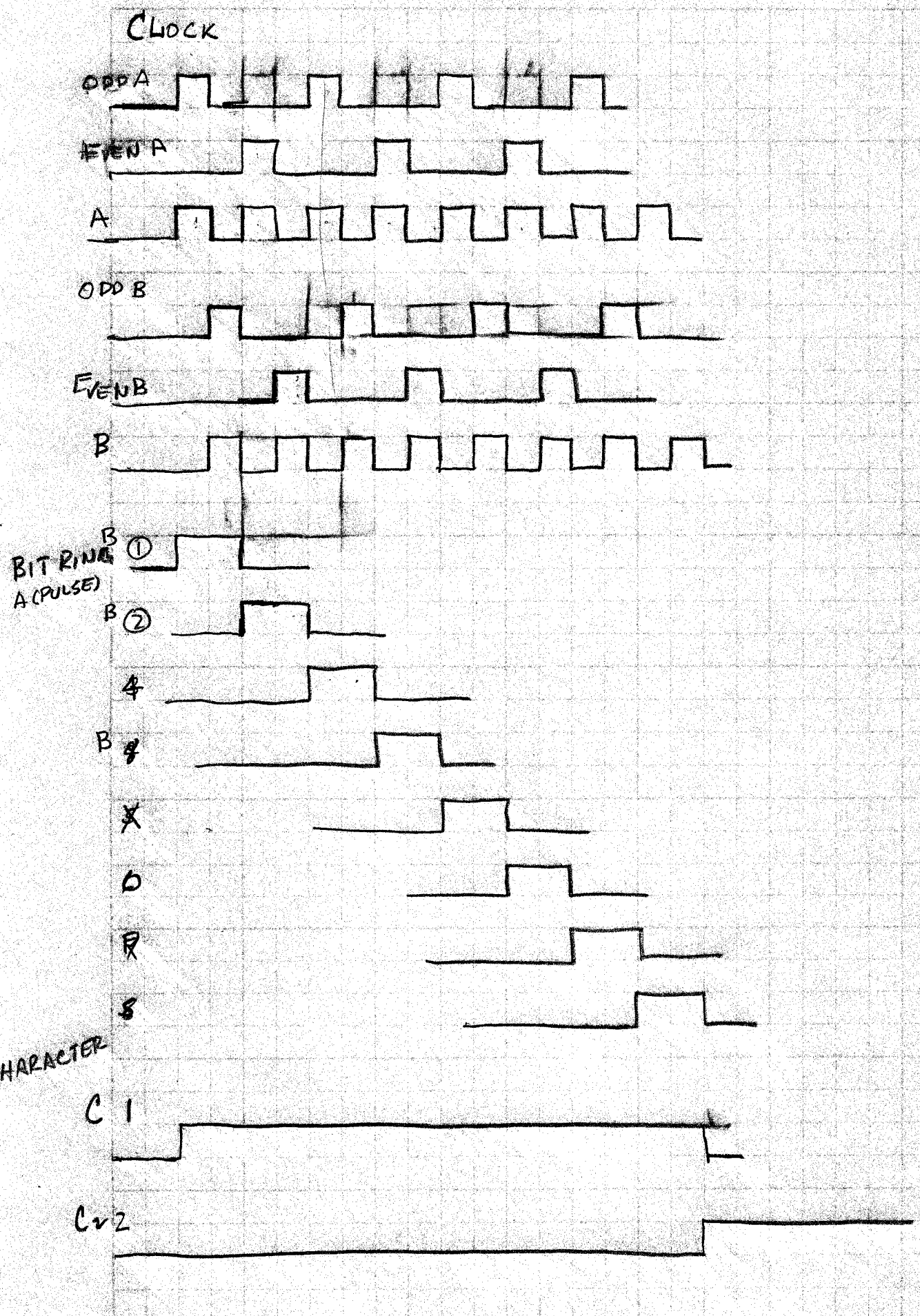
MLP Format choice from one record. -

Carriage controls

Min Electronics in 370 -



Two print tracks are a question - info to PR. on Printer.
One print track in Std - for one or two printers and punch - maybe


CLOCK
ODD A
EVEN A
A
ODD B
EVEN B
B
BIT RING
A (PULSE)
B ①
B ②
4
B 8
X
D
R
S
CHARACTER
C 1
C 2

Output analysis - part of processing - unit. Control line will tell printer what to do with each record -

~~Supplementation~~

selector and plug board on processor plug board -

plug board -
read from output track to print position - just do what it is told ~~not~~ to do by processing unit.

Output analysis is done from availability track.

Line program selector may be replaced by relays for added relays

This ~~by~~ puts just about all relay selectors in 370 -

12-2-55. 1A SPECS. *By Steve Heywood.*

I. Punch –

1. Selectors
2. DPBC – 20 standard; optional up to 80 in groups of 20.
3. Cycle Delay (co-selectors to unaverage DPBC.

new DPBC

1. One row rate DPBC
2. Test position. – as on 650
3. Blank col. only.

Offset stacker optional.

Punch checking

1. Read station + track vs relays.

Reading costs (comparing) DPBC costs.
Track + head 1 4PT per pos. ($1.24)
Elec. controls

$1.24 × 80 = $100
× 2
$200.

$15 Track
$300 elec.

Checking

Control – feedback loop.
Data –

II Disk.

A Electronics of access.
1. Packaging – 1 relay gate separate.
2. Biggate vs 3 relay gates.
2. Electronics will be pluggable unit form.
3. Use C.B.'s no access relays for control.
4. Simplify + stabilize servo.

B. Array
1. Drive motor change – pancake is internal.
2. Sector head casting – on C.B.'s for this.
– Same slots + holes for program of file.
3. Windshield

C. Checking
1. Reread of data.

12-1-55

Discussion (Hoonstra - Heywood. Gifford of Ramac 1A.

1. Input - output
2. File -
3. Processing unit - Drum, core, Control.
4. Basic Circuits.
5. Super Stations.
6. Packaging -
7. Power Supply
9. Drum.

I. Input - output.

Card Reader - 370 - 528 - 533 - 514 M - 535.

533 - ~~that~~ will run reader at speed to allow ~~~~ accurate search time and use one speed.
There is some investigation required to determine asynchronous ability of clutch on 533.

plugged or not plugged on input

Desirable to have plugged so that input may be spread to match accumulators - 80 → 100 -
- No selectors.

Read on 1st Sta. - Check on 2nd Sta.
Card not available until passes 2nd Sta.

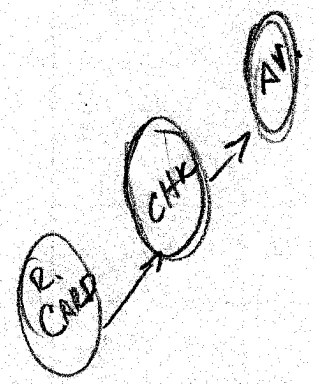
12-1-55 (2)

Retract all above - on plugging -

Since problem on Checking is not Compatable with plugging - or both have to be plugged.

* It was decided -
① No plugging - but Must be considered as potential optional feature (after extensive program)
② Complete 80 col. Checking - 80-80.

Groups Control. -
10 Cols of group compare.
all 80 brushes are available -
(This will be minimized later).
3 levels Maj., Min., Int.



Might have optional in groups of 10 -
Input 40 V on brush hubs
② Subject to Reviews

Three input tracks are required.
~~read~~ Checking costs the additional track and scan equipment.

Dollars are determining on whether Checking is available

Card feed failure indication will be provided -

Offset feature would be desirable but not available at present on 402 feed.

Stop in stacker to remove cards from hopper would help on errors on card feed.

Paper tape should be considered optional.

12-1-55

1. Printer - 370 - 403 - 407

1 printer Std.
2 printer optional.
407 as optional.
what is involved.

→ Not full alph -
5/3? spacing
→ No spec char
→ Zone problem
→ 88 Type bars.
→ No checking -

To much money - for printer
anyhow would allow only 75-80 lines

No card feed.

Emitter probably doubled -
considered gating of emitter -
or use of spec 10 pt emitt - carry to
528 chr.

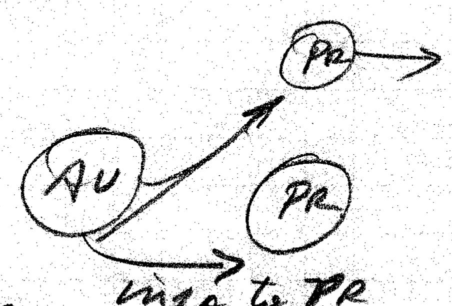
Nothing — zero supp -
spec. char. ~~[illegible]~~ insertion.
print suppression
Line format arrangement - (plugging -
of field to paper

Format ~~$~~ choice between
lines - (from separate records)

MLP Format choice from
one record. -

Carriage controls

Min Electronics
in 370 -



info to PR.
on Printer.

Two print tracks are
a question -
One print track in Std - for one
or two printers and punch - maybe

Output analysis - part of processing - unit. Control line will tell printer - what to do with each record -

~~Sequential~~

selectors and plug board on processor plug - board -

plug board -
reads from output track to print position - just - do what it is told ~~not~~ to do - by processing unit -

Output analysis is done from availability track.

Line program selector may be replaced by relays for added relays.

This ~~by~~ puts just about all relay selectors in 370 -

Punch -

Consider Read Back check on punch from Brushes -
~~Read start~~ B.
plugged to columns - Xo

~~or~~
Read Back, equip costs versus that of relays plug board.

1A SPECS. 12-2-55

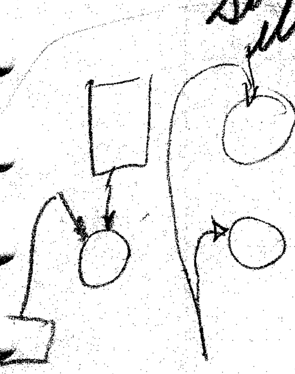
Checking in general should
have more control checks - close feed back loop - on #.

More data checks.

2. Disk unit.
   1. Disk array
      (a) Drive motor change
      ☆ (b) Section heads - Replace with CB'S.
      (c) Unkind shields - (

2. Access Electronics -
   (a) Packaging gate
      (1) Relay, would be seperate could be one two or 3 - compatable for 3 accs
      (2) Electronic ckts will be in pluggable unit form. (Consider drawer gates.)
      (3) Use CB'S on access Relays.
      (4) Reread when single error on reading occurs will re-read. Any re-read will set indicator with manual reset.
      (5) Two files one mach
      (6) Two mach one file
      (7) low priority - two acc. one mach
      (8) Data check - (1) Re-read. (2) Read twice. Acc. store by use of check word.

simplify servo electronics adjustments and servo



Check read
Parity
Re-read
check word.

12/2/55 2

9. Possibly eliminate address Buffer
   ① By use of drum on prog step
   ② replace delay by special drum slot.

③ Access Mech.
   ⓐ Hungid
   ⓑ up switch new arm
   ⓒ Consider mech design for double track density.

④ Service -
   ⓐ Compressor on floor
   ⓑ Symmetrical plan 60×29.
   ⓒ Consideration to seperate PS for RAM unit.
   ⓓ

12-8-55

③ Processing unit

(a) Cycle time (basic).
(b) Instruction format.
(c) Relay instorag Vs Elec. Inst. Reg.
(d) Relay primary timer Vs Elec primary timer.
(e) Inst. Counter. Relay Vs. Elec
(f) # of Inst and prog. track and arrangement.
(g) Special tracks
(h) arith. facilities.
(i) address buffer?
(j) Scan - compare ± = or hi-lo-e
(K) Decision elements - balance - #. - ~ delay - distributor
(l) decode in program re-entry.
(m) Selenium in
(o) Green instruction execution. - S99A99-etc. FILE, I/O →
(P) Reset accum from plug board.
(Q) R.O. of address Reg - or addr Buffer units
(R) Increase address buffer to R.O. to provide address of where we went on Seek
(S) What is Std. what is optional.
(T) flexible acc. size - Coupling of accum.
(U) Index register of B. Register type on 705.
(V) MN on E, can be eliminated.
(W) expand or compress of.
(X) Read after write on next cycle (Modifying inst) [next cycle.]
(X) Checking more Complete
(Y) Basic electronic clock pulses.
(Z) Consider writing clock and home track

Margin notes:

e) Static interlocks

Murray will prepare Note on File Checking.

Q code → for cycle delay.

Change of Bit coding on File, modulo 16 check mode. arbitrary Sector selection on P.B. 10 tracks.

(a) provide a CE. test panel

(bb) Reset Button what happens.

(cc) 8 MS. 7500 RPM drum.

12/8/55

(a) Basic Instruction time -
Believe should have at 40 ms/inst.
Numeric P shot should require no
additional time.
P_2 on Ia for numeric P.

Kill C_3 and C_4 - $D_1 D_2 \approx P_1 P_2$

(b) $T_1 A_1 B_1 T_2 A_2 B_2$ MN PQ.

(c) 4 tubes/bit on $a_1 b_1$ or $a_2 b_2$ or m.n.

4 × 8 Bit = 32 × \$4 = \$128 for $a_1 b_1$ or $a_2 b_2$ or mn

1 relay + 1 tu + 1 rel. + CB - × 8
2.50 + 4.00 + 1.00 .50¢
8 × 8 = \$64

B. registers are available with tubes
at nominal cost

T_1 T_2.

Current $T_1 T_2$ relays are duplicated..
3 other ways with relays.
[illegible] ..
Seems much better as relays -

T_1 Electronic - allows P_1 and T_2 set up time during E_1

P_1 code is relays -

Q is electronic now. - may be combined

(d) Relay primary timing..

Ptr - now - CB'S -
supply holds to $T_1 T_2 P$.
" " to Prog. Ctr.
" interlocks along with Status.

This does not
not eliminate
CB unit but
cuts it down.

yes

operating problems are relieved.

(e) - Inst. Ctr. -

~~St~~ Electronic Ctr units position selects time
Thyratron rings - drive relays -
directly - which selects track

(f) 10 std. to be able to use either
~~e~~ 10 track opt.

(g) arithmetic no emitter - R., S, P. F10 and File.

(h) add, sub, mpy., R.O., ROP.
Q Code will ~~p~~ change add, sub to
R. Add R. Sub. if this is easy.
Q = C = compare
Q = R = reset acc.

divide - will consider divide an
optional feature.

12-9-55 -

(i) Scan-Compare - optional feature -
= ±
10 fields - Q = S
given = ≠ compare to 10 fields
brought to plug hubs similar to
accumulator sign. - blank field.

~~[illegible]~~

(j) adder Buffer. - no.

Have R track - no adder Buffer.
↓ Command $T_2 = Y$
number trans to adder location
arm moved to position
Record transferred to R.
Command "write" (Flag on P)
Return "R" to file.

first check adjacent

(i) Contd.

~~Interlock.~~ ~~or set adr.~~
~~Time T2 ... between T2 = Y & Fetch~~

During time between
T2 = Y (or Sector advance) and "fetch"
interlock on any program step where T, out =
= R.

Ignore "write" flag unless T2 = R.

P. code of 3 -
decrease sect by 1

P = 2 is write instead
of sub. There is no
subs. —

(Y = T, will give units position of
address register read out. optional)

(K) Selectors - 10 - instead of 20.
No auto latch trip. optional in groups of 5 to 20
(~ delay) Pick and drop will be programed on start
15 OK - std. No options.
possible ~~no~~ additional 15 optional.
≠

Acc. Signs as is
Scan-compare leader = ≠ ~~2 ...~~ 10 × 2 × 3 in
high-low-equal optional.

Character selector — 1 full
— 2 hollerith —
— 1 group.

Compare - as is - increase # of pts.
Blanks field as is.

distribution 20 - 2's - 20 - 3's -
2 common

Program Re entry . as is - possible add single 100's hub.

(one available to 1 print, 1 punch)

Functions -
Card feed. implies transfer over to process drum
Print " " " " "
Punch " " " " "
Sector advance - x2 or 3.
Sector set - new - 10 hub } implies $T_1 = 7$.

Typewriter - in std -
inquiry
Run out. selector. new
Communication channels.
Store switch.
~~Se~~ Set up change switch - ok 6.

(l.) Program Reentry - as is

P.M.
~~01~~
~~(P) Reset accum~~
~~(Q)~~

(Any $T_2 = 7$ will allow inquiry to take over before instruction is executed.)

Q code for auto cycle delay for avoiding Read next cycle after Write.

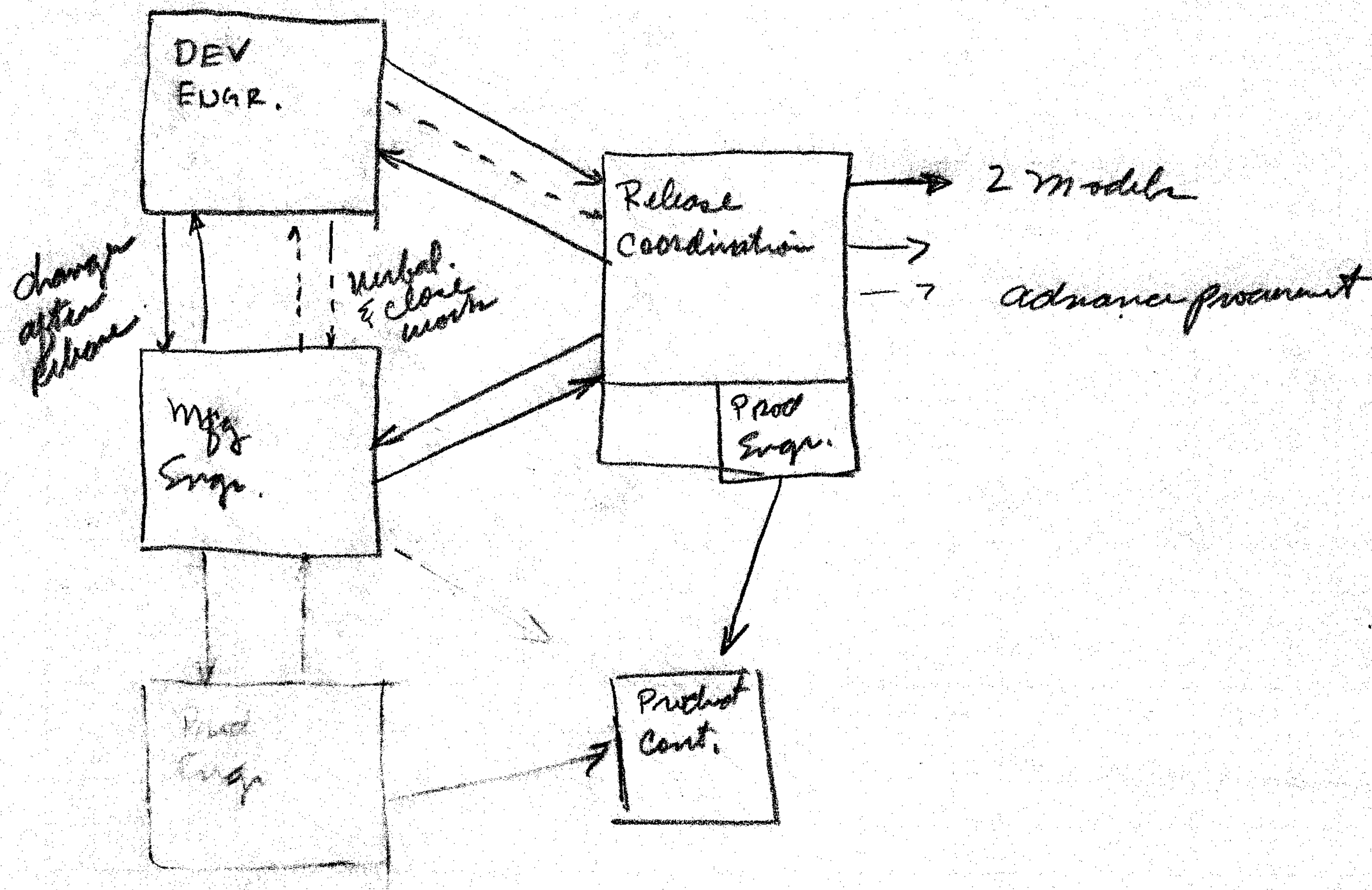
(a) - Inc. Process speed.

2/9/56

Meeting with Product test - Noyes, Bailey, Weeks, Stone.
dirt in leads, corro on wires.

1. Does not take into account all factors, new and elec plugs
2. Manner of procurement - advance release

Taylor, Friedli, Paul, Heywood, Noyes, Pomghun
Tidball, Fumbach, Stevens.



2/10/56 - FRI

Staff. Meeting -
L. Armstrong - office asst. Sect. Army - demonstration
Purchasing
Control group. - Release Procedure.
76 000 to Adv. Dev.

2/13/56 -
1. A.M.P. Man will be here today.
2. Write Sundberg. about 370 Coordination
1. CC. Fairchild, Furlani
3. Talk to Ernie - write comments on R.L. Pilgeram.
C.E. L.A. office

4. Check on. File timing change for John Clark.

2/14/ Endicott Prod test.
Burroughs Product Safety committee -
San Jose committee - Ritter Tunnelling - Sugo
Meet Thursday this week.

2/15/56.
Herm Stitler - Lou Markaman - visited.
Al. Willard arrived -

Meeting with Lamm, Poole, Hodges
Heywood, Noyes Dickinson, to determine
how to manage money for Ram-Ramac
Models. S.O. will be set up on each item
(Hodges will prepare) and be charged back
to work order on monthly basis.

2/16/56. Staff meeting -- Labor Cards
Poole - Personnel assignment cards

Haug: Money --
Current Program
1. Small disk unit - 10 - 20 $\times 10^6$. - 18"
Head per disk side - - 10 heads under common control - some individual arms. - 2400 RPM - This one manned first. - 50 - 75 ms. +
2. 100, $\times 10^6$ Ram unit. 24" disks. same size as now. .1 to 1 Sec.

3. Disk drum - 3 men - to our specs.

4. 100 head access mech. to present Ram

5. Sector locator.
6. Hydraulic access
7. hybrid head

2/17/56 Staff Meeting -- Dave Kean
John. Bill? - Bud Henderson

2/21/56 What about access time measurements -
Willard - PT - Ram assignment.

Review Schedules - Dickinson, Noyes, Hagen

Petricca to Bennett.

2/22/56

(1) Hang.
(2) Estimators from ~~Eastie~~ Pok - Proj Hi
(3) AE Ewing
(4) Millard - PT. - Dickinson - Moyer
(5) Tidsall - Ewing Friedli
(6) Schedules Haywood - Dickinson - Moyer
(7)

Meeting with Nienburg 3 other fellows from Project High - here all day to work on estimating development of 10 and 60 x 10⁶ char Ram for project 1115 - ⊕ - Durhalse. -

2/23/56

Staff meeting.
Worked on Personnel records as result of increase
Worked with fellows from Proj Hi
Burke, John - Estimator
Ray Nienburg, mgr. Electronic Dev.
John McGuggan mg Mech. Dev.
Warren Hunt -

2/27/56

2/24/56. Cost status. – meeting – Furnbach
Folidli, Brook, Stevens, Bell, Pangborn, Watt.
Rinehart, B –

2/27/56.

10 30. Specs meeting.
Barnes, Warden, Gifford, Heywood, Stevens
Leary –

2/27/56
Environmental test
2:00 – Product test – Bowie, Bailey, Furnbach
Dickinson, Kluhe, Willard, Noyes, Stevens
2/27/56 R. W. Avery – Called Bob to determine if
Endicott planned to have us spend $100,000 of their money
He said he would call back
2/28/56 –
Staff meeting –
Furnbach discussed New titles for code 803
801 – 800 – 802. –

Had a discussion with Jim Moore.
He had requested a transfer to another
group at 10th Street –

Worked on specs with Giff – Heywood,
Leary, Barnes, –

Visited H. Martin, R. Harry – with
Furnbach – Gifford to discuss test scoring
machine –

2/29/56 -

R. J. Pepin Called - wants to open electronic Mone plug board. very low on processing unit. Told Taylor and Haywood - they agree - NO

#

Had a general meeting with Product development personnel - Haywood reviewed specs, schedules, of repackaged Ramac - Stevens, emphasized job and responsibility to group

Meeting with Furnbach, Haug, Johnson, Stevens to discuss future relations of Product Development and advanced development - No Conclusions reached

3/5/56.

Called Beattie in Pok to request help of 4 engineers for 1 month to 6 months - He called back in half hour to say no soap. Said Crago might have 3 fellows who he has been holding that we might shake loose on a Permo of basis -

~~3/6/56~~.

3/12/56 -

- Mr Peterson
Walt Johnson
Al Bursath
Ed Lowe

} From advanced dev ~~dev~~ reported today to assist Haywood - for 6 months

28 3/6

3/12/56 Mitchell - interconnections -

Rinehart - Matt - Ramac Costs

Bunn - Haywood - CB - memory contacts

.. Noyer - Johnson std 29 x 60 frames
x 68 high

Millard - & Recommends
① Research in Disc coating -

4/19/56 Started a task force, effort, yesterday on the Ramac to determine - if it is an acceptable product. Haanstra from A.D. Haywood and Shugart from upgraded effort. Production machine #1 brought up to Doyle building

Nolan informs me that a first blush price has been set on 305. Production model

8.9	Process Unit, Super Sta - Power		1900 -	13,734 3,219
5.16	350 -		650.	3363
6.66	Punches		225	1500
6.0.	Printer		425	2500

1900. 13 734
3 219
16,953

March 15, 1956 (Thursday)

Stone, Kean, Haanstra, Bennett

Request to change partitions

1. 3 machines
2. Dev.
5. -

1. First or second machine to Air Force.
2. 370 - March 19th - one set of parts - set up to get another set of parts - 3 others by April 19th.

   More main drive tapes - 12 - now - set up tapes

3. CB problems - lubrication specifications pinned down.
4. Noise problems in 370 - interferring with files - sector pulse - most filters need changes.
5. Training of people - vs - machine schedule
   Training in component test

   Luncheon - overlap

Dave would stick by his present schedule - 1 good man to come in Saturday.

About 1 month after wire checked out.

Shipping procedure - Padded van - Tremelling
Acceptance testing - wide open - payroll as well as Leary's functional test.
Product Field Engineers assigned to Air Force machine - Harapko

1st

	1st	2nd	3rd
	Kean *	Flynn*	Ireton *
	Davis	Klein	Forester
2 weeks	Bailie	Dawson	Glass
rotation	Lawless	Couden	Muir
	Swearingen		

Procedures for communications - -

2nd

Shaw

3rd

Roticci

March 15, 1956 (Continued)

Component

1st 370

1st	2nd
Ogren	Tate
Cotton	Gonzales

2nd 370

--	--

3rd 370

--	--

Records for third machine are about three weeks

1st RAM

Bowdle - Crespo Dawson
Davenport
Schooler
Tidwell

Griffin and company

2nd RAM

Pluggable Units - Mees
Core Buffer - Franchini
Drum & Drum Gate
Assembly - Franchini - tested

March 23, 1956 (Friday)

Meeting on present problems.

1) WHat is the nature of the problems we have remaining?
2) Can the cause and effect of the problem be defined?
3) Do we know enought to estimate the remaining time to have the system operative.

April 6, 1956 (Friday)

Staff Meeting 11:00 A. M.

Heywood, J. E.
Bixby, L. H.
Kean, D. W.
Dickinson, W. E.
Willard, D. D.
Noyes, T.

April 6, 1956 (Continued)

1) Notes on what we have learned in RAMAC program
2) Project Engineers to Engineering Meeting - Syracuse
3) Sintered Metals Conference
4) Troy's visit.

Wanda call on Friday 11:15

April 9, 1956 (Monday)

Haanstra	Lesser	
Heywood	Kean	
Leary	Bennett	June 15
Dickinson	Bixby	

What are some questions to ask -

We have a product - or we do not --
We are goint to ship or we are not --

Shipment would be determined by:

1) Reliability of various sections and approaches -
   a) Drum system - 305 370
   b) Releay sequencing - relay timing
   c) Access positioning
   d) 370 electronics
   e) 370 Print unit
   f) Interlocks
   g) RAM Magnetics
   h) General circuits
   i) General Timing
2) Functional Features
   a) Limitations in Feeding - Plugging

Kean - Logical errors - 370 interlocks, etc.
Heywood - Relays controlling electronic signals
Bennett - Will meet specs of 20% downtime - does not believe specs are good enough. Does not believe specs are good enough concerned with file problems.

Bennett - CB problems
Drum and drum heads - no tests
Leary - Development model not acceptable - 370 - logical circuit not good when board fully wired
Parity errors
Improper P code - wrong exit
Buffer does not flip in 370
Dickinson - Unknown problems
Haanstra - What goes wrong if this or that occurs in the machine
370 problems - marginal
Lesser - If Bennett and Leary's statements okay then - machine should not be shipped
Leary - Trouble analysis sheet
Solve problems as we find them rather only noting that they occur.
Hedging on operation now
Program should stay on machine until it works
Bennett - Recommends getting Leary's programs on machine
Leary - recommends - as watch dog on the log - Who might this be.

#4
3rd one from Endicott - good feed - remove and put on #1
Have Tate call Crowell about feed.

1) Get test program working
2) Marginal check
3) Run programs

April 20, 1956 (Friday)

Staff Meeting - Wesley says:
a) Learson will be here May 3 - 4
b) La Motte will be here May 16-17-18
c) Wesley will be here May 1

1) Each person asked to prepare:
a) A critical appraisal of the manner the RAMAC program has gone - and how and what should we do to insure same mistakes not made in future programs - (What have we done wrong).
b) Suggestions for improvement of Development Engineering program. What should be done - presently - what can we do to improve - now.

April 20, 1956 (Continued)

Heywood - kick around --
Noyes - kick around - schedules

RAMAC - Product Test Coordinator

April 20, 1956 (Friday)

Some thoughts on RAMAC Program

The RAMAC program is presently in a very critical period. The outcome of which is hard to predict. Some of the various factors which go into this critical situation are:

1) As of today - we have not obtained an operating system on either the 305A Development Model or the first production machine.

2) The repackaged RAM and RAMAC are some what behind schedule, about three weeks to one month.

3) Manufacturing in San Jose has only the RAMAC to depend upon for the next year, to occupy its personnel.

4) Sales commitments have been made on the 305A which it is most likely that we will be unable to meet under any kind of a program.

5) Product Testing has not had any evaluation time on the RAMAC system and there will be many changes as a result of their investigations - The start of which are unknown.

6) We cannot as yet define exactly what our problems are - And until we can we really cannot guess what the time and effort required will be.

7) Should we decide right now to build no more than four of the 305A machines the earliest that we could hope to produce the first 305 would be January 1957.

April 24, 1956 (Tuesday)

1) Someone look at read - switching on drum for control voltages - Heywood will assign someone - Schlaepfer.

2) Filtering - someone - Taylor - Shugart will do - on both machines.

April 24, 1956 (Continued)

3) Relay gate covers

4) Each make a list of preventative maintenance specs.

April 25, 1956 (Wednesday)

Dave Kean was asked to determine what date is most reasonable to have completed one day of functional test.

Al Shugart new problem typewriter. Not continuous after return.

"Time record in log"---

May 3, 1956 (Thursday)

Tell Product Test -
≠ 140 130 - 150
-130 ≠ 10%

1956

~~May 1956~~

305A ~~transferred to Mr. E. K. Friedli~~

Dec 1957

Jan

Feb

May 1, 1956 (Tuesday)

Noyes, Dickinson and Hodges

1. Disk coating
2. Access electronics
3. Access mechanics
4. Disk array

First mechanical access complete first week in June.
First access electronics complete by May 28.
Combined with access mechanics - June 8.

Second access mechanics complete June 15.
Second access electronics tested by June 15.

First disk array assembled by June 22 - 90% on model status - by June 1.

Disk coating - will be complete by end of May.

Will be ready to start on first production batch by June 1.

(Ken Davenport - help Malcolm - 5 hours overtime for the rest of May.

Release to Product Engineering by August 1.

What happens in Product Engineering when release to P. E. occurs - No changes - without Development Engineering advice.

1. Responsibility for 370 and 350A to Product Engineering.
2. Transfer Tate to Bennett
3. Up date zero machine - two weeks
4. a. Engineering assistance to Product Test — Bixby
   b. Engineering assistance to 10th and Field — Handloff — P. T. Coor.
   c. Machine improvements — Davis
   d. Test results. — Kean, Flynn
5. Engineering responsibility to 10th. — Klein, Tate — to 10th

Bixby
Davis
Kean
Flynn
Klein
Petricca

Try to get three additional engineers for training - Read - Athens

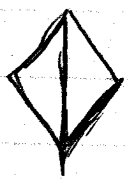
2 Customer Engineers - Maintenance

5/3/56

Tell Prod. ~~test~~

+140 → ± 130 - 150 ↔

∓ -130 ± 10% delta



Relay marginal Check.

48 ± 10% 43 - 53.

70V - 63 - 77

Printing accuracy --
but not print quality.

Singer due. space for - accounting machines - to prove programs.

Liang will investigate use of Ramac for prog.

Target date - 14th - will complete accept
paper roll device -

Who is to Handle Ramac in Product test.

5/13/56.

Fernbach, Wesley, Bell, Bailey

Haanstra –
Shugart –
Bixby –
Taylor –

370 printer problem on payroll –
What is the problem.

Wesley – will recommend a 60 day delays in program. Engineering and Customer engineering, testing must concur and so recommend.

Kean. Haanstra Shugart
Tate Bennett.
Flynn.

1. Dave Klar –
2. Bixby –
3. ~~[illegible]~~ Bennett. –
4.

1 – 1st mech –
2 – 2nd mech –
3 – 3rd mech –
4. Univ. model –
5. Repac Effort
6. + Education.

1	PT	APRIL
2	CE	MAY
3	AF	MAY
4		June
5		June

April
2 3 4 5 – 7 /

5/19/56

Bixby, Gifford, Haanstra

remote start key ~~[illegible]~~ do now

370 plugboard interference - CE scope sync not

-130 marginal check - variat. instruction register

370 drum - 305 drum.

Bixby
Hamdorf
Nom[illegible]
Petricca

323 sign conversion wiring -

Control Panel Change

1. Type-on 305 board? yes ✓
2. Selectors on 323 - No - ✓
3. Blank exit on Char sel. = No - change on ✓ Hollerith part - alpha section has ~~alpha~~ blank

4. Rearrangement of Control panel - on 3rd. mach. - -

5. Program step insurance - & redundancy on instruction register.

6.

May 17, 1956 (Thursday)

1. Test machine required for support of 14 machine program. Development model not satisfactory.

2. Any mechanical changes - Product Engineering will handle.

3. RAM (June 1) and 370 (June 4) and Power Supply (now) - Immediately Possibility of Tate shortly.

4. Remainder of machine - August 17 - earliest date for Resp.

5. Any power supply changes - June 1

6. Process Unit

   Drums)
   Heads) Now

7. Physical location of test machine.

8. Test file - test 370 instead

   Monday - J. D. Fernbach
   E. K. Friedli
   J. W. Haanstra
   L. D. Stevens
   R. M. Bennett
   R. M. Tidball

June 27, 1956 (Wednesday)

$100,000

564 - 4345 563 - 4353

Write note on cover fabrication on RAM components - Dave Kean

Fernbach - Kean will do.

What is wrong with 305A
What of these are recognized and included in repackaged

Sundberg/Ferar will make new console - we will update remainder.

June 27, 1956 (Continued)

Confirm - Wesley's conversation with Fernbach - Fermbach okays

Midenen - want to offer about $700

Machine #6 - Sales Research to Product Test

July 2, 1956 (Monday)

1. Meeting with H. S. Sherriff, A. J. Pangburn , D. D. Willard, D. D. Johnson - 'Disk Coating' Sherriff will contact Whitkin in New York to set up what contracts are necessary to protect IBM's interest in the matter. We will continue our technical work and Sherriff will handle the coverage from contracts.

2. Meeting with J. E. Heywood, L. D. Seader, H. S. Sherriff, P. A. Turner, A. J. Vivian on 'Drum Heads'. Why do we insist on making them within IBM? Brush Electronics would be good source. Will meet again when P. M. Taylor returns next week from vacation.

3. Talked with J. W. Haanstra about Zellerbach installation. Things look okay up there now. Decided upon a meeting with J. D. Fernbach, E. K. Friedli, to morrow to attempt to plot a course of action on remainder of program.

4. Talked with W. Furlani about:

a) RAMAC nameplate - he will let me know.
b) 370 - 323 cover schedule - he will let me know.

July 3, 1956 (Tuesday)

RAM File - Dickinson , Noyes and Haanstra 10, 000, 000 characters.
100, 000 records - 100 characters

100, 000 records - 100 characters - 700 bits/character

Stack disks - 18" diameter - gliding head

250 ms multiple head
3600 RPM disk - synchronous

June 28, 1956 (Thursday)

Fortune article in September on IBM

Fabrication on vinyl spray

1. Design settled
2. Painting — 370 - 323 fabricated
3. Schedules - width?
4. Storage cabinet

Design and details complete by August 1 - production drawings.

Both sets of covers complete by September 15th. Installed and fitted by November 1st. 370 - 323 covers unpainted in San Jose by September 15th.

Disk Coating - 3 M representatives July 9 - 10

Taylor, Noyes, Johnson, Pangburn, Vivian

Watt, Turner, Knapp, Hodges, Noyes, Heywood, Ewing, Vivian, Pangburn, Kapfer, Pepin and Taylor.

July 5, 1956 (thursday)

Harold Read assigned to school, also Product Test coordinator. Part time - each.

1. Meet with Willard, Friedli, Ewing, - Release RAM to Product Engineering.

2. Spare Parts? Multiple accesses - What will usage be? Selective features? Optional feature?

350 pluggable units a. s. by August 1.

Market forecast for optional features?

Write Blair Smith - 1.3 RAMS per RAMAC. Asking for data on this.

3. 355 electronics and test set - Willard, Hodges - basic specification standardization

4. RAMAC release. Heywood, Ewing, Donnell

   a) Bulk material
   b) to Product Engineering August 15th.

July 5, 1956 (Continued)

5. Recommend test equipment for RAMAC - Heywood.

6. Prepare schedule on covers with Production people. Knapp check on problems in Poughkeepsie.

7. Spare parts list with Friedli, Heywood, Bell to Brooks.

W. W. McDowell - letter on 3M.

July 6, 1956 (Friday)

1. Talked to Haug. He will let Astrahan know Garwin will be here on July 17th. It is okay on that date. The question we would like to consider is - What - -

2. Paul Gilovich - Trigg Noyes. Paul wants to transfer to Research. Noyes and I could not dissuade him.

3. Halkenhauser - Asked him to try to arrange to offer Demuth _____ less than Poughkeepsie Research, if not, then let pass.

4. Met Lane Tronson - Runyan's representative to Zellerbach. Met with Grim - okay on Engineers assigned to take over from Grim on July 26th.

5. Walt Furlani called - okay on schedule. Two sets of covers for fitting in Endicott - September 8th. Ready for shipment to San Jose September 15th. Final release drawings October 8th to Manufacturing. Nameplate design has not started. Call Eliot Noyes at New Cannen, Connecticut - Woodward 6-1629.

July 6, 1956 - Staff Meeting

Salary review meeting with Fernbach - Eric Fuegel called - get him a copy of the letter to Fernbach.

Dave Kean believes more information to each person would be helpful.

Wes Dickinson says bring people along technically.

Repackage machine program magnitude - okay.

Respect for the two organizations.

Runyan - Engineers on applications study okay.

Write status report.

Bill Burns - wants the Poughkeepsie job.

Leary - Bixby -

Willard - Gilovich

1. Paul - doesn't like -

   a) same personality
   b) pressure

Fernbach - informed about Burns and Gilovich.

July 9, 1956 (Monday)

Phil Taylor - drum heads
Sheriff - Heywood

Bill Burns

Check on San Jose Customer Engineering status. What was Burns thinking about full time work.

3M people will be here today.

(Meet with Bailey - Willard on results of RAM test in Endicott)

Gilovich - transfer - talk to Haug.

Eliott Noyes - phone call - relative to RAMAC nameplate. He is going to expedite design of the 305A.

Assigned Bill Burns to develop a paper tape input for RAMAC and follow through with a garmet tag reader for RAMAC.

Talked with Haug about Gilovich. He's not sure he wants him. Will call back after he checks around.

Tom Burke will be here Wednesday. 9/11/56

3M people here. Andy H. Persoon, Chief Chemist; Robert A Von Behren, Manager Magnetic Products Division and M. G. Courtney, Sales Engineer, San Francisco. They were told we would supply them with all available data. Contract people will worry about details of paper work.

J. H. Davis - related status of Zellerbach machine to me as result of his work up there last week.

10:30 - J. D. Fernbach, E. K. Friedli, J. E. Bell, R. M. Bennett, S. H. Bailey, L. D. Stevens, T. C. Bailie and T. A. Moilan

Bell - Bugs - 310 man hours devoted so far. One occurs as fast as they are picked off.

Bailie - List of troubles which have been located and repaired.

Bell recommends that the formal acceptance tests be run on Air Force machine before shipment. This would mean a couple days delay.

Proposed that we duplicate here what will have to be done upon acceptance at Oklahoma City.

Bell - Lay facts on table to Air Force and let them decide whether they want machine now or not.

Frank Roehm called - Wanted dates for release of RAMand RAMAC. Gave him our scheduled dates of September to February on RAMAC.

3M people signed confidential disclosure agreements.

Al Kapfer came by to say good-bye. (Be sure and write a letter thanking him by way of Furlani)

Haanstra - Gash on disk - See if J. E. Bell wants to change
Disks not scribed - wouldhave to do so if they are to be changed.

Mort Astrahan and R. Garwin will be here on July 18. To meet in Astrahan's office.

Fernbach, Wesley and Rathe decided to ship the Air Force machine this week no matter what..

Thursday (July 12, 1956)

H. L. Read - Product Test report on RAM.

July 13, 1956 (Friday)

Staff Meeting - Dickinson, Willard, Perrone, Heywood and Stevens.
Establish characteristics and rating.

Lyon, Willard, Dickinson, Disbro, Taylor and Howard
Taylor wants design work done on RAM file head.

Call - General Ceramics and Steatite or Ferroxcube for ferrite core on disk head.

July 16, 1956 (Monday)

Haanstra, Leary - Zellerbach status discussion - appears drum read switch is bad. Design will most likely have to be changed.

9:30 - 11:00 Grim, Haanstra, Warden, Stevens, Ireton, Fernbach, Bailey, Bennett, Friedli and Shriver.

Ireton - Manufacturing trouble - undetected print errors at home position. I_1, E_1, E_2 parity errors occasionally 370 line end.

Haanstra - Engineering assistance and support on 305A test program. Two engineers to follow the program - monitor.

Grim - Between now and first of September - must improve status.

Warden expects - last card control skip circuits.

Production Engineering control of 305A - five weeks

Preventative maintenance - then run acceptance tests.

Drum testing - Assign Jim Davis

Tom Leary wants to go to Research

Harold Hall - probably report for work Monday (7/23/56) summer work - Tell Perrone.

Bob Adams - Human Engineering - Consultant for Product Test. Turned him over to Sales Engineering - Grim, Warden and Shrivers.

July 16, 1956 (Continued) -

2:45 Dennis Willard needs draftsmen. Al Ewing not sure.

Alan B. Simpkins - Kaar Engineering -- applicant. Talked with him at some length. Looks good. Personnel asked to forward recruiting information.

July 17, 1956 (Tuesday)

8:00 Jim Davis - Assigned to investigate drum read switch (T_1) test set.

Heywood - asked to interview

Perrone -

Haanstra - Just starting acceptance tests

Woodburn - organizing chart for 1956 - 1957 and 1958.

10:30 Little work -

1:00 Willard and Read Product Test report

2:15 Mr. Burke - Army Medical

2:30 - 3:30 Al Hoagland - discussed ferrite head - also _____ recording.

July 18, 1956 (Wednesday)

R. L. Garwin and M. M. Astrahan - RAM reliability conference.

1) Removal of disks from one RAM to a second RAM and have them operate.
2) How hot can disks -
3) Spong rubber - effect of heat.
4) What forces are required to bend arm and can mechanism.
5) Electrical contact to stop if head touches disk assembly.
6) Switch on head to prevent entrance of arm if head downs.
7) What happens if failure of wiper on pots.
8) Commutator for flex. cables.
9) Garwin suggests -|- voltage to replace floating supplies.
10) Assign person to review reliability of writing circuits from a failsafe.
11) Make writing on file more difficult by use of two instructions.
12) Build in to make read before fill write madatory.

July 18, 1956 (Continued)

13) New instruction to open up the write circuits.
14) Not write on file unless we have a read a card.
15) Duplicate - store - runs things twice - two machines.
16) Program sequence bad, etc. Apply five character tag to record. (Physical address) 6.
17) Compare on read back after store (with modification) on file.
18) Enabling operation could specify number of characters which must compare.
19) Duplication of components in critical areas increases component reliability.
20) Clamp on write gate to prevent writing if write gate CF goes bum.
21) Short output of write amplifier to prevent failures in write amp controls from damage to data.
22) If current is flowing in write amp - prevent picking of write relay.
23) Manual check circuits.

July 19, 1956 (Thursday)

S. H. Bailey - confirm - conversation in letter. Product Test will get #6 machine. Okay on Underwriters cooperative test. Repackage RAM trouble probably not until first week in August.

John Haanstra - Zellerbach status - Completed functional test part of acceptance test. Will go on billing today. Had number of print set up errors and undetected output errors. Only one E_1 parity error.

Called J. A. Haddad - John Gibson in Poughkeepsie Research, Jack Horton, Bob Rohler and John Little. Gibson will be here next week.

Willard - RAM reliability assignment.

Garwin - RAM - RAMAC review.

Fernbach - interviews.

July 20, 1956 (Friday)

Went to Tenth Street with J. Fernbach.

John Haanstra - Functional test

1) Adjustment
2) Line end adjustment
3) Lower unit switch - loose

July 20, 1956 (Continued)

4) Detent switch -
5) Ribbon came off - 3
6) 11 output undetected)
7) 6 print set) loss of 'x' bit
8) 1 E_1 parity)

Billing runs - 1 1/2 hours no errors

1) Screw loose in 370
2) ____ trouble pp. amp.
3) 1 1/2 additional hours - no errors.

Haanstra - Grim:

Nameplate Haanstra, Grim, Fernbach, Bennett, Bell, Bailey Ireton, and Friedli. (Meeting to discuss Zellerbach program)

July 23, 1956 (Monday)

Ed Klein, Larry Bixby - assigned to Systems - 14 machines.

O. W. Sjoquist - optional feature costs.

9:00 - Kean, Klein, Bixby and Divis - Clarification of 305A program. Davis - changed to Kean's group.

* Plan a follow up system.

Grim - Preventative Maintenance - check with Bailey and Bell.

Send Grim extra copies of minutes.

Willard - Schneider - reliability studies.

Assigned Miles Tate to Bill Burns.

July 24, 1956 (Tuesday)

Must talk with Heywood about Tate.
Willard - call John Gibson in Poughkeepsie to discuss ferrite cores.

July 24, 1956 (Continued)

Heywood - Assigned Dave Flynn to Jim Carothers - Remote inquiry repackage.
Petricca will go over to Heywood within next two weeks to handle -

Read -- Product Test meeting review.

Talked to Handloff about 370 spares and new assignment.

Keith, Walter - Sales Publications Photographer - Check on August 1 date for mock-up for photo.

July 27, 1956 (Friday)

Rodent Proff - 305 repackage by sponge rubber at kick plate.

Basile, Tronson, Friedli, Bennett, Bixby, Moilan, Ireton, Bell, Bailey, Wesley, Stevens, Grim, Sjoquist - Grim reviewed experience for past weeks.

July 26, 1956 (Thursday)

Called Devaney - Okay for Grim to remain in San Francisco for another week.

Wesley - Faw - announcement September 4 - September 11
Television closed circuit.

370 will be underpriced.

How many relays can be taken from 370?

What are cost reductions - as result thereof?

August 27, 1956 (Monday)

8:00 - 10:00 A. M. Discussion with J. R. Poole, D. W. Kean, F. Stebbins, T. Noyes, D. D. Johnson relative to RAMAC issue of San Jose IBM News.

1:00 Don Brooks - 355 Looks like Endicott is about two months delay. Possibly February date. Burns will made a proposal.

2:00 - 5:00 Discussion with people from Phillips.

August 28, 1956 (Tuesday)

8:20 A.M. Called J. W. Haanstra - he agreed to handle the Syracuse panel discussion for me.

10:00 Hal Fliescher - Nate Edwards - Jaspers - Phillips

3:15 Al Shugart

September 18, 1956 (Tuesday)

J. E. Bell - Mundrick has gone to Oklahoma City to train Customer Engineer on 370 emitter adjustment procedure.

8:30 - 12:00 Management Training Class

1:00 - 2:00 P.M. Perrone - Heitz - Weekly status report from each group.

2:00 - 2:30 Len Albrecht - review of Industrial Design conference in WHQ

Wes and Trigg - New RAM review meeting with Research.

1956

October 1956

305A field troubles.

1956

November 1956

305A back into Development.

1956

December 1956

Product Development established independent operation. Expedited 305A Program.

6/29/56

1. Meeting with Bailey, Marden Knapp, Haywood Haywood, Bill, Taylor to discuss air Conditioning on 305. No objections to built in air conditioning unit Marden will follow through Mitch Sales

2. Talked to Echert about Garmin. He and astrahan will form a team to do what they can to answer the questions. What are these things we should do to ~~to~~ better insure the safety of customer records in file.

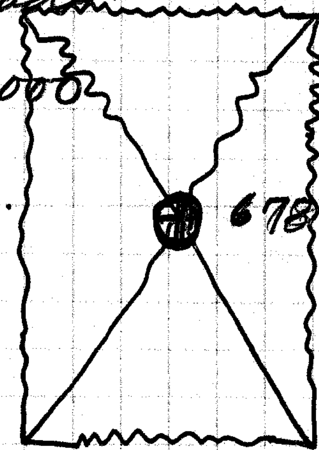
Wallace will let me know when Garmin will be here. Mentioned the project to astrahan, and Johnson. They are agreable.

3. Talked with Winton at 311 about paying for their work with us. He says they wouldn't know how to do it But are agreable to negotiating any type of agreement we might want at high level.

4. Completed reassignment of Millard Moyer and Dickinson, Knapp.

~~Mel~~ Wesley — Charles Campbell 9/27/56
V.P. World trade
World Trade.

Just the Ram Files — | MV 6-4000



T. Watson says No Ramac.
D. Watson [redacted] #

Signals may [illegible]

Nolan still goes.

Effective im- Dec. RAM type type 650
RAMAC.

Fernbach ~~Carlton~~ — — Power Supply — all on Same plane

Stone
Larson
Davenport

R.W. Oa 2-0540 —

1. Clear traffic - all ship
2. Clear CE - Spare parts
3.
4.
5.

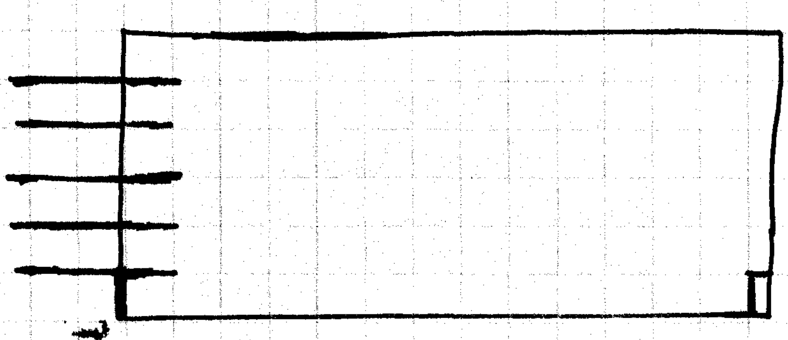
Mfg
Plnd. Test -
Sales Engr.
Power Supply. -
test equipment.

Allen — Stone. Ken Dav.
Davenport.
Davis
~~White~~.
Harper.
Larson.
~~Bouldt~~

K. Kaufman

Power Requirements -
account Number -

Scratched disks on CE Ram unit.

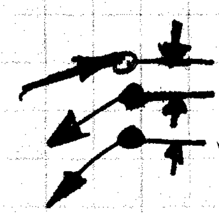


2½ hrs by Car
Zurich.–

Jack. Brent. Sect.
Mr. Andreas.

1. File from # Mfg – been checked out.
2. Product test Robot. Larry Schnider.
3. 2a New Console

~~220~~
208/230 . 50 amps – 60 ~. – ϕ



.110 20 amps . 60 ~

Bob. Engborg – Range

Ship on Monday –

N.Y.

Wesley called – go ahead – on Ram

380 V – 3ϕ 50 ~.
230 V – 1ϕ 50 ~.

Notes for General Engr. Meeting → 10/3/56.

1. Answer and ask Questions about program.
2. Next three months are very critical.
3. IBM depending on us.
4. Every day is worth thousands of dollars.
5. Objective is to get operating units. and information to Mfg.
6. Don't be critical of Mistakes - help find the right answer!
7. Each individual must assume resp.
8. ask yourself the question does this get my job done sooner - does it help some one else do his job sooner.
9. Make Suggestions -
10. Work together.
11. Orders for machine over 200 in first 2 months. Friedli - salesman say machine sells itself.
12. Lets ~~Not~~ Make Sam Jones the best -
13. IBM has placed confidence in SJ. live up to it.
14. Extra time to get ~~job~~ your job done
15. Concentration on making better use of our time - be productive every min.

10/3/56.

Target date.

Model A. and B Machine Complete. by end of November.

~~Model B~~ Machine complete by ~~end~~ ~~[illegible]~~. ~~[illegible]~~.

application testing ready and running -

Covers - on both Ramacs fitted. Nov. 2.

Ram fill - to Ramac A. Oct. 15 -
" B ~~Oct.~~ Oct. 20 -

Mfg I Nov. 56 Engr. I May '57

Mfg II-III Aug 57 Engr II-III Aug. 57

Cafe. Sept 57. Admin - May 58.

Ram A - Oct 8.

Ram B. Oct 15

Ramac A. Nov. 15 covered.

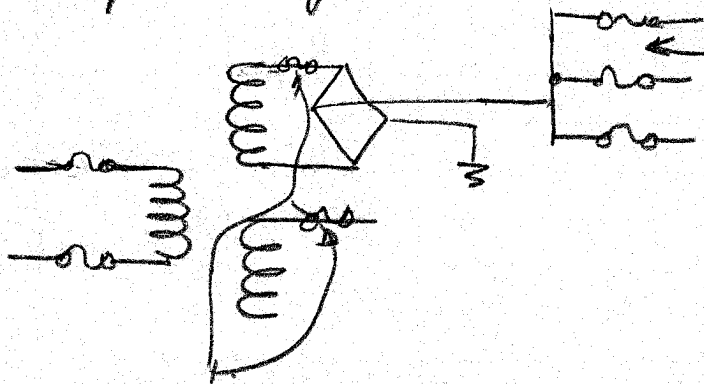
Ramac B. Nov. 30. covered.

12-6-56

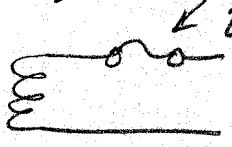
Power Supply

O'Donnel, Mitchell, Haywood, Haantra.

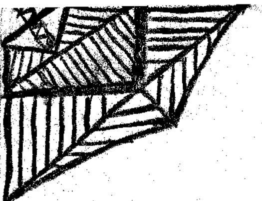
Fusing will protect. device in front.-



If more than one ~~transf~~ winding per transformer.



Fenbach - Poole - 1956 planned program



3/19/58

Haanstra -

Research needs from San Jose - will be in Monday

1. VLCM - assurance to Haddad - May 1960 is acceptable to SEPD -

4. Contract states No money now but may seek them later if exigencies of commercial program call for it -

2. acc. mach. - Ramac - remains unclassified - for at least another month -

press for cost advantages of standardization and compatiability --

3. 305TX - estimate - Matson and McDonnell are
Must have a story -

project a redesign - which will.

4. Five Year Plan --
5. VLCm - won't solve all problems in first device