

3/21/74 -

ENGH - 0131

Consider 5" dia disk.

a) C 10K, 15K, 20K BPI.

b) .020 mil .015 .010 track/track center.

c) Assume that outer 1/2 inch of disk is unusable.



$$\frac{140}{360} \rightarrow 2.72"$$

76

1. 20 mil X 32 tracks C 10K

$$2.72 \times \pi \times 10K = 85,451$$

$$2.72 \times \pi \times 10K \times 32 \text{ tracks} = 2,734,440 \text{ bits per surface.}$$

$$85451 \div 512 \times 8 = 17,453.2$$

$$17 \times 512 = 8704 \text{ bytes per track.}$$

$$8704 \times 32 = \boxed{278528} \text{ formatted bytes per surface.}$$

FORMATTED

2. 20 mil X 32 @ 15K

$$= 2.72 \times \pi \times 15K = 128,177$$

$$128,177 \div 612 \times 8 = 26,179.9$$

$$26 \times 512 \times 32 = \boxed{425,984} \text{ bytes per surface.}$$

FORMATTED

GROSS

(1)

$$2.72 \times \pi \times 10K \times 32 \text{ tracks} = 2,734,440 \text{ bits per surface.}$$

(2)

$$2.72 \times \pi \times 15K \times 32 = 4,101,660 \text{ bits per surface.}$$

(3) 15 mil track  $\rightarrow$  track on .640 inch band = 42 tracks.

$$2.72 \times \pi \times 10K \times 42 = 3,588,950$$

DC GROUND

- BUS OUT BIT
- CTRL STROBE

+ DEVICE Xn  
+ DEVICE Yn

- BUS OUT BIT
- PUT STROBE
- BUS OUT BIT
- BUS OUT BIT

VERTICAL SYNC

REMOTE PRINT SW

OFF

ENABLE LT

ON

LT > OFF

ON

NO ED  
AI

+ BUS IN BT

DATA LTS

PH  
LT

DTS

300 MA

4V

RST

CTR

2 POS

4/1/74 John Rood - Error Correction & Detection

① Comment from John on update of Scamp.

for legal reasons machine should  
be left in its original state.

(Me) Perhaps only keyboard change so that  
we may use machine for study purposes.

② REA has picked

~~REDACTED~~

~~REDACTED~~

4/2/74 - Room with Scamp unlocked + door open  
I arrived at 8:15 AM - What kind of security is this?

Shindye 6707  
Jim Eng 6151  
Marie Barts 2306  
Merlin Pickle 6194

Bob Dennis 6796  
Bob 6234

George Sellworth thinks we should contact  
Harold Baumester, Raleigh to see file.  
X6273

He tried this concept 10 years ago but  
did not have (plate)

Tell pat we are negotiating with Dugout for process.

4/5/74 - Call to Bill Steele. 5374

1. Negotiation by Smith:  
for buying process on particle -

Jim Smith 8-263-7700.

2. 1 ME (Designer) - Greg.  
2 EE

Croton - Chromium Dioxide:

Hand carry item from  
BOB Hart.  
Part for Terry Bradley.

4/8/74.

Visit from Bill Enmon - Re:  
Scamp Keyboard -

1. He sees nothing wrong with added key functions above numeric pad -
  2. Does not particularly like need to hold command key to select third function -  
He noted that Vehling operates on one hand and entirely defined KBD.  
ie : store cmd, if following key is valid function, execute same.
  3. Scamp 1 error will not be in time to be governed by KBD Corp. spec.  
Scamp 2 will -  
Then: cursor, etc command keys will be pre-defined and SACRED? -
  4. Suggests 3 key rollover under 2 key rollover is implemented such that a sound (click) occurs on leading edge of keystroke.
  6. shadow effect
- not occur -
- 2      2 does
- 2

He will check on latest Raleigh Calico implementation.

I should also find out if Dennis or Blayne know operation.

Memo to File:

4/16/74

Subject: Los Gatos (Hopner) File -

Messrs Maurice Bartz and Larry Mattson, Rochester file group, will be in Los Gatos April 25 and 26 to discuss technical and personnel questions pertinent to our joint effort.

Room 603 has been reserved for our use - Please let me know if there are conflicts with this schedule.

April 25	8:30 AM — 9:15 AM	]
	9:15 — 11:45	
	1: PM — 4:30	
April 26	8:30 AM — 9:30	
	9:30 — 11:30	

Roy Harper-Toben  
Emil Hopner-Toben  
Hal Hester  
Ed Murphy  
Al Brown  
Roy Haug  
Room 603

Harper  
Hopner  
Hester  
Murphy  
George  
Toben

Copy Ed Murphy  
Emil Hopner  
Sik-Kee Cen  
Bill Stule  
M. Bartz  
L. Mattson  
Al Brown  
Roy Haug  
Roy Harper  
Greg Toben

Joe George

4/19/64

Visit by Ken Stewart; Oneida.

They are increasing palm 3 for  
General purpose FSD controller -  
low end,

Very interested in GEM.

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2.5XPI X25K BPI X26 tracks =

$$= 196349.5 \times 26 = 5,105,087 \text{ bits}$$

4/23/84

## EXAMPLES OF VARIOUS SIZE DISKS

HOLD RECORDING AT 20K BPI

TRACK DENSITY

50 TRACK / INCH

EXCLUDE OUTER 1/2 INCH OF SURFACE.

RECORD 50 TRACKS



$$62831.854 \times 50 = 3,141,592 \text{ bits per surface.}$$

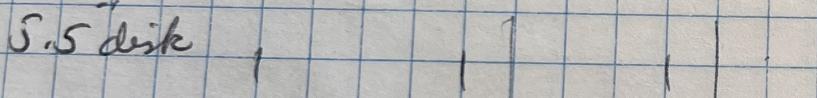
@ 1024 sectors = 307200 bytes-



$$94247.78 \times 50 = 4,712,389 \text{ bits per surface.}$$

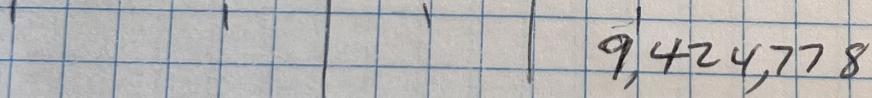


$$2 \times \pi \times 20K \times 50 = 6,283,185 \text{ bits per surface.}$$



$$2.5 \times \pi \times 20K \times 50 = 7,853,981 \text{ bits per surface.}$$

6.0 disk.



$$9,424,778$$

4/25/74.

Reduce cost, weight, size for Scamp II

1-5M bytes -

Scamp II for ?? -

File would be divided for Scamp I.

Test equipment - FSQ. 1 MEG Transfer rate. }  
8K limit ~~10K~~ bytes? }

no servo  
can handle  
stepping motors.

### UTS Test equipment.

Larry Mattson

Maurice Bartz

Ray Harper

Greg Toben

Joe

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4/25/74-

Emil Hopen

Si-Kee ~~Si-Ke~~ Lee

Greg Toben

Larry Mattson

Maurice Bartz.

Joe -

Emil History: Electronic mail.

mass storage -

fast data rates.

examined long video recorder.

- 1). designed own read & electronics.
- 2). signal processing
- 3). good signal/noise ratio.

relationship with Emil & Harper

GSD people Report to Roy.

Due to civil effort - (Gang = mechanical).

Expects to have system running in 1 year.

Arrange meeting with Johnnie Lynn.

Lab Demo by Si-Kee -

4/26/74-

## Summary of Rochester Visit.

Ernest.

Larry:

### 5 Critical areas —

2 levels of design.

Oct 1 / goal

open

1. present hardware electronics.

2. next design - acceptable physical package  
enquiry from P. Richard.

Maurry -

George Herring.

Mechanical - mfg. background.

Burnishing  
sandblasting  
A/W  
head

June Target date for Level 1 \$2.  
suggest 4.75 diameter disk.

Si-Kee wants someone to help build electronics.  
Wants dedicated electronic help.

W.T.C. Considerations.

4/20/74

Discussing Meeting with Hal Hester. 267-6287  
379-1788

- a) lab mission realignment for Los Gatos
- b) Murphy reports to Stevens.
- c) Murphy → Hester: "No GSD support." There is to be 0 man hours spent for GSD.
- d) Hester mentioned this to Jerry Mattson last night - Mattson did not inform me -
- e) Internal mail system to be main effort for "Electronic Mail"
- f) Hester's not sure what would happen if money were made available to fund 100% group - also Si-Kee and Steel to do file effort.

4/20/74 - Mentioned Hester's conversation to Horner - He still wants to cooperate - plus he will continue as usual unless Kuehler intervenes in which case he claims he will go to Gary - He "thinks" SJ does not want Rochester to have know-how.

What the next move(s).

4/21/74

Call to Hal:

Hal's input based on his thoughts in direct contact except no GSD support from Murphy -

Funds, shortages - GPD - SDD support worse trading - Emil's group bootlegging GSD JOB. NOT SO! should be working on GPD efforts. Jim Smith's commitment has slipped - GPD support #1.

Hal suggests meeting with Murphy, Horner, Hester, George -

Murphy + Horner not getting 44 man years of effort - What are plans to change this?

4/ Jim Engh 6151

Week of 22nd for  
Maurice Barty and Mattson.

IRD - Media -  
Budget input for 75 - 15 people

#### MECHANICAL / ELECTRICAL

MEDIA - Jim Smith

HEAD - CONTOURING, LESS COMPLICATED THAN WIN, etc.

ACCESS NEW CHEAPER MECHANISM - USE DRIVE MTR TO ACCESS -

PLATE → CAN BE PLASTIC

Use 6" model for Testing —  
4" model design —

Surface finish  
media  
plate mfg & effect  
on flying height.

Ken Steward - Oneida -  
Friday -

3 inch inner diameter  $\times \pi \times 30 = 282.74328$  Inches per.

$$\frac{1}{282.74328} = .0035367 = 3.5367 \text{ MS/in}$$

$$20.000 \left[ \frac{3.5367}{-3} \right] = 176.835 \text{ MS/BT}$$

7.54 M bPS

5/1/74

Roger Abernathy

4727

Tutt

4716

Prout

4072

Wyatt

4721

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5/1/74 - Call to Paul Friedl -

1. He will ask Joe Meyers to call Roy - Re: work being done by Research - Reorder of APL type of language (reverse APL notation)
2. Mentioned hopes of having Student for summer work - Ray to call Jane for approval before we approach Steve -
3. Sledes in SDD meet -

5/13

BILL TUTT	4716
Virge Wyatt	4721
REA	4727
DICK PRATT	4072

5/14/74 - Return call from Virge Wyatt -

S/3 - base 8 K bytes  
split in half.

1st 4K = always present - supervisor, etc.

next 4K = 16 blocks (pages)

256 byte per page.

logical range of 0-64K of addressing -

address translation scheme -

logical address to physical address

16 - 8 bit page registers associated with each 256 byte page -

(compare S&R vs 16 registers.)

complete parallel compare of all 16 registers -

Compare and address translate could be part of CPU path -

✓ arithmetic crossing page boundary -

✓ how to interrupt, return status,

✓ S/3 ignored as problem by not crossing boundaries

✓ not ideal solution -

- cycle steal - address had to be pre set -

✓ I/O page mismatch can not be handled on cycle steal -

✓ software tracking of pages -

hardware tracking if a page had been written in storage  
so that file write would not be needed -

Segmentation scheme - REA

Bill & Virg also had a scheme -

Tom McDermott for software Virtual S/3  
X3283

5/12/74

$$3 \times \pi \times 30 = \\ 282.74334 \text{ IPS} = 3,5367 \text{ ms per inch.}$$

612184896

$$20K \times 282 = 5.6548668 \text{ MEG}$$

$$\text{osc} = 5.6548668$$

$$\text{osc} = 7.5398223$$

$$3 \times \pi \times 20K = 188,495 \times 25 = 4,712,375 \text{ bits}$$

$$4 \times \pi \times 20K = 251327 \times 25 = 6283175$$

4712375

$$9424750 \text{ VS } 10,995550$$

$$188495 \div 4896 = 38 \text{ sectors}$$

5/28/74

Review of Scamp II file specs.

Inner ~~Outer~~  $0.95 \times 2 \times \pi = 5.9650346 \times 20K = 119380.42$  }  
Outer  $= 1.90 \times 2 \times \pi = 11.938069 \times 20K = 238761.38$  } = 2/1 ratio.

Overhead =  $612 \times 9$

Includes 1001 9 bit bytes plus 1 bit per data byte.  
= 5508

$119380 \div 5508 = 21.67$  records  
 $512 \times 20 = 10240 (+ 512)$

Call to Dennis 5/28/74

check cost of TP "EC" changes.

5/29/74

Asked Dennis about ACO's for 6514 and 6512  
dutches modules-

REA

Phil Hacay - 4763  
In Engr -

REA to send Jgar and attachment to user  
for ~~7/10/74~~

Al Ginsberg 332  
2605

Idee 2108

art 2156

Dave 2619

Virginia Algood 2621