"THE RIGHT BOOKS TO WRITE IN"

NATIONAL FIGURING BOOK
56-800 SERIES

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ALL COLUMNAR RULINGS WITH UNITS

WHEN YOU NEED ANOTHER BOOK, ORDER FROM YOUR STATIONER BY SPECIFYING NUMBER ABOVE.

Made in U. S. A.
National Blink Book Co., Holyoke, Mass.
A statement of some of the tasks which the systems approach performs:

1. To appraise limitations, needs and opportunities — to state overall goals and give them priorities.

2. To identify alternative potential strategies and development of their relative effectiveness.

3. To distinguish between what is known and what needs to be known about goals and alternative relations, and finally,

4. To select and develop the most promising combinations of problems and solutions.
Significant areas for work on Semiconductors are:

- **Uplift**
  1. Film resistors
  2. Capacitors
  3. Multiple chip assembly
  4. High Q tuning element
  5. Multilayer interconnection
  6. More complexity
      a) yield improvement
      b) heavy cell low yield
  7. Smaller size
  8. Packaging

- **Most**
  1. Single device
  2. Single polarity integrated circuits
  3. Single polarity integrated logic circuits
  4. Complementary individual devices
  5. Complementary integrated circuit

**Values**

- D.C. Power
- UHF Power
- High voltage FET
- Low current, low noise
- Power SCR
- Field effect transistors

**Other Devices**

- MFET/FEET
- SCL
- E.B. Tunnel diodes
- GaAs diode
- GaAs light emitter
- Optical transistor
- Metal bond type
- Tapered power emitter
- Silicon transistor
- Ferrite transistor
May 10 - 17

1. Talk to RNN about the split of products with SCS and our fluctuation plan.

2. Ken Forest is from NASA calling regarding Low pass circuitry. He is willing to buy 1000 pieces at $5.00 each. He wants 1) a dual 2 input gate
2) a R-S flip flop - to operate at 200 kc clock rate

Ken ran over F.C. 1121, 1121 from China from M.V.
He sent 2117F - 15 inc. for 4 FF driven by 40k.
Planted has shown their MFL line gate di; $5.95 each. 1000 pieces will.
Specs, he plans 15 inc. a spread to his forattro.

Action required: If we can see a time to deliver the 1000 pieces, we should place orders of our present gate to get the order.


4. Bob Snyder wrote me to contribute a committee member to the technical program committee for Semiconductor Device (also have E.C. 1).

5. Ed Banks needs a 1 page summary of what he will say at Miami.

6. Handle the Melroy deal.

7. Get out a T.C. committee chairman for Paul K. Morin (201-HUS-2100 EXTS 376, 577).

Also check to see if Don will be interested in the Sol. State Div. Comm.

8. Al W. needs purchasing, secretary, chairman.
1. Talk to UHDC, call Andrew with a committee chairman 201-HUS-2100 Ext 5760577 (Melvin)
2. Call Herb Kroemer
3. Talk with Graham and Frank robots about the advisability of trying to team with UNIVAC on the Wright Field, Texas A&M Program.
   for Standoff (215-MI 6-9000) Viner, Pulten, we may a couple of weeks for RFP.
4. Talk with RFG. cost T4 for Ming Yang. mom's may could like to talk to me about it.
5. A dot get proposal (from Carr Wood) - Bob Brown, 541 West 77th Street, L.A. 45. (He must be contacted personally if we are to get anywhere - Carr thinks he is very good.)
Now at Hughes, Culver City
in Adv Tech. Group

Needs a little more

Bob Bowen
5441 West 77th St
LA 45

Camer McD suggested
GORDON E. MOORE

MS +1 year -
dropped out from
pam of army.

One of Shade's
better guys on
We had a J. Brian Brown
on MOST 'n studied it
at BSI.
1. 5-year plan
2. Write hang mail
3. Get course set up
4. Get abstract started

July 2 - July 8
Things that must get done before I go:
1. Honor program decision & Campbell
2. Perturbations - are still out - Samuel: applicant? Jan?
3. Jeff Wilson: re: photo lab
5. Layout for "After Campus" meeting
6. Progress Report
7. Get briefed by Harold on European grants procedure
8. Map people sheets to upgrade
9. See you - Harling

2. Work up the divide product plan.

3. Get decision on NASA resident engineers to be final by 8/17.

4. See Andy Off
   a. Meet Arneke & ITT
   b. Meet NASA
   c. IBM

5. Write letter to Western people
Week of 11/8/65 - 11/12/65

1. Update personnel requirements to fit Palmer to correspond to the 5-year plan. Staff, etc.
2. Review offer to Moreland.
3. Lobby for key people. See Anne Spork.
4. Write CTS or consulting agreement.

Week of 11/15/65

1. Plant expansion fund.
2. Set up formal process by which project objectives and project numbers will be developed for next year. Weekly meetings - staff involved - project reviewed, approved. Be fair.
3. Familiarize people in long range organization - particularly the DoD panels.
4. Define for accounting the way I'd like to get data.
5. Get the thin film projects under tight cost control. In particular, where do those fit within the organization?
6. What did Salkar do with the surf. I gave him a $100,000 grant.
7. Get offer to Moreland.
8. Talk with Spork re. approval of the expanded systems program funds.
S. Alice, 10th at Flinders Street Station.

4. be with silent button; etc. Alice no: armed service, Bargin, etc.

2. be before the announcement and be soon.

1. Alice, 12/10/65

Alice of 12/13, 12/10, 1965

5. After lunch of 9:00, 9:30, etc.

4. When at hotel, have a供应 dinner.

3. Prepare a programming plan. If complex circuit, use Jitter

2. Fix after count with Jitter, with Jitter

1. Be sure to telephone cousin, as a word plan

Mark of 12/6 - 12/10, 1965
The plan: 12/5/65

1. Programs Projects - Get everything on paper
2. Personnel - Get a program to match needs with ability & 
   MOTIVATION TECHNIQUES!!
3. Politics - Influence internal operations by assigning 
   specific responsibilities
4. Facilities - Building and equipment layout
5. Image - Legal program for internal and external
6. Planning - Roadmap and future

1/7/66
1. Bibliography
2. Plan R&D
3. Project list

1/11/66
1. Submit drafts of letter for HHB.

1/17/66 2. Write detailed research statement draft.
3. Send to Bill Pilgrim via telegraph & a second pass letter concerning
   HHB contribution to integrated data. This should include tech. data and
   what was done; implication of the accomplishment, etc. It should have
   a scientific flavor and a sense of drama.
   Also send a brief factual summary.

4. Drop to Sam Lewis on academic support
5. Get deal with Sch. straightened out
6. Write, test, plan report
Jan 29, 1966 — Work as a result of Caltech visit:

1. Write letter to four students: Bob, Leland, Wise, Gordon.
2. Send i.e. with data on design, etc. to Hecht.
   This should include typical application and design considerations.
   Also see here then.
   August 20v, 70v, 707, 709, now c.d. (Widlar's paper?)

3. See what (if any) samples semiconductor equipment exists and might
   be supplied. This could include doping and polishing, stress core, etc.
   A supply of nice sample material would be appreciated. This is
   for Humphries.

4. Also write Humphries a letter containing a sincere invitation to send
   us a sample of some consulting equipment.

5. Gene Meat will be here Feb 14

6. For EJ Snow - we shall have Gene run another Alan(M) to make
   the data good.

7. Francei & Landouzi are Stan. Ph.D.

From visit to SOD

1. Get 1 st tests defined as soon from design, since 10-12 A
   design produces ok.

To the old Squamish canoe. Miss. Smith. Burgess.


Feb 25, 1966

1. Teach person dept all the basic programs.
2. Roger Palmer to present the firing script program next term.
3. Make sure we have the M.S. students we need scheduled in.
4. ........
5. Complete the deal to get automatic make-up paper started with Fred.
6. Find a shop. Dept head.

March 7, 1966 -

By dept
30-10

30-20

1. Arrange meeting for project schedule.
2. Have shipped.
3. Clean up deal on PEP. Let Karen call you.
4. Start survey of magnetic data recording techniques.

30-30

1. Clean up Chemo. testing.
2. FHF on NSF fellowship
3.
4.

30-25

1. Let Rex arrange Stanford fellowship.
2. Let Reuim press on testing of anage.
3. FHF first NSF on bone study.

30-40

1. Make sure CTH clean up in going in for an end.
2.

30-70
30-90

1. Get plan from Adam

Speaks

4. Test

Misc.

1. Complete Called Fellowship
2. “U.P. C.”
3. Get final report on Dove St. 46
4. “U.P. C.”
5. Write a summary report.
6.

Principal problem:

1. Personal
   a) We are short of many critical people
   b) We have an inadequate supply of candidates
   c) Our training of girls is weak
   d) We are losing a lot of girls because of advancement possibility

2. Taking advantage of what we can do
   a) Many product problems, must only partially technical
   b) Wasted work in many areas

3. General trend — level change must be made

1. J. Herbert for a pension writer — can we arrange a visit to the lab?
2. Call C. Hugh Haup, Hopewell, N.J.
3. Call Haup to call B. of Hell.
4. See Salt re: his 5-year plan to grow as described.
March 28, 1966

1. Arrange meeting to clean up the away dates program.
2. Decide (or talk with Jim to decide) about building Kellogg, Call Humphreys.
3. Send to Humphreys a copy of the consulting agreement.
4. Decide upon the arrangement (time and who) for the trip to MIT.
5. Program the Stanford M.S. recruiting.
6. Get together with Harry Conn. (a) Making quick decision (b) Nothing on record from MIT.
7. Project goals — either do them or tell everybody no.
8. Find out from tube all NEC glass — when do we get some?

March 31

1. Survey how much space we could make available to M.D. as a function of time in the new facility.
2. Find out what their program is — spend some time with him.
3. Talk with friends.
4.

April 5, 1966

1. Search for contract areas.
   My Methods — 250K
   Idea for Shamban —
   " " " " " " P.E.
   Run ideas for $70
2. Get ready up in a paper followed up with Chamberlin
3. GTI (a supplier to Sch. Lab.) would like a speaker (from civic association) on packaging for a Providence, R.I. company meeting. I'll talk to him.
April 21, 1966

1. For staff usage — how many Runner students can we handle?

2. There are several things to do as a result of the 4/20/66 Staff Meeting:
   a. Understand the requirements of the 6th Grade program.
   b. Schedule and hire.
   c. Question to follow the science problem.
   d. Selection of new candidates for first spring meeting.
   e. Bag out a program for B.C.'s, complete run.

3. Get on top of the desk warage.

May 1, 1966

1. Get a classified area set up at M.V.
June 7, 1966 - Notes made while reading the paper re CPC.

1. Plan and assign the A4 load factor study. What program?

2. Dig into what it is we will need for a high voltage junction. (Is it possible to do with the present? In any case?) Assign Staff the job of defining the problem.

3. Thought album: Do we really have a program to generate enough data to convince us that an AC-AC-AC-DC-AC cycle system in production earth? For example, consider the argument that TI is going to trim the problem in their ACP! A most IMP impact project!

4. What should our program in sin is implemented be? A study group staff.

5. Get the physics program cleaned up. Get Betterman on top of these things. He really understands - including Don Trew. Must be built around others.

6. The TC film record program in our agenda?
   a. When is it needed for running a program record?
   b. What is going to be its purpose?
   c. Why should we do it? How will it be used?

7. Review project review.

8. I need a review of the Solvay record program - which seems to look good.

9. Include me.

10. Make sure we have the X-ray records on the new camera close to hand.
    a. Martin's letter.
    b. Results received in the last.
    c. File of all X-ray data to whom.


12. I shall like to get an in overall view of@api program, in case.

13. Need lifting for review, making project evaluated?

14. Tell me to see what must be done to demonstrate a Ni or nickel ion in a reasonable way, adequate for a case and for Paul Schuy.

15. Summarize the table of dielectric films no applications and briefly summarizing the status.

16. I like to have a lot in C or P. It lasts into making the film a lot. If they'd like to make something possible it would be all right.

See Selly for program comments.

17. What to develop: P - different criteria, came at P - Program plan revised.
16. Why is the Mann camera limited in size? - Simply review model.

17. Don't have a solution - S.R. - WHY? (Young NY)

18. A decision on how to try redundancy is needed - - either quick plan

Don't have. More work needed after 16.

Note: 6/27/88, sent - - check reading figures below.
5/23/66 - Some philosophy:

We have a problem of not moving new technology as new results rapidly to products.
Also, many major technological problems are not anticipated.

The exploiting of new technology for future benefit is devin --
e.g., optical film, single layers, thin-film, discrete, etc. is best done by the product group.

The technology and research done outside of the product area should be for art. It should be clearly anticipating, broad new or it should be research done aimed at gaining a basic understanding of existing technology or device.

A group like Sella should also do process engineering or a new process until it gets established in another group then it's off to a new project.

It is going to be essential to try to have existing technologies developed in different departments to get compatible e.g., the comparison of optical glass and thin films in our third.

This is enough info to define a chart for McP. 
Aug 23, 1916

1. Is it possible to get one of Campbell's beds for Boy Rockville creature?

2. Make material recommendation to post on what controls should be added.

3. Who knows something about Korea stamps for Operation (may 4).


5. Talk to Helen Walker at next club, take down problems.

6. Can we live with 10/12 plus someone on new B.L.? (possibly 10/13)
Phone call from Mildred Brown, Chair/Housekeeping. 201-355-3200.

Please call me back. The housekeeping department is working on the problem.

The employees have been called in for an emergency meeting. Please call me back.

I'll be at the meeting, but I'll need to leave early. Please call me back.

The housekeeping department is working on the problem. Please call me back.

I'll be at the meeting, but I'll need to leave early. Please call me back.

I'll be at the meeting, but I'll need to leave early. Please call me back.

I'll be at the meeting, but I'll need to leave early. Please call me back.
7/2/66

1. We absolutely must have some good data on Sue, long, metal system reliability -- both at the deletion and an, contact!

DTL - Problem: Maximizing "A" grade yield

Slightly below historical highs.

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Note: All "A" grades will be 95% or better.

In addition we have less of an "A" grade on shrunken and especially on 125°C test. They go down at least 50%.

Start 12,000 cufc/week, 20,000 cufc in the mill, 2 weeks' time.

CTL (24/21/20)

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Note: 255 has always been a major problem.

May 7 was weak after offset; new report -- this major problem all cleared up.

A change to AMER screwed up all the access values.

Talk before in having meetings with Landsat Em, Design Em, and Dr. [illegible].
Oct 31, 1966

Things to do today

1. Review I.M., J.W., W.S. - Must be done by 12:00
2. Talk to R.NN, R.S. to assure a good split-up of the topic
3. Write 44 on subject to be called ei "F.I.C." talk
4. Get A.W. to prepare for Preston
5. Prepare all cut-archs needed by Thursday morning
6.

Other items to be done
1. Make decision on how to proceed on project budgets
2. Detail a plan to arrive at Jan 1 and project objective, projected budget
   and project number all straight
3. Speculate on organization changes that make sense
4. Define clearly what role A.W. is destined to play
Nov. 11, 1966

Areas requiring major emphasis by R&D:

1. Solving the process problems on the M2-8 to get it into production.
   a) Diaphragm etching
   b) Second layer
   c) Increased diaphragm capacity

2. Get the MOS-20 to an existence proof and ready for transfer

3. Get wafer protection broadly used

4. Upgrade p-i capability to allow the new device to be made

5. Upgrade quality and turn-around on masks making to allow the new devices

6. Complete added flip system

7. Develop an alternative to AE

8. Develop and transfer high speed DLI Technology
Nov 21, 1966

Subjects about which to see Sells:

1. Data on epoxy on metal can 1250 - Can there be a 7:00 AM tomorrow?
2. Diffusion contribution in DIP on CERAKOTE plating problems. What is N. Shults do?
3. The supply of second run of 1115 cards.
4. Broadening of the AL evaluation study to include the physical people.
5. Program for non-AL metal systems.
6. How should we proceed on the two-layer metal system problem?
7. How can we establish a major project to establish the Solder-lead flip-chip process (Al-later) for Mosler by 4/1/67.
8. What is holding up glassing under epoxy? Do on bare chips-pass 8/5/85.
I. OXIDES AND SURFACES

A. B. Deal, M. Sklar, P. Castro
   1. Surface States - Effect of Process Variables
   2. Dielectric Evaluation (Silicon Nitride Etc.)
   3. Gettering Studies - Want a paper for approval - Start late
   4. Disappearing Aluminum - Basic Mechanism

B. E. Snow - Maltz
   1. Non Mobile Impurities in SiO₂
   2. Radiation Effects on MOS Structures - The Contract
   3. GaAs Surfaces (Maltz) Partially done

C. A. Grove, V. Hsu, D. Fitzgerald, ( )
   1. Chargeable Surface States - Meas. and Theory
   2. Low Frequency Noise
   3. Device Exploration and Analysis - Not Citizen
   4. Schottky Barrier Theory - Can't be trained.

II. EXPLORATORY DEVICES AND DEVICE THEORY

A. R. Whittier
   1. High Current Studies

B. W. Hooper
   1. GaAs FET
   2. High Voltage Structures - Dep. from - vertical date

C. G. Reddi, P. Hower
   1. Second Breakdown - End May - Current date
   2. MOS, High Frequency Theory

III. NEW PHENOMENA

A. H. Kroemer, M. Shyam, R. Rao, R. Solomon, ( )
   1. Gunn Effect
IV. MICROWAVE DEVICES AND MICROWAVE INTEGRATED CIRCUITS

A. H. Ruegg
   1. Read Diodes

B. G. Bechtel
   1. Schottky Barrier Diodes
   2. Integrated Circuits with Schottky Barrier Diodes

C. D. Tremere
   1. GaAs Varactor

D. W. Lehrer
   1. Technology for Microwave Devices

V. MAGNETIC THIN FILMS

A. W. Carter, J. Wright, F. Greene
   1. Flat Wire Thin Film Memory

VI. THIN FILMS, DIELECTRICS, AND VACUUM TECHNOLOGY

A. J. Campbell
   1. Theory of Cond. of Resistors
   2. Ellipsometers
   3. Misc. Vac Technology

B. N. Laegreid, R. Martin
   1. Sputtered Dielectrics
   2. Sputtered Metal Contacts

C. R. Waits
   1. Silicon Chromium Resistors

Projects for 1967 included:

- High-quality resistors
- High-Q inductors
- Smaller transistors

Additional notes:

- Film
- Film

Projects for the future:

- Improved film
- Better film
- Ejected climbing
- October
- My scales
May 28, 1966 - Projects for 1967 in the MOD Dept.
Discussion with Soll

Masks & mask making

4 exciting projects - no others

glass - sedimentary glass film technology (unfit)
- glass formulation & fabrication
plastics polymers - oh

solid epi stands - can for all points lined up
hope a new one for Solly

EPI: A proposal to be discussed:

EPI Technology

1. EPI spin system
2. MOD program
3. EPI deposit systems
4. EPI evaporation technology

EPI research

1. EPI film structure

Note: This program has an effort to get better films
with Solly's help
It contains our needs development for Solly's program to get improved uniformity only for large batches

New deposition system:
- Project to a deposit epi deposition program
  1) Uniformity of a regrowth diffusion vs beam line
  2) Defect free diffusion

Assembly technology:
- Follow Assembly - MOD total F.C. system
Dec 15, 1966

Notes from breakfast meeting with F&L:

1. By our studies in small machine, feel for hardware responsibility. Mr. King @ ESL would like to do our machine family outside because they are not capable inside.


Life of hardware (if it gets done) ~ 50,000,000 chks. (to 1970)

Chips are 100,000, ~ 50-60 chks/unit, 500/ply = ~1.25 cents.

In order to hire existing board today.

"Not a man for performance"

Need people by end of 1968 - enough to build two machine prototype. This means ~ 40-60 types a small quantity of each.

Production quantities starting late 1968.

Cost objective: ~ 8¢/ch. Do, 5¢/lany up to 10 chks.

More info: IBM can not find all to copy. IBM internally.

We all in that kernel had still.

Jan 11, 1967 - Selle

1. We don't have enough info. to specify pitch, etc. Do.

2. We got this info from Selle's proposal. We need a single pitch.

3. The only way we make it is NES to copy the 201s competition.

4. We agree that the only way to meet their time is NES and seek lesser.
Enter - 1967  1/3/67

Mac. job

1. Australian? - call Jim Begin
2. Fill out rating form
3. Respect Committee goals
4. Get to 30 by Thursday or late
5. Get consequences in starting to adjust non-critical, especially clinicians
6. Assure that project number shots get out this week
7. Make major plan

R&D - medical problem:

30 - 20

1. R & F - split cell ultrasound - std check vs. sticking rate
2. SC to paper (if any) on Cancer
3. Catch half cells 10. project 2 statute of war before Art Plane arrives
4. 
5. 

30 - 25

1. Check in at 9am - Smith
2. Be prepared to talk to Art Plane - not up rating since AMH

30 - 35

1. Get Si materials straightened out
2. Get flip chip program going with full depth/depth
3. Visit machine making, both "K" & "C" plants. Ask inside briefly and plan
4. On the CAPE (Cancer) why not also a project? Finish
5. 

30 - 40

1. Confirm adequate over-run data options on mean forgetting again
2. Get time plan in comp. MOS
3. Complete layout of line for 100% yield (find out what from Budget how is doing)
4. Assure that adequate attention is being paid to cht for war money
5. Get projects hand out ?

30 - 50

1. 

30 - 40

1. Define and establish a personnel die technology program on basis of Mikeแนะนควร
3/13/67  Monday

Directly related to get done.

1. Set up the money planning job with Sandra, Schmell, Chelsea. (Negotiate)
2. Set up date to meet D.S.C. M.U.
3. Finish reading progress report.
4.
For people on shopping list, will fill at least 25% —

4 lb. 10 oz. for every 20 lbs. will fill the balance.

Be ready by 9 p.m. to take treatment.

B. — do we have anyone from 24th of Feb. or March?
Project of the week: 3/18/67

Get a vital "beam-lab" type program organized

Need:
1. A Crew
2. The following minor facilities
   a) S/N4 request system
   b) A spinning system
   c) An appropriate mask set and supply of paper
   d) Assembly equipment
   e) A source of substrates

Use M.V. for 1. Size 1, get main program going on 2. Begin.

Proposed project layout:

C. B.
   1. Sell stars
      Positrons
      2. Earth
      3. B. B.
      4. 
      5. 

Action items:
1. Get C.B. update on project
2. Get I.B.'s feeling - I was not a project since September, he has sent on self
3. Get Richardson's feeling - a picture of what C.B. wants
4. Tell Selle
5. Test the specific objective
6. Make the organizational change.
1. Enlarge the device development organization in such a manner that it can complete a major chunk of work March to June. This operation.

2. Get straight some kind of a chart for our 1k operation that defines what (if anything) we will do in the direction that shows what we will do in September studies.

3. Organize the 6As work clearly and clearly.

4. Complete a 1k project and back off the 100 project.

5. Put the magnetic memory project started and populated.

6. Define a P.R. type program with continuing output.
April 3, 1967

Questions to be answered about Fairchild "Hybrid" business:

1. What do we see as constituting our "hybrid" business, e.g., as a type of function, markets, technology, present, in one year, and in five years?

2. What does R&D make a contribution?

Meeting on 4/5/67 - Waltraud, Bell, Fred

Valantine

Enderes:

1. Parsec as a philosophy to LIST long term.
   1. All flip
   2.
   3.

If we will be Fairchild has a clear picture of the hybrid business, we are trying to enter.
2 - 22 pm - AL system - full time

Campbell
Laznić
Martin
Barry
Olefsen (Barry & Liz)
Egolf (Egolf part time)

Inalog

Installing electrical analog (a-barc & cables)

Mr. New York
To see THE data:

1. Grand plans
   a) Short term
   b) Rest of year

Specific questions:
1. Sales for rest of year on profit plan?
2. Hair objective number for next few months?
   a) Offer to make — exemples, non exemples
   b) $ to occupy early — exemples, non exemples, capital
April 19, 1967

Major R&D problem (non-technical division)

1. Communication with outside world
2. Project accomplishment (budget)
3. Management quality

Set up sign-ins

April 26, 1967

Task force for 2-layer AD system (full time)

Campbell - Project leader
ixuid
Mattini
Klopman (Brry. V. time)
Engell (at least major portion of time)
Corkay
Herzler (at least 6 weeks until someone can be substituted)
Mtn. Store guy

Add Art Lewis on electrical problem
May 10, 1967

Specific problem areas to resolve:

1. The effects of recent re-organization, especially the CAF task force on the Korean operation.

2. What should our program on radiation effects be?

3. Examine and react on hybrid program.

4. Confirm proper direction and magnitude in the magnetic moment.

5. The magnetic moment project:
   1. We need the test data to be interfaced data to test data.

6. Get Korean material program decision made.
Establish a going p-channel technology in the lab.

Recent progress:

DIED

Teddy
35, Schuman
Wife, went last week.

Tech Sgt A.D.

Allen
Kantelis
305, Writing possibility, complimentary

U 3700 from here and "confused" -- lot more work in M.V.

LTC

Batell

Status:
The Allen program has fallen apart in the last month -- and expects a rapid recovery but future oscillations.

0057 in M.V. Air particular -- no stability at all

Complimentary: Not per test vehicle to MCA recently.

HIC: A purposeful piloted program. Absolutely not wanted by Mv. (Kolb's gang)

DIED:
The 2 long metal designs all died.

George - Final design of MCA recently.

That last design is for George.

Schuman doing graphics -- Far too good

George doing detailed design -- Ames will -- country now

Bamy - fine rep - just starting now.
I must be down. Where I am turned, and how I am going.

If a friend comes, so in Irish.

specific problem

To bring in a cut-off at three in conclusion:

(a) A green bed in any G. A. S. Point.

(b) Have the priest bring us all to the grand square. I see it.

catch our (manuscript) chair, etc., that I can read our grand square.

Do it also it's a French (manuscript) chair, to which our grand square.

If, in my God, can it be said? that we are not secret.

For, by God, there is no other of my God, can it be said? that we are not secret.

(1) 1.50

(2) 1.00

(3) 1.00

(4) 1.50
On the organization:

- PADI Logbook
- Model
- Flippers
- Drag
- Aqualung
- Fins
- Snorkle (O)
- Gate petecus

We will stay in Dubrovnik and Kotor.

1. The ballast should (double-down, not double) and be done in a side pipe.
2. The FMC et al. should be ready to run at any time the pressure is established.

---

Steps & timing

1. Feed up the grade from
   a) Talk to Boughton - Lancher - Winter.
   b) Reding, Milne

2. Send answer talk to Young
Week of 6/5

1. Talk to Plough, Winkle, Henry about Canada program.

2. Get input from Marketing on importance of radiation tolerant device and satellite program.

3. Summarize the MOS plans for Byr, Sotiri, etc. deadline, June.

4. Get the R+D employment situation straightened and make appropriate decisions regarding offer.

5. Get a summary of production or program de-bugging, make computer - coded maps for it by this week.

6. Set up a date for the IBM course.

7. Hybrid program.

8. Lay out the R+D program review - when?, how?

9. Start the liaison assistant function.

10. Write thank you notes as appropriate - mailing.

11. Turn at a "R+D update" report.

12. Mark III


14. How is the MOS project being changed? How should it be?
A. A. And don't a clean men.

The good work him and the rain in the neighboring
John F. O. M. and soft conclusion.

[Partial text not legible]
A summary of the MOS memory program. — June 6, 1967

Projects in U.S. and U.C.'s area:

1. High-density MOS cell bipolar drive intended for hybrid flip-chip being dealt with 3 geometries, channel stop
2. High-density bipolar and 2-layer metal, permitting
3. Low-density bipolar on bulk up to 2- to 4-mil thickness can be. This compares “base-coupled” with “emitter-coupled” cells. These (emitter-coupled) cells look useful at an increase of 2-3x

4. Read-only memory
   a. CN structure

5. Magnetic memory proposed also

It is felt that the read-only optical memory would be a very useful product, if completely packaged.

NN is working on 5-cell step-up of 16-bit memory in 3 wires (3 for 8 bits, 3 for 2 bits, 2 for 3 bits)

In fact, all the stuff being done is really dependent on 2-mil capability. Single-level bipolar is not attractive

Our MOS program is aimed at higher density.

Our semiconductor product planning is not involved in memory product planning. Our paper shall be aimed at a significant product jump in a 1-year time scale. We must get a memory product plan, including intermediate stuff before our

Our desks should be in order by 123456 months.
June 7, 1967
discuss. c . inl. F. H. 1. 6.
Simult. bum. 3rd. a.m. now. 11 Mar. + 1 in 3 weeks
The S.S. coordination must be worked out. Our initial is C. One week
point to understand their program.

We need a secretary for Snow @ Haines. It could be a
girl from somewhere else, or it could be a Minors girl.
Meeting at Alby Arms 6/8/67
100% in Van Men @ 80°

Vacuum stuff:

Sells: 2 Methyl Splitters (Period) One was returned from M.V.
1 M.E. (M.e.c.) good with ground: drone @ N. not used
1 M.T. mills (3 each) for F-D-2 splitting for 2 laps - Earl Foyd & Tom

Mr. M.K.H. 2 for crop from lady - Black - doing small beds
Please do corn feed by groups, not splitting

Betten: M.H. III in some way, 1/2 not doing since man

Drill spotters on 0.5: Mr. S. Mr. B. G. hard luck
Red tank = Van Droy
Ritz system 2 a crop
New drill spotters again M.H. II by Jack

Sheep: M.H. II + 2 others
M.H. ered, shippers

Stuffed for Meschers stuff (Boy + M.H. II)

Vermic System: Big Salmon - sale contest

Seeds: 1 Methyl, 1 red, 1 e. of chickens
I MK III deck lights for Co-S\(^2\) (cap R)
1 x AL III 1905 only
1 x MK II G.P.
1 x MK IV S5-AL for MkIV Gen control
1 x MK III G.P., twice, fit.
2 x MK IV G.P. (Mark, etc.)
"Clean" Anw. Aircraft hanger MK III, 10
1 x Cat A 712 F1 (GDI-ribbed)
1 x CUC Ca Fe S2k
1 x MK III for simplicity, new.
1 x MK IV def for electric generator stuff

Hunting up flight special:
MK (1) used for mine marker stuff

What did we shoot?
1. Metal gratings for bed - will get in July 4 with new mine ads
2. Bettman - nothing - possibly Schott's elevation.
3. Seeds - if we go, then all A7, need Smegar. 1)
   Max capacity, 2) out of field capability
4. 70s, 20 Some of these seem to get too 2 - 3/20000
5. Reboll - anything for lemn, leads
   Before capability of reg to 2 - 4000

Just:
1. Unich Coal - Reboll will sort this up.
2. 24 M1s mounting system, range system is available for other ships.
3. Replace 8eks out of operational system
Kelly (Red Son)  
N. Tony Son (Technical, no. 1)  
Bob Birmingham  
Ray (or E. Doane)  
M. Mattheson  
Walter  

Car.  
Dr. O'Brien  
Tom  
Ray  
M. Mattheson  

O'Brien - C. of Naval then San Rafael - Sales Line - experienced, personable  
Kelly - Exp. 6 mos. for a couple of years - Production, experience - hard worker, looks good  
Bob Birmingham - Very tall 6/6 - doing trade, setup  
R. Alex - Exp. Fairly thin, tall, line  
M. Mattheson - Same size, average - clothes, sort of  

Joe, Tony - looks good - light  
Ranney, Bob  
Ranney, Bill  
M. Mattheson, Bob  
Walter, Ward  

NCS organized  6/13/17
The present program

I hope it all the 3701 shingles - torn in - well put back up too.

What acceleration...dllle?

Here 180° mean, run at 300 rpm, the gate is pitch plate.

3701 is 14 pin flat plate 100 last @160°, clock to 500 rpm as a limit.

Evaluate this as a test for them - in...

3/10 - Vega - try to be the same.

Failure analysis: - 1 Joint!

Complicity evaluation:

AMT 20-30
G.I 20-30
CME 20-30

Questions:
1. Accelerated design failure - Hard for
2. Torn here at the limit - Hard
3. Reconstruction of the pressure - Hard

Redesign:
3300 - S. H. 3701
3303 - 4008 PEA. S. H. 3300
3302
3303
3500
3701
3000
3300
3700

A real question: How shall we count our design capability?
Morning Program:
C. Interpret - we are now monitoring 32 mg.
All of June 11th, George Kaplin

Theodore朝着 - women run 5 1/2, big goal 5 1/2.
We will factor in something to show current Y independent of Liberal.

8:00 am Fri (Sept 11)
Discuss with Schmidt & Spagnoli.

Original deal: ~12 people total, ~50K capital this year.
Substitute population should probably be part of this.

Third task — we will supply as a service.
WfH costs — where?

Final Sal/Ed

Sharp Up

Boxed Up

Copy Sharp

+ Red

+ Black

By coming in

Tang Read — Processing in CH.

Need help?

Discuss with Hayl Maps on competition.

SAS: canceled at time last month — high level talk - writ

for 3-4. Rest's late.

SAS is giving us several proposals that are usefulSS or backup, at best.

Our proposal

1000

Storage

Display

Send

Expand

By Dec 15.

Can get around 130 by Sept. To start putting the graphics language in.

Can see the team from 130 to Dec 15. To plan with.
56. MOS meeting 6/25/61

CoE:

Product to be built:
- 3021
- 3303
- 3304
- 3170
- 3102

2. 240°/28K

1. Resistivity greater or can be picked up, 8-12 Ω cm

2. Pull vapor over 3701

3. Try for 2-3 cycles, then 1-2 vapor

H.B. Schedule:
- 3701
- 3302
- 3303
- 3300
- 3540

H.B. will get together with L.E. to discuss design.

Computer stuff - No program yet

G.I. control: @ 15 min, 225° - no change.

Using 3V map and draft - Resistor minus 0.5 Ω.

Magnet: 300°, 1 hr, 20 K

NOTES
1. What happened to the Automatic Cutter?
2. [Blank]
Heading on Fig 33:

Problem - volley drop - need \( \pm 0.5 \) out of \( \pm 10 \) for love dad and integrations.
Can set by odd < 100% good, my set of rules.
13 sec injection time split from a 10% load width? Call me when this
stage, but with a very accurate calculation.

Can we go to the old college try?

Cred to Parker for \( \frac{1}{2} \) the cash paid, is \( \frac{1}{2} \) we in all we need for
the most important.

What alternatives make any sense at all to hide of?

1. Sacrifice moving for simplicity - C.

Not winning.

("GI would not write 256 bit pass, flipping once to be able
4,000 bit memory") 4 pluse clock

50% then 256bit = 500 sec exposure

Notes at the back 1/2 sec possible if seen

1. Alternation that makes sense
2. This workable
June 29, 27 - MDS meeting

Charlie Ellenby:

- Data on 3102's assembled record place - 100 ft. failure to wire link.
- Data on 3701's - more to come.
- S&O power.

- Try 180 and 240 to get 1/2 of the current condition.

- Gated 3701's, please install links, like LNK current. On the other hand, does it make any difference? 9/1 occurrence. A REAL MYSTERY.

- 2/5th 1.2 cm.

- Gated 3701's above what looks like LNK current. On the other hand, does it make any difference? 9/1 occurrence. A REAL MYSTERY.

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MOS - O 7/6/67

C.E. - 3701 a.


Charlie proposes that this suspect be removed to get at products.

Charlie will develop a fail in - double stressing - 25, 30, 40, 50, 60, 70, 80, 90, 100° F. 24 h.

G I - Focus

1/2 0112° on end. 50° on side. 3 fold marks, but cut catastrophically.

S. B. 305-2141 - O h. fail. (Static discharge)

A.M.B. - Catastrophic failure at a high pull. 5%. 22/22. Ext. standard.

G. I. S. F. resist. - name the past one, many died - real problem.

Conditions: G I. Is on top! - Will come at -

L.V.

At 300° M G. I. will come down 15 - 20 in the field.

1. Go in cold 3701 die that Toshah done
2. Get a clean air for 3701 a. 68 P.
3. Bring 3700 to 68 P. but take a record and plotting.
4. To Nadge all being do Brown's data and take in data presently.
Barn in -

- 7x2 orchard cells for test
- Need staff figure by Fri - plan 4NO for orchard 15 week field up sprue.

Kel - 1st monthヌhad thru dem.
1st dip on brisk rate - 98 citrate 1/2 min
1/8 pm 1/2 min

By end f week will have 1st test on 5 min.

Design

3300 in date i need debts
3162 can go up fax
3500 plot right away
- certificate on abiding

Washing - See paper passed out

Renate and Hub to start good thighs

Staff of Department
Not staff study down
Meeting with Kellell & Winkle on film resistor

8/25/67

We need to take off on a family of N/Cs &

1. A family of Si chip resistors 10 to 1M to be supplied by Winkle.
2. Resistor array on Si chips
3. Resistor array on ceramic — Need by end of year for Sandia samples.
   Jeff can get made made in 2 weeks — if we buy them out.
4. Slide resistors

Remind:
1. Jeff will supply the chip later — 2 or 3.
2. An engineer to pick up the process — on a semi-tol.

The Sandia interest is a very important part of this business. It requires
that the "split" of this business — 2400, 2 TF; etc. with very
The innards. Second could be complete flip.

Our requirements are ASAP
1000 1/2 1/4 1/8

A possibility:

A
1. Drop by for engineering
2. Design on Si, etc.
3. Ceramic for Sandia

B
1. Full family of chips
2. Array on Si
3. Ceramic for Sandia

Conclusion:
1. We will go on R's on Si, etc., "A" or "B" — see coming.
2. We will get together, i.e. Dallas, to come up with an approach to Sandia.

Meet on Friday, 2:00 to hear results.
R&D PROJECTS

<table>
<thead>
<tr>
<th>Project</th>
<th>Priority</th>
<th>Personnel</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Voltage 1500 V (current density, reliability)</td>
<td>B</td>
<td>D. Meyers</td>
</tr>
<tr>
<td>Triac (eliminate dbl. masking, isol. diffusion, surge current)</td>
<td>B</td>
<td>W. Khadder</td>
</tr>
<tr>
<td>High voltage (300V) PNP reliability (Si3~4?)</td>
<td>C</td>
<td>D. Duncan</td>
</tr>
<tr>
<td>Device stability at low $I_d$'s (stability early in process)</td>
<td>B</td>
<td>D. Duncan</td>
</tr>
<tr>
<td>PNP Processes (material, diffusion, light emitter for power)</td>
<td>A</td>
<td>Duncan</td>
</tr>
<tr>
<td>Dual devices, mesa isolation</td>
<td>C</td>
<td>Archer</td>
</tr>
<tr>
<td>High frequency (diffusion, geometry, packages)</td>
<td>B</td>
<td>Purnnya</td>
</tr>
<tr>
<td>High dissipation (new technology process)</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Large area topside heat sinking low inductance process on chip and package</td>
<td></td>
<td></td>
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<tr>
<td>J FET - very high voltage stability (Power)</td>
<td>C</td>
<td>R. Parker</td>
</tr>
<tr>
<td>50 V N Channel reliable process</td>
<td>A</td>
<td>R. Hurlston</td>
</tr>
<tr>
<td>MOS technology support to be defined after present set of experiments</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

W. Steffe
6/29/67
1. The problem - 
2. The solution - 
3. The goal - 
4. The method - 
5. The conclusion - 

**Notes:**
- Method 1: This is the best method.
- Method 2: This is a good method.
- Method 3: This is not a good method.

**Questions:**
- What is the main idea?
- How can we improve the solution?

**References:**

**Extra Notes:**
- Method 2 is more efficient than Method 1.
- Method 3 should be avoided.
II Technology

1. Amboss -试点 chip
2. # - Inolación a la Frechka
3. Thi film R
   a) Supply hybrid only
   b) High 2/10
4. Hybrid fell of wood
5
Dissociation of the C 2H 5 2H ion.

1. They base the value per day upon 60 % of 2H 3.

Program: Ideal Sea

- Ambient water
- Biofilm

Initial control of R + x factor (5% R vs. biofilm)

T.C. Match - Unique for market

K to A/D builder - X projects upon a unique solution of potential

Room in potential water

Some S, a C 2H 2 gas, for about tolerance prefers

Alum - 30 x 2" after uptake

(Same For experience, not necessarily unique)

Quantity of mixing is problem

Recovery of strongly - inductive phase as a solvent - not terrible offens - wonder if still

Record in 0.14m colder - anything but from a girl who consents

Cape Town - they had a lot capably on The 3 moment.

Can rebuild in column from Cairn aspect of it

Late 80's be critical on what he has been able to get.

Can operate in capital St. George's themselves.
Count to they need:


   Can use 3 or 5. No attachment problem for 3.

3. Plastic array - 15% Bn on silicon chips.

   Problem: Mask schedule.

   What is the situation on scribing segment?
Discussed. E. Sadeh & Schuon: 11/6/67

Pls. see problem on page 66 in print.

1. The retrolord generator should be lumped in with CAD.

2. We Agile on 2 cages facility to Andrew E. and sent it back from him while he sets up a 25-er.

Ex Staff Mtg: 11/6/67

1st 2nd 3rd 4th Total
T&D Newt Prod 925 414 302 53 2,086
Plant Prod 255 315 375 113 2,061
Cont T&F 262 90 51 34 437
Op Support 25 25 95 145
Reliability 4 7 6 2 19
Mtn. Mtr. P.C. 20 16 16 21 73

Capital

Plant group includes capital for:
1. New gas reactor
2. Rapid mass titration evaluation
3. Rapid growth

"We will not be competitive in any area without relative in new gas package."

- Why are we so strongly interested in a new gas package?

1. Product quality
2. Actively looking for other D. Kegs

Of the digital data ($39M), $30M at constant price

- NTI Comp
- 5M Ltd

- Board to discuss further
- Data on MOS, LIC, Ag Eq., $25M of Lic.
- DIP die in stock
- Mark rate Eq., ($25 - 2 M)

\[\begin{align*}
\Delta &= \text{shift} \times 2 \text{ M} \\
\text{cost} - \text{shift} &= \text{25% to cost}
\end{align*}\]

\[\text{LC} = \text{60K} + \text{40K}\]

Plan on Taping

At a minimum we should do all MOS and all T2 in Taping - J. London
The internal market will not pay a premium for external DIP on plating -

Condorini - DIP in cobalt - we should minimize mistakes in continuing it - J. Sch.
Difficult problem dept - How should we handle packaging/assembly by Memory.

Memory

Lab

Present:
- Schmidt - SMP
- Pat - Mic
- Trefle - LST

Bit Series under Cary
Microcell in M.P.
Lankin in MMT

Prelab:

Lab

Plant

Marketing

Memory

Memory

Marketing

Our line of memory products will consist of:

a) Static devices
b) Latchable chip

c) Logic compatible arrays - 16 or 64 bit

d) Plano - a stack of simple cells until peripheral data

e) Register, delay line, etc.

I am concerned only with d.

It needs:

a) A supply of MOS wafers
b) A "logic" batch
c) Ability to mount, chip, assemble and test
d) A supply of products
e) An engineering reliability for:

1) Customer stock
2) Planes
3) Do internal product development.
Money problem, cont.

Possible:

1. A seat on D/D for some memory, i.e., follow-on to SAM and Project X

2. A seat on Play, combining the memory and SAM features, plus the continued ESI operations and D/D

3. Body box of SAM & Operation with all program confided to D/D

4. A semiconductor memory Dept. on the lab

5. A total memory Dept. in the lab

<table>
<thead>
<tr>
<th>Advantage</th>
<th>Disadvantage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5. 1.

6. 9. Useful operator with access to anything.

7. Right embiggen a going problem

5. 3.

6. 3. Join managing a leader

7. Reduce split in semiconductor program

5. 5. With division and startup in memory

7. Reduce division and memory

2.

5. 4.

6. Like 4

7. Like 4

3. Delete semiconductor

All of these except a assume an effective transfer of SAM technology to Operation without stopping the project of present person 1. If a typical modern...

Ordering of my ratings: 1, 3, 4, 2, 9
30-I0 problems of the day (12/29/67)

1. MV personnel - will none be available? - Should we go outside?
2. L1C shoot range program
3. Renew R&D plan, PMS to conference
4. Holoe - Blume
5. Schenin - Eurod charts, split
6. Packaging program
7. Memory
8. Microwave
9. New plasma
10. Dr. Al Loving project
Meeting with Gore + Bittman re a robot to do with the MacKenna group

14/108

1. Should we do anything on Hum?

YES

No.

Schenk + others had better a plan

Steger on 14 Sept.

Res on FCT

Also, Oxygen in Sic amending public

Schenk: SI evaluation - need optical techniques - (Finally, new men, etc.)

Steger: Should we talk in the group?

Rao: FCT trend is very similar evaluation

Roddy: test (?)
. Gunn
. fuze
. tuning
. threshold switch
. O_2 in Si
. eval. technique for epi film
. FET in traveling wave applic.
. hi value capacitors for hybrid
. visible light-emitter
. continuum transverse mag. mobility
. nitride-topping memory.
March 1, 1968

Summary of the R&D packaging dilemma:

Jobs to be done: (Technology integration and component division)

Assembly technique:
- Solar lamps
- Al Vs bonding
- Air beam bonding
- Other metal bonds (Al?)
- New lamp optics (2cm, 4cm)

Substrate technology:
- Single layer, multilayer
  - High
  - Double layer, multilayer
  - High
- Extended lead technology configuration

Package selection technique:
- Solid
- Plastic glass
- Plastic
- Cell

Thermal management:
- Analyze
- New approaches

Die passivation
- Multi-chip pilot capability

Major project-oriented jobs:

1. **Cell**
2. **HYBRID**
3. **High performance substrate**