File: Xerox

21 MAR 1974

MEMORANDUM FOR: Chief, Printing Services Division, OL
Chief, Operations Division, OJCS

SUBJECT : Feasibility Study for Xerox 1200 Computer Printing System

REFERENCE : Memo dtd 22 Jan 74 to D/L fr C/PSD/OL, subject: Xerox 1200 Computer Printing System

1. This memorandum contains recommendations for your approval. Such recommendations are contained in paragraph 7. Although the agreement between the Director of Logistics and the Director of Joint Computer Support suggested a more comprehensive initial survey of potential applications for the Xerox 1200, including such management options as centralization vs. decentralization of such facilities, it was decided that it would be injudicious to take that large a leap without first gaining hands on operating and procedural experience with the 1200 system on a test basis. We feel that the broader jump into more far-ranging areas of decision making could be held down for a more detailed study beginning during the recommended test period.

2. The purpose of this paper is to examine the computer output printing requirements of OJCS Operations Division and to determine what advantages, if any, could be realized through the use of the new Xerox 1200 computer output printer and how it could be utilized to the best advantage of the Agency.

STATINTL

3. An analysis of printing operations in OJCS has been completed by [redacted] and the undersigned. The capabilities and operating costs of the Xerox 1200 were examined. It was concluded that:

a. The Xerox 1200 is an efficient cost/effective substitute for the computer forms printer (Xerox CFP). However, it is also much more than a CFP - it is a totally new concept for line printing.

b. The Xerox 1200 should be fully evaluated as soon as possible by conducting a 60-day pilot test in the PSD General Printing Plant (GPP) using PSD personnel to operate the Xerox 1200 and OJCS personnel to distribute the product. Current work now being completed on both the line printer and the CFP should be used.

c. The magnitude of the total OJCS current printing and distribution requirements (41 million pages/yr - 16 major pieces of printing equipment) suggests that there may be a more efficient and economic means of accomplishing a part of this function which should be fully investigated after the test period (see paragraph 6).

d. For the first time an efficient means to separate computer operations from most production printing operations may be available in the tape driven off-line Xerox 1200.

e. The increasing cost of paper and pressures for operating space may become overriding considerations for eventual conversion of additional line printer operations to more efficient forms of computer output. This should be studied further.

4. BACKGROUND

a. In spite of careful operation and management, the average computer-driven impact printer has always presented problems to data processing operations. The inherent inefficiency, tendency to jam, the poor printing quality of multiple copies, frequent maintenance and attention, the need for decollating and bursting, and the awkwardness in subsequent handling and filing are common to all computer printers and their output. The Xerox 1200 may prove equally cantankerous in the end but a test is definitely recommended. The problem promises to become more acute with the growing scarcity and sharply rising costs of paper.

b. PSD has experienced as much as a 100% increase in cost for certain types of paper within a 4 month period. It is entirely possible that the paper now used for OJCS printing could also double in price. The current cost is approximately $200,000. As an illustration of the magnitude of this operation, the number of sheets used by OJCS per year is approximately twice the number of impressions produced on PSD's presses in its Main Printing Plant or in its Special Printing Plant. Additional statistics were compiled on paper costs and utilization, and on speeds and costs of the various printing techniques. These are included in Attachment A.

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The three Xerox computer forms printers now in use in OJCS and DDO/ISG do save paper by reducing the print size by 40%. Unfortunately, they have proven to be too slow, are mechanically unreliable, and subject to tearing and jamming. Again, it remains to be seen if the 1200 is more reliable. As a result, the CFP's are utilized for less than 10% of the total computer printing requirement leaving some 37 million pages to be printed annually on 13 line printers.

5. THE XEROX 1200 AS A SUBSTITUTE FOR THE COMPUTER FORMS PRINTER

a. There are a total of three machines in use in two locations, and an equivalent total of 4 persons are used to produce a total of 319,000 prints/month. Attachment B describes the volume, costs, and equipment utilization at the present time. Three optional configurations using the Xerox 1200, including comparative costs, are also described in Attachment B. A single Xerox 1200 is designed to produce 500,000 prints/month on a single shift basis. A net savings in operating costs would be realized using any of the three options. There are many other added advantages. Test prints made from OJCS tapes on the Xerox 1200 indicate a quality significantly better than either the line printer or the Xerox CFP (see Attachment C). A pilot test will help to establish data on reliability and the degree of backup (suggested in the three options) actually required. Such a test could readily be made in GPP. Personnel from PSD could operate the 1200 for the test and OJCS personnel currently involved in the distribution of work produced on the CFP's could perform this task during the test phase. A 2420 request, originated by PSD, for a 60-day rental of the Xerox 1200 would permit delivery by June. Assuming that about 200,000 prints would be produced during the test period, the cost would be approximately $5,800. OJCS is already preparing test jobs for this trial period.

6. FOLLOW-ON STUDY

a. If the Xerox 1200 performs according to specifications during the test period, the economics of extending its use to other printing requirements should be examined. Some of the areas which would be considered are:

(1) The security and control implications of separating computer printing from other related computer center activities.

(2) Should Xerox 1200 operations be centralized or decentralized. Other input/output operations are being decentralized by placing Remote Job Entry (RJE) Stations throughout the Metropolitan area.

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(3) How many of these RJE stations and line printers could be effectively replaced by the Xerox 1200.

(4) The feasibility of producing one copy on the Xerox 1200 and remaining copies with a Xerox 3600 (5-20 copies).

(5) The feasibility of producing offset masters on the Xerox 1200 and using two-sided printing on the Multilith 1275 (15-50 copies).

(6) The manpower and paper savings which could be accomplished by the above in a centralized location or decentralized operation.

7. RECOMMENDATIONS

a. That a 2420 request be initiated immediately by PSD for a Xerox 1200 for use in a 60-day test. Proceed with training by Xerox of PSD and OJCS personnel to be utilized for the test, plans for preparation and submission of tapes, and complete all necessary requirements for electric wiring and site preparation.

b. That a joint task force be officially tasked with the assignment of investigating options for computer output printing for the future, including those suggested in paragraph 6 above.

[redacted] STATINTL

Chief, Systems Staff, PSD

Atts: as stated
CONCUR:

STATINTL [redacted]

Chief, Support & Services Branch,
Operations Division, OJCS

3/25/74
Date

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APPROVED:

STATINTL

[redacted]

10 April 1974
Date

[redacted]
Operations Division, OJCS

12 April 74
Date

* In accordance with our meeting of 9 April 74 with Mr. Fitzgerald and [redacted] STATINTL

ATTACHMENT A

PAPER UTILIZATION AND COST - 41 MILLION PAGES

Printer Used	Relative Weight, Storage & Filing Space	Cost 1000 pages	Total Cost
Line Printer	100%	$5.29	$216,890
1200 & CFP	60%	2.44	100,040
Offset - 2-sided	30%	1.16	50,020
Photocomposed - 2-sided (see sample)	10%	.38	16,673
Computer Output Microfilm	01%	.25 (film)	10,360

BASIC PER PRINT COSTS

Xerox 1200	.016
Xerox 3600	.012
Xerox CFP	.023
Line Printer	.0193

PAPER USAGE PER YEAR - OJCS

Computer paper 3200 pages/box - 225 boxes/wk of which 33,280,000 is single copy		37,440,000
Xerox copies 3 Xerox CFP		3,800,000
	GRAND TOTAL	41,240,000/yr
	OR	163,650 sheets per day
COM usage Produced on COM recorders and duplicated by PSD and ISG 16mm film and microfiche - total pages now 50% as great as total hard copy		20 million pages/y

SPEED COMPARISON

	Rated pages/min
Xerox 1200	60
Xerox Computer Forms Printer	40
Xerox 3600	60
Line Printer	
3211 Single Ply	28
Three Ply	84
1403 Single Ply	14
Three Ply	42
COM	160

ADMINISTRATIVE

INTERNAL USE ONLY

ATTACHMENT B

CFP OPERATIONS

Two of the CFP's are currently used to support DDO/ISG operations in Room GC-47 Headquarters Building. A one shift operation uses the equivalent of two persons to produce approximately 220,000 copies per month. The number of copies ranges from 9 to 20 per original. Distribution of this material is handled by a DDO component. Overtime is occasionally required.

The third machine is operated by OJCS in Room GS-19 Headquarters Building. The equivalent of two persons on a one-shift basis is also required for this operation with occasional overtime. They produce a total of 99,000 copies per month ranging from 4 to 24 copies each. This crew also packages and addresses the copies for distribution.

CFP COSTS

3 Units - Current volume 319,000 prints/mo.

Prints/Mo

99,000 OJCS
220,000 ISG
319,000

$3,790.00 Min. Chg
957.00 Supply (Xerox)
500.00 CPU & Computer Paper
750.00 Line Printer (Hetra)
1,425.00 Line Printer (3211)
$7,422.00/mo

.023 per print

CFP UTILIZATION - 3 UNITS

Av. Daily Prod/Machine - 4,833 prints
Rated speed 2400/hr
Est. usage per day 3 hrs per machine - 1 shift

COMPARATIVE COSTS
(Exclusive of Labor)
319,000 print/mo

		COST	
		Per Month	Per Print
CURRENT SYSTEM			
3 - Xerox CPF's			
2 - Line Printers			
CFT Rental & Supplies	$5,247.		
1 - Hetra Line Printer	750.		
1 - 3211 Line Printer	1,425.		
	$7,422.	$7,422.00	.023

ATT B

XEROX 1200 SYSTEMS

Option No. 1

1 - Xerox 1200			
Tape	$ 145		
1200	5,090		
	$5,235	$5,235	.016

Option No. 2

1 - Xerox 1200			
1 - Xerox CFP (Backup)			
Tape	$ 145		
1200	5,090		
CFP	1,000		
	$6,235	$6,235	.020

Option No. 3

2 - Xerox 1200			
Tape	$ 145		
1200	5,090		
1200	2,600-Min Chg Backup		
	$7,735	$7,735	.024

The transfer of this work from the CFP's to the 1200 would permit the removal of a Hetra terminal and possibly at least one line printer. We hope to prove that the 1200 is more reliable and 50 percent faster than the CFP's. For these reasons a savings in labor of at least one body ($1,056/mo) is estimated. In addition, less operating space would be required, better quality printing and a savings in paper is achieved through the elimination of the one computer run used for copying on the CFP.