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VOLUME I

D R A F T

PRODUCT GOALS AND STRATEGIES

JANUARY 1981

CENTRAL ENGINEERING

CORPORATE
PRODUCT STRATEGY
RED BOOK

* * * C O M P A N Y C O N F I D E N T I A L * * *

CENTRAL ENGINEERING
CORPORATE PRODUCT STRATEGY
RED BOOK

JANUARY 1981

VOLUME I

D R A F T

PRODUCT GOALS AND STRATEGIES

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   - B. Preliminary to the Strategy

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III. Iron Strategy

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   - B. Software
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     4. OFIS
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SECTION I. INTRODUCTION

A. Overview

This year's Product Strategy Redbook will benefit from the work done by the Strategic Planning Units in determining the goals and direction to maintain our market position as we face existing and new competitors.

The business as usual strategy which dominated last year's goals has been drastically altered this year to focus the VAX family into our traditional markets while moving the 16 bit focus to low end systems. The latter move enables us and our customers to capitalize on 16 bit software investments as we continually reduce the entry level price for such systems. It also opens up new market opportunities and enables us to strengthen our position in markets such as word processing.

Many of the strategies that will be presented are complete but local networking (NI), OFIS, professional based systems and distributed data processing do need to be expanded upon. The development organizations with the assistance of the appropriate strategic planning units plan to continue to develop such strategies so that they can be included in the final Redbook scheduled for May 1981.

B. Document Format and Planning Process

This year's Redbook is in two sections. Volume I outlines the product strategies which reflect the direction set by the Strategic Planning Units, and will be used to guide implementation proposals made to EBOD for funding. Volume II is made up of the reports from the five Strategic Planning Units and was distributed during December.

The format used in this Redbook is designed to help the broad spectrum of readers find the areas of particular interest to them. It differs from that of previous years as there is a much greater focus on applications. Digital's business has been divided into four categories: Service, Systems, Iron and Terminals. Systems strategies are presented in terms of five application categories, explained below, and by architecture. Component strategies covering software, communications, storage and terminals are also presented.

The strategies in this preliminary Redbook are not all funded, but will be used to determine any changes to the base plan and future new product start-ups. The new product start ups and funding process is as follows:

1. Adjust the current base plan which is budgeted for FY81, 82 and 83 to reflect any significant changes to the strategy or the implementation programs, and to extend the budget out to FY84. This adjustment will be based upon a proposal from engineering to EBOD.

2. EBOD, marketing groups and engineering work on what changes should be made to the base plan to accomodate programs that have been approved since the June EBOD base plan such as CT (KO) and OFIS.

   These two steps will result in a base plan which will include CT and OFIS for fiscal years 82, 83, and 84 respectively.

3. The third step is to provide the development organizations an opportunity to list their new product recommendations that fit within the strategic goals documented in the Red Book.

4. The potential new products will be presented for selection based on market needs. These new product start-ups will be funded out of the FY83 unallocated funds and will also put first call on appropriate FY84 funds.

It is expected that these last two steps will be completed by May 15 and will result in a final version of the Red Book and a base plan that will represent both current and new product start-ups. The final documents will be used by product lines for their long range plans and as the starting documentation for the repeat of the product strategic planning cycle.

C. Business Perspective

1. Service

The service revenues for the next 3 years are forecasted, in $Millions, at $1,002, $1,378, and $1,916 with profit goals of $212, $281, and $391 for fiscal years 82, 83, and 84 respectively. Service, like any other component of our business, is undergoing changes due to competition and the increasing number of customers who compare systems by five year cost of ownership calculations.

To date our product strategies have focused on the product and system sale and have not reflected the price to the customer or the cost to DEC associated with service. Recent cash flow and life cycle cost analyses have shown the leverage in development to reducing service costs. This combined with remote diagnostics, customer diagnostics, telephone answering service, and fail soft product designs can significantly alter the customers' perception of quality and ownership costs.

This section will be included in this year's Redbook, not because the current product strategies have addressed all of the service issues but as a reminder of the work that must be done to recognize the product feature needs of the service related product lines. The intention is to address the service issues as they relate to product strategies in future Redbooks and to put more emphasis on planning service needs into both hardware and software products.

Service Product Lines are:
- Field Service
- Software support
- Consulting Services
- Education

2. Systems

Product Group NOR forecast's for systems for FY'82, '84, and '86 are, in $Millions, $2,322, $3,782, and $6,500. To facilitate our understanding of the customer motivations to purchase our equipment the systems business is further broken down into five application categories. These are:

General Purpose Timesharing

This is a catch all classification to capture interactive computing, traditional timesharing, and general purpose computational environments.

Real Time

Included in this category are all of the applications associated with traditional on-line data gathering and process related input/output.

Transaction Processing

This category is being used to represent all of the features required to support terminal based systems that are used for data entry, query, and forms related applications.

OFIS

This application area is currently limited to word processing but it is seen that technology is going to make it possible to integrate many office functions such as mail, copying, facsimile, telephone facilities, and filing. The strategies outlined in this Redbook represent the first cut and are both short term and limited in scope. This area is clearly one where market strategies need to be much more completely defined so that development can proceed productively.

Professional-Based Systems

In certain applications such as a manager's terminal in an office, this category and OFIS could be considered an overlap. However, professional based systems are being considered on a broader spectrum which includes programmer and educational workbenches, specialized I/O and graphics workstations, and computational data verification stations.

This year's efforts to pull together the major features needed in each of these applications areas and relate them to both competitors trends and our development efforts should be reviewed as embryonic. It is an effort to get more of a software systems flavor into our planning as requested by the product lines and it also enables us to focus on software strategies and how our products will evolve to fulfill these strategies. It is our plan to improve on this section with the help of the strategic planning units in future editions of the Redbook.

The product lines selling systems are:

Word Processing	TOEM
Retail Stores	ECS
MDC	ESG
CSI	LDP
TIG	MSG
COEM	GSG
GRAPHIC ARTS	

3. Iron

For the purposes of developing product strategies the "Iron" market is classified as micro processor products and box sub-systems. The latter is a subset of the system business and includes at least a CPU and might or might not include an operating system. The microprocessor and box business makes the fundamental building blocks of our systems visible thus it is important that these businesses and related products be included in our product strategies. For the purpose of the Redbook the following are considered as selling "Iron" products:

Microprocessor group
TOEM
TIG
A & SG
CSS

Product Group NOR forecast for the Iron business in $Million, for fiscal years '82, '84, and '86 is $1,456, $2,579, and $4,235 respectively.

4. Terminals

The terminal business consists of three product types: Video, printing terminals (KSR and RO), and traditional line printers. The Terminals Product Group NOR forecast for video and KSR/RO terminals, in millions, is summarized below:

	82	83	84	85
Video	$ 81	$128	$195	$284
KSR/RO	180	230	279	320

The terminals business represents an important sector of the corporate NOR and, because of the low unit price, the highest volume products we build. In general terminals are sold by all product lines but at present the keyboard printer is sold primarily through the Terminals product line.

Because of the high volumes required and the rapidly changing technology in the terminals area the strategic planning unit is an important coupling between product and market strategies. The product strategies are covered in detail in the Terminals Section of this Redbook.

/mhm

D. PERSONAL COMPUTER STRATEGIES

An additional Section (IV) concerning personal computer products has been included in this Red Book. This section covers the CT (or computing terminal) strategies and their relationship to terminals.

For the purpose of this draft it has been treated as a separate section because it represents a new and somewhat different product set from that which we have historically developed in Central Engineering. It is expected that this section will be integrated into our applications scenario in the final version of the Red Book.

II. SYSTEMS STRATEGIES

II.
SYSTEMS STRATEGY TABLE OF CONTENTS

A. Overview

1. Systems Goals
2. Development Investment Effect on Product Trends
3. Customer Perspective of Systems Growth Paths
4. The Local Area Network

B. Timesharing

B1. General Purpose

1. Applications Strategy
2. Product Needs
3. Price Band Scenario FY'83
4. Price Band Scenario FY'86

NOTE: Each application class below, C through F, is in the format of the above items 1. through 4.

B2. Computation/Scientific Processing
B3. Interactive Data Processing

C. Real Time Systems

D. Transaction Processing

E. Office Information Processing

F. Profession Based Systems

G. 32b Systems Goals and Objectives

H. 16b Systems Goals and Objectives

I. 36b Systems Goals and Objectives

SYSTEMS GOALS OVERVIEW

SYSTEMS FOCUS

The Central Engineering strategic commitment is to a systems focus. Organizational alignments are being worked out that will bring better focus to products as prospective customers perceive them as solutions to their organizational and individual data management, information communications and problem solving objectives.

VAX/VMS THE FLAGSHIP ARCHITECTURE

While the systems strategy has been segmented into 16, 32, and 36 bit pieces, it should be noted that the overall systems product goal must be viewed as moving towards a range of systems around a single VAX/VMS family architectre. Design centers for members of the family will be within price bands with intervals of a factor of 2.5. The price band boundaries are $1K, 2.5, 6.25, 16, 40, 100, 250, and 625. Systems would offer progressively more performance per dollar with no more than one per price band.

ONE SYSTEM PER PRICE BAND

GOAL TO BE ACHIEVED BY 1990 OR SOONER

Although the above is the systems product goal for 1990, DEC will invest to permit a transition from large 16b and 36b configurations to the 32b architecture by the mid-eighties.

PROPRIIETARY NETWORKING AND FAMILY COMPATIBILIIY

Towards this goal, DEC has made significant progress by developing a networking architecture and tools, however, due to our multiplicity of operating systems our ability to interconnect all permutations of systems is not planned. The network strategy is to focus features and functionality around VMS.

TARGET THE SITE DEPARTMENT OR CAMPUS

It is expected that global communications technology, super computers, and proprietary data banks will be owned by ATT, IBM, and large service organizations. Because of this, DEC products must connect to these "global" and "giant corporate" facilities. DEC's strength has been and will continue to be at the local area or department level.

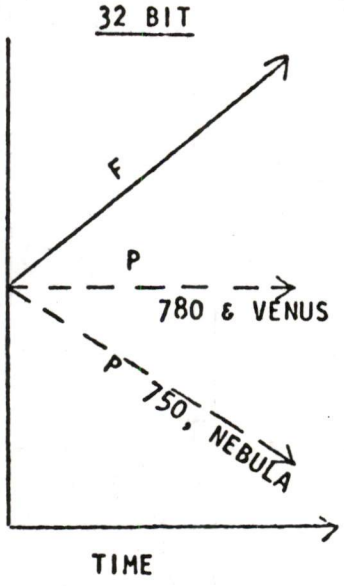
MARKET GROUPS TO DEFINE MARKET REQUIREMENTS

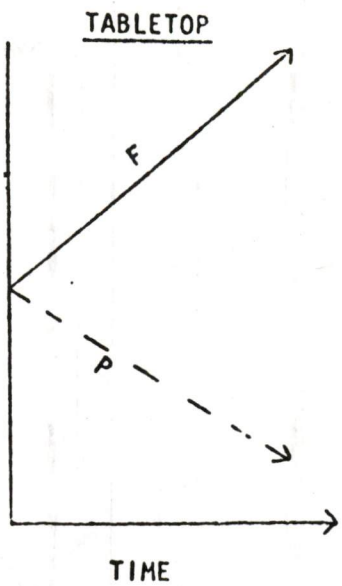
Specific networking and compatibility objectives will be determined by the applications and needs of our future customers, and by the economics of the cost of physical connections. It is expected the market groups will establish these objectives based on the future needs of customers.

TABLE TOP PDP-11 SYSTEMS	Products in the lowest price bands (<$16K) will be of the 16-bit architecture, and will include table top systems and terminal like products during the 1980-1990 time period. These products will leverage off the software maintenance and layered software investment required for our ongoing PDP-11 business. Additional software investments will be necessary so that tabletop systems will meet competitive cost, functionality and performance of single user systems. Beyond 1985-1990, it is expected that tabletop products will become members of the VAX/VMS family with the initial introduction of a product based on Scorpio.
CAP THE PDP-11 BOX AND CABINET SYSTEMS	PDP-11 UNIBUS systems will be capped at their present 11/24 and 11/44 level. PDP-11 Q-BUS systems will be enhanced with J-11 and AZTEC.
36 BIT COEXISTENCE	The investment in TOPS-10/TOPS-20 systems will be maintained at a basic support level including the development of a high performance system (Jupiter) which will be used to cap off the 36 bit systems architecture. Coexistence tools will facilitate the transition of 36-bit customers to the 32-bit architecture.

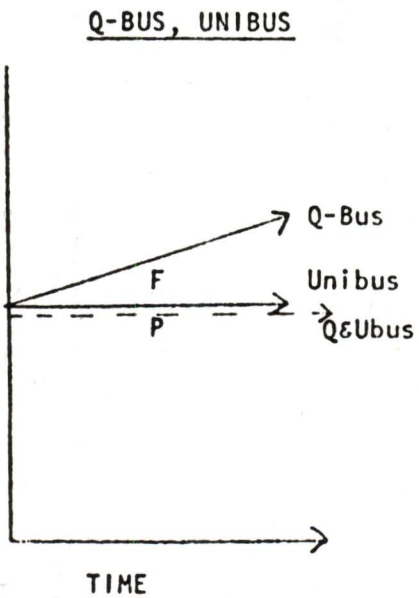
PRODUCT DEVELOPMENT INVESTMENT STRATEGY

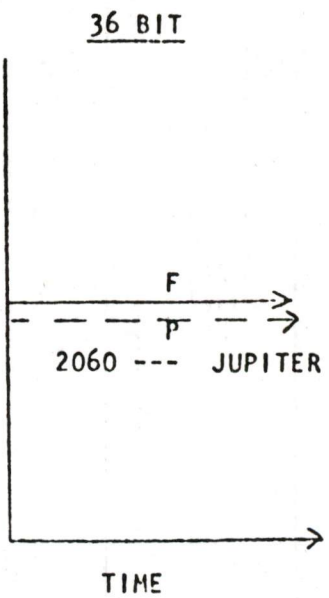
1. Invest in Price/Performance Leadership:





2. Maintain Traditional DEC Business:





KEY:

F = Functionality

P = Price

Slope reflects strategy to Increase, Maintain or Decrease Functionality or Price

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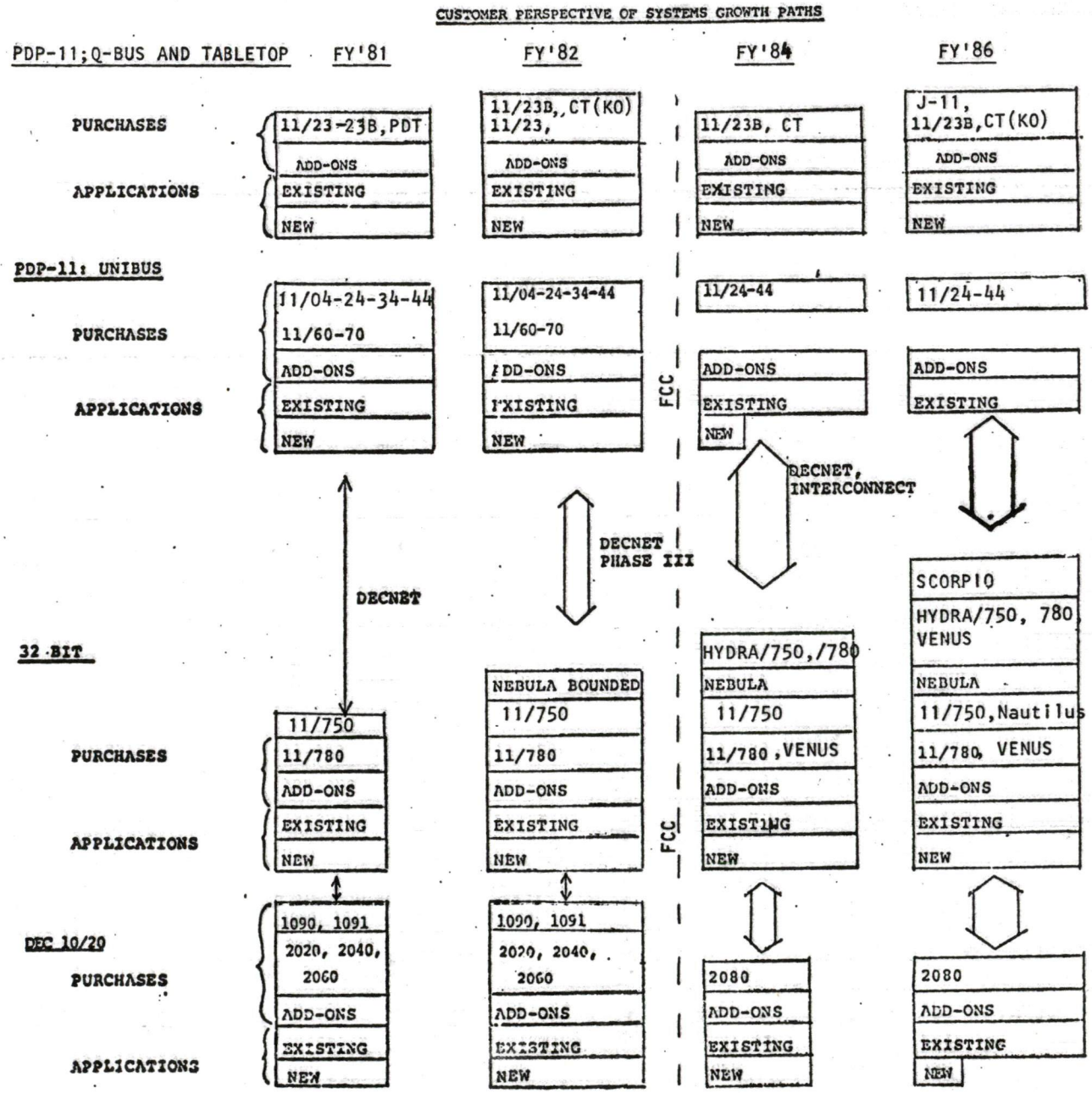
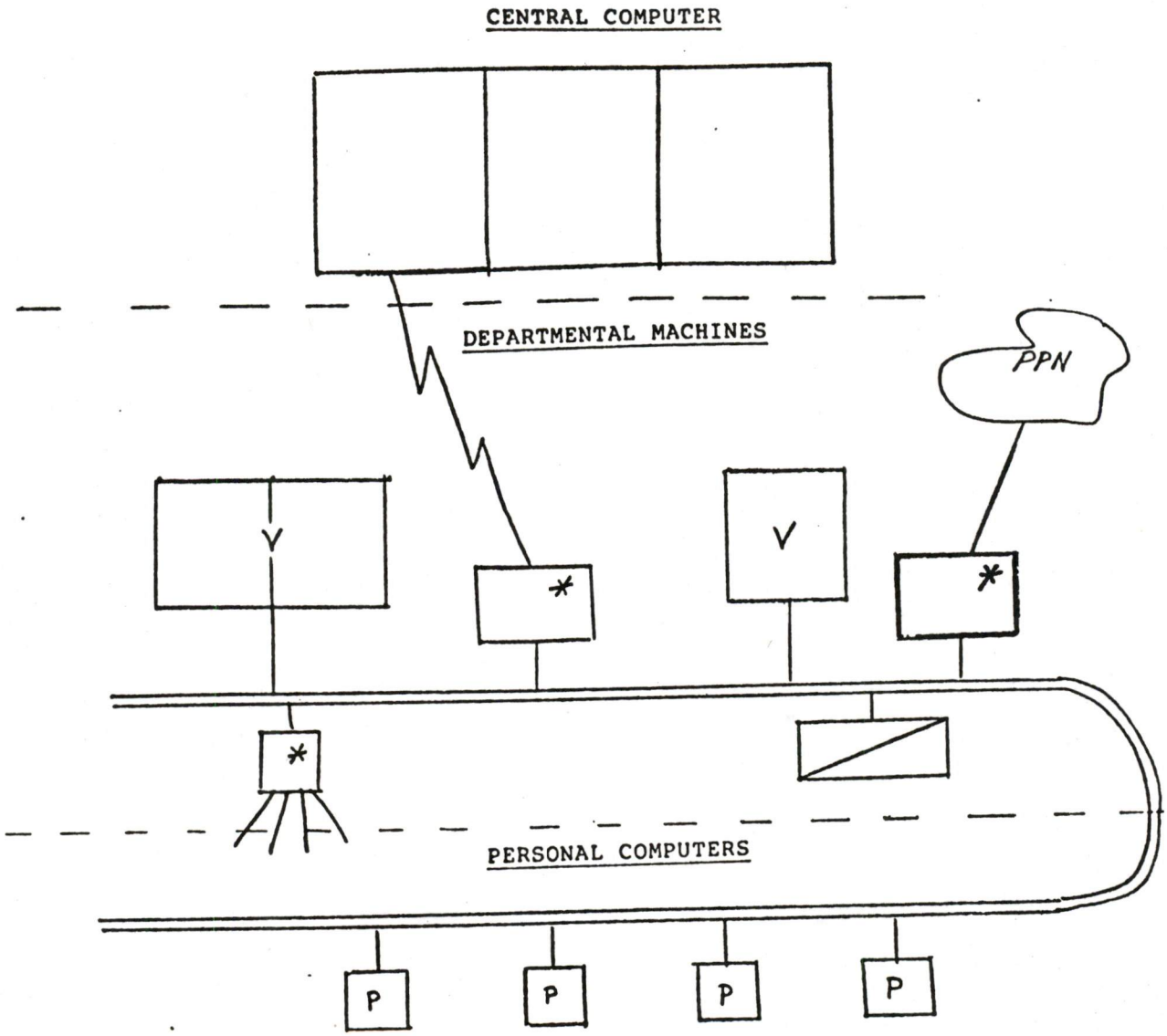
CUSTOMER PERSPECTIVE OF SYSTEMS GROWTH PATHS



THE LOCAL AREA NETWORK



V Departmental VAX
P Personal computer PDP-11
* Terminal concentrators, gateways
Sensor based PDP-11/VAX

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B.

STRATEGY FOR GENERAL PURPOSE TIMESHARING

B. Application Class Strategy Timesharing:

- o Position VMS as pre-eminent general purpose system by Version 4 (FY'84)
  - . Better operations and 'dependability' features
  - . Add OFIS, RDMS, Datatrieve-32, ADA
- o Maintain 32-bit cost/performance leadership with new CPUs and storage
- o Induce existing RSTS and TOPS-10/20 customers to implement new applications on VMS
  - . Superior VMS features
  - . Implement only those "migration/coexistence" features required to ensure customers find DEC-to-DEC transition easier than DEC-to-competition
  - . No additional timesharing features for TOPS and RSTS (except for small systems)
- o Transition new customer sales to 32-bit as soon as 32-bit available in required price band.
- o Use 16-bit for small systems and 'locked-in' existing customers
- o Explore relation to network of individual personal computers in advanced development and corporate research group
- o Drive entry-level virtual memory system to less than $30K
- o Provide tabletop personal computing based on 16-bit for profession-based systems and small business systems.

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B.1 General Purpose Timesharing

Product Strategy Needs:

32-Bit Systems

- Ability to support 16-512 terminals
- All major languages: FIV, COBOL, PL/I, PASCAL, APL, ADA, RPG even ALGOL
- Interactive data base management
- Superior, simple easy-to-learn documentation
- Backup and restore
- Error management and utilities
- Simple to use query
- Large disks
- Local networks
- Electronic mail, word processing

16-Bit Systems

For competitive multli-terminal systems use lower cost RSTS systems, 1-16 users
Networking - local area
- Intelligent terminals
- End node to VMS

GENERAL PURPOSE TIME SHARING (FY83)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K - 250K	$250K - 625K
ENGINES	GIGI	11/23B	11/23B 11/24 11/750	11/44 11/750	11/70 11/750	11/780
MASS STORAGE		AZTEC	AZTEC	RA80/TS11 RA80/RL02 PINON X 2	RM05/TU77 RA81/LGCR	RP07/TU78 OR 2 RA81/TU78
SOFTWARE	RT-11	RT-11	RSTS/E	RSTS/E SMALL VMS	RSTS/E VMS	VMS
				INTERACTIVE DBMS ---------->		
				DOCUMENTATION ---------->		
				QUERY, BACKUP/RESTORE ---------->		
				APL, ADA, RPG, ALGOL ---------->		
				TERMINAL HANDLING ---------->		
		EMS/WP ---------->				
NETWORK		NI TO VMS QNA	VIA UNA ---------->			
		DECNET ---------->				
			X.25 (32 BIT) ---------->			
		2780/3780 ---------->				
				CDC ---------->		
# TERMINALS	1	1-8 DZV-8	4-16 DZ11 COMBO	8-32 DZ11 COMBO	24-96 DZ11 KDZ NI IC	64-256 KDZ NI IC
		Low Cost TERMINALS ---------->				
PACKAGING	TERMINAL DESK TOP CABINET ---------->					
OTHER	MIGRATION TOOLS FROM 16 AND 36 BIT					

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GENERAL PURPOSE TIME SHARING (FY86)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K- 250K	$250K - 625K
ENGINES	GIGI CT	11/23J	SCORPIO 11/23J	SCORPIO NAUTILUS	NAUTILUS	VENUS
MASS STORAGE	5" (2x) + BACKUP	AZTEC	100-150MB BACKUP AZTEC	300MB	600MB	1200MB
SOFTWARE	RT-11	RSTS/E	SMALL VMS	VMS		
			FILE SERVERS ON NI			
			REMOTE DATA BASE			
		EMS/WP				
NETWORK	INTEGRAL NI TO VMS					UNA
			PRINTER, COPIER SERVERS			
		X.25, DECENT, SNA VIA GATAWAY				
# TERMINALS	1	2-16	8-32	16-64	48-256	96-512
		INTEGRAL NI	NI T.C.			
	LOW COST TERMINALS					
PACKAGING	TERMINAL	TERMINAL	DESK TOP?	CABINET		

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B.2 Computation/Scientific - Timesharing

Product Strategy Needs

32-Bit Systems

- Codasyl data base management with interface to FORTRAN, PL/I, ADA
- Interactive data base management
- Large mass storage devices with effective backup hardware and software
- Personal work stations with high functionality and effective connection to host machine

16-Bit Systems

Intelligent Terminals (PDP-11 based)

- Async and sync port to large host
    - Hi performance floating point
    - VT105+ graphics
    - RSX compatible
    - FIV+, BASIC PLUS 2
    - Printer port (graphics)
    - Local removable storage (5-10mb)
    - Optional
        - Word processing
        - Mail

COMPUTATION/SCIENTIFIC (FY82)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K- 250K	$250K - 625K
ENGINES	TERMINALS	11/23B	SOME 11/44	11/730	11/750	11/780
MASS STORAGE		AZTEC	AZTECX2	RA80/RL02	RA81/LGCR	RP07/TU78 OR 2XRA81/TU78
SOFTWARE		RSX	RSX	VMS ---------->		
				ADA ---------->		
					DBMS ---------->	
				PROFESSION BASED GRAPHICS ---------->		
			EMS/WP ---------->			
NETWORK		NI TO VMS VIA QNA	NI TO VMS VIA UNA ---------->			
			DECNET ---------->			
			X.25 ---------->			
			IBM 2780/3780 ---------->			
				CDC ---------->		
# TERMINALS		1	1-2	2-4	4-16	16-32
				9.6KB PER PORT MINIMUM		
PACKAGING	TERMINAL		CABINET ---------->			
GRAPHICS				PROFESSION BASED GRAPHICS ARE P.L. DEVELOPED		
				OTHER GRAPHICS ARE		
OTHER					MIGRATION TOOLS FROM 36 BIT ---------->	

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COMPUTATION/SCIENTIFIC (FY86)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K- 250K	$250K - 625K
ENGINES	TERMINALS	11/23B 11/23J	SCORPIO 11/23J	SCORPIO NAUTILUS	NAUTILUS'	VENUS
MASS STORAGE		AZTEC	100-150MB+ BACKUP AZTEC	300MB	600MB	1200MB
SOFTWARE		RSX	VMS PROFESSION BASED SOFTWARE EMS/WP			
NETWORK		NI TO VMS VIA QNA	INTEGRATED NI TO VMS DECNET, X.25, SNA VIA GATEWAY			UNA
# TERMINALS			1-2	2-4	4-16	16-32
			56KB P & R PORT			
PACKAGING	TERMINAL		DESK TOP?	CABINET		
GRAPHICS			PROFESSION BASED OTHERS ARE P.L. DEVELOPED			

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B. 3 Interactive Data Processing - Timesharing

Product Strategy Needs

32 Bit

- Ability to support 16-512 terminals
- Business oriented languages COBOL, BASIC, APL, DIBOL, RPG
- Interactive data base management
- Simple to use query and forms
- Family of disks from small to large
- Ease of installation and maintenance
- Easy to learn and to understand documentation
- Networking (IBM a must for larger systems/organizations)
- Migration tools from 16 to 32
- IBM compatible tape for larger systems/organizations
- Electronic mail, word processing

16-Bit

Small commercial or local distributed
- RSTS/E
- Clustered (1-4 terminals)
- Networking (Decnet, IBM-2780)
- Local problem solving
- Information retrieval

INTERACTIVE DATA PROCESSING (FY83)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K- 250K	$250K - 625K
ENGINES	CT	11/23 B	11/23B 11/24	11/44 11/730	11/70 11/750	11/780
MASS STORAGE	5" + BACKUP	AZTEC	AZTEC	RA80/TS11 RA80/RL02 PINON X 2	RM05/TU77 RA81/LGCR	RP07/TU78 OR 2 RA81/TU78
SOFTWARE	RT-11	RSTS/E	RSTS/E	RSTS/E SMALL VMS	VMS	VMS
				INTERACTIVE DBMS, QUERY ---------->		
				DOCUMENTATION, PACKAGING ---------->		
				APL, DIBOL, RPG, ---------->		
				TERMINAL HANDLING ---------->		
	FORMS ---------->					
	EMS/WP ---------->					
NETWORK	NI TO VMS TO CONNECT K.O.'s TO VAX					
		2780/3780 ---------->				
				X.25 (32) ---------->		
				SNA (32) ---------->		
# TERMINALS	1	1-4 DZV-8	4-8 DZ11	8-16 DZ11 COMBO	16-48 DZ KDZ, COMBO NI TC	32-96 KDZ, NI TC
PACKAGING	TERMINAL	DESK TOP	CABINET ---------->			
OTHERS	MIGRATION TOOLS FROM 16 - DIBOL NEEDED					

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INTERACTIVE DATA PROCESSING (FY86)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K- 250K	$250K - 625K
ENGINES	CT	11/23J	SCORPIO 11/23J	SCORPIO NAUTILUS	NAUTILUS	VENUS
MASS STORAGE	5" (X2) + BACKUP	AZTEC	100-150MB BACKUP AZTEC	300MB	600MB	1200MB
SOFTWARE	RT-11	RSTS/E	SMALL VMS	VMS		
	EMS/WP					
			APPLICATION TOOLS AND/OR PACKAGES			
			REMOTE DATE BASE			
NETWORK	INTEGRAL NI TO VMS					
			PRINTER, COPIER SERVERS			
		X.25, SNA, DECNET VIA GATEWAY				
# TERMINALS	1 INTEGRAL NI	2-16	4-32 NI T.C.	32-64	64-256	96-512
PACKAGING	TERMINAL	TERMINAL	DESK TOP	CABINET		

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C.

STRATEGY FOR REAL TIME SYSTEMS

C. Applications Class Strategy - Real Time

- Position VMS as leadership system for non-critical response-time applications with interface to critical-response-time 16-bit front ends
- Limit real-time 16-it software enhancements to that necessary for front end role and new peripheral support (plus 11/23J) in order to induce existing customers to transition to VMS as hardware space is covered with 32-bit
- Move responsibility for other real time 16-bit development to LDP and TOEM
- Develop one or more compatible subsets of VMS to serve $16 to $100K system requirements
- Enhance RAMP features for low cost of ownership
- No special coexistence investments beyond existing DECNET and VMS/RSX compatibility commitments
- Develop Scorpio to prevent severe erosion of low-end by semicomputer manufacturers; compete on software/systems functionality and DEC service capability

C. Real Time

Product Strategy Needs

32-Bit System

- Effective packaging and/or subsetting of VMS for $20K-$80K systems
- NI hardware and software to support distributed real time devices (desk top PDP-11s)
- Low cost 16 bit desk top machines
- Familly of removable disks (F+R is ok at the very low end) with 20mb + capacity per cartridge
- Rudimentary software routines for 32-bit board products with development capabilities on larger VMS systems

16-Bit Systems

- Compact packaging for single user desk top, (e.g., replace F-11 with J-11 in MINC)
- Current modular systems extensions
  - One new 16-bit system (11/23J)
- Support of RSX-11M/S, RT
- Networking required to VMS host
  - Decnet
  - NI

REAL TIME (FY83)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K- 250K	$250K - 625K
ENGINES	T-11 F11 BOARD SET	11/23B	11/23B 11/24 11/34 11/730	11/44 11/730 11/750	11/750 11/780	11/780
MASS STORAGE	RX	RX, RL02	AZTECX1	AZTECX2 RA80/TS11 RA80/RL02	RM80/TS11 PINON X 2 RA81/LGCR	RM05/TU78 RP07/TU78 RA81/TU78
SOFTWARE	SSC	RT-11	RSX SMALL VMS ADA 32	RSX VMS	VMS	VMS
		EMS/WP ---------->				
NETWORK		NI TO VMS ---------->				
		VIA QNA	VIA QNA/UNA	X.25 ----------> DECNET ----------> HOST DEVELOPMENT PACKAGE FOR SMALL, DISKLESS VMS IBM ---------->		
# TERMINALS		1-2 INTEGRAL	2-4 DZV-8/Q	4-16 DZ, COMBO ---------->	16-32	16-32
PACKAGING	BOARD SET	BOX	CABINET ---------->			
SENSORS		P.L.	DEVELOPED			

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REAL TIME (FY86)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K - 250K	$250K - 625K
ENGINES	T-11 J-11, SCORPIO BOARD SET	11/23J SCORPIO	11/23J SCORPIO	11/730 , 11/750 NAUTILUS	11/750 NAUTILUS	VENUS
MASS STORAGE		20MB x 2 F+R OK AZTEC	40MB x 2 F+R OK AZTEC	100MB x 2 REMOVABLE 300MB FIXED + TAPE	600MB FIXED + TAPE AND/OR REMOVABLE	600MB FIXED + TAPE AND/OR REMOVABLE
SOFTWARE	32 BIT SSC	RSX SMALL VMS	RSX SMALL SYSTEMS VMS ----------> HOST DEVELOPMENT FOR SSC 32 ----------> EMS/WP ---------->			
NETWORK		NI TO VMS ----------NAUTILUS----------> UNA VIA INTEGRAL PORT ONLY X.25 ----------> DECNET ----------> IBM SNA ----------> VIA GATEWAY				
# TERMINALS	1	1-4 INTEGRAL	4-6 VIA NI ---------->	8-24	24-48	24-48
PACKAGING	BOARD SET TERMINAL	TERMINAL DESK TOP	DESK TOP	CABINET ---------->		
SENSORS		P.L.	DEVELOPED			

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D.

Strategy for Transaction Processing

D. Application Class Strategy - Transaction Processing

- o Layered software on top of VMS for leadership in ease-of-implementation/ease-of-use transaction processing
- o Focus on smaller, simpler, more general applications than IBM CICS/IMS
- o Emphasize enhancements to terminal functionality (CATS), efficiency, and connectivity (NI)
- o Cut losses on TRAX-11 ASAP

Product Strategy Needs

32-Bit Systems

- Transaction processing software with forms management and ability to tune terminals for a specific environment
- Journaling, fast restore and backup
- Interactive data base management
- Large disks with good access time
- Easy to learn and use documentation
- Excellent COBOL
- Support of many application terminals with heavy load

Transaction Processing - Product Strategy Needs

16-Bit Systems

- o Intelligent terminal
  - Cluster (MUX) control (1-4 terminals)
  - Distributed intelligence (FMS, etc.)
  - Data cache (limited storage)
  - Slave to VMS host
- o Networking to VMS host
  - Decnet
  - X.25
  - Local network

TRANSACTION PROCESSING (FY83)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K - 250K	$250K - 625K
ENGINES	TERMINALS K.U.	11/23 B	11/24 11/23B	11/44 11/730	11/750	11/780
MASS STORAGE	RX? 5" WINCHESTER + BACKUP	AZTEC	AZTEC	RA80/TS11 RA80/RL02 PINON X 2	RA81/LGCR	RP07/TU78 OR 2 X RA81/TU78
SOFTWARE	K.U. OS	SCS	SCS/RSTS-E	RSTS/E SMALL VMS	VMS	VMS
				TRANSACTION PROCESSING SOFTWARE ---------->		
				INTERACTIVE DATA BASE ---------->		
				JOURNALLING, TUNABLE TERMINALS ---------->		
				HI AVAILABILITY SOFTWARE		
				DOCUMENTATION ---------->		
	FORMS MANAGEMENT ----------			HOST SUPPORT FOR K.U.'s ---------->		
				HOST SUPPORT FOR K.U.'s		
	EMS/WP ---------->					
NETWORK	QNA? NI TO VMS	QNA	UNA	UNA	UNA	UNA
		2780/3780 ---------->				
				X.25 ---------->		
				SNA ---------->		
		DECNET ---------->				
# TERMINALS		1-4 DZV-8	1-4 DZ11	8-16 DZ11 COMBO	16-48 KDZ11 COMBO, NI TC	64-128 KDZ11 NI TC
		LOW COST TERMINALS ---------->				
PACKAGING	TERMINAL	CABINET ---------->				
OTHERS				MIGRATION TOOLS FROM 16 BIT		

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TRANSACTION PROCESSING (FY86)

	$2.5 - 6K	$6K - 16K	$16K - 40K	$40K - 100K	$100K- 250K	$250K - 625K
ENGINES	TERMINALS J-11 CT	11/23J	11/23J SCORPIO	SCORPIO NAUTILUS	NAUTILUS	VENUS
MASS STORAGE	5" (2X) + BACKUP	AZTEC	100-150MB BACKUP AZTEC	300MB	600MB	1200MB
SOFTWARE	CT O.S.	SCS/RSTS/E	SMALL VMS	VMS	VMS	VMS
	EMS/WP ---------->					
	FORMS MGT ---------->					
			MORE HOST SUPPORT FOR K.O.'s ---------->			
			(ASSUME OTHER FY83 SOFTWARE IS DONE)			
	EMS/WP ---------->					
NETWORK	INTEGRAL NI TO VMS ---------->					UNA
	X.25, DECNET, SNA VIA GATEWAY					
			TRANSACTION ACCESS TO IBM AT PROGRAM LEVEL TO FACILITATE CASUAL NEEDS			
			REMOTE DATA BASE ----------			
# TERMINALS		1-8/NI	4-12/NI	16-64/NI	64-256 NI, NI TC	128-512 NI, NI TC
PACKAGING	TERMINAL	DESK TOP	DESK TOP	CABINET ---------->		

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E.

Strategy for Office Information Systems

E. Applications Class Strategy - Office Information Systems

- Use WORD-11 as stopgap layered product and VT278 for stand alone
- Retain compatibility with WPS-8
- Do stopgap mail product using VAX DSM
- Do long-term development of layered OFIS on VMS
- Intensive effort to refine strategy to better match market needs, competitive environment, and DEC resources

Product Strategy Needs:

16-Bit Systems

- Word processing
  - Networking (VMS)
  - Mail
- Integrated workstation
  - Single user context (i.e., stand alone word processing)
  - Multiple functions
  - Host(s) dependent for data base, etc.

E. Office Information System

FY83-FY86

Product Charts

F.

Strategy for Profession Based Systems

F. Applications Class Strategy - Profession Based Systems

- o Rapidly develop attractive single user system (CT) utilizing PDP-11 architecture for time-to-market and exploitation of huge software base.
- o Simultaneously push development of market definitions, distribution channels, etc.
- o Investigate local area networks of PBSs.

Profession Based Systems

FY83 - FY86

Product Charts

G.

32-Bit Systems Product

Goals and Objectives

G. Systems Strategy 32-Bit

General Goals

1. 32-bit product excellence in the $40 to $250K+ range (FY81-FY85). Extend range down to $16K by FY85/86.

   Generate market pull via superior functionality and cost performance to make 32-bit products customer purchases choice.

2. 16-bit personal computer, desk top systems product excellence in the $2.5-$16K range (FY81-FY85). Extend range down to $1K in second half of decade.

3. Product excellence and leadership in local area distributed processing (FY81-FY85) via effective 16-bit personal computers, 32-bit engine and NI interconnect.

4. Exploit current products as they are, to satisfy existing applications needs.

Implementation - Strategy

1. Investments

   - Fund and staff 32-bit products, 16-bit personal computer, NI communication
   - Allocate remaining resources to maintenance and few selective enhancements of some existing products

2. Customers

   - Promote strategic direction by emphasizing goodness of PDP-11 at the low end and VAX for larger systems
   - Promote distributed processing with today's products (e.g., MINC, 11/780, Decnet)

3. Rationale

   - Capitalize on our strengths (16-bit, 32-bit, Decnet architecture)
   - Focus the efforts to achieve excellence in specific areas rather than uniformly dispersed ad hoc capabilities

G. Systems Strategy - 32-Bit (continued)

Objectives FY81 - FY85

Leadership 32-bit products in the $30K - $500K systems range and in the $15K (and up) for OEM prdocuts

Cover the needs of all markets and applications in that $ range with 32-bit products as first priority

Explore the need for 32-bit board products

Maintain a single O. S. Achieve small system size through packaging and subsetting of VMS

Focus new 16-bit development on tabletop systems and intelligent terminals (less than $16K)

Exploit 11/24 and 11/44 to satisfy needs of existing 16-bit customers in conjunction with 32-bit offerings

The 32-bit systems cost and functionality must be sufficient to create market pull away from 16 and 36-bit systems, i.e., investments must be made now to achieve the $30K and up goals in (FY82/83) and the less than $30K systems goals by FY85

Objectives FY85 -FY88

Expand 32-bit leadership to low end ($10K - $30K) by providing 32 based intelligent terminals and microcomputers

Maintain high end cap at $500K per system, i.e., develop constant cost, greater performance machines

Use 16-bit at the very low end (less than $10K) for terminals and controllers

H.

16-Bit Systems Product Strategy Implementation

Hardware Objectives

Software Objectives

H. 16-Bit Systems Strategy

Hardware

Drive for leadership in personal systems, sustain existing application base on traditional system

- o Focus dollars into tabletop systems
- o Continue Q-bus systems with one more product 11/23J (J-11 Aztec), enhance ease-of-use customer installable
- o No 16-bit unibus systems beyond 11/24, 44

Software

Sustain existing base with minimal investment

- o Effective tabletop requires development of some layered software
- o RT - tabletop, OFIS
- o RSX-11 M+ tabletop, no sysgen; 11/23, 11/24, 44, R&S, OFIS
- o SCS/RSTS, 11/23 B, J, 11/24, 44, OFIS
- o RSX11-MP; IAS; TRAX-11 - no Central Engineering support
- o FMS-11, tabletop (intelligent terminal, slave to VMS/TPSS)
- o Support a RSTS to VMS transition strategy
- o Ease of use enhancement required for traditional systems

I.

36-Bit General Systems Strategy

I. 36-Bit Systems Strategy

TABLE OF CONTENTS

1. Current 10/20 Market

2. Market Strategy

3. Product Strategy

4. Product Group Strategy

I. 36-Bit Systems Strategy

1. Current 10/20 Market

Timesharing/Multitask

- General purpose timesharing
- Interactive business

Sales are based on timesharing functionality/performance with parallel production jobs maximizing thruput.

2. Market Strategy

Base Plan

- o Maintain a mainframe presence until VAX software matures and Venus is introduced
- o Timesharing focus until transition to DDP with intelligent terminals is mature
- o Grow installed base revenues through Jupiter

36-32 Coexistence Plan

- o Increase the VAX business in the 10/20 market (installed base)

3. Product Strategy

- o Jupiter
- o Minimum O.S. investment
- o Layered product enhancements
- o Leverage off as many corporate developments as possible:
  - Peripherals
  - CI
  - Mercury
  - MSC-50
- o Phase II communication
  X.25

36 - BIT TIP

		ECS	NDC	CSI
Acct. Strategy	Current 10/20 accts.	60%	Yes	Yes
	New accounts	40%	Yes	No
	Penetrate 11/VAX accts.		Yes	Yes
	Unique Account Profile	Higher Education (colleges/univ.)	$100M + Accts. $30-100M on a selective basis	Data Services Large named strategic accts.
Applications	Desired	Instructional/end Academic General TS Network Host Admin (2 yr. college) Multi-language requirements	Time-Share Financial Mfg. Operations Commercial Interactive processing Mfg. Productica and Control	In House TS Finance Modeling APL
	Undesired	Dedicated Admin.(Univ.)	Custodial EDP-Batch	General Purpose EDP
PG Technical Support People (Does not include mktg.)		Dave Moroses Mitch Perlitch Fred Smith	C. Cannizzaro (Two slots open)	J. Hartley R. Uphoff M. Taylor
	Prospect Seminars	Univ. Seminar Series	Yes (Six major cities)	No
	Sales Rep. Trng.	Specialty Book	Yes	Yes
	Additional	Customer Reference Brochures	Sound/Sync. Customer Testimonial	Generic 36 - BIT Training

PRODUCT GROUP STRATEGY AND SUPPORT

		ESG	GSG	LDP
Acct. Strategy	Current 10/20 accts. New accounts Penetrate 11/VAX accts Unique Account Profile	90% of effort 10% of effort General Purpose Engineering Companies or Departments	ARPA Upgrades Yes Yes Accounts which have large system exp. and capable SW staffs.	Yes Yes Yes Large RSCH Lab Public or Private
Applications	Desired Undesired	PCB Layout (DWR-CPS) Engr. TS Structural, mech. and elect design and analysis Any outside of engr. related	Communications Command/Control Dist. Data Base Combat Systems Support Interactive TS	Where account has large number of concurrent users and require full data base
PG Technical Support People (Does not include mktg.)		Norm Valentine Kent Blackett Tom Kent Marlene Knott	Dave Dodge D. Anderson J. Francis C. Dimino	M. Flitterman and 2 1/2 people in group.
Prospect Seminars Sales Rep. Trng. Additional		Yes Specialty Trng. Demo/Benchmark DWR-CPS Video	Yes Yes As req'd on project by project basis	Yes Generic

III.

IRON STRATEGY

III.

IRON STRATEGY

Strategy Boxes

- Transition to full family of 32-bit system as fast as VLSI effort (Scorpio) permits in order to prevent erosion by semicomputer firms
- Maintain VMS as pre-eminent, high-functionality multitask system; develop small VMS for low-end systems; add dependability features
- Critical-time real-time response implemented through 16-bit front-ends
- Evolve to new family of interconnects--Q22, BI, NI, and CI

Strategy Boards

- Build J-11 chip and board to satisfy 16-bit base
- Move to Scorpio ASAP to prevent serious erosion by semicomputer houses
- Determine if small enough VMS is possible to satisfy market while preserving strict familiness
- P/L funding for special development tools
- Pricing/positioning problems versus boxes and systems remain a severe risk given need for familiness and shared use of Central Engineering-developed products

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IV.

PERSONAL COMPUTER

(AND VIDEO TERMINALS)

VIDEO TERMINALS AND PERSONAL COMPUTERS

DEFINITIONS

VIDEO TERMINAL - Element of a total system employing soft copy (video) technology and dedicated to information entry and/or retrieval. Local intelligence or computing power may be employed to improve total systems performance or to enhance the interactive utility of the terminal. Video terminals must be connected to a host computer or communications network when in use.

PERSONAL COMPUTER - Complete computing system dedicated to an individual user, providing all system elements necessary for stand-alone operation. A personal computer often may function as an intelligent terminal/DDP node within a master/slave or peer cluster network environment.

MARKETS/APPLICATIONS

Markets	Products	Applications
System console	Video terminal	1. System initialization, control, error reporting, and status
Timesharing or data entry terminal	Video terminal	1. Access to local or remote computers for timesharing, EMS, graphics, text preparation, etc. 2. Data entry and/or data retrieval
Word processing/ office automation work station	Video terminal or personal computer	1. Heavy focus on word processing with later expansion into other office automation tasks, through large system or personal computer.
Intelligent terminal/DDP node	Video terminal or personal computer	1. End-node in VMS, DECnet, NI environment 2. Access to value-added network 3. IBM device/protocol emulator 4. Peer in personal computer cluster (personal computer only)
Profession-based system	Personal computer	1. Focus on integrated hardware/software package for professionals in targeted markets (scientific, education, engineering, administration, etc.)
Small business/ independent professional system	Personal computer	1. Stand-alone computing with some network access 2. Heavy focus on applications software

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GOALS

- Maintain leadership in high functionality video terminals.
- Strengthen total systems capabilities in DDP through development of competitive, highly compatible video terminals, low-end network nodes, and their support software.
- Provide leadership products for interactive computing and information management within the office automation market.
- Establish DIGITAL as a major supplier of personal computers/very small business systems for professional and small business applications.

STRATEGIES AND TACTICS

Common

- Evolve a family of terminals and personal computing products based upon a common architecture:
  - Emphasize compatibility across the family, with particular emphasis on common firmware architecture, hardware/software interfaces, user interface, and communications options.
  - Employ common options and components whenever possible.
  - Emphasize modularity in order to achieve family breadth and architectural longevity and to facilitate incremental enhancement.

Video Terminals

- Focus on video terminals as the future, all-purpose "terminal at every desk" capable of serving multiple applications:
  - Provide a compatible family of video terminal products spanning the range from simple ("dumb") terminals with asynchronous or character-at-a-time communications to editing ("smart") terminals with block mode synchronous communications that can off-load tasks from the host.
  - Provide options and accessories (user programmability, printers/plotters, graphics tablets, voice I/O, etc.) required to allow a single terminal to serve multiple applications on a variety of (DIGITAL and non-DIGITAL) host computers.
  - Emphasize graphics capabilities and applications; recognize trend toward color graphics.
- Provide the video components for personal computers.
- Develop communications options/products required to support video terminals and personal computers.

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STRATEGIES AND TACTICS, continued

Personal Computers

. Enter the market in a timeframe concurrent with the incorporation of the mini-Winchester disk and 16-bit microprocessors into personal computing systems. Top priority is on time-to-market and maximum manufacturing ramp for the initial product set.

. Compete effectively on a price/performance basis, and win with superiority in quality, ease-of-use, communications, and flexibility.

. Design for high volume manufacture, customer installation, and low cost of ownership. Place strong emphasis on total systems offerings with integrated documentation and support.

. Provide a high volume family of base products which are sufficiently modular to allow their effective adaptation for particular market needs by various marketing/engineering groups within DIGITAL.

. Provide software targeted in the following areas:

  - Base system support for all major 16-bit operating systems with:
    . Flexibility required for individual market targets,
    . Support for existing PDP-11 applications software.

  - Focused on the development of high-level, easy-to-use software functionality for personal computing with emphasis on word processing and related office functions, and on distributed utilities within a VMS environment.

  - To create an application magnet which encourages development and provides support for a broad library of applications software created by DIGITAL, its OEMs, and independent software houses.

DELIVERABLE PRODUCTS - see next pages

DELIVERABLE PRODUCTS

Video Terminals

FY'83

	0 - 1 K	1 - 2.5K	2.5 - 6.5K	6.5 - 16K
VIDEO TERMINAL		VT101 VT102	VT125	
SCREEN SIZE		12" & 24 LINES ---------->		
PACKAGE		VT100 PACKAGE ---------->		
FUNCTIONALITY		VT100 ---------->		
		PRINTER PORT ---------->		
		AVO	GRAPHICS	
COMMUNICATIONS		RS 232 STANDARD ---------->		
		20mA OPTIONAL ---------->		

FY'86

	0 - 1 K	1 - 2.5K	2.5 - 6.5K	6.5 - 16K
VIDEO PRODUCT		VT-X	VT200 VT200FP VT200C	
SCREEN SIZE		12" 24 LINES	15" 17" 13" 33 LINES 66 LINES 33 LINES (COLOR)	
PACKAGE		NEW, TBD ---------->		
FUNCTIONALITY		VT102 + GRAPHICS, SUB- & SUPERSCRIPTS, SCROLLING REGIONS, 1 PAGE DISPLAY MEMORY, PROPORTIONAL SPACING ---------->		
			OPTIONAL TEXT MEMORY, GRAPHICS ENHANCEMENTS, PORT/SLOTS FOR USER OPTIONS, ROMS FOR FIRMWARE ENHANCEMENTS, CHARACTER SETS	
COMMUNICATIONS		19.2 KB ASYNCHRONOUS STANDARD ---------->		
		X.20 ASYCH/X.21 SYNCH BLOCK MODE STANDARD---------->		
		MULTIDROP STANDARD---------->		
		INTERNAL MODEM(S) OPTIONAL ---------->		

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V. COMPONENT STRATEGIES

V. COMPONENT GOALS AND STRATEGIES

The following definitions have been used for goals and strategies:

1. GOALS

   The statement of a better place you would like to be and the reason for wanting to be there

2. STRATEGIES

   The paths and alternatives selected to achieve the goals

A. STORAGE SYSTEMS GOALS AND STRATEGIES

Goals

- Develop or acquire leadership or at least competitive storage components, devices and attachments across the product spectrum as rapidly as possible; these products should primarily match the systems needs of the corporation and secondarily, should be saleable as components. Recognizing that generally IBM has a dominating lead, we should excel first at the low-end and quickly extend this competitive position puwards.

- Be recognized as leaders by our customers relative to our systems, third party, and selected components competition

- Continue to establish joint siting of engineering and manufacturing as technology centers, managing them for outstanding performance, for rapidly advancing process intensive technologies

- Emphasize the quality, reliability, and ease of use in the implementation of our products

- Track storage technologies and select a hierarchy of winners for the systems that we sell

- Measure ourselves as our customers measure us and evolve our metrics as our markets evolve

- Increase our market share by encouraging the establishment of braoder distribution channels and field merging of storage products at both the subsystems and components levels

Strategies

- Low end ($Ø - $16K base systems)

  Disk: Maintain low cost removable hard disk leadership

  Tape: Continue to explore opportunities for leadership in cost effective block mode non-IBM compatible tape products

  Attachments: Primary need for low-entry cost supports movement toward integrated attachment and sharing of host CPU power and packaging

  Memory: Maintain leadership through timely utilization of industry available RAMs and semi-custom LSI

o Mid-range ($16K - $100K base systems)

Disk: Continued technology investment to reach a highly competitve position (proposal now pending to invest in technology to place us in a leadership position)

Tape: Purchase industry compatible 1/2" tape drives. Focus internal efforts on cost reduced controllers and formatters. Continue to explore non-compatible technologies

Attachments: Provide cost effective attachments from SI to major (supported) corporate buses

Memory: Maintain leadership through timely utilization of industry available RAMs, semi-custom and custom LSI

o High End

Disk: Achieve a two-year time-to-market lag on IBM (5 year cost/MB lag) through timely buyout, and effective attachments. (Proposal now pending to invest in technology and products to bring us within 1-2 years cost/MB lag.)

Tape: Continue buy approach to high performance industry compatible tape

Attachments: Continue towards high performance cost effective, remotely diagnosable intelligent storage subsystem attachment

Memory: Maintain leadership through timely utilization of industry available RAMs, semi-custom and custom LSI

B. Software Goals and Strategies

Goals

- Shift mid and high end PDP-11 investment to 32-bit
- Focus PDP-11 investment on low end, tabletop systems with primary emphasis on ease of use. No major operating system enhancement
- Aggressive development of leadership software based on a single, homogeneous 32-bit software architecture (VMS): single implementations of files, languages, applications, communications, utilities, documentation, etc.
- Maintain 16/36 bit market base via shift of investment to outer layers of the product set (languages, applications tools), and away from operating systems. Reduce or stabilize investment in mature systems (IAS, RSX-11D, TOPS, and traditional modes of RSX-11M, RSTS and RT-11).
- Provide the industry's broadest range of compatible software products
- Be the industry leader in ease of use

Strategies

- Start development of low-end compatible VSM system
- 16/32-36 bit compatibility for all new product efforts
- Development of aids and documentation to ease movement from existing 16/36 bit products to 32 bit
- Customer-installable products
- More aggressive efforts on human factors in command languages, query, error message, utilities, development tools and documentation

C. Communications Goals and Strategies

Goals

- Develop local area network leadership to address major applications such as R.T., T.P., T.S., Office (EMS, WP, etc.)
- Concentrate communication product development on a single architecture to reduce combinatorial problem and concentrate on a smaller set of better products
- Support major network architectures (SNA, X.25, etc.) to achieve connectivity of our systems with other vendors' equipment
- Improve ease of use, installation and maintenance by concentrating on enhanced network management, network simulation tools performance measurement
- Insure a smooth transition from DECnet Phase III to DECnet Phase IV

Strategies

- Aggressively develop NI based terminal concentrators, routers, gateways and software to interconnect our major systems
- Concentrate first on functionality, then performance, then cost reduction via LSI
- Develop gateways for SNA, X.25 and later office equipment products (e.g., copiers, etc.)
- Focus DECnet Phase IV on NI support for VMS, RSX, RSTS/E*, RT*, TOPS-20*
- Explore NI products as an alternative to Mercury on CI
- Develop VMS SNA for both backup reasons and VMS based gateway
- Do not start development of new communication devices on Unibus or Q-bus

D. TERMINALS GOALS AND STRATEGIES

SOME GOALS ARE DIRECTED MORE TOWARD THE "INTERNAL MISSION", SOME MORE TOWARD THE "EXTERNAL".

PRIORITY	GOALS	STRATEGIES	RATIONALE
#1.	HUMAN FACTORS & EASE OF USE BE THE STANDARD SETTER FOR INCORPORATION OF HUMAN FACTORS CONSIDERATIONS INTO TERMINALS, BOTH FROM A PHYSICAL PRODUCT CHARACTERISTIC STANDPOINT (E.G. INTEGRAL MODEMS, SIZE, NOISE, VARIABLE CHARACTER SIZES, FULL PAGE, STYLING, CABLING, INTEGRAL PHONES, MAINTAINABILITY, ETC.) AN EASE OF USE STANDPOINT (E.G. SETTING-UP FEATURES, ALTERNATE INPUT/OUTPUT METHODS, SELF-EVIDENT CONTROLS, ETC.)	FOR PHYSICAL PRODUCT CHARACTERISTICS, USE EUROPEAN INPUT AS A GUIDE -- THE WORKER COUNCILS ARE THE LEADING EDGE IN THIS AREA. FOR EASE OF USE, BY A DIVERSE SET OF USERS, ADD CAPABILITY FOR NON-TYPEWRITER KEYBOARD OPERATION (E.G. TOUCH-SCREEN CONTROL, PROGRAMMABLE-LABELABLE FUNCTION KEYS, DATA TABLETS, BADGE READERS, VOICE OUTPUT/INPUT, PENS). THE FIRMWARE CONTENT OF TERMINALS WILL BE INCREASED FOR EASE OF USE -- ADD RESIDENT EDITING, GRAPHING ETC., FUNCTIONS TO SIMPLIFY AND STANDARDIZE USER SCREEN MANIPULATION.	HUMAN FACTORS (PHYSICALS & EASE OF USE) CAN BE THE DISTINCTIVE COMPETENCE FOR DEC AS QUALITY AND SERVICE ARE NEUTRALIZED BY THE NEW COMPETITION.
#2	MULTI-USE, MULTI-HOST TERMINALS PROVIDE TERMINALS CAPABLE OF FILLING USER NEEDS FOR SERVICES THAT ARE FURNISHED BY THE SYSTEMS/NETWORKS OF A VARIETY OF MANUFACTURERS.	BUILD IN CAPABILITY TO EASILY (OR AUTOMATICALLY) CHANGE COMM CODES/ PROTOCOLS, AND COMMAND STRUCTURES, TO ENABLE EFFECTIVE USE ON DEC & NON-DEC LOCAL AREA NETWORKS, DEC & NON-DEC HOSTS.	TODAY, WORKPLACES ARE GETTING CLUTTERED WITH SUPPLIER-SPECIFIC TERMINALS PERFORMING SINGLE TASKS. THE TERMINAL AT THE DESK MUST FILL THE USER NEED FOR A VARIETY OF SERVICES NOT FURNISHED BY DEC. THIS CAPABILITY IS MANDATORY.
#3.	SYSTEM-OPTIMIZED TERMINAL DELIVER A MORE COST EFFECTIVE/HIGHER PERFORMANCE DEC SYSTEM SOLUTION BY PROVIDING SOFTCOPY TERMINALS WHOSE COMMUNICATIONS AND TASK HANDLING CAPABILITIES ARE DETERMINED BY OPTIMIZING AT THE SYSTEM LEVEL SOLUTION.	VIA TERMINALS ARCHITECTURE PROGRAM, CHANGE DEC SYSTEMS AND TERMINALS TO ADD BLOCK MODE MESSAGE ORIENTED CAPABILITY, SYNCHRONOUS COMM, PARTITIONING OF EDITING TASKS, GRAPHIC TASKS TO PROVIDE EFFECTIVE LEVEL OF LOCAL USE.	OUR PRESENT CHARACTER INTERACTIVE ORIENTATION IS DEC'S ACHILLES' HEEL, LIMITING THE NUMBER OF TERMINALS AND/OR PROVIDING POOR PERFORMANCE IMAGE TO CUSTOMER. OUR PRESENT INTERFACE ALSO HELPS THE TELETYPE-COMPATIBLE INDEPENDENTS TO PUT THEIR TERMINALS ON OUR PORTS.

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REVISION 5
11/7/80

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PRIORITY	GOALS	STRATEGIES	RATIONALE
#4.	RAMP (TO BE WRITTEN)	(TO BE WRITTEN)	(TO BE WRITTEN)
#4.	MANUFACTURABILITY PROVIDE FOR CONTINUING IMPROVEMENT IN MANUFACTURING EFFECTIVENESS BY DEVELOPING PRODUCTS WHOSE DESIGNS TAKE ADVANTAGE OF ADVANCES IN THE MANUFACTURING PROCESSES ASSOCIATED WITH TERMINALS.	COUPLE ENGINEERING PRODUCT DEVELOPMENT AND MANUFACTURING PROCESS DEVELOPMENT ACTIVITIES, AT A POINT EARLY IN THE PRODUCT DEVELOPMENT CYCLE, TO GET PRODUCT -PROCESS MATCH DOWNSTREAM IN PRODUCTION.	COMPETITION IN THE TERMINALS BUSINESS WILL BE FROM HIGH VOLUME, HIGH QUALITY ORIENTED SUPPLIERS, SUCH AS IBM AND JAPAN, INC.
#5	WORLDWIDE PRODUCTS PROVIDE PRODUCTS SUITABLE FOR WORLD-WIDE MARKETING.	BUILD IN CAPABILITY FOR EASILY ADDING NATIONAL CHARACTER SETS/KEYCAPS, CHANGING ENGLISH-LANGUAGE FIRMWARE, PROVIDE FOR WORLDWIDE POWER, PROVIDING NATIONAL POWER CORDS, DEVELOPING DOCUMENTATION IN COUNTRY OF USE, CERTIFYING TO VDE/BPO/ PTT STANDARDS OF SAFETY AND EMISSIONS.	A BIG PORTION OF THE DESKS TO BE SERVED WILL BE OUTSIDE OF THE U.S. ALSO, OUR HUMAN FACTORS OBJECTIVES PLAY RIGHT INTO THE EUROPEAN MARKET.

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PRIORITY	GOALS	STRATEGIES	RATIONALE
#5	MODULARITY BE ABLE TO USE FUNCTIONAL MODULES (E.G. MODULES FOR VARIOUS TYPES OF COMM LINES) IN MORE THAN ONE TERMINAL MODEL OR GENERATION.	DEVELOP A MODULAR TERMINALS ARCHITECTURE WHOSE IMPLEMENTATION DOES NOT PENALIZE THE COST OF THE TERMINAL.	COMMON MODULES PROVIDE THE ADVANTAGES THAT COME FROM A REDUCTION IN PRODUCT VARIETY -- LONGER PRODUCTION RUNS OF ONE DESIGN, SMALLER INVENTORIES, LOWER TRAINING COST/LOGISTICS COST/SERVICE COST, SALES & CUSTOMER EASE OF PRODUCT UNDERSTANDING, ETC.
	RANGE OF RO PRINTERS PROVIDE A RANGE OF RECEIVE-ONLY PRINTING PRODUCTS AS A COMPLEMENT TO SOFTCOPY TERMINALS, IN A PRODUCT PRICE RANGE OF $500 TO $2,000.	OPTIMIZE DESIGN FOR RECEIVE-ONLY TO GET COST, QUIETNESS AND SIZE ADVANTAGES. USE HIGH-RESOLUTION DOT MATRIX (HRDM) TECHNIQUES TO GET ACCEPTABLE CORRESPONDENCE QUALITY HARDCOPY AT LOW COST.	THE USE OF RO-OPTIMIZED PRINTERS SHARED OR ONE-ON-ONE WITH SOFTCOPY TERMINALS, IS PART OF THE TREND THAT IS CONTRIBUTING TO THE SLOWING MARKET GROWTH OF HARDCOPY TERMINALS.

(A PLAN FOR THE HIGH $ NON-IMPACT CLASS OF PRODUCT (LASER/XEROGRAPHIC/INK JET) THAT IS REPLACING LINE PRINTERS AND BECOMING "INTELLI COPIERS" IN THE OFFICE HAS NOT YET BEEN ADDRESSED BY THE TERMINALS SPU)

#7.	HARDCOPY TERMINALS MAINTAIN DEC'S LEADING MARKET POSITION IN HARDCOPY TERMINALS.	IMPROVE HARDCOPY TERMINAL PRODUCTS IN AREAS OF FASTER SPEED, SMALLER SIZE, LIGHTER WEIGHT, LESS NOISE, INTEGRAL COMM. (MODEMS/COUPLERS).	MARKET GROWTH RATE IS SLOWING AND WE HAVE A GOOD POSITION. INVEST TO KEEP OUR LEADERSHIP POSITION.

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E. Microcomputers Goals and Strategies

Goal

Use Digital owned VLSI-MOS technology to product successful high volume proprietary microcomputer CPU components:

- o Continue to produce successful, high volume proprietary architectures (e.g., PDP-8, PDP-11, VAX) that will require MOS VLSI to provide significant cost reductions

- o Use industry MOS VLSI components in those instances where there is no market advantag in using a Digital product (e.g., PDP-11 ISP). Base exceptions on corporate make versus buy guidelines

- o Use VLSI to leverage market and/or product opportunities made possible by Digital's investment in design and manufacturing

Strategies

Data Processing:

- o Continue collapsing traditional Digital architectures with VLSI technology (e.g., F-11, T-11, J-11, V-11): High performance, high functionality implementations (two to three times performance every three years) using multiple chips. At the lowest level of system integration the chip sets will be used for SBC; at higher integration levels chip sets will be extensible to provide higher performance (e.g., fast floating point) or additional functions (e.g., CIS)

Low End Microcomputers

- o Provide PDP-11 ISP system and sub-system based components to satisfy distributed intelligence/distributed function capabilities for terminals, communications, mass storage, console/remote diagnosis, and single board computer systems

VI. SUMMARY

SECTION VI. SUMMARY CHARTS

1. System Business as % Corporate NES, FY77-86
2. Budget Overview FY82-84
3. System Price Band Charts

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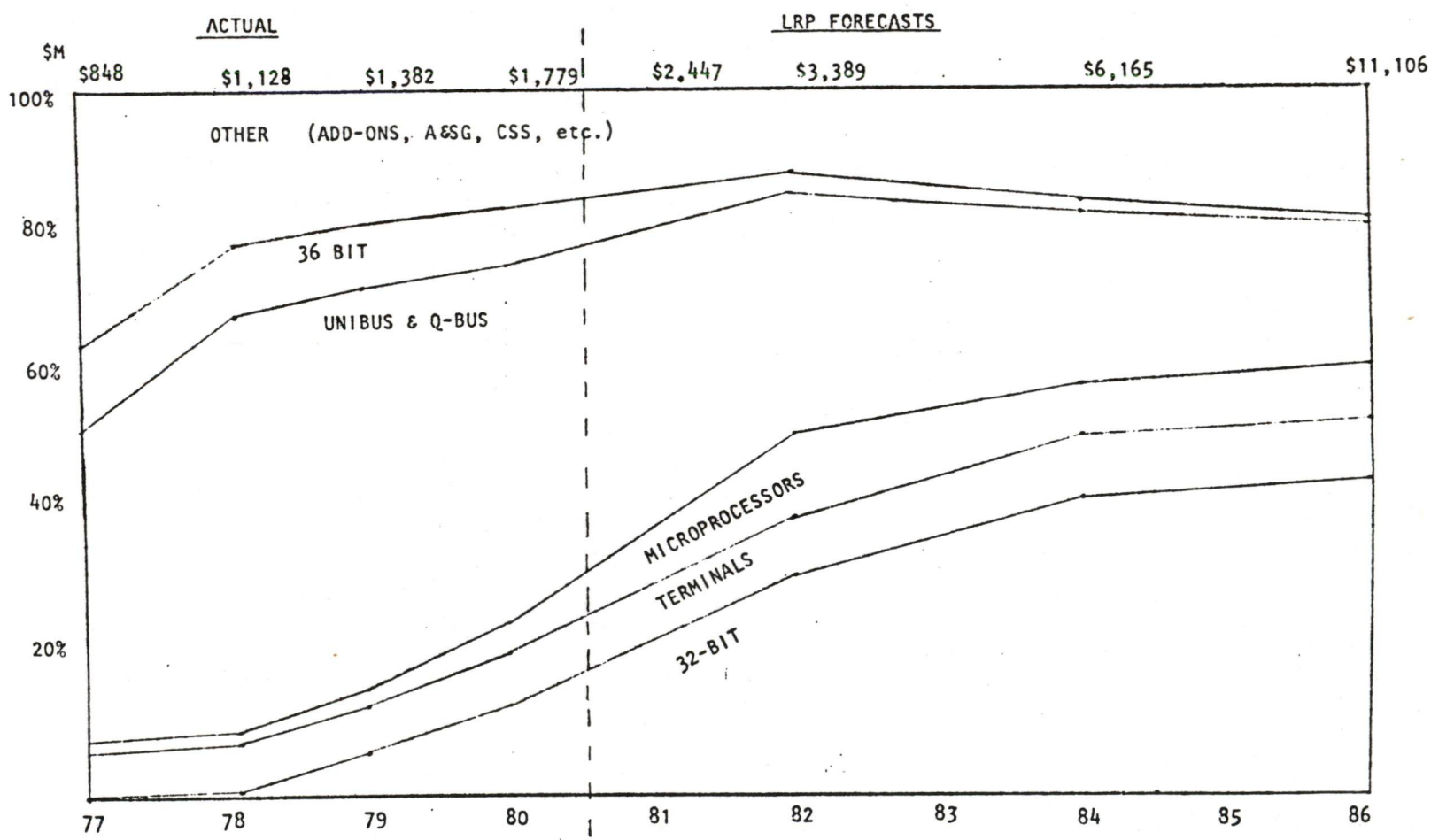
V.C

C. SYSTEMS BUSINESS AS % CORPORATE NES -- FY77 - FY86



Source:

System NES derived using OPTRPT and CHUMS report
Corporate NES per Brown Book.

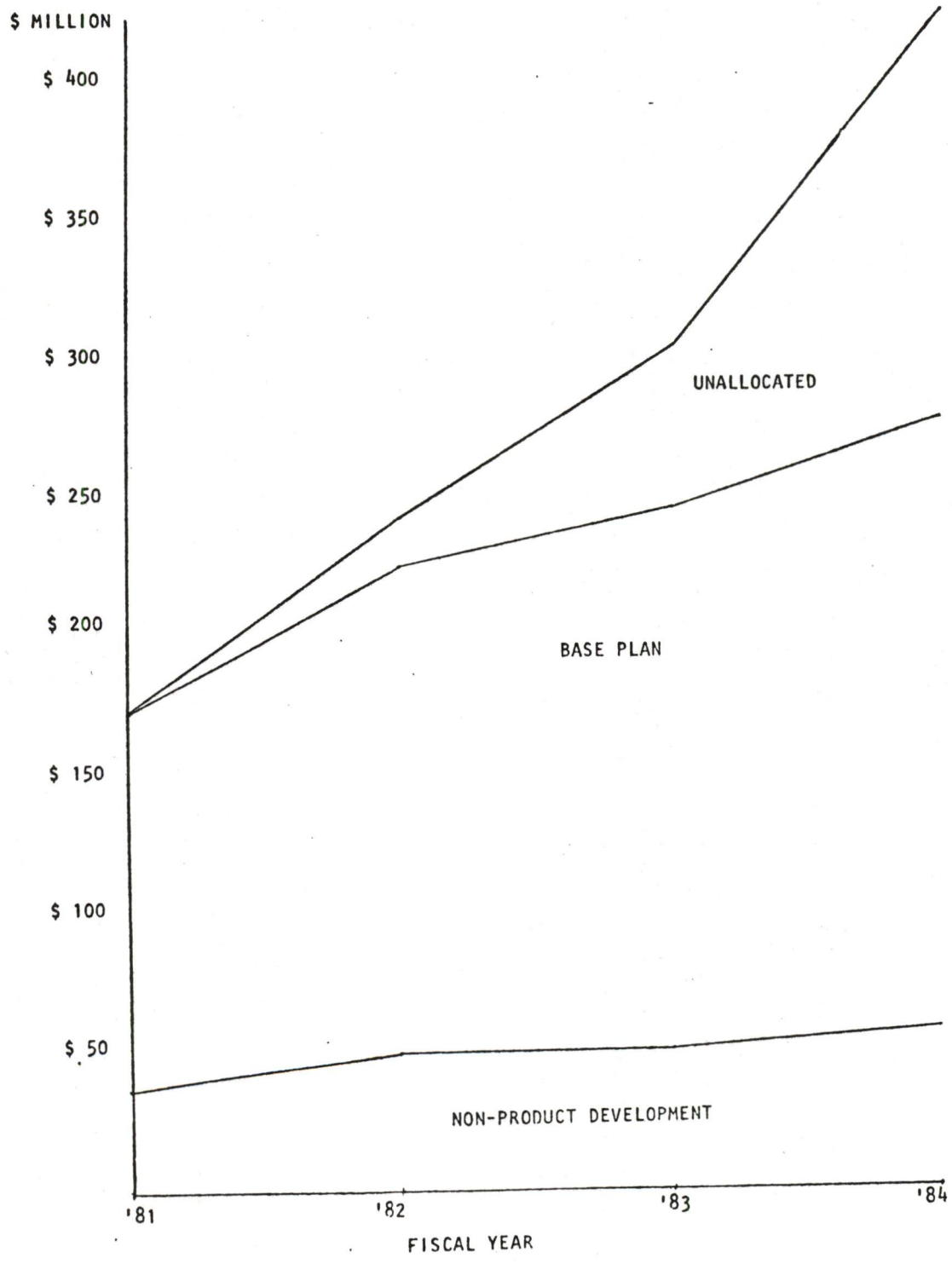
Source:

System NES per Product Group Forecasts (10/80) FY82,84,86

Corporate NES per Product Group LRP's, FY81-85, extrapolated to FY86 @ 34% growth

JS 11/24/80

D. PROPOSED CENTRAL ENGINEERING BUDGET, FY'82 - FY'84



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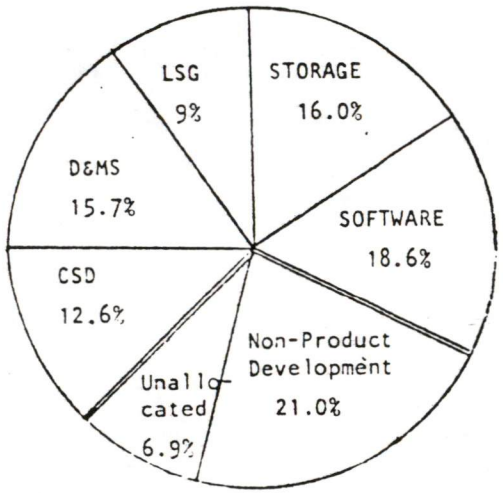
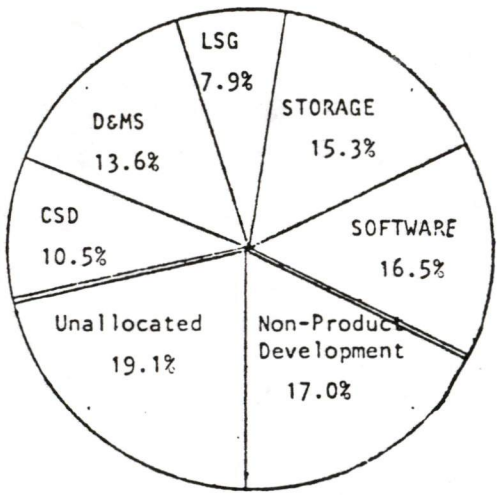
D. CENTRAL ENGINEERING PROPOSED BUDGET ALLOCATION -- FY82 - 84

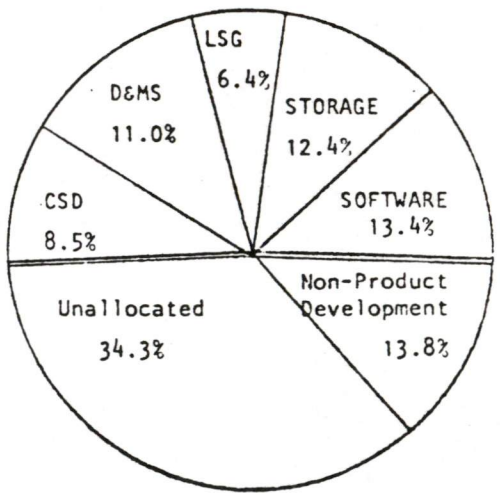
FY'82



FY'83



FY'84



TOTALS $233.3M $307.9M $429.0M

JS 12/1/80

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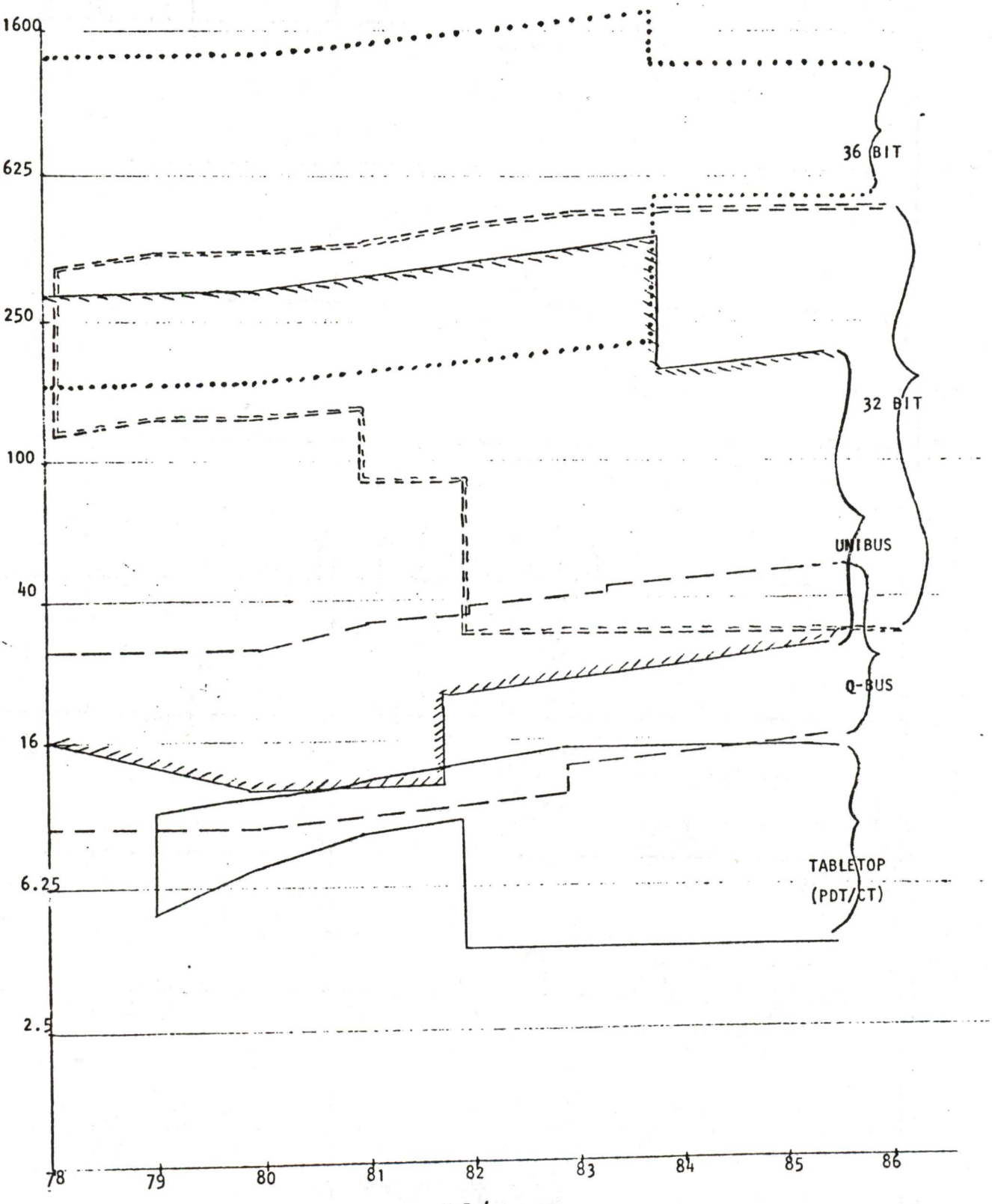
E. SYSTEMS ARCHITECTURES BY PRICE BANDS - FY78 - 85



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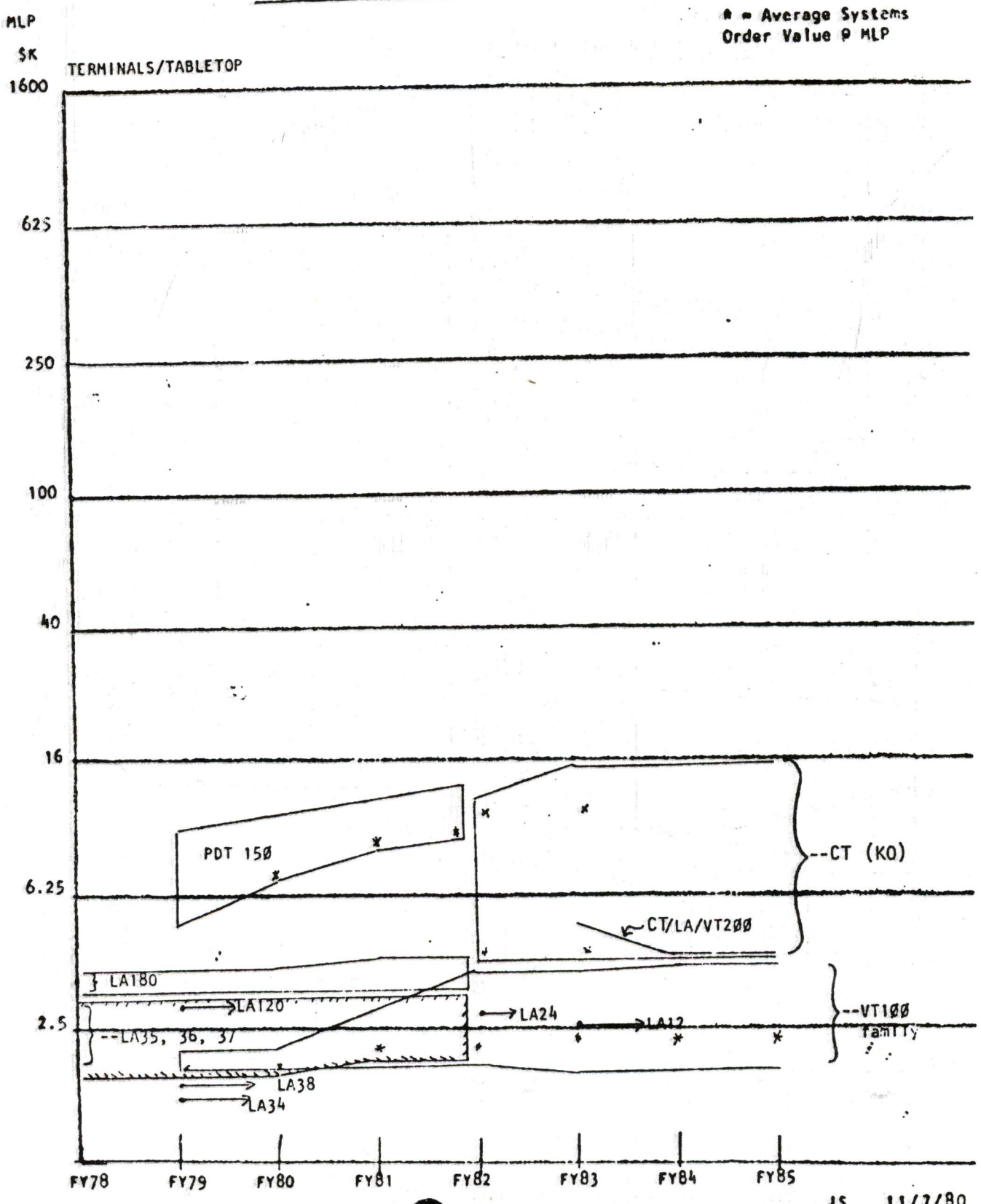
E. SYSTEM PRICE BANDS: FY'78 to FY'85



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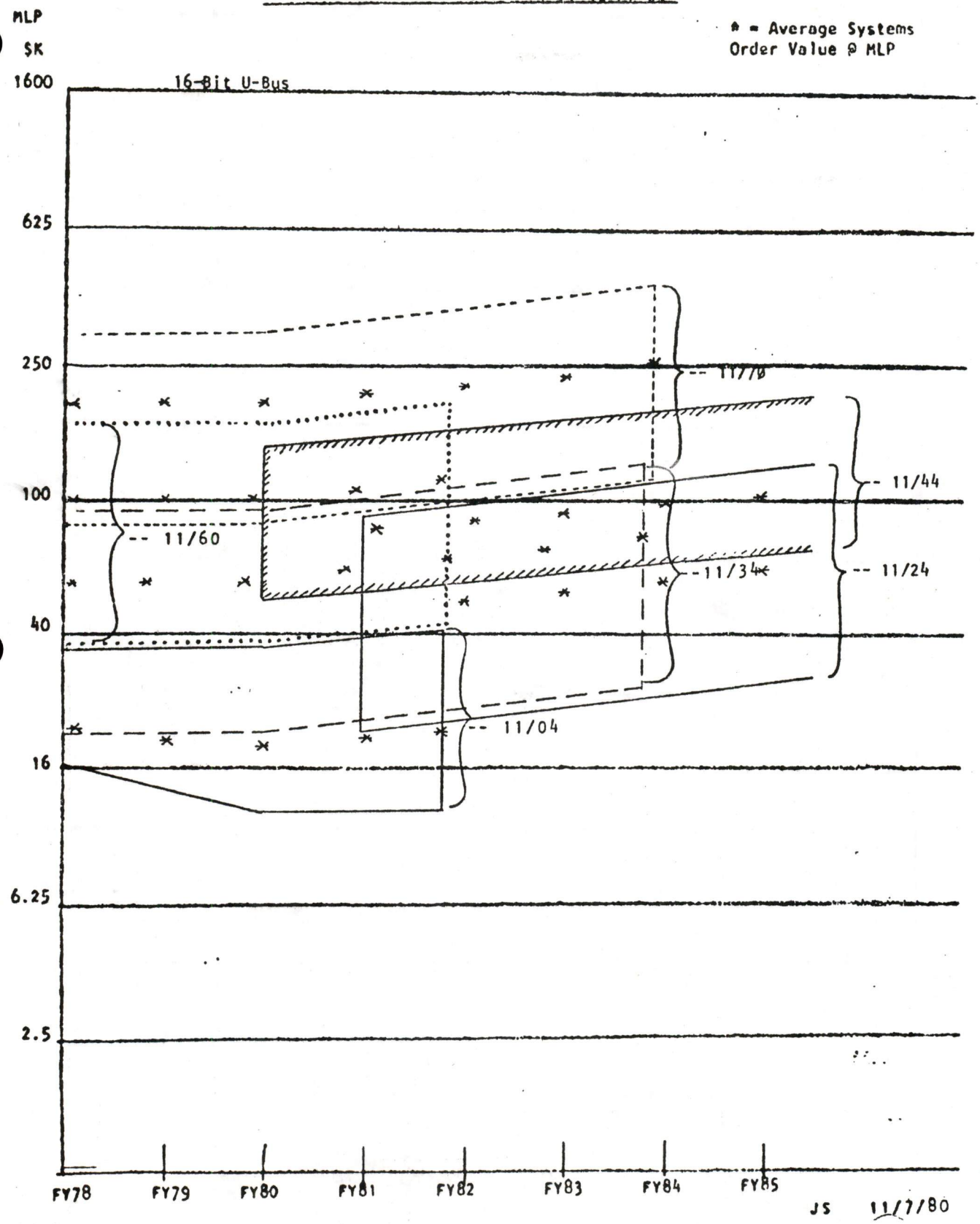
E. SYSTEM PRICE BANDS: FY'78 to FY'85



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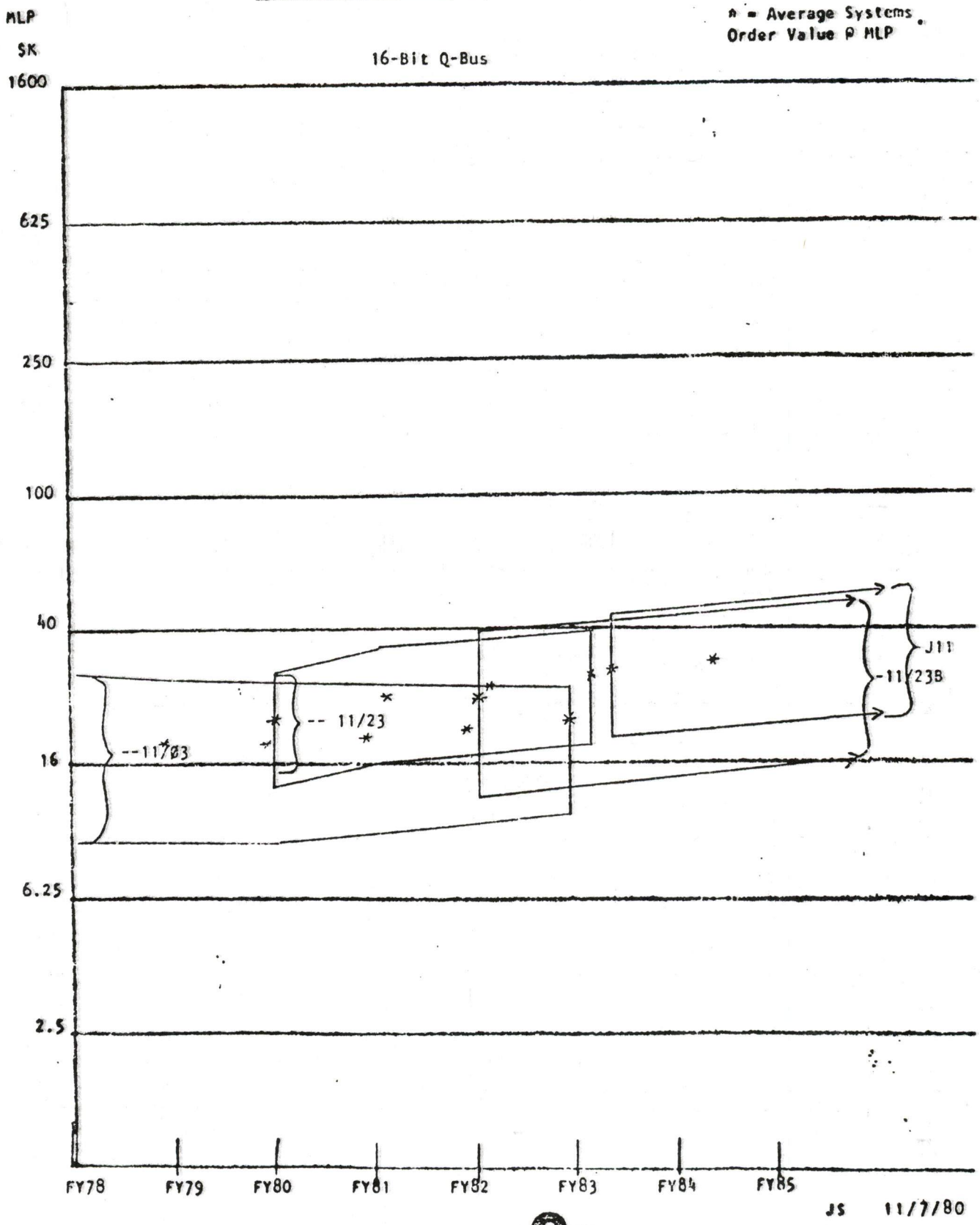
E. SYSTEM PRICE BANDS: FY'78 to FY'85



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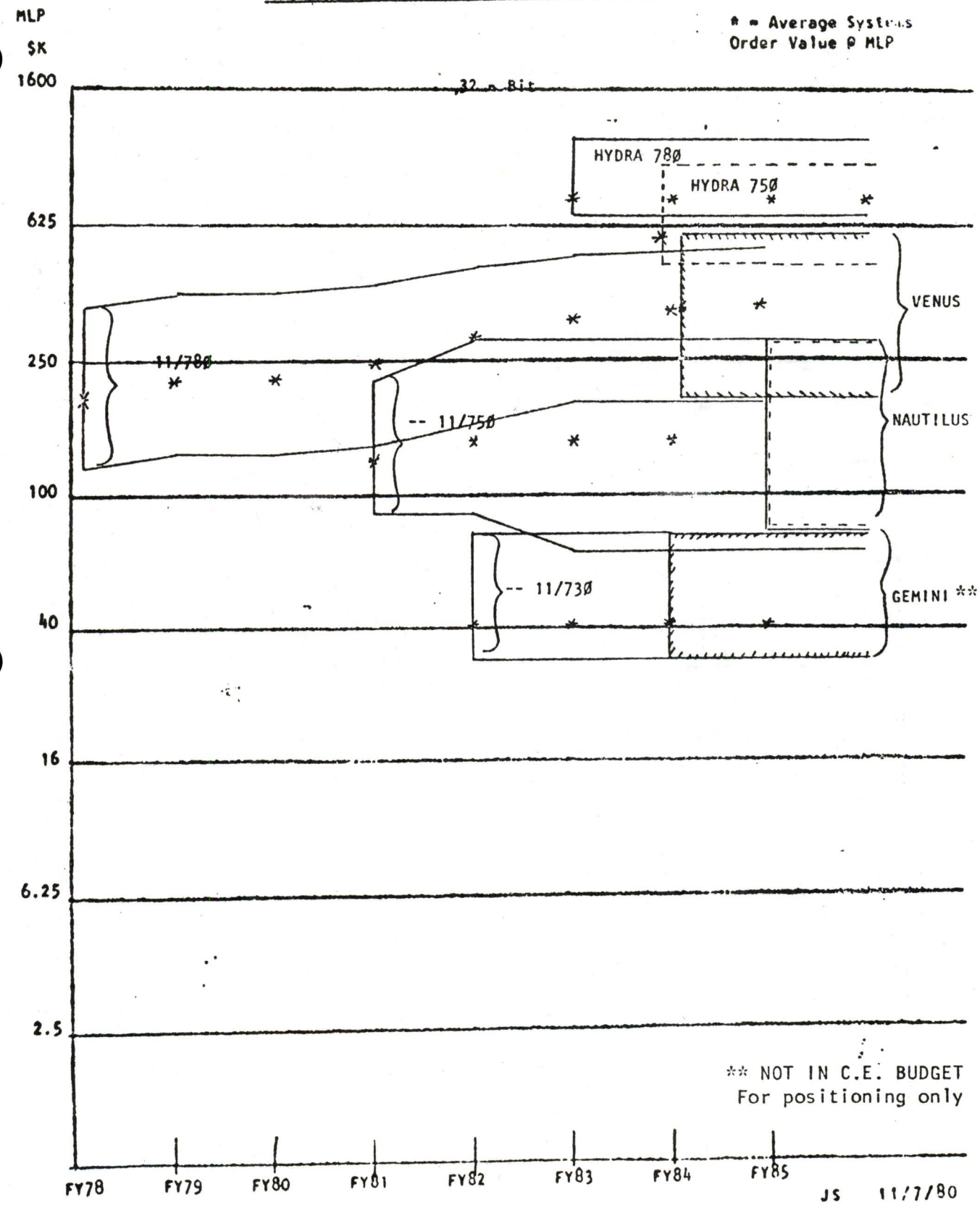
E. SYSTEM PRICE BANDS: FY'78 to FY'85



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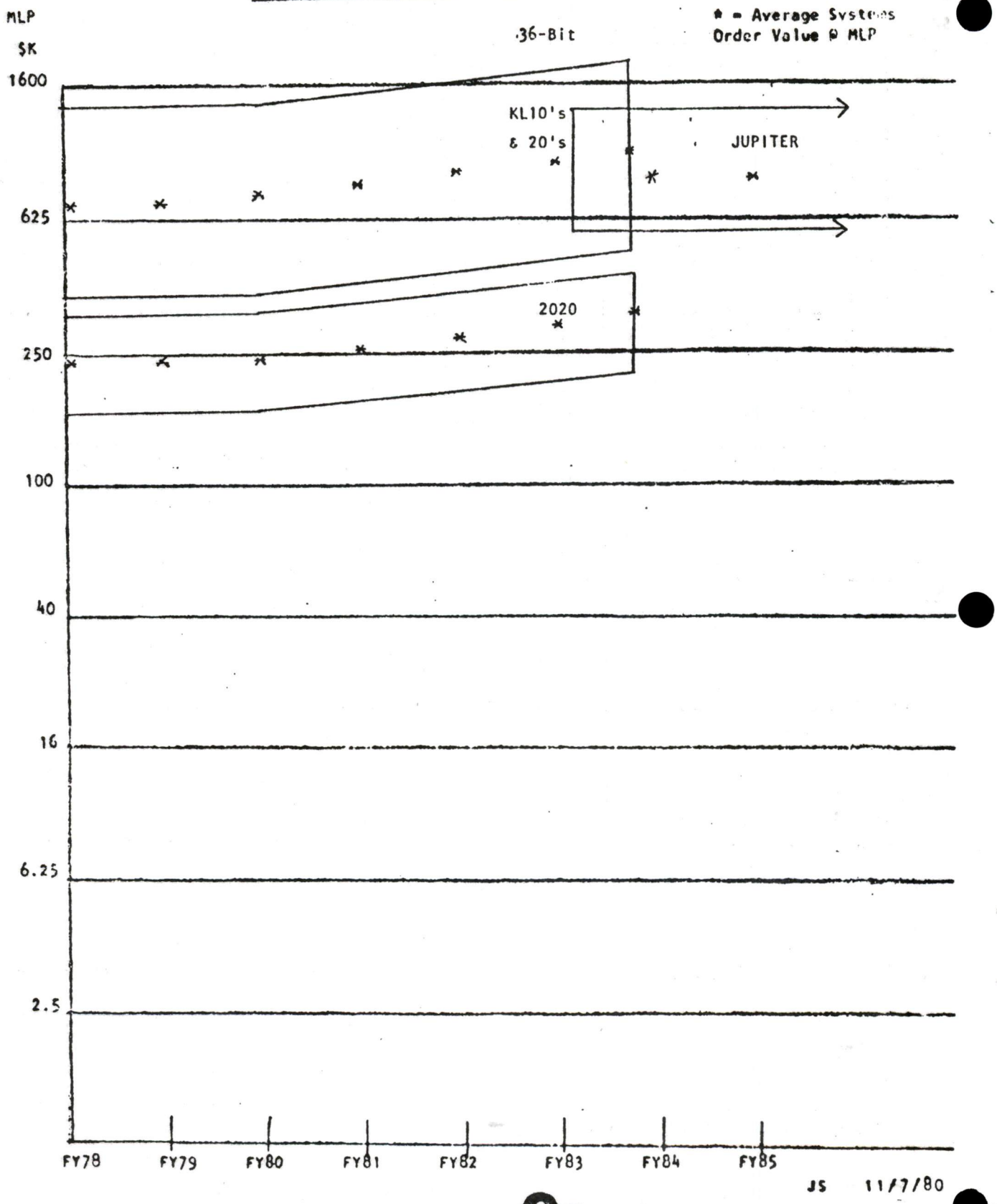
E. SYSTEM PRICE BANDS: FY'78 to FY'85



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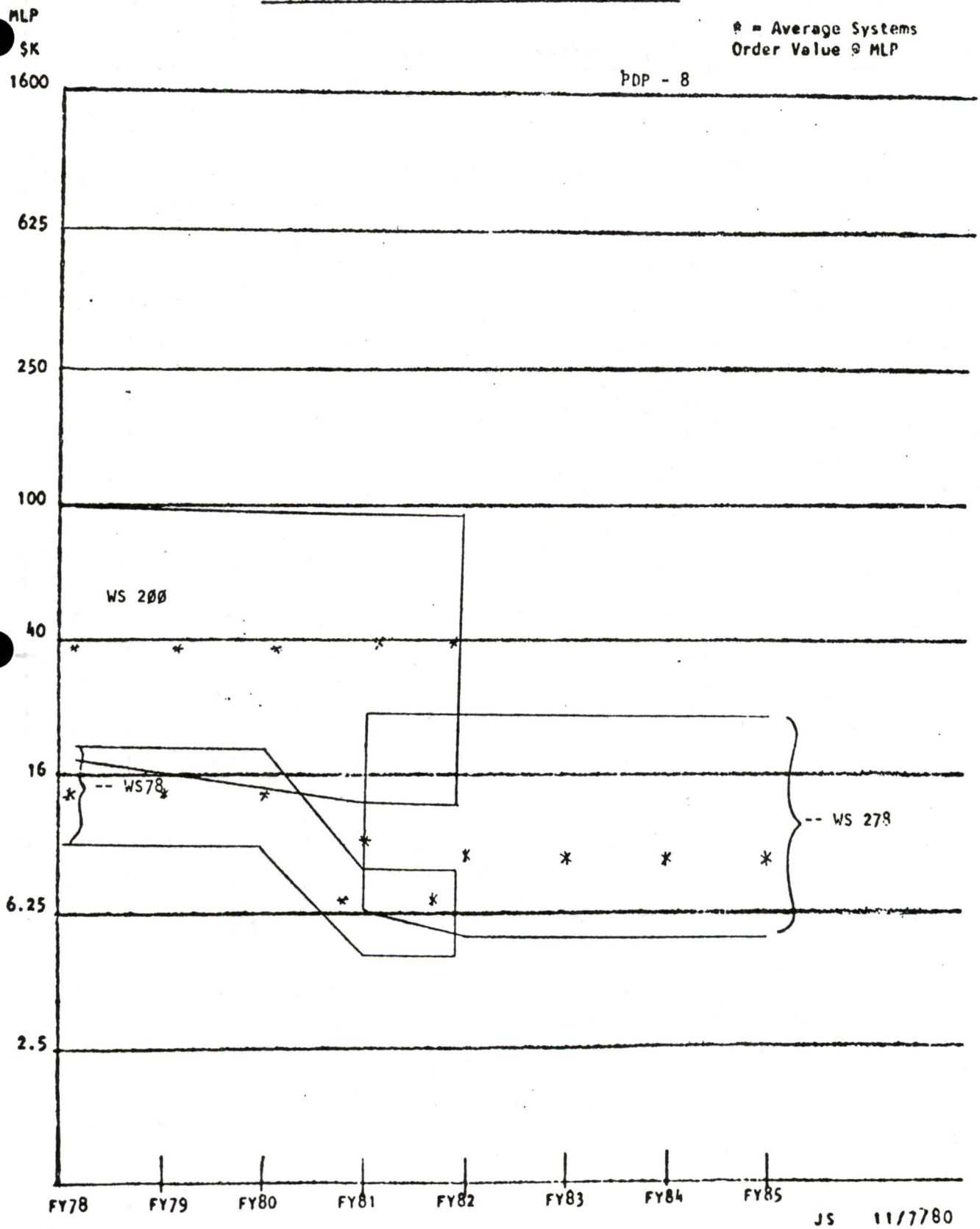
E. SYSTEM PRICE BANDS: FY'78 to FY'85



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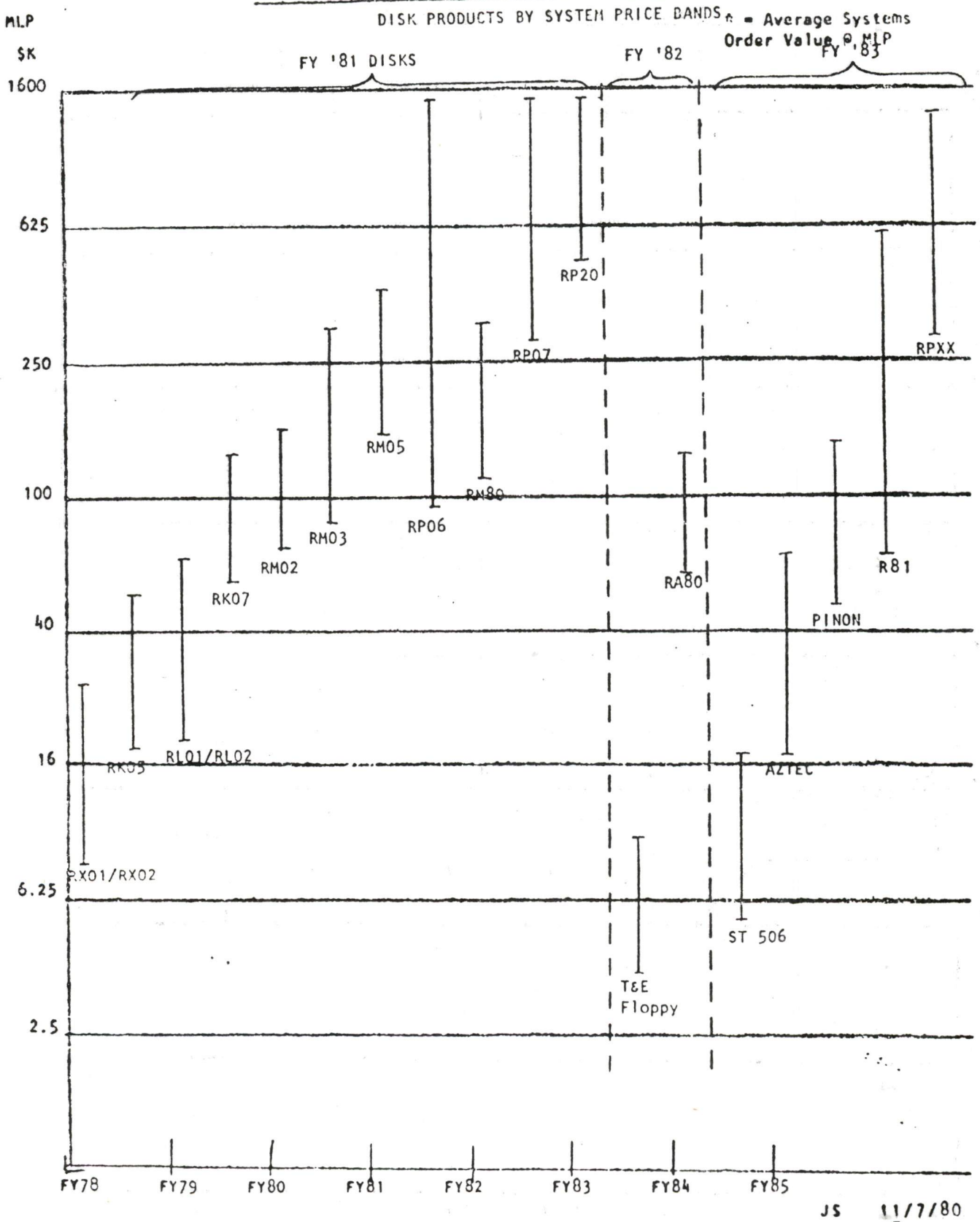
E. SYSTEM PRICE BANDS: FY'78 to FY'85



JS 11/7/80

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VII. APPLICATION DESCRIPTIONS

SECTION - APPLICATION CLASS DESCRIPTIONS

Overview

This section provides definitions and background information on the application classes used in the strategy sections of this document. It should help readers to better understand the product strategies. In addition, it shows some of the ways we hope to build on our application focus in future Red Books in order to better incorporate competitive and business factors.

The following applications classes are desribed:

I. System Business

- A. Multi-user time-sharing systems
  1. General purpose time-sharing
  2. Computation/scientific processing
  3. Interactive data processing
- B. Real-time systems
- C. Transaction processing systems
- D. Office information systems
- E. Profession-based systems

II. "Iron" Business

- A. Boxes
- B. Boards

The application class descriptions are divided into as many as seven sub-topics. The following standard format explains the content of each:

STANDARD FORMAT FOR APPLICATION CLASSES

Definition:

- o Brief description of the application class

Markets Served:

- o Derived from product group LRPs
- o Further refinement in conjunction with product groups needed

Characteristics:

- o Product characteristics in the application class

Trends:

- o Changes expected in requirements for this application class

Customer Buying Criteria:

- o Critical product-oriented buying criteria; excludes non-product considerations such as vendor reputation, service capability, delivery schedules, et. al.
- o To be included on list, factor must be
  - . Important buying consideration to a significant number of customers
  - . Discriminate among competitors

Business/History/Opportunities:

- o Intended to provide financial justification for relative investment in different application classes
- o Not available in time for this report
- o Future reports should include
  - . Engineering investment rate
  - . Current revenue/market share
  - . Target revenue/market share
  - . Specific assumptions

Position vs. Competition:

- o DEC position versus competition as anticipated over time
- o Forecasts of behavior by competitors have high degree of uncertainty
- o Differences between DEC and competitors selected from list of customer buying criteria
- o Only most significant areas of competitive strength and weakness highlighted for each competitor
- o In general, more money or higher priority in obtaining resources could improve areas identified as "DEC disadvantage"
- o Exceptions are identified with parenthetical notation
  - (N) - Not a goal to improve DEC position
  - (S) - Strategic issue resolution required improve DEC position

General Purpose Time-Sharing Systems

Definition:

Remote access personal computing as a centralized or departmental service for

- Interactive problem solving, data analysis, program development
- Heterogeneous applications
- Controlled sharing of information/resources

Markets Served:

- o Commercial, engineering, and laboratory department data processing
- o Educational computing (instructional and administrative)
- o Data service and in-house timesharing

Characteristics - General:

- Many terminals with typically low duty cycle
- Cost of computing per terminal must be low
- Multiplicity of languages and applications
- System must be very approachable from the user terminal viewpoint
- Interactiveness with good response time for edit, compile, link

Trends:

- Moving towards departmental systems; impact of micros in the education environment not understood

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Customer Buying Criteria:

System Cost/Effectiveness ("Buyer's" Issues)

Price/Performance/Capacity

Cost per terminal
Response time
Cost of ownership (maintenance)
# of terminals supported
$/Mbyte file system
Entry level pPrice
Aggregate terminal thruput
File system capacity

"Required" Functionality

Familiness (upgradability)
diversity of programming
Languages
Connectivity to IBM
Connectivity to DEC
Security features
Graphics support
Controlled sharing of
information/resources

User Cost/Effectiveness (Customer Head Count and Quality Issues)

User

Integrated OFIS features
Interactive data query/
analysis
Graphical display/
analysis
Symbiotic support for PBS

General

Speed of learning
Forgiveness of errors
Command/keystroke
efficiency
Native language
support
System availability

Operations

Maintainability features
File system controls
Backup/archive
Scheduling controls
Unattended operation

Programmer

Development environ.
. Advanced debugging features
. Programmer work-bench features
Batch environment
. Conditional Control
. Mountable device allocation
Application Dev. Tools
. Full language features
. Easy database
. Easy report Generator
. Power of utilities and command lang.
. Power of OS features
. Virtual memory

Position vs. Competition:

+ DEC advantage
o Neutral
- DEC disadvantage

IBM 370

		Today	FY'83	FY'86
	Cost/terminal	+	---------->	
	Programming/operations features	+	---------->	
	Command/keystroke efficiency	+	---------->	
	$/Mb file system	-	---------->	o
	Database	-	---------->	o
	Interactive query	-	---------->	o
(N)	Batch features	-	---------->	
(S)	Connectivity to IBM	-	---------->	

HP

		Today	FY'83	FY'86
	VM programming	+	---------->	o
	Cost/terminal	+	---------->	
	Easy database	-	---------->	

PRIME

		Today	FY'83	FY'86
	Software quality/ features	+	---------->	
	RAMP	+	---------->	o
	VM system familiness	-	---------->	+
	VM system database	-	o	+
(S)	OFIS features	-	---------->	o
(S)	Connectivity to IBM	-	---------->	

Computation/Scientific Processing Systems

Definition

General purpose multi-access computing for cost/effective computation with a relatively stable application mix.

Markets Served

- Engineering and laboratory data processing

Computation/Scientific Processing

Characteristics

- Number crunching; fast floating point processors; execution speed for FORTRAN, PLI, ADA - large programs
- Large data bases (drawings, layouts, etc.)
- Need to connect to very large machines (CRAY, CDC, etc...) for further data reduction
- Interactive personal work stations for engineering design
- Graphics for engineering work

Trends

- Moving towards highly functional personal work stations for design work. Dominated by large addressing space machines.

Customer Buying Criteria

System Cost/Effectiveness ("Buyer's" Issues)

Price/Performance/Capacity

MIPS/$
$/Mbyte file system
Entry level price
Aggregate terminal thruput
File system capacity

"Required" Functionality

Familiness
Connectivity to big non-DEC
Connectivity to DEC
Security features
Graphics support
Controlled sharing of information/resources

User Cost/Effectiveness (Customer Head Count and Quality Issues)

User

Integrated OFIS features
Interactive data query/ analysis
Graphical display/ analysis
Symbiotic support for PBS

General

Speed of learning
Forgiveness of errors
Command/keystroke efficiency
Native language support
System availability

Operations

Maintainability features
Backup/archive
Unattended operation

Programmer

Development environ.
- Advanced debugging features
- Programmer work-bench features

Batch environment
- Conditional control
- Mountable device allocation

Application dev. Tools
- Full language features
- Easy database
- Easy report generator
- Power of utilities and command lang.
- Power of OS features
- Virtual memory

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Position vs. Competition:

+ DEC advantage
o Neutral
- DEC disadvantage

IBM
370

		Today	FY'83	FY'86
	Cost/terminal	+	---------->	
	Programming/operations features	+	---------->	
	Command/keystroke efficiency	+	---------->	
	$/Mb file system	-	---------->	o
	Database	-	---------->	o
	Interactive query	-	---------->	
(N)	Batch features	-	---------->	
(S)	Connectivity to IBM	-	---------->	

HP		Today	FY'83	FY'86
	VM programming	+	---------->	o
	Cost/terminal	+	---------->	
	Easy database	-	---------->	o

PRIME		Today	FY'83	FY'86
	Software quality/ features	+	---------->	
	RAMP	+	---------->	o
	VM system familiness	-	---------->	+
	VM system database	-	o	+
(S)	OFIS features	-	---------->	o
(S)	Connectivity to IBM	-	---------->	

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Interactive Data Processing Systems

Definition:

Multi-access interactive application environment for

- Moderately heterogeneous application mix
- Simple, low volume transaction-processing
- Concurrent program development activity

Markets Served:

- o Commercial department data processing
- o Multi-user small business systems
- o Commercial and 'in-plant' publishing

Interactive Data Processing:

Characteristics

- Many terminals with low/medium duty cycle
- Emphasis on ease-of-use due to the general lack of computer technology/terminology knowledge by the utilisator
- System has to be perceived as a productivity tool for information management, data processing and clerical functions
- Interactiveness with good response time especially for data update and inquiry
- IBM central system must be assumed for the larger companies (not the case for small businesses)

Trends

- Moving towards application packages (from vendor or through OEM channels) especially in the small business segment
- Ease of installation and service is becoming a must (vendor's profit and user low sophistication level)

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Customer Buying Criteria:

System Cost/Effectiveness ("Buyer's" Isues)

Price/Performance/Capacity	"Required" Functionality
Cost per terminal	Familiness (upgradability)
Response time	Good connectivity to IBM
Cost of ownership (maintenance)	Connectivity to DEC
$/Mbyte file system	'Dependability' features
Entry level price	Security features
# of terminals supported	Business graphics
File system capacity	Controlled sharing of information/resources
	Relational and codasyl database

User Cost/Effectiveness (Customer Head Count and Quality Issues)

User	Operations	Programmer
Integrated OFIS features	Maintainability features	Development environ.
Interactive data query/ analysis	Unattended operation	. Advanced debugging features
Graphical display/ analysis	Backup/archive	. Programmer Work-bench features
Symbiotic support for PBS		Batch environment
		. Conditional control
General		. Mountable device allocation
Speed of learning		Application dev.
Forgiveness of errors		Tools
Command/keystroke efficiency		. Full language features
Native language support		. Easy database
System availability		. Easy report generator
		. Power of utilities and command Lang.
		. Power of OS features
		. Virtual memory

Position vs. Competition

IBM
System/38

	Today	FY'83	FY'86
Cost/terminal	+	---------->	
Response time	+	---------->	
Entry level price	+	---------->	
Easy database	-	---------->	o

Real-Time Systems

Definition:

Event-driven multi-task systems with predictable response time for

- Relatively homogeneous and dedicated applications
- Industrial/laboratory environments
- Data acquisition; process monitoring and control

Markets Served:

- Hardware OEM system building block
- Laboratory computation, data acquisition, and experiment control
- Manufacturing data entry, process/machine monitoring and control
- Simulation
- Commercial message switching
- Terminal networks
- Military command and control

Characteristics

- Interrupt response; trend towards distributed sensor base or R.T. front ends (leave to P. L. Engineering)
- Hostile environment; diskless O.S.; host program development, down line loading
- Compact packaging because of floor space premium cost
- Disk removability needed at the low end and mid-range for fast set up of experiments and later processing of large amount of data on big number crunchers
- Few terminals 1 - 32
- Real time network for distributed microprocessor based sensors
- Scientific languages; FORTRAN, ADA, some BASIC

Trends

- Moving rapidly to real time distributed processing because of the availability of low cost microprocessor based real time sensors

* * * C O M P A N Y C O N F I D E N T I A L * * *

Customer Buying Criteria:

System Cost/Effectiveness ("Buyer's" Issues)

Price/Performance/Capacity	"Required" Functionality
Cost of ownership	Familiness range down to run-time only
I/O bandwidth	Function in hostile environment
MIPS	Rich connectivity within family
Entry level price	Simple connections to non-DEC
Communication thruput	Variety of hardware interfaces
$/Mbyte disk storage	Minimum footprint
Minimum response time to events	'dependability' features

User Cost/Effectiveness (Customer Head Count and Quality Issues)

User	Operations	Programmer
Interactive data analysis	Maintainability features	Ease of writing device drivers
Graphical data analysis	Scheduling controls	Virtual memory
	Removable disk for fast setup	OS features (e.g., event flags)
		CORAL, PASCAL, ADA
		Advanced debugging features

Position vs. Competition:

+ DEC Advantage
o Neutral
- DEC Disadvantage

DG	Today	'83	'86
32-bit familiness	+	---------->	
Programmer features	+	---------->	

SEL	Today	'83	'86
Software functionality	+	---------->	
I/O bandwidth	-	---------->	?
Critical real-time response	-	---------->	o
(N) Price performance	-	---------->	+

IBM Series 1	Today	'83	'86
32-Bit, VM	+	---------->	?
Programming/operations features	+	---------->	
Cost of ownership (BMC)	-	---------->	?
(S) IBM terminal support	-	---------->	

HP-1000	Today	'83	'86
32-Bit, VM	+	---------->	?

Transaction Processing Systems

Definition:

Relatively high volume interactive database query and update for

- Homogeneous and dedicated applications
- Low computational demand
- High volume terminal and file I/O
- Concurrent program development and testing

Markets Served:

Business application software OEMs

Commercial departmental machines

Commercial distributed data procesing

High-volume laboratory/industrial data entry

Transaction Processing

Characteristics

- Familiness; same application must run on small and large machines; application is developed once for the family. Large machines have multi functions/transaction types
- Must always assume IBM presence as the central DP machine
- Software must be very approachable by end user (clerk) and flexible for the application programmer tailoring
- Simple, easy-to-learn and use documentation
- Data is an important resource; so is computer up-time, this high availability system requirements
- Potentially multiplicity of terminals connected to computer

Trends

- Distributed processing with central control over applications development

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Customer Buying Criteria:

System Cost/Effectivenes ("Buyer's" Issues)

Price/Performance/Capacity	"Required" Functionality
Cost/terminal	Familiness (range and upgradability)
Transactions/second	Variety of terminals supported (e.g., IBM)
# of terminals supported	'Dependability' features
Aggregate terminal thruput	. Data integrity
$/Mbyte file system	. Rapid recovery
Cost of ownership (maintenance)	Relational and codasyl database
Entry-level price	Strong connectivity to IBM
File system capacity	Good connectivity within family
	Security features

User Cost/Effectiveness (Customer Head Count and Quality Issues)

User	Operations	Programmer
Command/keystroke efficiency	Unattended operation	TP application structure
System availability	Easy backup/restart	Forms package
	Maintainability features	Testing aids
		Full language and database features

General

Native language support
Speed of learning
Forgiveness of errors

Position Versus Competition:

+ DEC Advantage
o Neutral
- DEC Disadvantage

IBM CICS/IMS

		Today	FY'83	FY'86
	Cost/terminal	+	---------->	
	Speed of learning	+	---------->	
	Staff size	+	---------->	
	File system capacity	-	---------->	o
	Dependability features	-	o	+
(S)	Connectivity to IBM database	-	---------->	?
(S)	Connectivity to IBM terminals	-	---------->	
(N)	Familiness (range)	-	---------->	

Office Information Systems

Definition:

Interactive paper replacement systems for traditional administrative and related secretarial/clerical functions

Markets Served:

- o Stand-alone and clustered word procesing
- o Dedicated office systems
- o Layered enhancement to computing systems

Customer Buying Criteria:

System Cost/Effectiveness:

Price/Performance/Capacity "Required" Functionality

Cost/Terminal	Word processing features Electronic mail "File cabinet" features Calendar Controlled sharing of information/resources Familiness Letter quality output Connectivity to? Native language support

User Cost/Effectiveness

User	Operations	Programmers
Command/keystroke efficiency	Secretarial skill level	IQ < 100
Forgiveness of errors	Minimum hours/week	Very easy report generator
Speed of learning	Disk housecleaning/ archive facilities	
Dependability		

Competition:

		Today	FY'83	FY'86
Wang				
	Connectivity to DEC	+	--------->	?
	Required functionality	-	---------->	

		Today	FY'83	FY'86
IBM				
	Connectivity to DEC	+	---------->	
	Word processing features	-	---------->	

		Today	FY'83	FY'86
Xerox				
	Connectivity to DEC	+	--------->	?
	Required functionality	-	---------->	

* * * C O M P A N Y C O N F I D E N T I A L * * *

Profession-Based Systems

Definition:

Interactive tool customized for needs of knowledge workers in specific professions and providing

- o Simple computation
- o Information storage and retrieval
- o Controlled sharing of information/resources with colleagues
- o No dependence on support from programmers or systems analysts

Markets Served:

Needs better definition. Not yet well identified in product group Long range plans. probably should include single-user small business sstems.

Customer Buying Criteria:

Systems Cost/Effectiveness:

Price/Performance/Capacity

Entry-level price
Cost of wwnership (maintenance)
Storage capacity
Program size limitations

Required" Functionality

Symbiotic relationship to larger systems
Connectivity to IBM
Controlled sharing of information/resources
Integrated OFIS features
Graphics support
Data integrity features
Native language support
Easy data query/analysis
Letter quality output
Connectivity to special hardware

User Cost/Effectiveness:

Speed of learning
Forgiveness of errors
Command/keystroke efficiency
Graphical data analysis
Specific profession-directed features/application software

Competition:

- o To be completed after better definition of CT is available

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Iron Boxes

Definition:

- o System component building blocks for sophisticated customers capable of integrating their own customized systems frequently incorporating Non-DEC hardware.
- o Includes CPUs, peripherals, special hardware interfaces, operating systems, program development tools.

Markets Served:

- o Technical OEM markets
- o Telephone industry markets

Customer Buying Criteria:

System Cost/Effectiveness

Price/Performance/Capacity

MIPS/$
$/Mb memory
Cost of ownership (maintenance)
Entry level price
Interrupt response time
Address space
I/O bandwidth
$/Mb disk system

"Required" Functionality

Familiness (range and upgradability)
Variety of hardware interconnects
Function in hostile environments
ADA for government
Real-time/multitask OS
Run-time only OS option
Dependability features
Form factor

User Cost/Effectiveness

User

Human engineered command language
Native language support

General
Speed of learning
Forgiveness of errors

Operations

Unattended operation

Programmer

Ease of writing device drivers
Advanced debugging features
Programmer workbench features
OS features (e.g., event flags)
Full language features
Virtual memory

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+ DEC Advantage
o Neutral
- DEC Disadvantage

Competition:

DG	Today	FY'83	FY'86
32-Bit familiness	+	---------->	
Programmer features	+	---------->	

SEL	Today	FY'83	FY'86
Software functionality	+	---------->	
I/O bandwidth	-	---------->	?
Critical real-time response	-	---------->	o
MIPS /$	-	---------->	

PE	Today	FY'83	FY'86
Software functionality	+	---------->	
VM/address space	+	?	?
Familiness	o	+	+
MIPS/$	-	---------->	

Iron Boards

Definition:

- Piece parts for very high volume distribution for use by sophisticated customers capable of integrating into systems or subsystems
- Includes board-level CPUs, memory, small storage devices, communication interfaces, backplanes, boxes, hardware interconnects, small operating systems, simple program development tools

Markets Served:

- Sophisticated, price-sensitive TOEMs
- High-volume manufacturers
- Large laboratories and universities

Customer Buying Factors:

System Cost/Effectiveness:

Price/Performance/Capacity	"Required" Functionality
$/Mb memory	PASCAL
Address space	Form factor
Minimum OS space overhead	Function in hostile environment
Interrupt response time	Familiness (software portability)
Entry level price	Run-time only OS option
Instruction set "power"	Full control of error recovery

User Cost/Effectiveness:

User	Operations	Programmer
Not applicable	Unattended operation driver	Ease of writing device Advanced debugging features Programmer workbench features Application test features Operating system features

Competition:

INTEL 432	Today	FY'83	FY'86
Familiness	N/A	-	+
Softare functionality	N/A	-	+
Entry level price	N/A	-	-

Other competitors to be added in a later update

APPENDIX I

SYSTEM POSITIONING

SYSTEM POSITIONING BY PRICE BANDS FY81-FY84

PRICE BAND	LOW	MID	HIGH
$250K - 625K	11/780 Center Venus (Q1'85)	11/780 Stretch Venus (Q3'84)	Hydra 780 Venus (Q1'84)
$100K - 250K	11/750 Center (11/70)	11/750 Center	11/750 Stretch 11/780 Entry
$40K - 100K	11/730 Entry 11/44 Entry	11/730 Center 11/44 Center	11/750 Entry 11/730 Stretch 11/44 Stretch
$16K - 40K	11/24 Entry	11/730 Entry 11/24 Center	11/730 Entry 11/24 Center
$6.25K - 16K	CT (KO)	J-11 Entry	J-11 Center
$2.5K - 6.25K	VT200	CT	CT
$0 - 2.5K	T E R M I N A L S		

SYSTEM POSITIONING BY PRICE BANDS FY84 - FY86

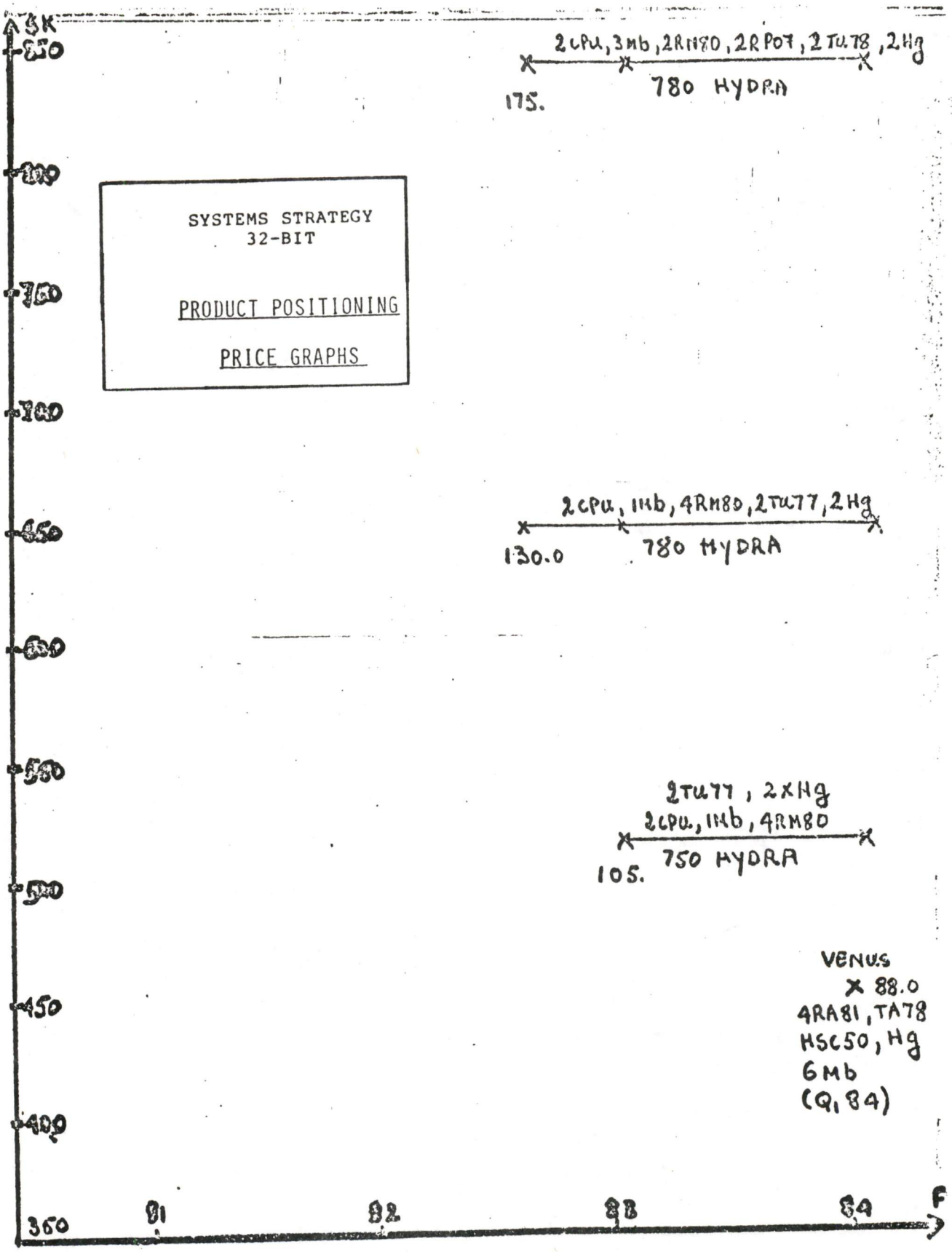
$250K - 625K	11/780 Center Venus (Q1'85) Nautilus Stretch (Late '85)	Venus	Venus
$100K - 250K	11/750 Center Nautilus Center	11/750 Center Nautilus Center	11/750 Stretch Nautilus Stretch
$40K - 100K	11/730 Entry Gemini Entry ('84) Scorpio Center ('85/'86)	11/730 Center Gemini Center Scorpio Center	11/750, Nautilus Entry Gemini Stretch Scorpio 11/730
$16K - 40K	Gemini Scorpio	11/730 Entry Gemini Scorpio	11/730 Entry Gemini Scorpio
$6.25K - 16K	CT (KO)	J-11 Entry	J-11 Center Scorpio Entry Gemini
$2.5K - 6.25K	VT200	CT	CT
$0 - 2.5K	T E R M I N A L S		

Note: Gemini is shown here for positioning. It is not part of the Central Engineering budget.

SYSTEMS STRATEGY
32-BIT

PRODUCT POSITIONING

PRICE GRAPHS



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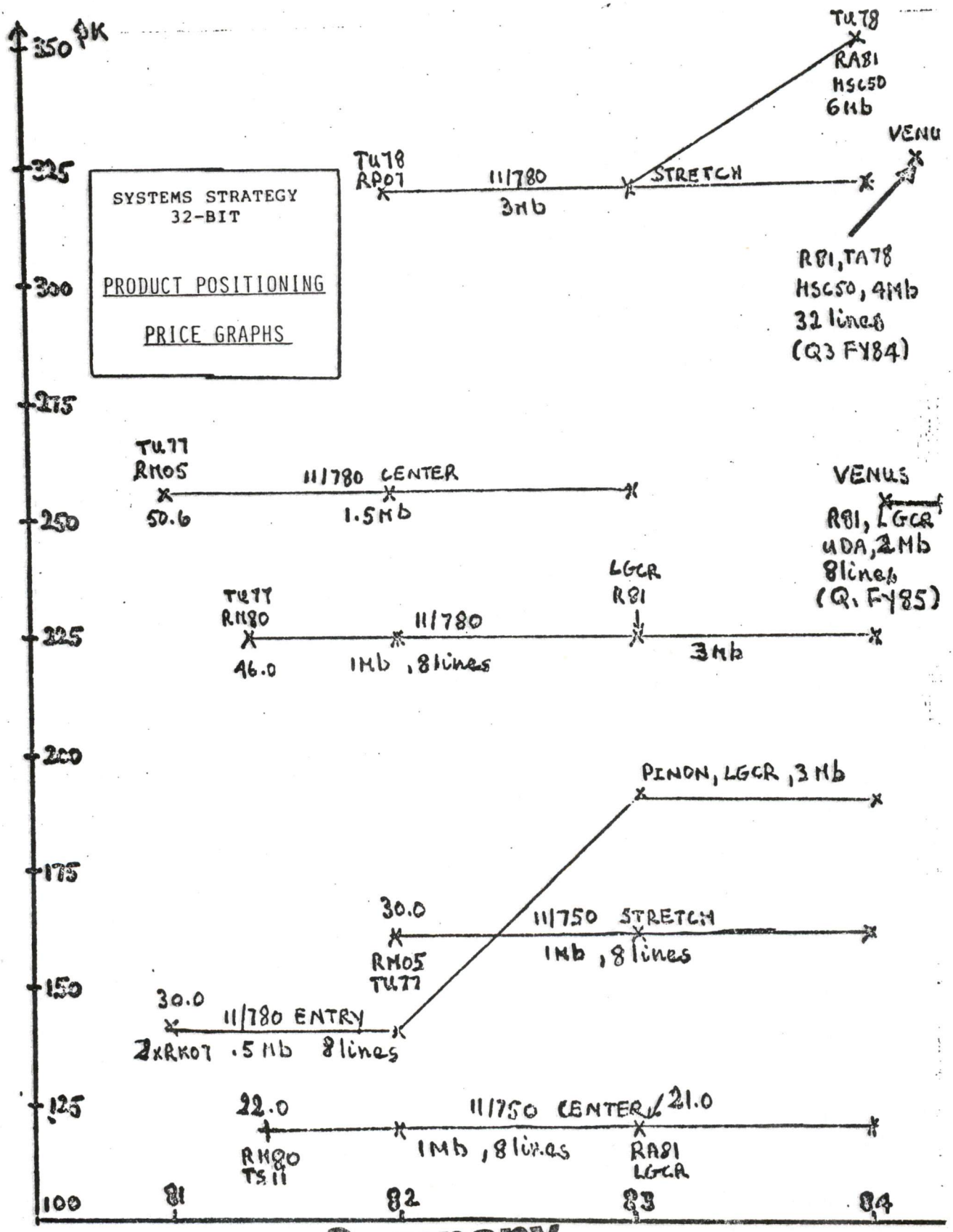

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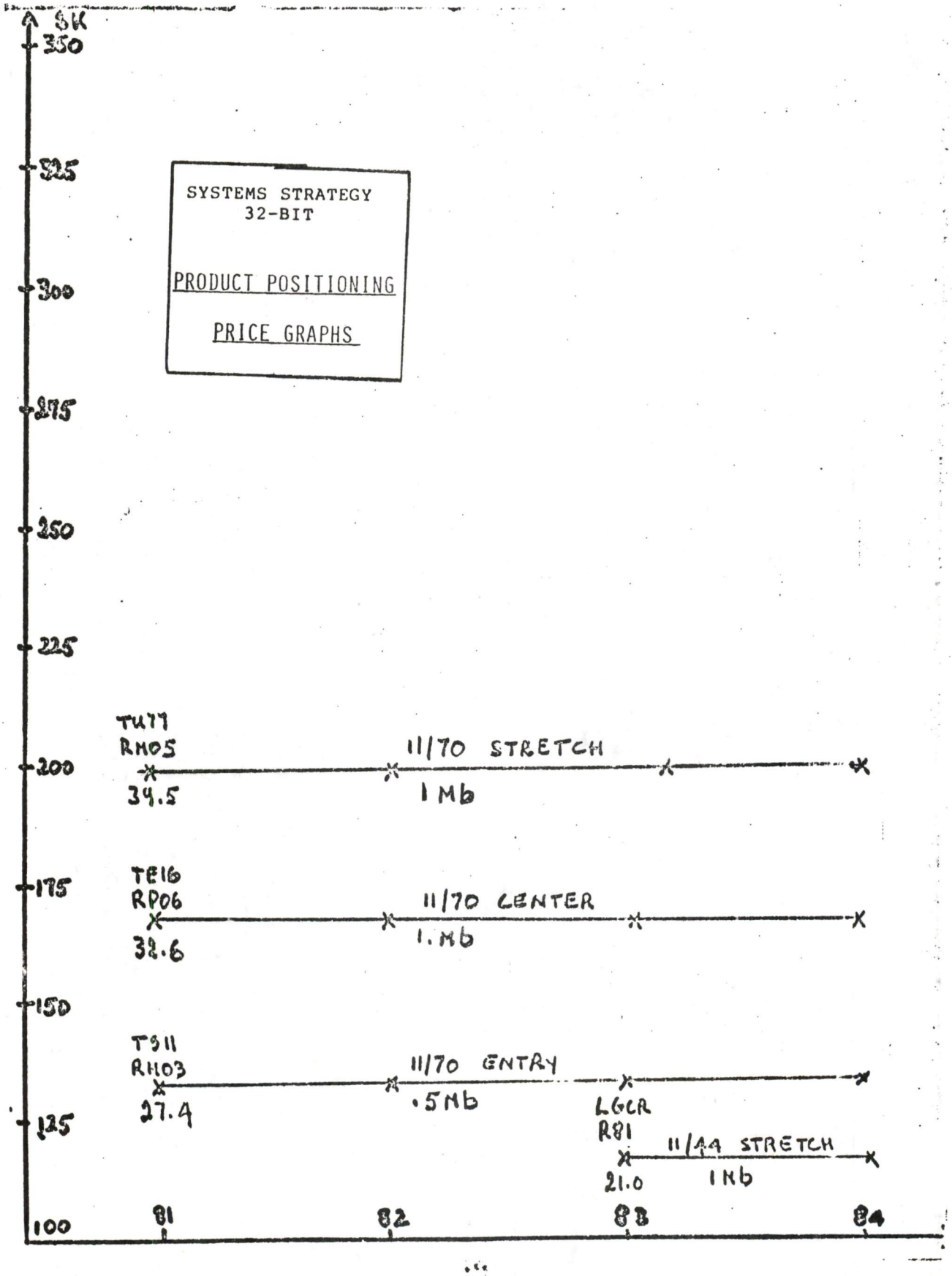

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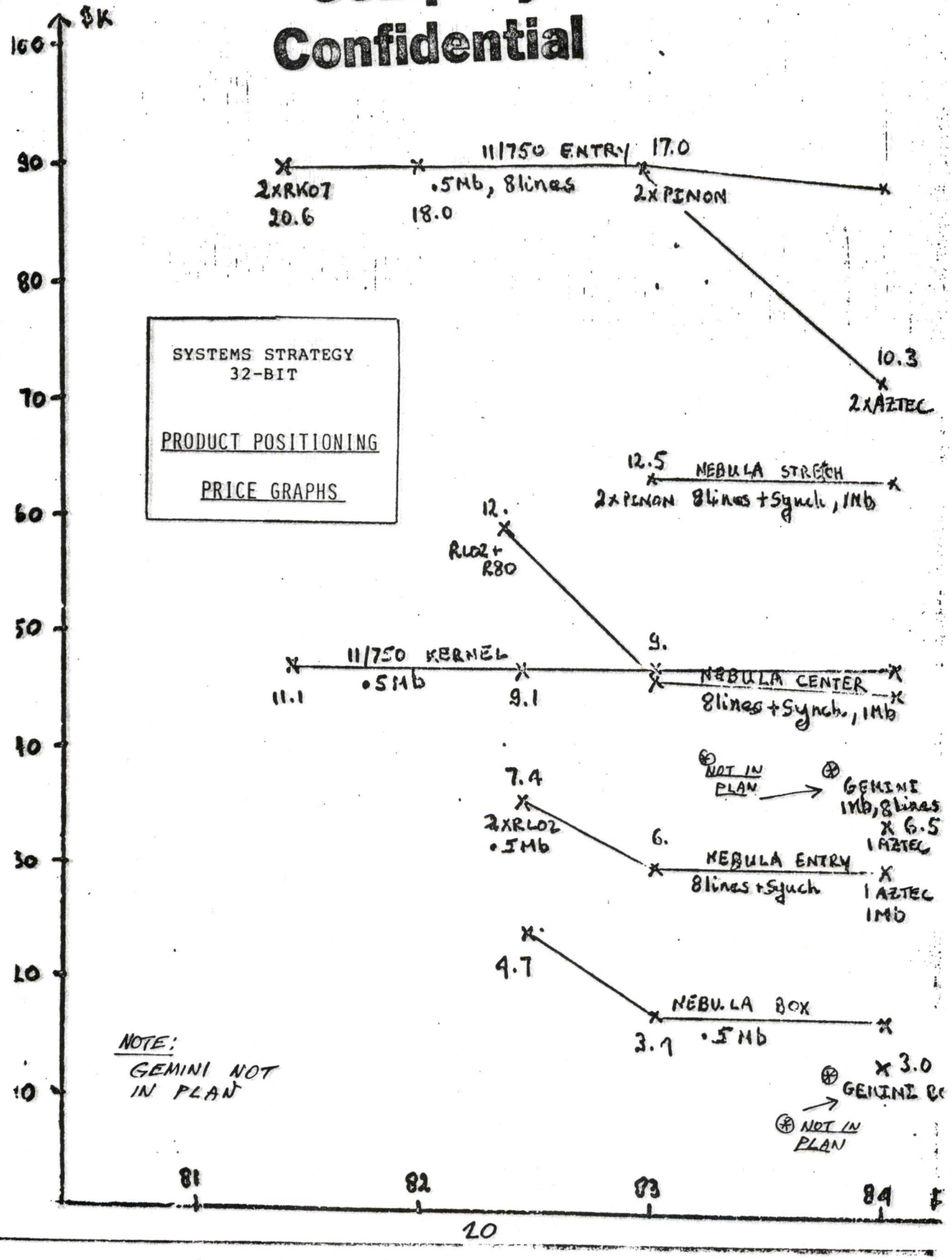

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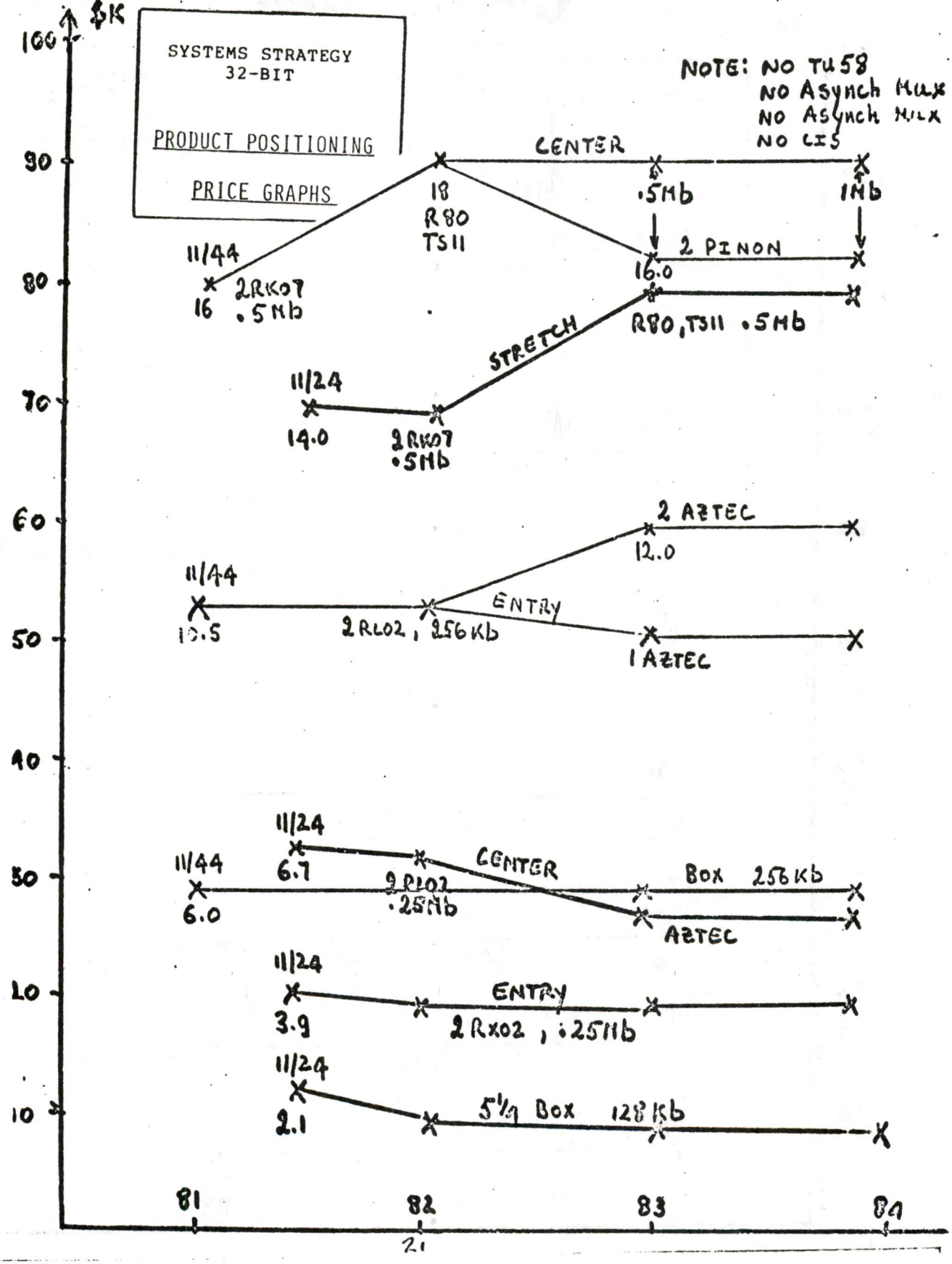

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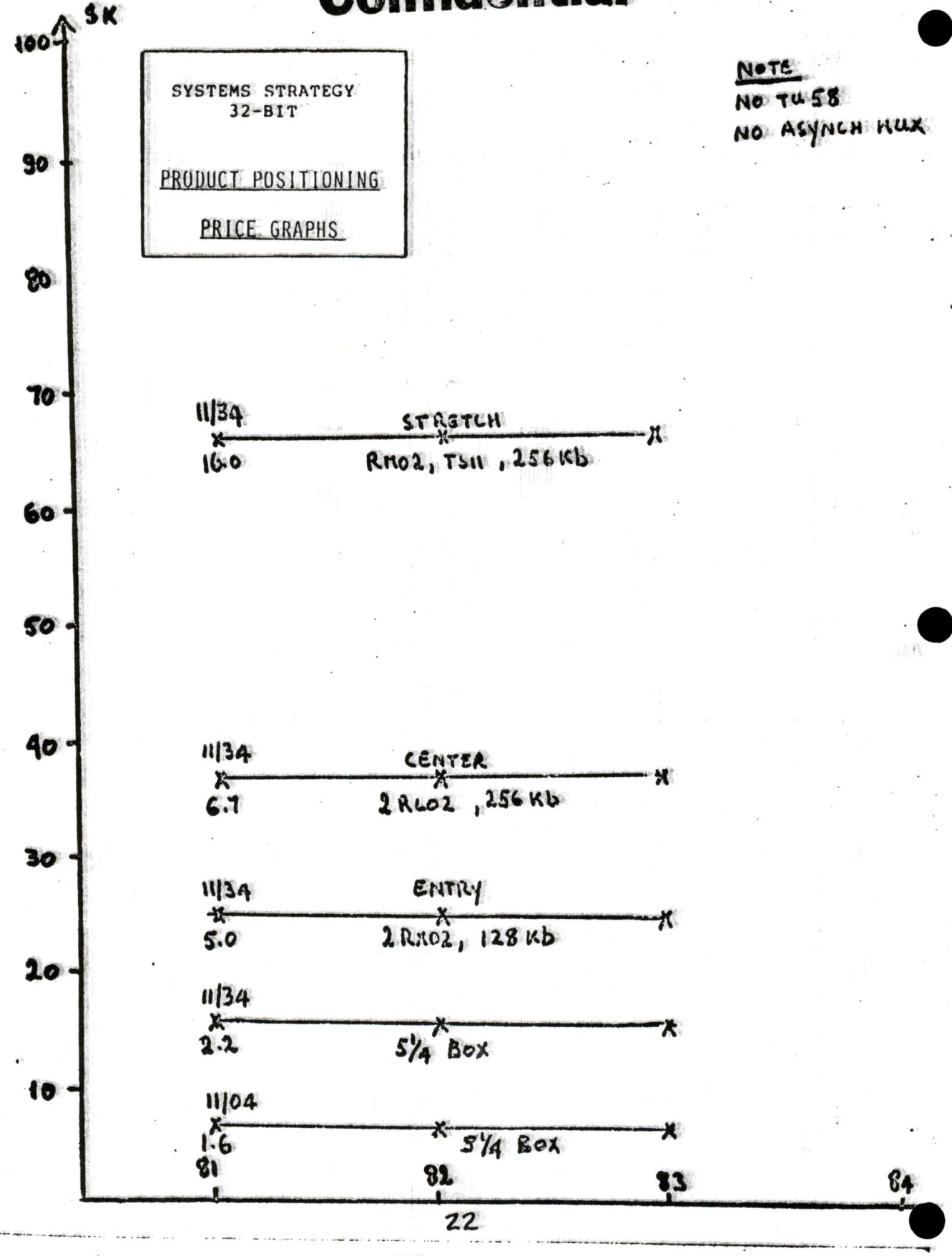

APPENDIX II

PERFORMANCE POSITIONING

PRODUCT POSITIONING

PERFORMANCE

	U. S. Steel (Decimal subscript)	Whetstones SP	Whetstones DP
11/780	303	1133	727
11/750	218	736	639
11/730	60 (E)	300	199
11/70	70	699	518
11/44	55	314	231
11/34A, Cache	33	225	192
11/24	16 (E)	55	29
Venus*	1200	4800	3300
Nautilus*	600	2000	1600
Gemini*	60	300	200
Scorpio*	250	900	700

*For planning purposes

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PERFORMANCE

MULTIUSER WORKLOADS (# USERS)

SYSTEMS STRATEGY
32-BIT

	ECS	COMMERCIAL #1	TIC
11/780			
1MB	20	48	16
2MB	40	96	32
3MB	60	≥ 120	48
4MB	75	—	—
11/750			
1MB	18	48	16
2MB	32	80	24
3MB	48 (E)	96 (E)	36 (E)
11/730			
1MB	16 (E)	48 (E)	16 (E)
2MB	24 (E)	60 (E)	20 (E)
3MB	36 (E)	70 (E)	24 (E)
11/70			
1MB	16	48	NOT AP
2MB	24	56	NOT AP
11/44			
1MB	12	48	NOT AP
11/24			
1MB	6	32	NOT AP

MARKETS - APPLICATIONS
PRODUCT REQUIREMENTS

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PERFORMANCE
MULTIUSER WORKLOADS (# USERS)

SYSTEMS STRATEGY
32-BIT

PRODUCT POSITIONING

PERFORMANCE

VENUS

2 - 2.5 TIMES 11/780

NAUTILUS

1 - 1.5 TIMES 11/780

GEMINI

ABOUT THE SAME AS 11/730

SCORPIO

ABOUT THE SAME AS 11/750

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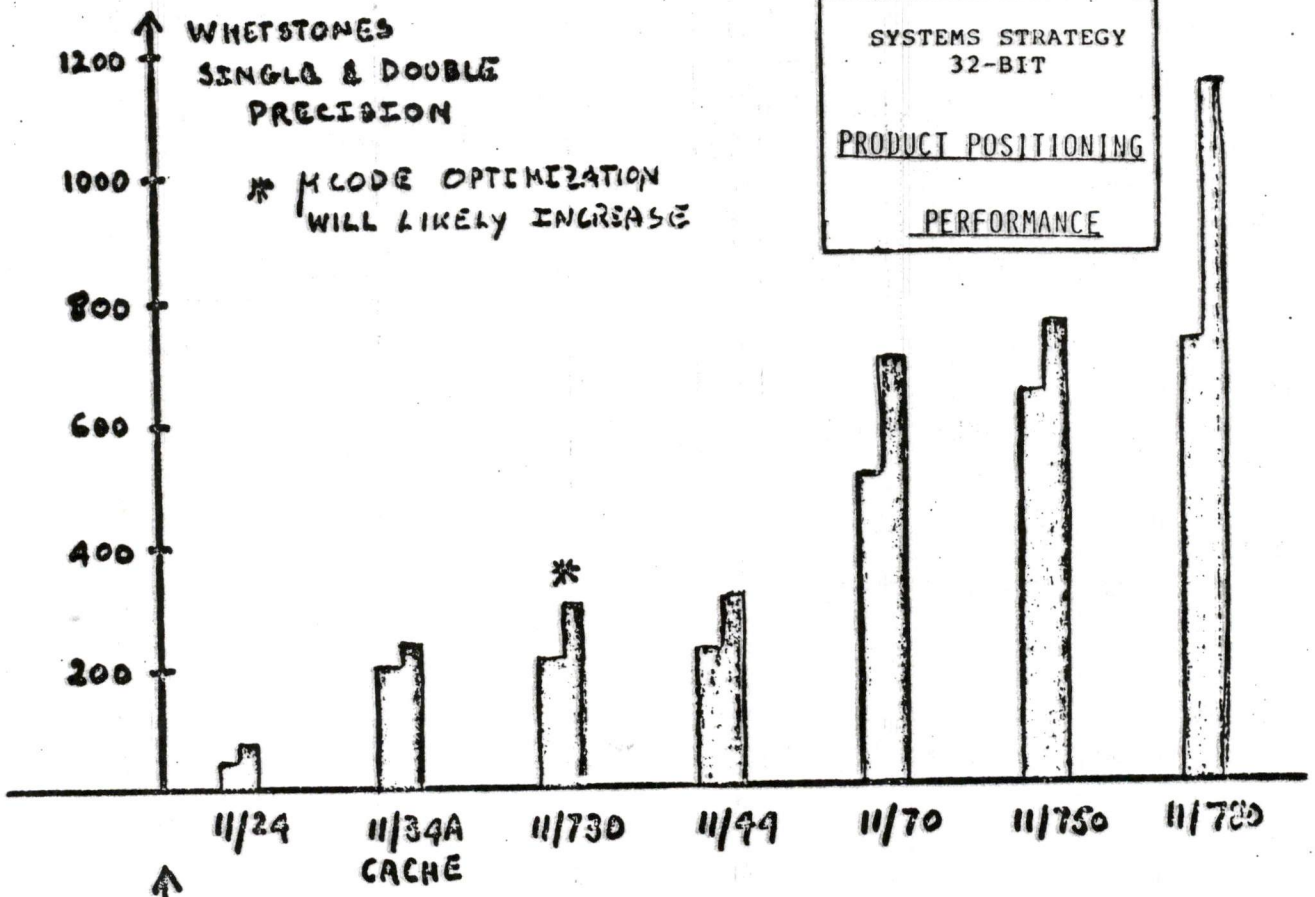
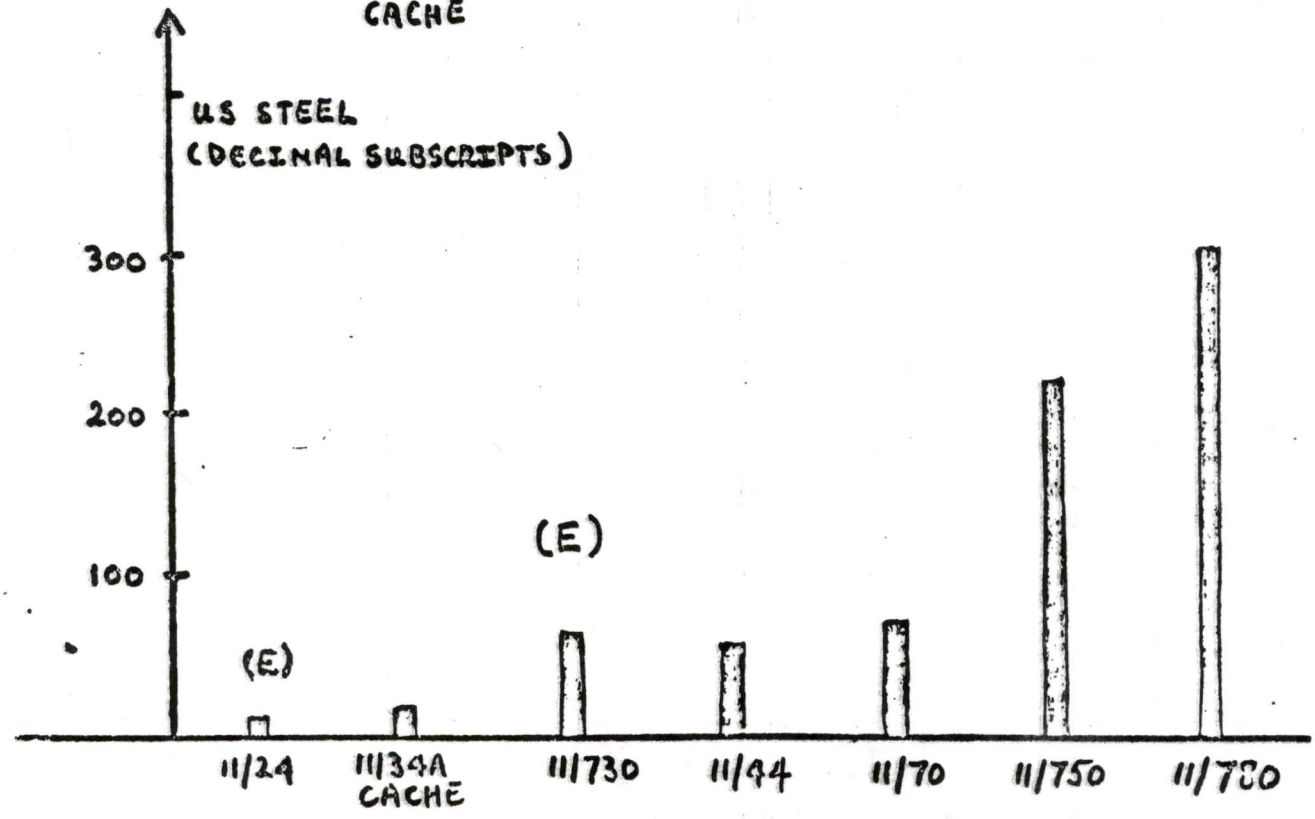
SYSTEMS STRATEGY
32-BIT

PRODUCT POSITIONING

PERFORMANCE





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APPENDIX III

BUSINESS DATA

HISTORY - PROJECTIONS

SHIPMENTS

	FY78	FY79	FY80	FY81	FY82	FY83	FY84
VAX							
11/780	34	383	1009	1850	2800	3400	3700
COMET	-	-	-	800	4000	6500	8000
NEBULA	-	-	-	-	600	4000	8000
Total VAX (Mid-Range)	34	383	1009	2650	7400	13900	19700
Venus							326
Total VAX	34	383	1009	2650	7400	13900	20026
% Δ		1026%	163%	162%	179%	88%	44%
PDP-11							
11/04	4289	3545	3719	3000	1000	400	
11/24	-	-	-	400	4000	9000	10000
11/34	7096	8528	10239	7000	4000	2000	1000
11/44	-	-	93	2800	4300	6000	8000
11/60	493	713	437	300	150	50	
11/70	1372	1912	2023	1800	1000	750	525
Total PDP-11	13250	14698	16511	15300	14450	18200	19525
% Δ		11%	12%	(7%)	(6%)	26%	7%
PDT	0	859	2533	5600	5000	3000	1600
% Δ		195%	121%	(11%)	(40%)	(47%)	
11/03	4114	5338	7300	6200	3000	2000	1000
11/23	0	0	964	7100	11000	10000	4500
11/23B	0	0	0	0	3000	13000	24500
Total Small 11s	4114	5338	8264	13300	17000	25000	30000
% Δ		30%	55%	61%	28%	47%	20%
DEC 10/DEC 20	105	267	285	257	228	277	187
% Δ		154%	7%	(10%)	(11%)	21%	(32%)
Grand Total	17503	21545	28602	37107	44078	60377	71338
% Δ		23%	33%	30%	19%	37%	18%

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NOR

$M	FY78	FY79	FY80	FY81	FY82	FY83	FY84
VAX							
11/780	6.2	78.1	210.4	379.9	651.0	850.0	999.4
COMET				77.6	433.8	673.1	776.0
NEBULA					23.5	176.8	335.4
Total System/Box MLP				475.5	1108.3	1699.9	2110.8
Total Order MLP				686.3	1662.2	2549.9	3166.2
Equipment NOR (Mid-Range)	6.2	78.1	210.4	562.8	1363.0	2090.9	2596.2
Venus							179.3
Equipment NOR (Total VAX)	6.2	78.1	210.4	562.8	1363.0	2090.9	2775.5
% Δ		1160%	169%	168%	142%	53%	33%
PDP-11							
11/04	44.4	34.7	34.4	24.9	8.3	3.4	
11/24				8.9	111.5	253.9	278.0
11/34	235.8	271.2	310.7	179.3	82.5	28.7	14.3
11/44			2.8	154.3	228.7	289.1	353.8
11/60	34.4	44.5	26.7	18.4	8.3	2.5	
11/70	228.1	308.3	321.4	253.4	143.1	105.8	73.0
Total System/Box MLP				639.2	582.4	683.4	719.1
Total Order MLP				958.8	873.6	1025.1	1078.7
Equipment NOR	542.7	658.7	696	786.2	716.4	840.6	884.5
% Δ		21%	6%	13%	(9%)	17%	5%
PDT	0	3.6	10.7	25.2	24.2	14.5	4.8
% Δ			197%	136%	(4%)	(40%)	(67%)
11/03	38.8	73.6	60.5	48.3	23.4	15.6	7.4
11/23	0	0	9.7	74.3	115.1	101.4	45.6
11/23B	0	0	0	0	39.2	170.0	312.5
Sub-Total Small 11s	38.8	73.6	70.2	122.6	177.7	287.0	365.5
% Δ		90%	(5%)	75%	45%	62%	27%
DEC 10/DEC 20	123.0	142.0	162.0	150.0	150.0	175.0	200.0
% Δ		15%	14%	(7%)	0	17%	14%
Grand Total	710.7	956.0	1149.3	1646.8	2431.3	3408.0	4230.1
% Δ		35%	20%	43%	48%	40%	24%

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Data Sources for Shipments

Mid-Range VAX and PDP-11

FY78-FY80 are actual shipments per Manufacturing's Worldwide Translated Shipment Report. They include revenue and non-revenue ships through Q2FY79 and revenue ships from then on.

FY81-FY84 are Product Management projections.

VENUS - Per LSG's Orange Book data of 10/80.

PDT - Per Carl Stone (CSD Product Management)

Small PDP-11

FY78-FY80 are actual shipments per Manufacturing's Worldwide Translated Shipment Report. FY80 11/03 ships are per Ed Schmid's Worldwide CPU Plan.

FY81-FY84 are per Small System's Product Management Orange Book of Q2FY81 (October 6, 1980).

DEC10/DEC20

FY78-FY80 are actual shipments per Manufacturing's Worldwide Translated Shipment Report.

FY81-FY84 per LSG's Orange Book data of 10/80.

Data Sources for NOR

Mid Range VAX and PDP-11

FY78-FY80 is actual NOR calculated from the OPTRPT report. The NOR represents everything shipped on the order with the CPU. It does not include add-ons on separate invoices.

FY81-FY84 are Product Management's projections as of October 30, 1980. A 50% add-on assumption is included in the totals but is not shown on each product. The graphs include the add-ons for each product.

VENUS -Assumes an average NOR per system of $550K per LSG Product Management finance.

PDT -Calculated using price assumptions from Carl Stone (CSD Product Management) and a 32% discount and allowance assumption per the PDT financial analysis of June 12, 1980.

Small PDP-11

FY78-FY79 is actual NOR per OPTRPT report.

FY80-FY84 is calculated using Small Systems Orange Book of October 6, 1980 and discounts and allowance assumptions per the Product Financial Statements.

DEC10/DEC20

FY78-FY84 per LSG finance.

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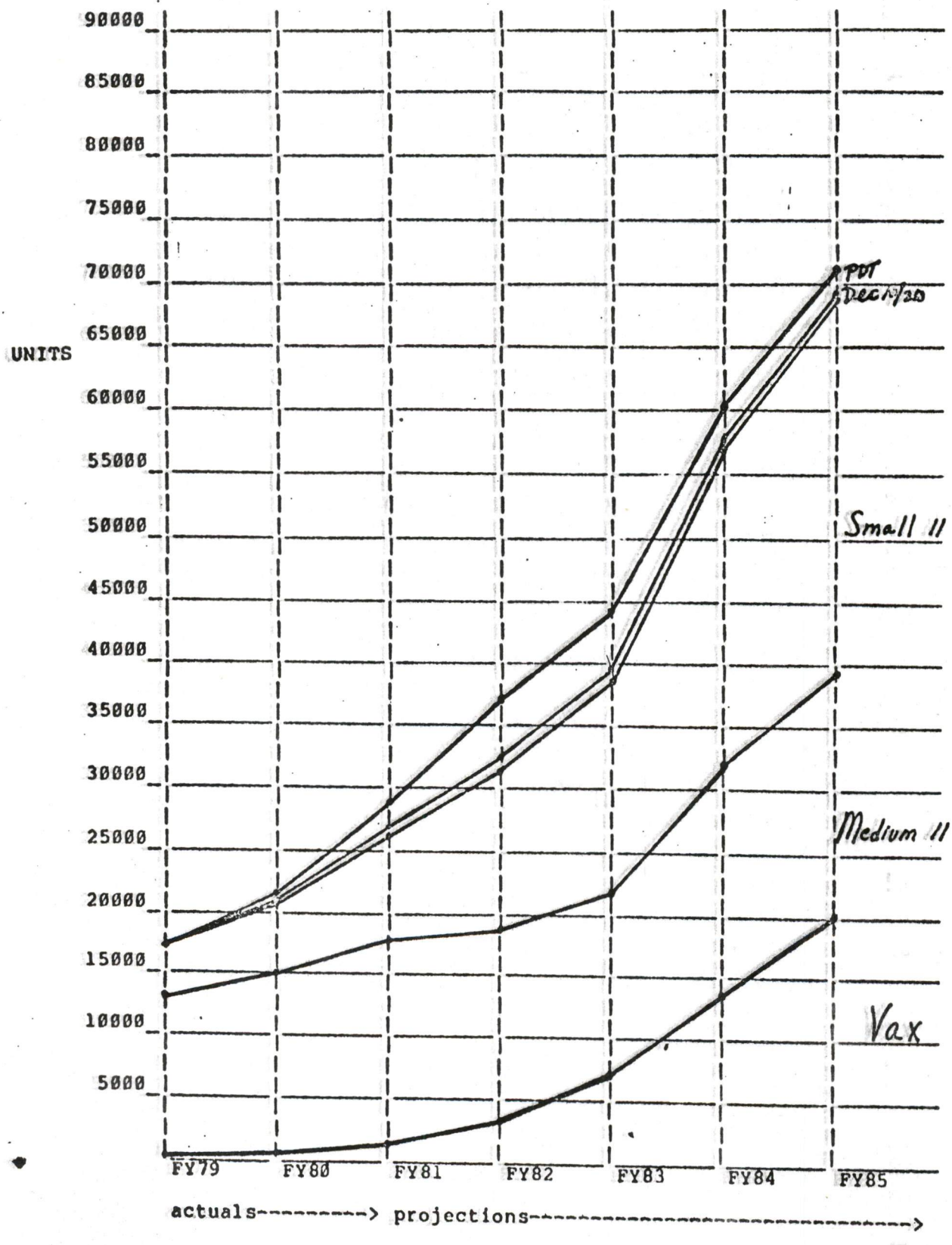

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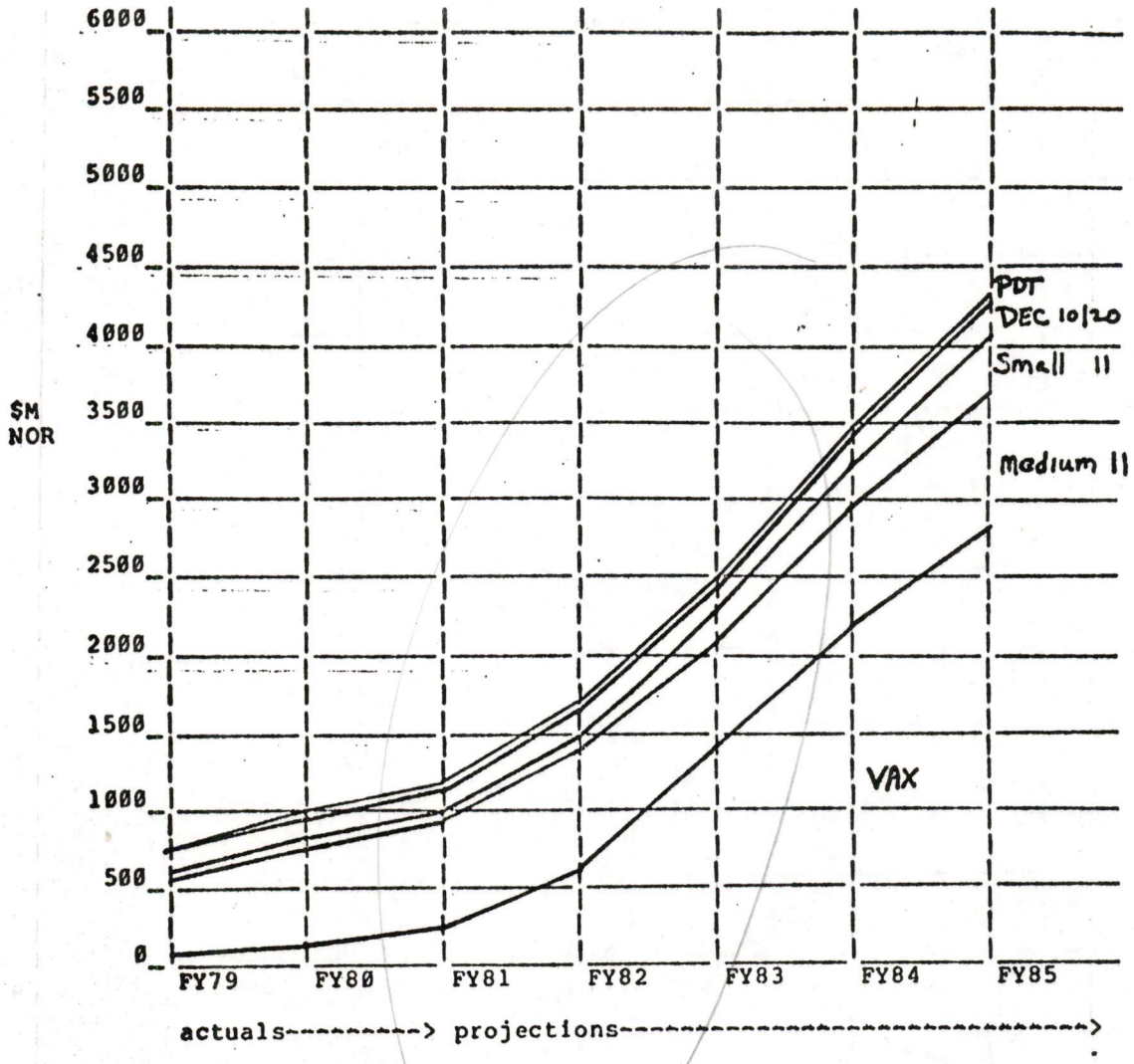

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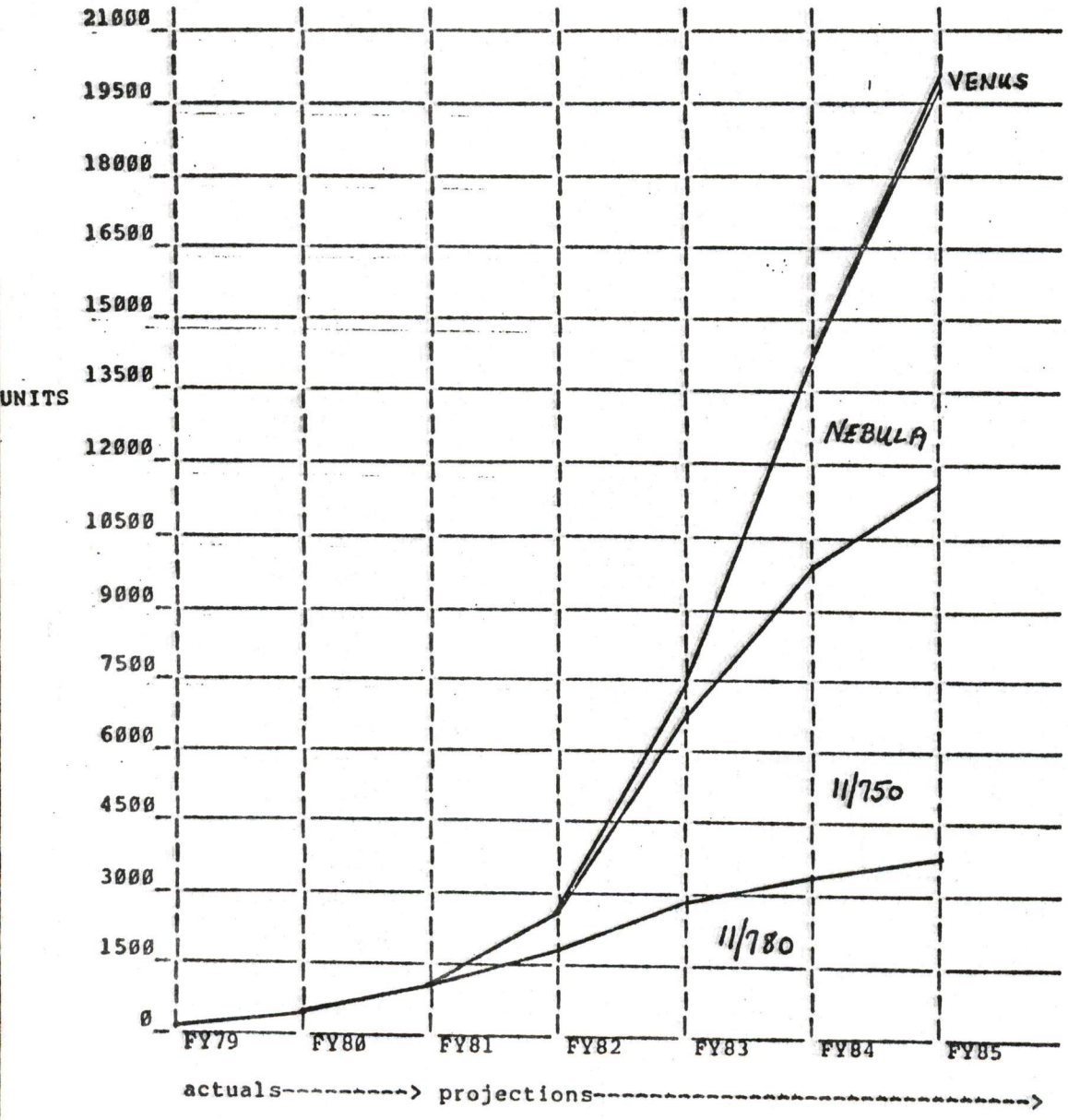

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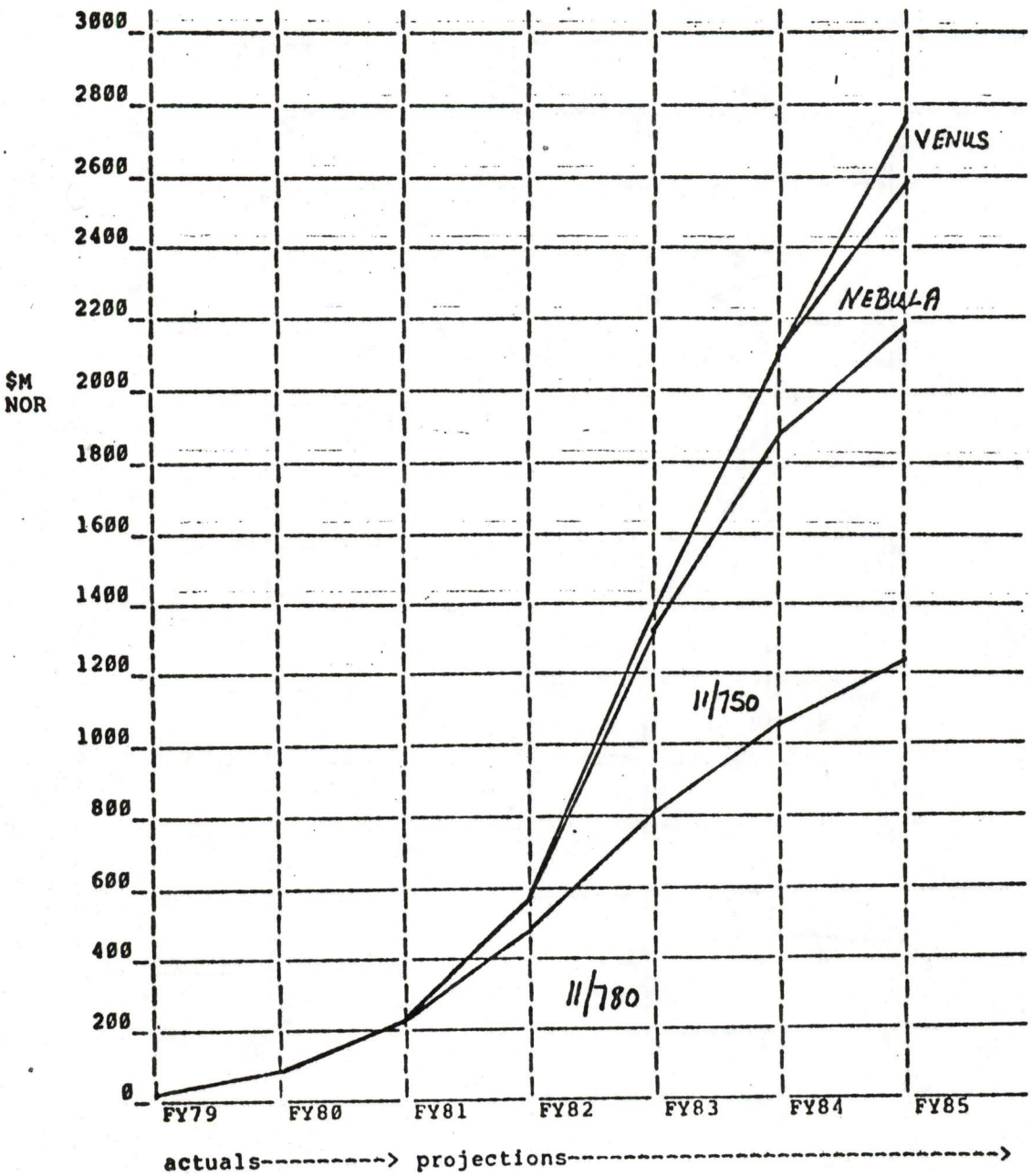

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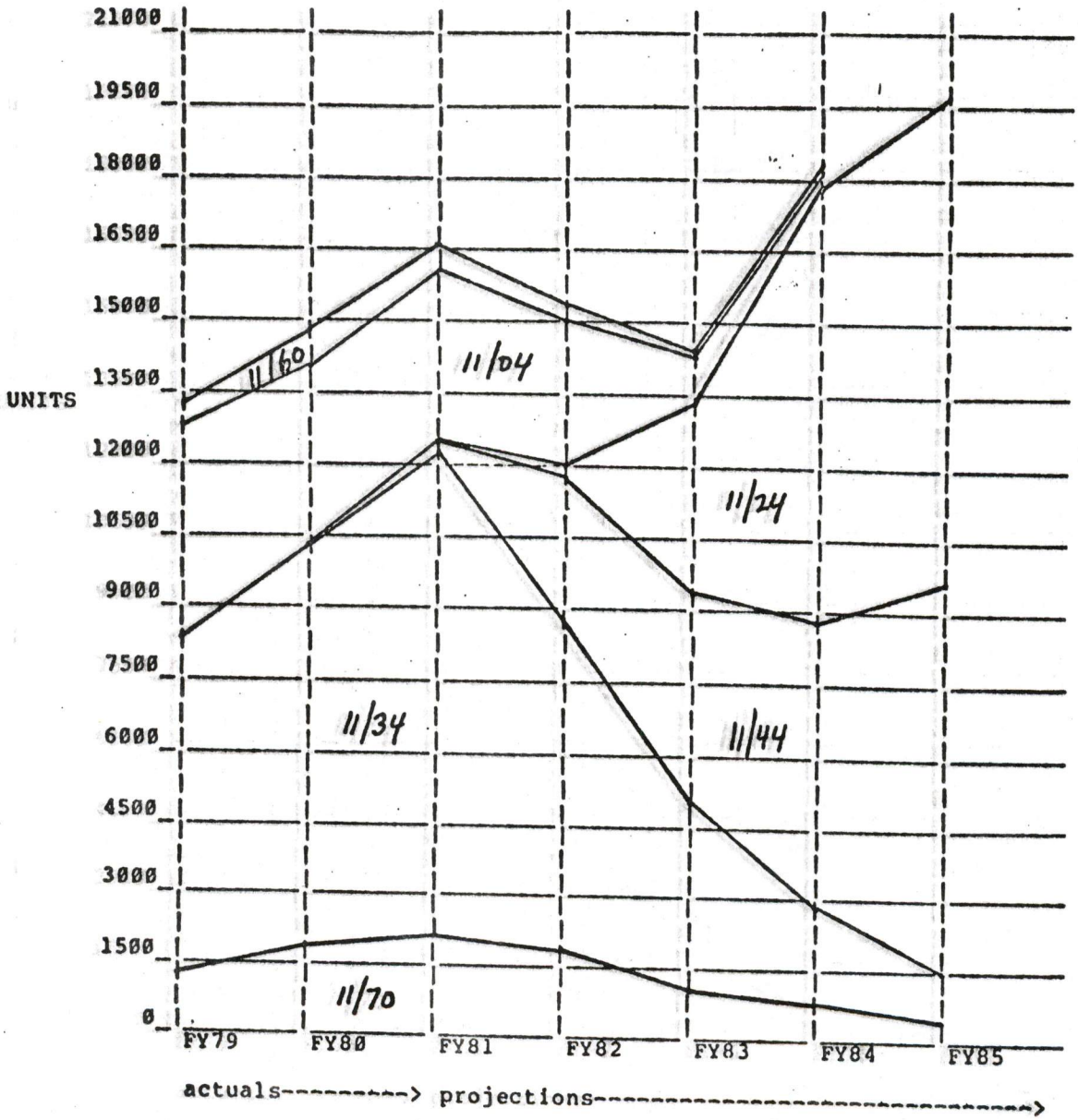

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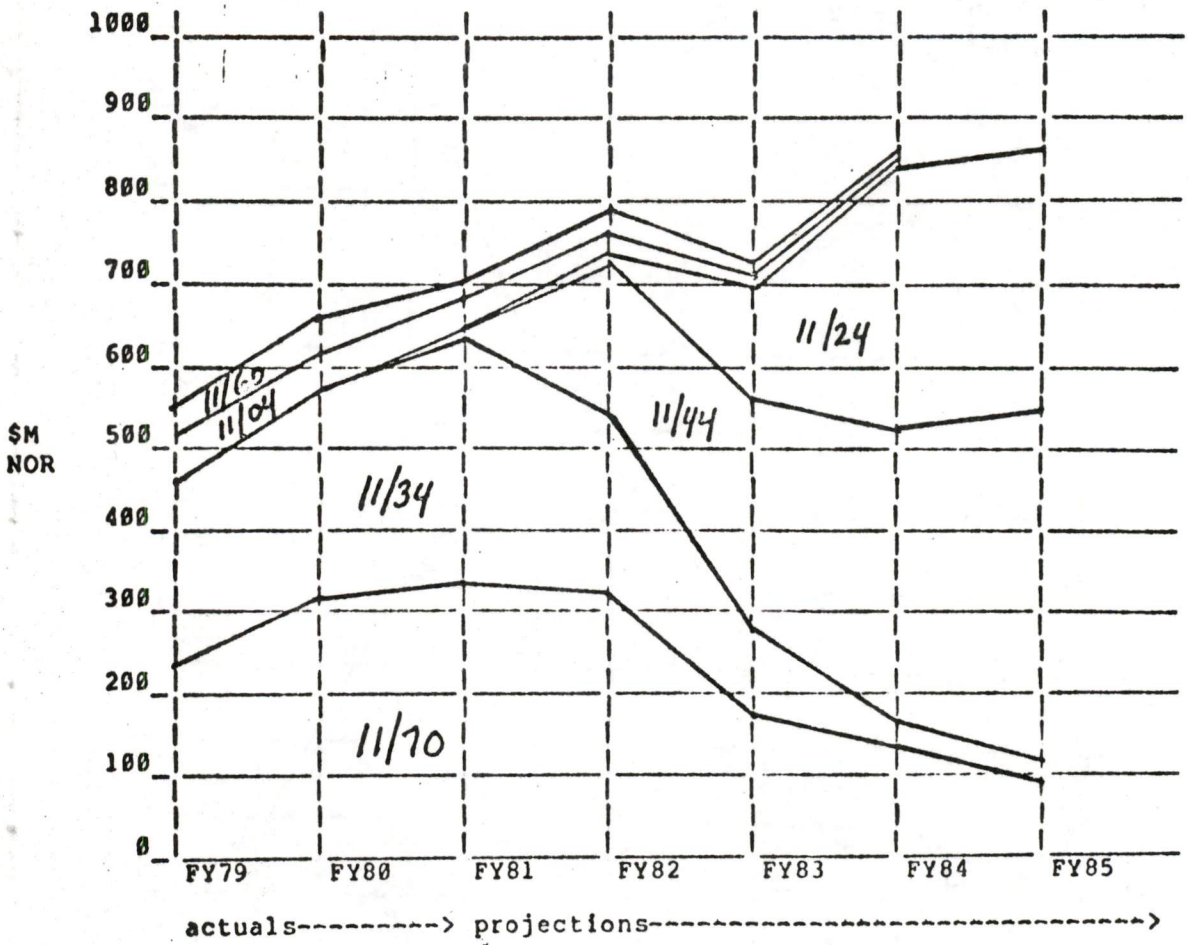

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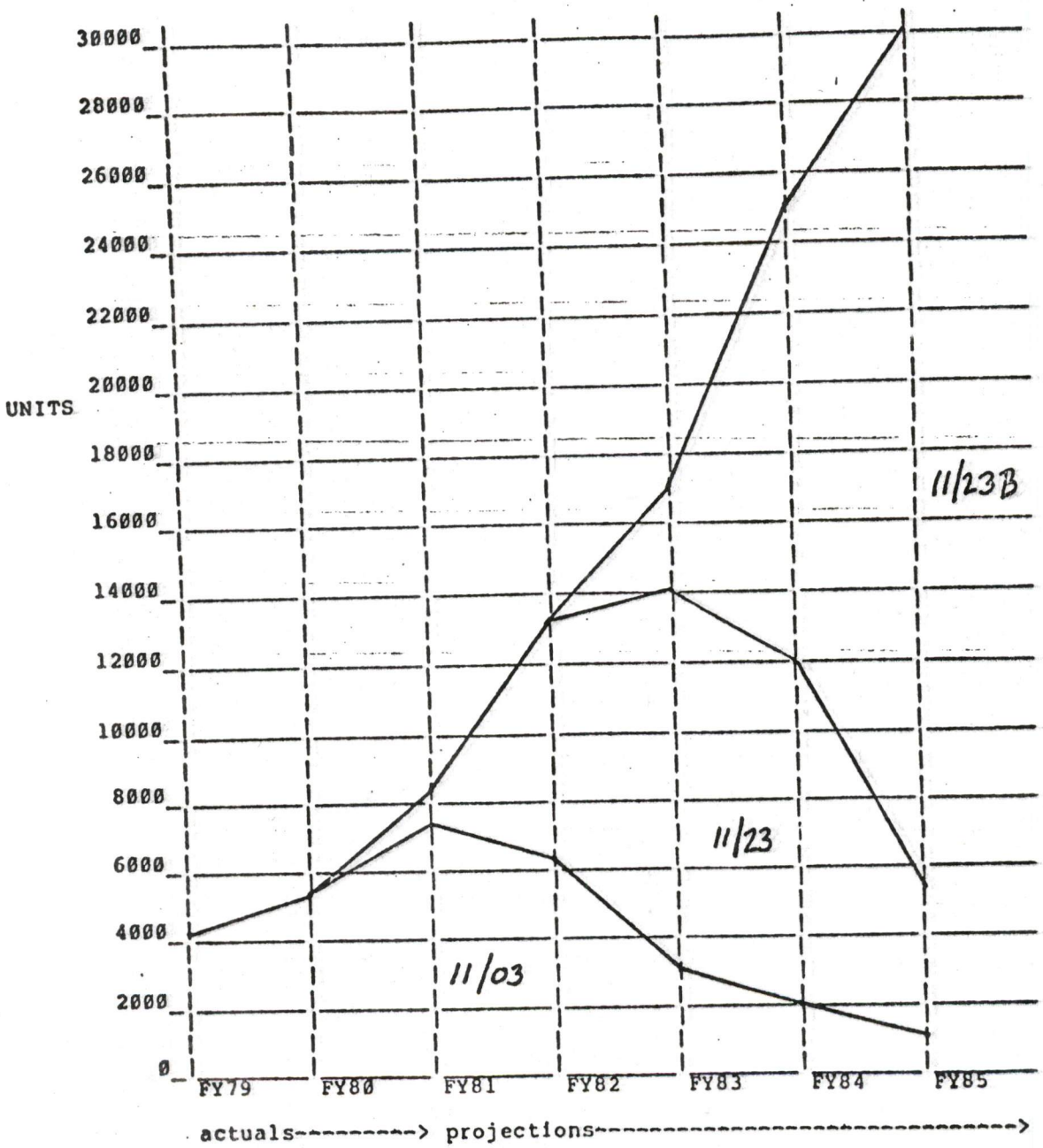

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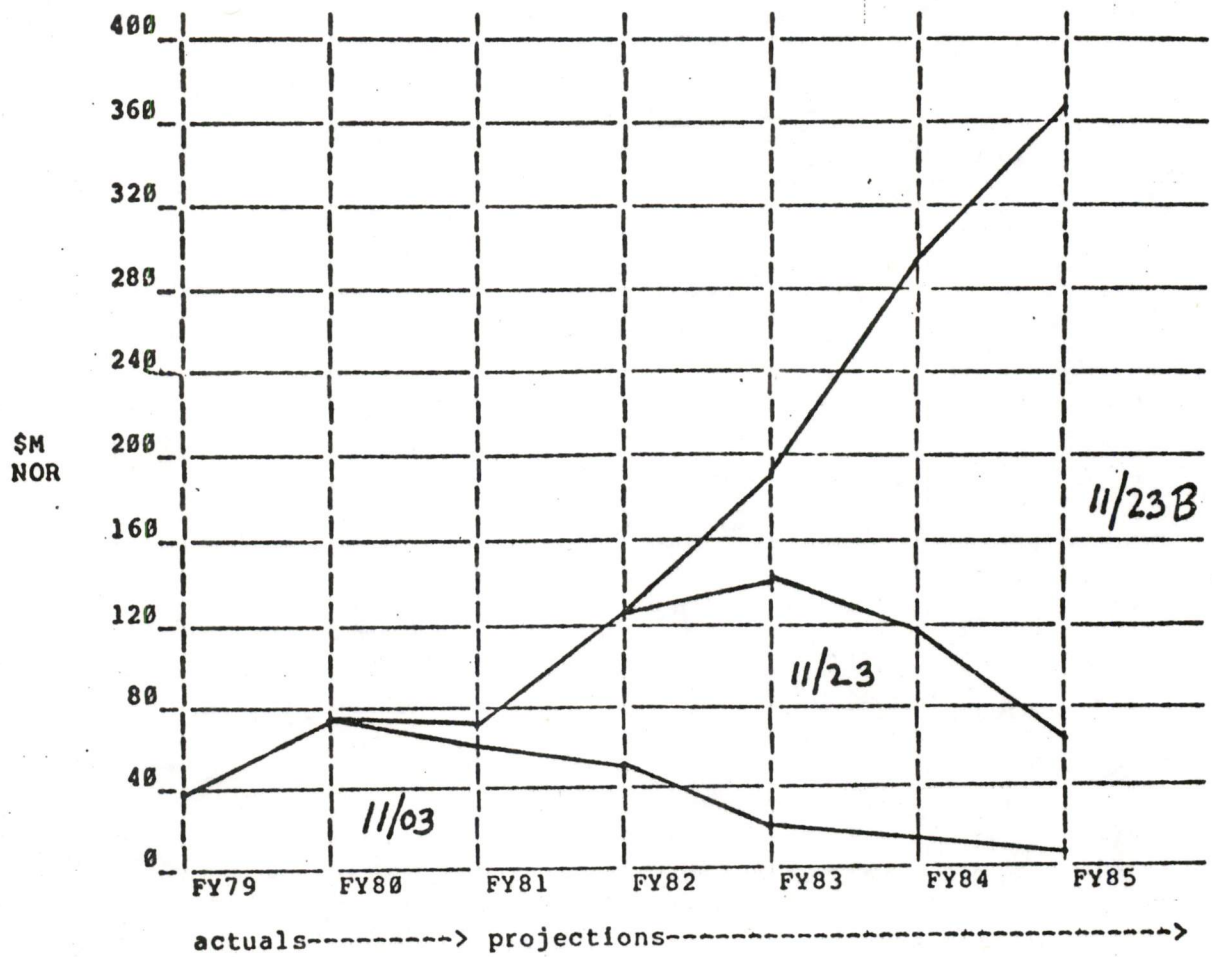

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