

**THE SELECTION OF A TYPESETTING SYSTEM FOR
JOURNALISM INSTRUCTION AT OKLAHOMA
STATE UNIVERSITY AND PRODUCTION
OF THE DAILY O'COLLEGIAN**

By

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//

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PREFACE

As the newspaper field enters the modern world after sleeping decades with little real change in production methods, new concepts and methods are being brought into the newsroom and out of the composing room. Control of news by its originators is a real benefit as well as effecting a reduction in production costs.

Along with change comes new thinking, a function which hopefully can be aided by college journalism programs such as The School of Journalism and Broadcasting at Oklahoma State University.

Unfortunately, the cost of equipment for training the new journalist is very expensive. Fortunately, The Daily O'Collegian is a part of the journalism school and costs of training can be shared, making it possible for Oklahoma State University to become one of the first in the nation to be able to use this modern equipment in its training and production, which is an extension of their college work.

Much study has gone into concepts of training and methods, and with the aid of a number of experts in various fields, this study can be used as a basis for others. It should be used only as a basis for study, as each school or production facility has its own peculiar problems and needs.

Knowledge has been drawn from a number of people, including the following. I am grateful to them, as to my knowledge, there has been no study such as this made. If there had been, technology would outdate it soon, as it will this one.

Invaluable aid was received from Dr. William Hughes, head of the electronics department of Oklahoma State University and a former systems consultant for the Los Angeles Times; Mr. King White, assistant director of Publishing and Printing at Oklahoma State University, and Mr. Fred Weddle, business manager of The Oklahoma Daily, Norman, Oklahoma.

Appreciation is also extended to me advisory committee: Dr. Harry Heath, director of the School of Journalism and Broadcasting; Dr. William R. Steng, associate professor; Mr. Michael Buchholz, assistant professor; Mr. John Henry, instructor, and Robert Bledsoe, instructor, all in the School of Journalism and Broadcasting.

My thanks also go to the companies which responded to requests for bids and to their salesmen who were able to give insight into the various problems. Their time and patience were appreciated and no doubt the hardest part of the selection was telling all but two that "We have accepted the bid of another company." The rejection of their bids in no way belittles their products. It only meant that in our particular time, in our particular situation, we felt that another company could better meet our needs.

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CHAPTER I

INTRODUCTION

A new concept in news processing has been accomplished by something the newspaper world is calling the "New Technology." As has been the case too often with those who are "first with the news," the industry has been one of the last to respond to change.

Background

After remaining static for eight decades, new advances have finally hit the printing industry. Bright young minds found new ways of improving quality and speed with the lithographic processes, known more generally as offset printing.

Letterpress, the old standby process which dominated the industry since the 15th century when Gutenberg first used movable type, dramatically took second place to lithographic processes despite the groans and overt opposition to change by tradesmen and traditionalists. With the advent of the Linotype in the latter part of the 19th century, compositors believed the ultimate had been conceived. Change was repressed until offset came to the front with new technological advances which could no longer be ignored.

Speed, versatility and economies were possible with simpler, less-skilled operations. Offset was on its way and within a 10-year period it was the method of producing the majority of all newspapers in the United States.

This was just the beginning of the technological revolution. Acronyms by the dozens appeared to confuse non-technical journalists. Video display terminals, optical character readers and copy preparation systems were just beginning to be identified when a new generation of terms entered the picture to herald in newer and more mysterious programs which could be hard wired, soft wired and firm wired.

Suddenly these new typesetting machines were producing thousands of characters per minute and performing functions thought to be the exclusive domain of skilled typesetters. Hyphenation and justification of copy were done by a mini-computer. Profit-conscious managers watched as the more aggressive among them installed these cost-cutting slaves which neither smoked, took time to eat or go to the rest room, operating at speeds only dreamed of 10 years ago.

The Problem

These advances in technology are being felt in journalism education, especially with the recent concept of the complete computer-operated newsroom where even the sacred typewriter is going the way of the revered "hot type" machines such as the Linotype and Ludlow. Not since the days of Benjamin Franklin has the writer controlled means of production of type. This has brought in a new operational concept: the combination of the writing and editing of stories with the final composition of type controlled by the newsroom.

Suddenly college graduates, faced with the hazards and expectations of gainful employment, will also confront electronic video terminals and computer-powered systems. With prior knowledge gained in school and with the confidence of youth, they may see it as a challenge and lead the industry into even more dramatic uses.

It is the responsibility of the schools of journalism to be leaders in the teaching of these new concepts. The problem is to secure the necessary equipment with funds available and the personnel to give adequate instruction.

Purpose of the Study

This study was to provide information on available machines being used which might be purchased for use at Oklahoma State University for instruction in newsroom technology and for use in the production of the student newspaper, **The Daily O'Collegian**.

First generation equipment was researched and engineered at great cost and was restricted to larger newspapers. Within the past year, new and cheaper components have been developed and there is competition for survival among the manufacturers and distributors.

The purpose of this study was to determine the amounts and kinds of equipment necessary for proper instruction of journalism students and for their use in the efficient production of **The Daily O'Collegian**, and to recommend to the board of directors of The O'Collegian Publishing Company the equipment to be purchased.

This must be accomplished with available money from reserves of **The Daily O'Collegian** and the School of Journalism and Broadcasting.

A significant question arose concerning the desirability of a simplified version using a storage unit for information filing and retrieval or to seek a more complicated and versatile system using programmable computers with their inherent maintenance problems. Any purchase would be restricted by limitations of a realistic budget.

An inherent question was, "Can a computerized newsroom be bought with funding available, one which must provide 'backup' capabilities to meet deadlines when mechanical failure or software problems cause the system to become inoperable."

A "system" in this study refers to an integrated group of instruments upon which a reporter's keystrokes are used to make possible error-free type ready for pasteup in the composing room. It is being referred to as a copy preparation system (CPS).

A reporter will be able to write a story on a video display terminal with an attached alphanumeric keyboard which also provides command keys for various functions of the system and to give commands to the phototypesetter. The terminal has the capabilities of adding characters, deleting characters and other functions with combinations of key strokes, giving great ease to quality newswriting.

The news story is then sent to a storage disc where it may be retrieved for future editing, proof reading and storage or sent directly to a phototypesetting machine or paper tape punch.

Objective

The objective of this study is to be able to recommend the purchase of an electronic system of news production. To be able to make this recommendation, the following procedures must be followed:

1. To determine the money available.
2. To obtain approval of the publisher, the board of directors of The Daily O'Collegian Publishing Company, and the Board of Regents for Oklahoma State University.

3. To recommend a system using an optical character reader or one using only video display terminals as input devices.
4. To determine the number of input units necessary.
5. To determine minimum functions of a system which would satisfy needs of production and instruction.
6. To determine the type and capacity of a central processing unit which would serve at the lowest cost.
7. To determine if an adequate system could be purchased with funds available.

CHAPTER II

REVIEW OF LITERATURE

At the time this study began in March 1976 there were no copy processing systems in operation in a university, according to the various manufacturers' representatives, although a number had various components such as optical character readers and video display terminals. This review of literature will, with the limited number of articles listed in various library indices, point out the need for such equipment and some of the problems faced by educators in introducing it into journalism programs. The Associated Press and United Press International have them in use in their large bureaus and some domestic bureaus.

Need to Accept New Concept

The industry is rapidly accepting the change as costs are reduced, capabilities are increased and reliability proven. This is shown in a single issue of **Editor and Publisher** (3). Various stories report that **The Washington Post** is to install 22 terminals on a system scheduled to be operational in March 1976 for limited use; **The New York Times** has ordered 325 for its editorial department and is considering 134 more for the classified ad department, and **The Dallas Morning News** has selected a 32-terminal system.

Few educators question the need for an expenditure of money to teach the new system of news production to journalism students. The vast majority has stated that it is the obligation of schools to teach them the latest methods with which they will work upon graduation (6).

Top administrators indicated the obstacle most significant was the cost of the equipment. Other problems included the lack of space and competency of instructors to teach the use of the equipment (6).

William F. Dean, writing in **Scholastic Editor Graphics-Communications**, said the cathode ray tube (CRT), the basic element of the system, is becoming widespread in newspapers and on campuses which teach journalism as it is a financially sound method and "assures newsroom and copy desk control of the story" (2). He reported that the University of Missouri "materially reduced correction costs and keypunching costs in the back shop." This was accomplished with the use of the terminals alone.

Research by **The Daily O'Collegian** management has shown where considerable savings can be realized with the new equipment.

John J. Clarke, in an article entitled "It's No Time for Clinging to Goose Quills" (1), agreed that the teaching of the new technology is important, but it is not a cure-all. He said the newspaper world is leaving the "goose quill stage" although equipment is only equipment and will not replace education in the basic skills presently taught in journalism schools such as spelling, grammar and the ability to write with clarity of thought.

He reported an additional benefit in the form of better-prepared copy produced by students on the terminals, indicating that they may be an excellent educational tool. They are used as self-teaching machines, using prepared six-level tapes which flash their lessons across the screens.

Ohio State professors, according to Clarke, do not believe the training is absolutely necessary for journalists but recommend it as highly desirable.

Inland Printer quotes Philip Pagano, vice president of Dymo Graphics System: "There may be those who damn the new tools of competition, some as the result of unfortunate experiences. But no amount of damning will overshadow the overwhelming benefits that our trade has, and will receive"(5).

In his doctoral dissertation, William R. Steng, Oklahoma State University associate professor of journalism, stated that only two of 120 college-oriented staff members polled said there was no need for hands-on experience of reporters. He found that "most administrators agree that verbal explanations are inadequate and that instruction is desirable in the classroom"(6).

The dissertation showed that respondents believe the classroom is the place for such training, and that it cannot be left up to the newspapers. Dr. Steng concluded that laboratory methods will be the most-used means of instruction in 1980, with budgetary problems the biggest obstacle.

The study showed that "journalism programs indicated they want to retain responsibility for the teaching of newsroom computer technology and not have it assumed by newspapers, nor did they want much instruction in computers and technology provided by other academic disciplines"(6).

Summary

Literature strongly indicates the new technology is here to stay and is a necessity for the journalism school which wants to be progressive and has the future of the school in mind.

Educators believe that journalism schools should assume the responsibility of such instruction to better prepare students for jobs and make it easier for them to secure jobs.

CHAPTER III

METHODOLOGY

Manufacturers' representatives reported there were no copy processing systems in operation in universities when this study began in January 1976, and there were few used in newspapers, making it necessary to make decisions on information other than the experience of users. The author believed the only practical way of coming to rational recommendations was to contact all known manufacturers and gather data on performance and price of their products.

Cost Sharing

Since costs would be a definite factor, the first step was to determine the maximum amount of money which would be available by July 1, 1976, the date deemed desirable for installation of equipment. Such a date would permit installation, primary instruction and time for the staff to learn its operations before the beginning of the 1976 fall term.

Since use would be divided between **The Daily O'Collegian** and the School of Journalism and Broadcasting, it was necessary to establish a cost ratio to be shared. In meetings with Dr. Harry Heath, head of the school, and O'Collegian management, it was agreed that costs would be shared on a three-to-one basis with **The O'Collegian** providing the larger share. Exact amounts and service contracts could not be determined until a bid and service agreements were made final.

No agreements could be made without formal approval of the board of directors of **The O'Collegian Publishing Company** and the Board of Regents for Oklahoma State University.

Specifications to Be Broadly Written

To be able to study a wide range of configurations, the decision was made to send formal bids to every company which made equipment which might satisfy production and educational needs. It was realized that broad, inclusive terminology would be needed to permit bids from various companies. Before preparing specifications, meetings were held with journalism faculty and staff members to determine the number of input terminals, phototypesetting machines, central processing unit capacity and peripheral equipment needed.

Although some favored the purchase of an optical character reader (OCR), the majority agreed they were primarily an interim process and had a limited future due to the reduced costs of video display terminals (VDT's) in recent months. In the early seventies, VDT's sold from \$11,000 to \$60,000 and OCRs from \$28,000 up. By the end of 1975 the price of the terminals dropped below \$4,000, making it feasible to use them exclusively as their speed and versatility overshadowed performance of the OCRs. The committee also questioned the practicality of the OCR when only a few hours of training are necessary to learn its operation. It was suggested, however, that electric typewriters be made available to students and that editing procedures for the OCR be part of the reporting course so they would be familiar with input procedures.

An advisory committee was formed to make recommendations. It was composed of Dr.

Harry Heath, head of the School of Journalism and Broadcasting; John Henry, graphics instructor; Robert Bledsoe, **Daily O'Collegian** advisor; Michael Buchholz, head of the news-editorial sequence and Leland Tenney, manager of **The Daily O'Collegian**.

The committee studied the needs and recommended the purchase of 10 terminals with a storage capacity of 500,000 characters. This would make it possible for all known manufacturers to meet specifications.

The committee also recommended the purchase of a phototypesetting unit with line-mixing capabilities to be put on-line with the system

With the basic equipment needs identified, specialists were contacted to help write the technical aspects of the bids. Information was received from Ralph Squires, Gannett Newspaper Foundation consultant; William Hughes, head of the Electrical Engineering Department at Oklahoma State University who had served as consultant for **The Los Angeles Times**; King White, assistant business manager, Publishing and Printing at Oklahoma State University, and Fred Weddle, business manager of **The Oklahoma Daily** at the University of Oklahoma.

It became the responsibility of the author to search for information concerning the companies making the equipment. The information was presented to the committee in the journalism school which made its recommendations to the board of directors of **The Daily O'Collegian Publishing Company** and the Board of Regents for Oklahoma State University.

To get the thinking of engineers, manufacturers were asked to take the minimum requirements and recommend systems which would adequately perform the tasks as set forth in the bids. A list of manufacturers was compiled from Standard Rate and Data Service Business Directory, manufacturers known by local printing firms, advertisements in trade magazines and from direct mail gathered over several years.

List of Manufacturers Receiving Bids

Invitations to bid were sent to 22 companies which were believed to manufacture such equipment. They were:

xDatatype Corporation
P. O. Box 693712
Miami, Fla. 33169

xDymo Graphics Systems
7203 J. W. Carpenter Freeway
Dallas, Texas 75247

xA-M Varityper Division
612 South Main
Tulsa, Okla. 74119

Alphatype Corp.
7500 McCormick Blvd.
Skokie, Ill. 60076

Autologic, Inc.
9119 DeSoto Ave.
Chatsworth, Calif. 91311

Composition Systems, Inc.
570 Taxter Road
Elmsford, N. Y. 10523

xCompugraphic Corp.
2527 Lantrac Road
Decatur, Ga. 30032

xDigital Equipment Co.
Parker Street
Maynard, Mass. 01754

xECRM, Inc.
205 Burlington Road
Bedford, Mass. 01730

Harris Corp.
55 Public Square
Cleveland, Ohio 44113

xIMLAC Corporation
150 A Street
Needham, Mass. 02194

Information International
12435 W. Olympic Blvd.
Los Angeles, Calif. 90064

Singer Graphics System
151 Callan Ave.
San Leandro, Calif. 94577

Sun Graphic System Group
200 Park Ave.
New York, N. Y. 10017

xMergenthaler Corp.
2880 Walnut Hill Lane
Dallas, Texas, 75229

xComputype, Inc.
3686 Jackson Road
Ann Arbor, Mich. 48103

xHendrix Electronics
Suite 470, Center City Bldg.
Ann Arbor, Mich. 48108

xCompuscan
900 Huyler St.
Teterboro, N. J. 07608

Video Graphics, Inc.
One Town Hall Square
Nutley, N. J.

xNewspaper Electronics Corp.
7948 Wornall
Kansas City, Mo. 64114

x Responses were received from 13 of the 22. They are identified by an x at the left of each respondent.

Bid Form

Following is a copy of the Invitation to Bidders sent by the Oklahoma State University Purchasing Department. Specifications were submitted by management of **The Daily O'Collegian** with standard bonding and insurance described by the Purchasing Department.

OKLAHOMA STATE UNIVERSITY

PURCHASING DEPARTMENT December 19, 1975
STILLWATER, OKLAHOMA 74074

REQUEST FOR QUOTATION

**THIS IS NOT
AN ORDER**

BEFORE FILLING OUT THIS FORM, PLEASE READ THE FOLLOWING INSTRUCTIONS

Please submit your quotation on the items described. Use pen and ink or typewriter in filling in quotations and initial any corrections. Unless specifications as given are altered, the vendor will be expected to deliver merchandise as bid. If bidding an alternate, so state on this document and attach complete specifications and brochures to fully describe the merchandise you propose to furnish. The unit price must be stated on all items and all totals extended; bidders guarantee unit prices to be correct. The right is reserved to accept or reject all or part of any quotation submitted. All merchandise will be awarded by items or groups of items, whichever may be to the best interest of the University. "All or None" bids must be clearly identified as such. Bids must be received in sealed envelopes with requisition number and closing date plainly written on the outside of the envelope.

Competitive Bid No. 77285-TS No Bid Received After January 15, 1976 11:00 A.M.

ITEM NO.	QUANTITY	DESCRIPTION	UNIT PRICE	AMOUNT
		<p>IMPORTANT: This combined bid and affidavit must be signed in ink, notarized, and bear the notary seal to be acceptable.</p> <p>You are invited to Submit a Proposal for Equipment for use in producing the Daily O'Collegian and training in The School of Journalism and Broadcasting located on the campus of Oklahoma State University, Stillwater, Oklahoma, as per attached Specifications and General Conditions.</p> <p style="text-align: right;">Total Amount Of Proposal----- \$ _____</p> <p>All Bidders must specify firm delivery dates, calculated as days following receipt of University Purchase Order. DAYS REQUIRED FOR DELIVERY _____</p> <p>MARK OUTER ENVELOPE: SEALED BID #77285-TS January 15, 1976 11:00 A.M.</p> <p>ALL INFORMATION BELOW THIS LINE MUST BE COMPLETED.</p>		

_____, of lawful age, being first duly sworn, on oath says, that (s)he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the bidder has not been a party of any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding; or with any state official or employee as to quantity, quality or price in the prospective contract, or any other terms of said prospective contract; or in any discussions between bidders and any state official concerning exchange of money or other thing of value for special consideration in the letting of a contract; that the bidder/contractor has not paid, given or donated or agreed to pay, give or donate to any officer or employee of the State of Oklahoma (or other entity) any money or other thing of value, either directly or indirectly, in the procuring of the award of a contract pursuant to this bid.

Subscribed and sworn before me this _____ day of _____ My Commission Expires: _____

_____, 19____ Notary Public (Clerk or Judge)

DAYS REQUIRED FOR DELIVERY: _____ TERMS: _____ FIRM _____

F.O.B. Stillwater, Oklahoma SIGNED BY _____
Name & Title

RETURN TO
 TO **PURCHASING DEPARTMENT
 OKLAHOMA STATE UNIVERSITY
 STILLWATER, OKLAHOMA 74074**

ADDRESS _____
 CITY & STATE _____
 DATE _____ PHONE _____

This submitted as a legal offer and acceptance by the Oklahoma State University Purchasing Department constitutes a binding contract.

BID INFORMATION

The O'Collegian Publishing Company, owned by Oklahoma State University, is interested in the purchase of equipment for use in producing The Daily O'Collegian and for training in the School of Journalism and Broadcasting.

General specifications are in this bid. They cannot be considered totally complete. Vendors are encouraged to submit proposals with features not specifically asked for.

Proposals for complete systems, and others with component parts to make up a system, are requested. However, it is understood that a single company must be responsible for the complete, turnkey installation.

Bidders will supply all materials and personnel to set in place and make operational in the offices of The Daily O'Collegian. Payment will not be made until system is operating, to the satisfaction of the buyer.

Bidders must specify training periods recommended, number of persons to be trained, where training will be held, and the cost, if additional, to the buyer.

Bids must include schematics and parts catalogs for each item to be used only by personnel employed by Oklahoma State University.

Bidders must include, and permit classroom use of, training materials sufficient to be used to instruct student in the operation of all equipment.

Bidders are asked to recommend other items to make a complete "system" for newspaper production and education.

The University reserves the right to make the final decision on what it believes to be the best and lowest price, but this does not mean a decision will be based on price alone.

Bidders must list details of all warranties including coverage and time limits. This must include breakdown of individual components, parts and labor during warranty periods.

Influencing the acceptance of a bid will be:

- Delivery and operational dates
- Storage capacity
- Average waiting time with all stations in operation
- Versatility of equipment, including programming
- Maintenance costs
- Service availability and costs
- Warranties
- Patent infringement guarantees
- Training provided for local employees
- Ability of components to work on-line or independently
- Necessary environmental conditions for equipment
- Safety of stored information when power outage is experienced

Contact Leland Tenney at The Daily O'Collegian, Room 109 Communications Bldg. (Phone 405-372-6211, Ext. 571) for further information. The office will be closed from Dec. 23 to Jan. 2, 1976.

OKLAHOMA STATE UNIVERSITY

STILLWATER, OKLAHOMA

CONTINUATION SHEET

To Accompany Requisition No. 77285

QUANTITY	DETAILED DESCRIPTION — DOUBLE SPACE BETWEEN ITEMS	UNIT PRICE
1	<p>PHOTOCOMPOSITION UNIT</p> <p>Specification:</p> <ol style="list-style-type: none"> 1. Speed: minimum of 50 newspaper lines per minute *2. Type range: four faces in 8 sizes from 6 to 72 point 3. Mixing capabilities: inter and intra-type faces must be able to mix, with reverse leading for area composition 4. Justification capability 5. Hyphen and hyphenless logic, with word-exception dictionary as option 6. Letter increments not less than 18 units per em 7. Leading: primary and secondary from 1/2-point to 48 point 8. Reverse leading or other system for area composition 9. Tape control of face, size, line length and leading; computer control identical to tape feed 10. Quad left, center, right and hanging indentation 11. Tabulation: tape or computer input, minimum of eight columns 12. Accept commands from 6-level tape, OCR, VDT or storage bank to set body type and area composition using any combination of type on the phototypesetter 13. Type quality: must produce high-quality book and newspaper composition in faces preferred by buyer <p>*Alternate to item 2: 2 faces in eight sizes 6-72 point 2 faces in four sizes, 6-36 point</p>	

OKLAHOMA STATE UNIVERSITY

STILLWATER, OKLAHOMA

CONTINUATION SHEET

To Accompany Requisition No. 77285

QUANTITY	DETAILED DESCRIPTION -- DOUBLE SPACE BETWEEN ITEMS	UNIT PRICE
8	<p>VIDEO DISPLAY TERMINALS</p> <p>Specifications:</p> <ol style="list-style-type: none"> 1. Screen: minimum 9-inch diagonal, 16 lines with 64 characters per line 2. Input capability direct to tape punch or storage computer for text and mixed composition for advertising and other uses 3. On-line for input, recall and editing; scrolling capability; cursor control; letter, word and sentence delete; overstrike; minimum of 4k memory or equivalent; merging and updating from tape or computer recall; ability to re-arrange copy 4. (preferred) Ability to recall showing justification and hyphenation 	
2	<p>STANDALONE VIDEO DISPLAY TERMINALS (each with punch)</p> <p>Specifications:</p> <ol style="list-style-type: none"> 1. Screen: Minimum 9-inch diagonal, minimum 960 characters 2. Capability of direct punch or printer, and, direct input into computer, for text and mixed composition 3. Computer sufficient for normal newspaper work; overstrike; minimum of 4k memory or equivalent; merging and updating from tape or computer recall; ability to re-arrange copy. 4. (preferred) Ability to recall showing justification and hyphenation 	

OKLAHOMA STATE UNIVERSITY
STILLWATER, OKLAHOMA

Page 4

CONTINUATION SHEET

To Accompany Requisition No. 77285

QUANTITY	DETAILED DESCRIPTION — DOUBLE SPACE BETWEEN ITEMS	UNIT PRICE
1	<p>MASS STORAGE AND RETRIEVAL SYSTEM, ON-LINE *</p> <p>Specifications:</p> <ol style="list-style-type: none"> 1. Capacity: to adequately facilitate a minimum of eight input devices; minimum storage of 250,000 characters; with expansion capability at minimum cost 2. Functions: accept input from minimum of eight units, including VDT, OCR, tape; provide for recall and editing capabilities; typographic formatting of text and advertising, including mixing of lines, with output either to paper tape or photocomposition machine 3. Programmable machine preferred, price must include program tapes for basic operations; hardwired equipment will be considered if versatile for all operations. <p>*ALTERNATE TO ITEM 3:</p> <p>Complete system using Oklahoma State University's IBM 360-35 computer to replace separate storage-retrieval unit. This bid must include all installations and costs relative to compatible interchange of information between the components.</p>	

OKLAHOMA STATE UNIVERSITY
STILLWATER, OKLAHOMA

CONTINUATION SHEET

To Accompany Requisition No. 77285

QUANTITY	DETAILED DESCRIPTION ---- DOUBLE SPACE BETWEEN ITEMS	UNIT PRICE
	PERIPHERALS	
1	Printer, on-line, capable of providing hard copy from input terminals and computer	
1	Paper Tape reader, 6-level, on-line, for use with editing terminals, 6-level	
1	Paper tape punch, 6-level, on-line, for use with editing terminals and/or OCR	
	Interface units, all other devices for completing system	
	Spare parts kits as recommended by manufacturer	

OKLAHOMA STATE UNIVERSITY

STILLWATER, OKLAHOMA

CONTINUATION SHEET

To Accompany Requisition No. 77285

QUANTITY	DETAILED DESCRIPTION — DOUBLE SPACE BETWEEN ITEMS	UNIT PRICE
1	<p>OPTICAL CHARACTER READER SCANNER (optional, depending on cost of other items)</p> <p>SPECIFICATION:</p> <ol style="list-style-type: none">1. Minimum speed 500 words per minute from sheets up to 14 inches in length2. Must be able to read characters from faces compatible with office use, such as Courier 12 or OCR 1, with maximum accuracy, using typing-paper quality.3. Must be on-line to computer storage and direct tape punch	

Method of Compiling Information

Upon receipt of the bids from the 13 companies, it then became the problem of selecting the equipment and determining if adequate equipment could be bought within the price range. Information from each bid was tabulated on a large form to make apparent comparisons of advantages and disadvantages.

Included in the charts (see chapter four) is data on each of the bid items comparing speeds, sizes of type, logic, storage and retrieval unit capabilities, capacity, programs included and available, size of screen on the terminals, necessary peripherals to complete the system, training time and costs, spare parts, service available and rates, location of service centers and prices.

It was then necessary to analyze the bids, limiting further consideration to those who could provide the equipment which would be adequate to perform the functions specified and still fall within the price limitations.

This phase of the study limited the list to four. They were Computype, Newspaper Electronics Corp., ECRM and Compuscan.

As none of these manufactured a phototypesetting machine it was necessary to look to other companies for this. Only two qualified within the price limitations. They were Compugraphics and Addressograph-Multigraph. The writer already had personal knowledge of the machine proposed by the latter, and as there was no similar model as that proposed by Compugraphic in operation within reasonable distance, no visits were made. Several telephone calls, however, were made to knowledgeable people concerning Compugraphic's proposal.

Three copy preparation system manufacturers had at least one installation. Computype's first, a prototype, had been installed at The Pittsburg Sun, Pittsburg, Kansas, in late 1975. Newspaper Electronics Corporation installed its first at The Junction City Union, Junction City, Kansas, in late 1975. Compuscan installed its first system since this study started, although a partial system was in use by the Tyler, Texas, newspapers for their classified advertising input and billing. ECRM had no installations at that time suitable for use by **The Daily O'Collegian**.

After determining these systems were adequate for journalism instruction and production of **The Daily O'Collegian**, the writer made visits to the three newspapers and talked with operators and saw the systems in actual production. A second trip was made to **The Pittsburg Sun** to gain further insight after the prototype was replaced with a production model similar to that proposed in the bids.

Reports of the findings of these trips were presented to the advisory committee in the journalism school and an evaluation of bids' including a cost-benefit ratio, was then made before a recommendation could be made to The O'Collegian Publishing Company.

CHAPTER IV

FINDINGS

The copy processing system concept is new, being a development of the past two years. To encourage input from as many manufacturers as possible, specifications were necessarily general. It follows, then, that bids would also be varied and therefore difficult to compare for a rational evaluation.

There is keen competition at the present time in the video display terminal and systems markets, whether they are considered as two markets or one. Companies have spent millions of dollars to develop new methods which have become very sophisticated. In the newspaper field there is not room for all of them and many will not survive. Those who can show strength now, at the beginning of the revolution, will establish themselves as the leaders and grow strong. The market is too specialized and limited in scope to support a large number, especially the existing softwired systems. In the lower-priced hardwired systems, few companies have specialized and there is yet little competition among them. Their battle is with the lower end of the soft-wired group.

To have the prestige of selling to one of the nation's major universities is obviously important. The college market will eventually be large in itself. Of more importance will be the number of students who train on such equipment. Their later recommendations will depend to a large degree on experiences gained on the equipment, and they may have a great influence in the near future on brands of equipment which will be bought by commercial operations.

Early installations may also be used to show other prospective buyers. The company which can take a prospect to a nearby newspaper where their equipment is being used will have an additional tool to help make future sales.

Money to be used for the equipment would come from reserves of The O'Collegian Publishing Company and from special donations to the School of Journalism and Broadcasting.

Reserves from the publishing company were in the neighborhood of \$85,000, having been put aside over the past ten years from the sale of advertising and funds from the student activities fee.

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Donations from friends of the school made it possible to set a maximum of \$127,000 as the top figure possible, and if spent, would make the reserves critically low. This amount was also presented to the Board of Regents as the maximum.

After the advisory board made its study, the recommendations were presented to the board of directors of The O'Collegian Publishing Company, which gave its endorsement at a special meeting in the office of the president on March 22, 1976. The board asked that the purchase be placed on the calendar for action by the Board of Regents for Oklahoma State University.

The presentation was made by the general manager who explained the proposition to the board at its April 1976 meeting. It was explained that the purchase would be made without the expenditure of tax monies, as the total amount was already on hand from donations to the school and from profits of **The Dally O'Collegian**. Benefits both from educational and operational standpoints were emphasized. The board gave unanimous approval.

Although the bid asked for an alternate, using the university's 360-65 computer, none were received. Costs of cables and other necessary equipment and the cost of a software program were reasons given by salesmen. Time costs would have been small, as the system would have used only a small proportion of its capabilities. Such a tie would have given almost limitless capabilities, and also sporadic down time although the later would have been minimized by the technicians on duty.

Softwired vs. Hardwired

There are as many opinions about the advantages of the hardwired (non-programmable) and softwired (programmable) systems as there are people. Add to that the newer developments, changeable program cards for hardwired equipment, and opinions vary even more.

The programmable systems have as the heart a computer which can be changed to fit many needs. Most have computers made by large companies which may be used for any computer operation. The hardwired central unit is not changeable although many commands and formats can be entered on the receiving discs.

With the limited funds available to **The O'Collegian**, the first question was the possibility of buying softwired equipment, which was preferred, at special discounts, or taking the hardwired equipment at prices close to, if not the same as, their regularly list prices. The specialized companies, because of the lack of competition, were reluctant to make concessions although the equipment is to be used for instructional purposes and production by a state-supported school.

To make matters more simple the prices of some manufacturers prevented them from responding. These companies, such as Harris and Miehle-Goss-Dexter, are in the large daily market and their systems are much more powerful. Complete newspaper operations are accomplished on them including billing, bookkeeping and payroll operations. Other bids were quickly set aside for the same reason.

In order to fairly compare capabilities of the various systems, charts were prepared using the detailed and sometimes technical brochures received with the bids. Differences in terminology and inherent differences in equipment made exact comparisons difficult, but with the aid of sales representatives, fairly accurate charts were completed. Approximately 300 pages of bid information and descriptive literature were reduced to these tables. In this way features could be compared easily and price-capability ranges could be correlated.

Analysis of Phototypesetter Bids

Table I is limited to information on phototypesetters and includes four bids. Even here the complications arise as Mergenthaler, for example, combines the phototypesetter with an internal computer. Total price prevented serious consideration of their equipment.

After analyzing the bids it became obvious that to be able to finance the necessary equipment the bids of Dymo (base bid \$26,000) and Mergenthaler (\$32,400) could not be considered, although each had features which were not available on the less expensive models. They were completely programmable, being operated with true computers which gave them versatility not experienced in the hardwired phototypesetters.

The Addressograph-Multigraph 748 has some of the features of the above but is limited in its programming. Formats can be designed to fit many needs, reducing the number of keystrokes and making codes automatic. For an additional cost, there is available a word-exception dictionary which prevents words from being hyphenated erroneously by the logic which is inherent in each of the machines.

The Compugraphic Unisetter is described as a "hardwired" machine, which means that all programs are burned in at the factory and cannot be changed without major expense and time.

The phototypesetter is designed for newspaper work and has capabilities for normal production. Add to this the formatting capabilities of the entire copy processing system and the additional advantages of the programmable machines are minimized.

The Unisetter also holds more type sizes and faces, an important consideration when meeting deadlines. Accidents caused by improper installation of film strips or discs are also prevented as there will be few days such changes will need to be made with eight faces and 12 sizes of type available in the machine at any one time.

A comparison of costs of the 748 and Unisetter with similar capabilities shows:

Unisetter	Addressograph-Multigraph
Base price\$15,850	Base price\$20,330
Formatting option975	Formatting optionincluded
Film fonts800	Film fontsincluded
12 lensesincluded	12 lenses1,250
TOTAL\$17,725	TOTAL\$21,580

This shows a comparative price of the two phototypesetters and is not necessarily the equipment which would be recommended for use on **The Daily O'Collegian** and reporting classes.

The apparent discrepancy in the base price of the 748 was due to the salesman's information that the same model can be purchased through the State Central Purchasing Department at this lower price. If it were decided to purchase this machine the bids would have been disregarded and all bids for a phototypesetter refused.

The added formatting on the Unisetter more nearly compares to the capabilities of the 748. To make the 748 equal in sizes available on the Unisetter, four lenses would have to be added at a cost of \$1,250.

A spare parts kit was recommended by Compugraphics at a cost of \$1,500. With these parts most maintenance problems can be solved by regular employees by contacting a service center in Dallas of Kansas City, a service provided at no extra cost.

TABLE I

DATA ON PHOTOTYPESETTING MACHINES

COMPANY AND MODEL	Number of Sizes	Number of Faces	Lines per Minute	Can Intermix	Exception Word Dictionary	Can go On-Line	Image Master	Characters per Face	Maximum Line Length	Tabulation	Secondary Leading	Kerning Ability	Programmable	Core Size	Format Storage	Base Price	Software Cost	Training	Warranty (Labor, Parts)
Addressograph-Multigraph 748	4	4	50	Y	Y	Y	Disc	112	54	Y	Y	Tape	Y	16k	Y	\$21,730		Incl.	90 days
Compugraphic Unisetter	12	8	80	Y	N	Y	Film Strip	118	45	Y	Y	Tape	N		Y	15,950		Incl.	90 days
Dymo Pacesetter	8	8	50	Y	N	Y	Disc	112	54	Y	Y	Tape	Y	16k	Y	26,000	9,300	Incl.	90 days
Mergenthaler VIP	21	4	80	Y	Y	Y	Grid	96	45	Y	Y	Tape	Y	16k	Y	32,500	25,000	Extra	90 days

Peripheral Equipment

Of relatively minor importance is the evaluation of paper tape readers, punches and printers which are necessary to complete the operation. Speed is not of importance as any known such equipment is fast enough for normal use. None of the companies makes its own, but buy from common manufacturers and resell. There was some variation in price, such being reflected in the total bid price and therefore not evaluated separately.

Analysis of Video Display Terminal Bids

A number of companies sells video display terminals (VDT). Some are self-contained units with memories. Others must be operated by a computer. Some may be used either way. These variations made evaluation difficult with many configurations available from each company.

Table II shows pertinent information with prices varying considerably. Most terminals can be driven by computers of other companies, a situation which was not desirable because of installations and warranties. Having a single company responsible would prevent the shifting of responsibilities in case of malfunction.

In this light, and because of price, Addressograph-Multigraph, Compuscan, Digital, Dymo, ECRM, Hendrix and Mergenthaler were excluded from further consideration, although the terminals of Digital and ECRM were competitive in cost.

As evaluation of the terminals is closely related to the system as a whole, further discussion will be included in the section on the system.

Analysis of Copy Processing System Bids

With the inclusion of the video display terminals in the overall Copy Processing System, the capabilities and costs of all components were included when evaluating these bids. The phototypesetter is not included.

Although the bids of softwired companies were originally out of the picture pricewise, two began making price overtures which would put additional capabilities close to the budget. Equipment at an original price of close to \$140,000 was offered at about \$110,000 without the phototypesetter. These companies did not have sufficient backup capabilities in case of computer problems without additional expensive units.

Compuscan and ECRM were both in the picture but their systems were designed for only eight terminals. Additional capacity for the number of input ports and output ports was prohibitive pricewise.

Two companies which bid did not have the complete concept and were not considered. Their specifications were either too limited or were not able to communicate with the various components to transfer, edit, recall and send information to the phototypesetter. Addressograph-Multigraph is not building this type of system. Compugraphic at this time is not in the systems market and their bid was considerably higher than others when able to achieve the same latitude although their interconnections had desirable qualities. In some ways the proposal was rejected because of overkill in storage with each keyboard unit encompassing duplicated capabilities.

TABLE II
DATA ON VIDEO DISPLAY TERMINALS

	Screen Size	Char. on Screen	Shows Justification	Directory	Built-in memory	Copyfitting	Unit Price	Can Go On-Line	Standalone
Addressograph-Multigraph	15 inch	18x110	No	No	Yes	No	\$8,448	No	Yes
Compugraphic	14-inch	14x128	Yes	Yes	Yes	No	x78,400	No	Yes
Compuscan	15 inch	18x72	No	Yes	No	Yes	5,000	Yes	No
Computype	9 inch	16x64	No	Yes	Yes	No	3,195	Yes	Yes
Digital	14 inch	16x64	No	Yes	Yes	Yes	3,000	Yes	No
Dymo	15-inch	27x100	No	Yes	No	Yes	8,650	Yes	No
ECRM	10 inch	18x72	Yes	Yes	No	No	3,000	Yes	No
Hendrix	12 inch	18x72	Yes	Yes	No	Yes	5,900	Yes	No
Mergenthaler	14 inch	23x80	No	Yes	No	Yes	4,950	Yes	No
N.E.C.	12 inch	25x80	No	No	Yes	No	3,800	Yes	Yes

x Includes 8, built in with phototypesetter

TABLE III
DATA ON CENTRAL PROCESSING UNITS

COMPANY AND MODEL	Storage Capacity	Programmable	Computer	Directory	Exception Word Dictionary	Will Interface	Classified Ad Program	Base Price
Addressograph- Multigraph	200,000	Yes	16k	Yes	Yes	No	No	Not Sep.
Compugraphic	200,000	No		No	Yes	No	No	Not Sep.
Compuscan	5 million	Yes	Nova	Yes	Opt	Yes	Opt	\$40,000
Computype	500,000	No	No	Yes	No	Yes	Yes	19,950
Digital	2 million	Yes	PDP 11	Yes	Yes	Yes	Yes	49,025
Dymo	200,000	Yes	8k	Yes	Yes	Yes	Yes	114,000
ECRM	1.2 million	Yes	PDP 11	Yes	Opt	Yes	Opt	62,500
Hendrix	2.4 million	Yes	16k	Yes	Yes	Yes	Yes	58,100
Mergenthaler	2.4 million	Yes	16k	Yes	No	Yes	Yes	18,000
N.E.C.	200,000	No	No	No	No	Yes	No	25,000

Analysis of Standalone Terminal Bids

Standalone terminals are designed to operate without the aid of a central processing unit, producing tape which can be used in a phototypesetter. Our application would be primarily in the news reporting laboratory adjacent to the newsroom where they could also be used under emergency conditions for **The O'Collegian**.

Terminals as submitted by Addressograph-Multigraph and Compugraphics are not designed to be integrated but operate independently only. Terminals by Hendrix and Compuscan were bid as part of the system but cannot be used independently, and could not be considered according to specifications.

Computype and N.E.C. have terminals which can operate either as standalone units or with the system, as each has a mini-computer built into each terminal. N.E.C.'s terminal must have a converter with each to be able to integrate, which would be installed at additional cost.

The Computype keyboard requires more keystrokes for commands when compared to N.E.C.'s terminal, which has "firmwired" cards which can be programmed into single strokes at additional cost. For training purposes the Computype system is adequate and requires a better understanding of the operation than the more automated keyboard.

TABLE IV
DATA ON STANDALONE TERMINALS

Bidder	Standalone	Can Be Integrated	Unit Price
Computype	Yes	Yes	\$3,195
Compugraphic	Yes	No	17,000x
Addressograph-Multigraph	Yes	No	10,800x
Hendrix	No	Yes	4,900
Automix	Yes	No	14,000x
Compuscan	No	Yes	3,200
N.E.C.	Yes	Yes	3,800

x Includes peripherals in system bid

Analysis of Optical Character Reader Bids

As stated in the bid specifications, the purchase of an optical character reader would be considered only if total pricing fell into range of the money available. Such was not the case and the committee agreed that the additional educational value of the OCR was minimal compared to the cost.

The concept is already being taught in the reporting laboratories and only a few hours of instruction is needed to learn to operate one. It was felt that the OCR will not become prevalent in newspaper production as the cost of the VDTs has been reduced drastically.

Three companies submitted bids for bar code readers, which read typewriters with special coding printed beneath the character to be entered. Accuracy is questionable and the special fonts are not compatible with secretarial use.

This information is shown in Table V.

TABLE V

DATA ON OPTICAL CHARACTER READERS

COMPANY AND MODEL	Standalone	Can Be Integrated	OCR or Bar Code	Base Price of OCR
Compugraphic Uniscan	Yes	Yes	OCR	\$24,500
ECRM 4400	Yes	Yes	OCR	16,000
Addressograph Scanset	Yes	No	Bar	19,950
Hendrix OCR-2	Yes	Yes	OCR	11,500
Mergenthaler 100	Yes	Yes	OCR	32,500
Compuscan Alpha	Yes	Yes	OCR	29,500
Datatype	Yes	No	Bar	18,900
Dymo 200	Yes	Yes	Bar	13,500

CHAPTER V

SUMMARY AND CONCLUSIONS

Phototypesetter

Because of the price, the bids of Mergenthaler and Dymo were excluded. Both had advantages of being programmable but were not recommended for The Daily O'Collegian as the extra capabilities could not be justified. Included in the CPS were many capabilities which would help offset these advantages.

The same is true of the comparisons between the Unisetter and the 748. The 748 is softwired, but the additional functions will be mostly offset by the dual-capabilities of the Unisetter when driven by the central processing unit. With this in mind, the purchase of the formatting of the Unisetter was not believed necessary.

The cost of the Unisetter with similar capabilities was \$3,855 less than the 748 with similar equipment. It should be noted here that the 748 does have formatting and word exception dictionary capabilities.

The spare parts kit with the Unisetter at an additional \$1,500 was recommended to be used in conjunction with the telephone repair information service offered by Compugraphic whereby most breakdowns can be repaired without the presence of a service man.

The above information was presented to the board which approved the purchase of the Unisetter as follows:

Unisetter, base price	\$15,950
Spare parts kit	1,500
.....	_____
TOTAL	\$17,450

Copy Preparation System

As newspaper production and newspaper training accounts for almost all the use of the equipment, the versatility of the softwired computers was not deemed necessary, although desirable. If such equipment could be purchased for an additional \$10,000 the committee would have recommended it. The lowest price established in negotiations was near \$100,000, about 10 per cent above the price range as recommended originally by management.

Addressograph-Multigraph and Compugraphic were eliminated as their lack of a system concept did not meet specifications.

Two other companies, Datatype and AKI, bid only on single items and were not considered because of price and the desire to have a single company responsible for installation and maintenance.

Mergenthaler bid a system with only three terminals, and the cost of the software package

placed it out of reach. Digital, Hendrix and Dymo all had systems which met all requirements but price prevented serious consideration.

Compuscan and ECRM made counterproposals which came within 10 per cent of the money budgeted and presented attractive packages. However, neither had adequate backup facilities at that price range and they were rejected.

The final decision had to be made between Computype and Newspaper Electronic Corporation, both of which were in the price range with hardwired systems. The decision here became difficult, with both having features desirable.

Computype was recommended because of the directory capability, classified ad program, favorable cost of expansion, recommendations of present users, including the local newspaper, **The Stillwater News-Press**, and price.

A comparison of price is as follows:

	Computype	N.E.C.
Base Bid	\$91,437	\$81,410
Discounts	8,229	4,070
2k memory	-2,000	
Classified ad system		7,000
Equal spare parts		2,110
COMPARATIVE PRICES	\$81,208	\$86,449

The Computype system was accepted according to the configuration drawn up by Computype shown on page 31 of the Appendix. It can be compared to the original layout as shown on page 30 of the Appendix.

Standalone Units

As the Computype video display terminals can be used either on line or individually for backup purposes, it was recommended that ten be ordered in lieu of eight on-line and two standalone units.

Optical Character Reader

The committee recommended that, as there was not sufficient funds for other equipment and an optical character reader, that all bids for such be refused.

Final Purchase

Shown below is the equipment purchased and is now being used at Oklahoma State University.

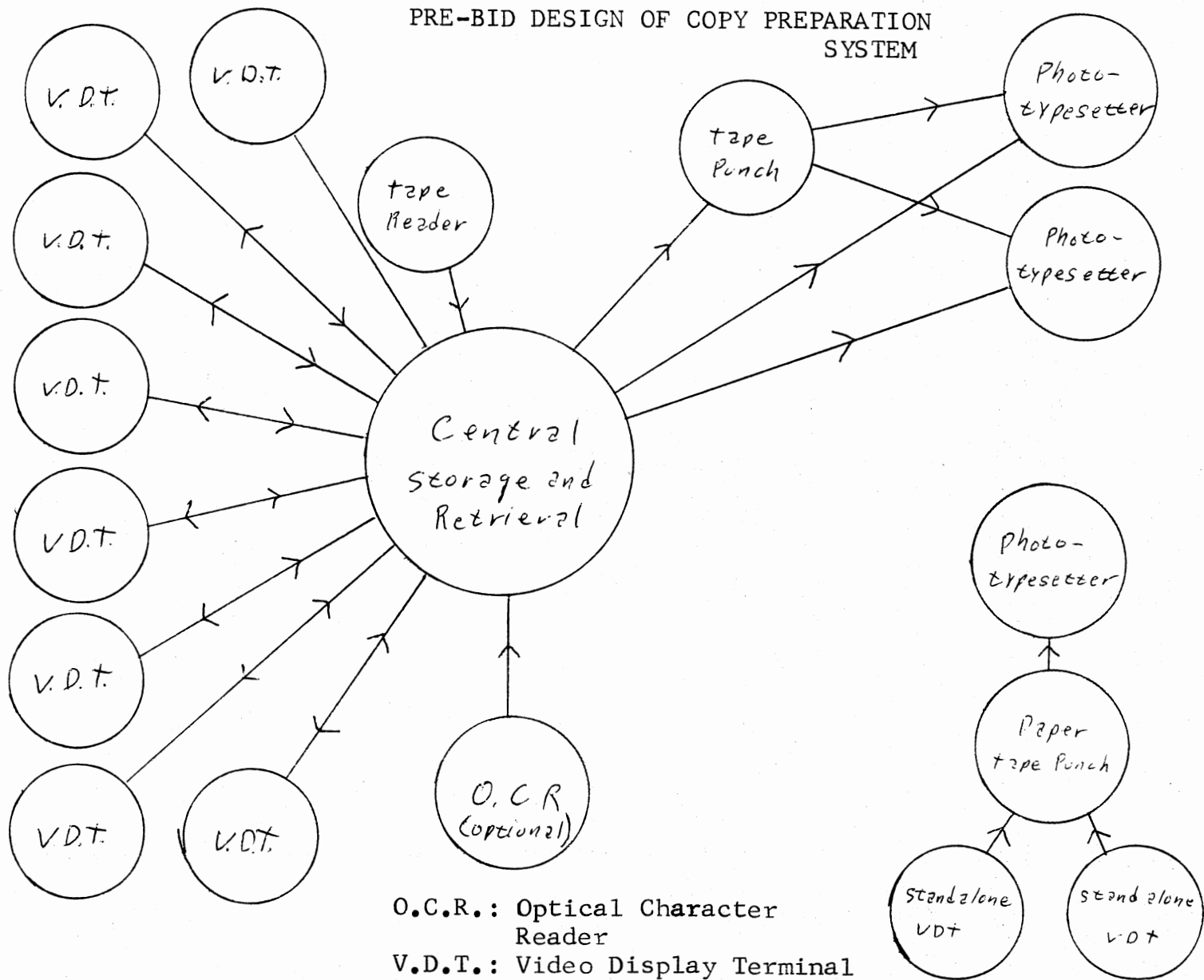
1 Compustor, double wide, 3 discs	\$29,945	Spare Parts	6,340
10 CompuEdits, 4k	31,950	Total	\$91,437
1 Extel Printer	2,500	Less cash discount	8,229
2 Model 120 Interfaces	5,990	Total for Copy Preparation System	\$83,208
2 Paper Tape Punches	5,000	Unisetter with spare parts	\$17,950
Accessories	8,212	Total project cost	\$101,158

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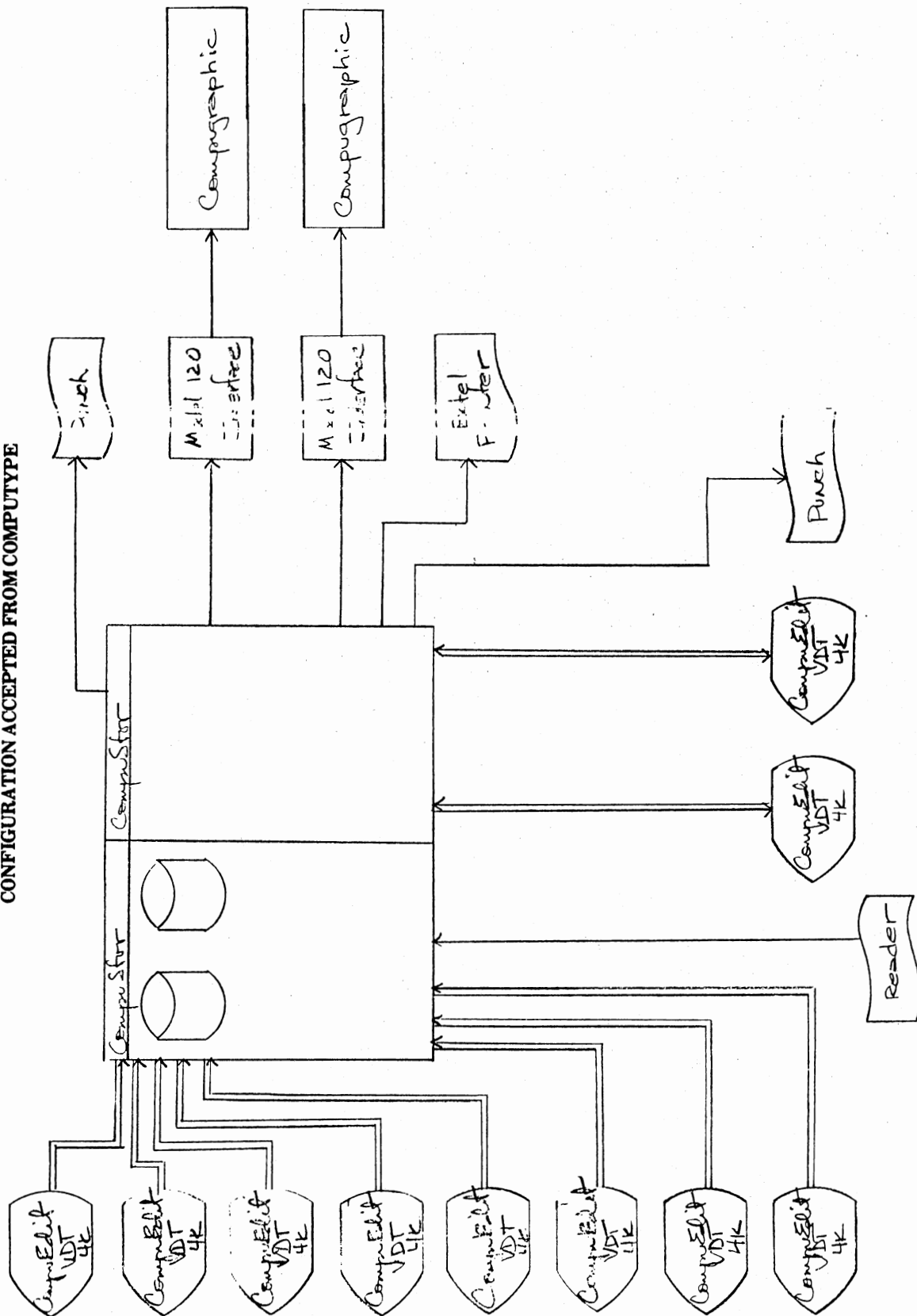
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APPENDIX A

PRE-BID DESIGN OF COPY PREPARATION SYSTEM



CONFIGURATION ACCEPTED FROM COMPUTYPE



VITA

Leland Arthur Tenney

Candidate for Degree of

Master of Science

Thesis: THE SELECTION OF A TYPESETTING SYSTEM FOR JOURNALISM INSTRUCTION AT OKLAHOMA STATE UNIVERSITY AND PRODUCTION OF THE DAILY O'COLLEGIAN.

Major Field: Trade and Industrial Education

Biographical:

Personal Data: Graduated from Stratford High School, Stratford, Oklahoma, in May 1944; attended East Central State College, Ada, Oklahoma, 1944-1945; received Bachelor of Arts Degree in Journalism from The University of Oklahoma in 1950; completed requirements for Master of Science degree at Oklahoma State University in December, 1976.

Professional Experience: Circulation manager, Anadarko Daily News, 1950; commercial printer, Panola County Watchman, 1951; foreman, The Yukon Sun, 1952; publisher, The Weleetka American, 1952-1957; publisher, The Okemah Daily Leader and Weleetka American, 1958-1967; head, printing department, Oklahoma State Tech, 1967-1968; coordinator, Graphic Arts Center, Oklahoma State Tech, 1967-1974; general manager, The Daily O'Collegian and advisor, Redskin Yearbook, Oklahoma State University, 1974-1976.

Professional Organizations: Oklahoma Press Association and Sigma Delta Chi, national journalism fraternity.

Civic and Government Experience: Chairman, Board of Trustees for City of Weleetka, 1955-1956; chairman, Okemah Utility Authority, 1964-1965; president, Weleetka Chamber of Commerce, 1956; president, Okemah Chamber of Commerce, 1966.