NORTHERN ILLINOIS UNIVERSITY

The Practical Experience of Technical Writing

Or

Everything You Wanted To Know About A Technical Writing

Internship But Were Afraid To Ask

A Report submitted to the

University Honors Program

in Partial Fulfillment of the

Requirements of the Baccalaureate Degree

with Upper Division Honors

Department of English

by

Lynne M. Brooks

DeKalb, Illinois

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ABSTRACT (100-200 words):

This paper is a report on a technical writing internship during summer of 1988 in the Computing and Telecommunications Division at Argonne National Laboratory. It consists of five parts: introduction, narrative, analysis and evaluation, comment, and appendix. The introduction describes the setting for the internship and how it related to the Laboratory as a whole. The narrative section consists of a daily journal the author kept from May 31 to August 1. The analysis and evaluation section discusses and criticizes the documents produced on the job. The report concludes with a comment on the value of internships for liberal arts students and samples of all the documents edited or wrote, as well as other relevant documents.

For Office Use:

THESIS NUMBER:_____

ARGONNE NATIONAL LABORATORY

9700 South Cass Avenue, Argonne, Illinois 60439   312/972-4216   **July 27, 1988**

Dr. Glenn Meeter, Chairman
Department of English
Northern Illinois University
DeKalb, Illinois 60115

Dear Dr. Meeter:

Lynne Brooks has completed her technical editing internship under my supervision at Argonne National Laboratory.

Lynne has done an excellent job of editing (and occasionally writing) technical documentation for computer users. She has learned to edit on-line, to be aware of the need for consistency and precision in style and format, to work congenially but forcefully with authors and reviewers, and to supervise documents through the various publication processes. She has successfully concluded a number of high-level edits. Her name will appear as editor on the title page of *Using the Hydra Protocol Converter for IBM Full Screen Terminal Emulation at ANL* (ANL/TM 457, Revision 1) and *Quality Assurance Plan for the Computing and Telecommunications Division* (ANL/TM 4nn).

Lynne learns readily and works well both independently and in collaborative settings. She has an excellent ear for language and is aware of the importance of the audience.

I have encouraged her to think in long range terms of graduate work at one of the five or six schools offering premier programs in technical communication. While Lynne could serve successfully as a technical editor now, she would be well qualified with an advanced degree for a management position at a truly excellent salary.

Sincerely,

Dr. Clifford M. Caruthers
Senior Computer Publications Editor

CMC:cad

ct: Dr. Charles Pennel
       Dr. James Miller
       Dr. Marion Miller

U.S. Department of Energy   The University of Chicago

Approved: _____

Department of: _____

Date: _____

INTERNSHIP REPORT

Argonne National Laboratory
Computing and Telecommunications

THE PRACTICAL EXPERIENCE OF TECHNICAL WRITING
OR
EVERYTHING YOU WANTED TO KNOW ABOUT A TECHNICAL WRITING
INTERNSHIP BUT WERE AFRAID TO ASK

Summer 1988

By

Lynne M. Brooks

ACKNOWLEDGMENTS

PREFACE

"There are three infallible ways of pleasing an author and the three form a rising scale of compliment: 1) tell him you have read one of his books, 2) tell him you have read all of his books, and 3) ask him to let you read the manuscript of his forthcoming book. No. 1 admits you to his respect; No. 2 admits you to his admiration, No. 3 carries you clear to his heart."

Mark Twain

When Mark Twain wrote the above in *Puddinhead Wilson,* he was clarifying the relationship between author and editor. In this case the author, of course, was Twain and the editor was William Dean Howells. Howells served as Twain's editor from the beginning of Twain's literary career. In his book, *My Mark Twain,* Howells also wrote about Twain's reactions to editorial comment: "At that time I had become editor of the *Atlantic Monthly,* and I had allegiances belonging to the conduct of what was and still remains the most scrupulously cultivated of our periodicals. When Clemens began to write for it he came willingly under its rules, for with all his willfulness there never was a more biddable man in things you could show him a reason for. He never made the least of that trouble which so abounds for the hapless editor from narrower-minded contributors. If you wanted a thing changed, very good, he changed it; if you suggested that a word or sentence or a paragraph had better be struck out, very good he struck it out. His proof-sheets came back each a veritable 'mush of concessions,' as Emerson says."

Since I am an English major currently interning as a technical writer in a highly technical, scientific environment, I felt it appropriate to begin this paper with a literary reference. After all, technical writers have been around since 5th Century B.C. We claim colleagues like Aristotle, Hippocrates, Galileo, Newton, Darwin, and DaVinci. However, technical writing only emerged as a viable profession during World War II.[1]

Today, the burgeoning field of technical writing and editing has become for many closet English majors a way to express their love of and interest in language and literature; and, yes, it also answers the eternal question of, what do you do with an English major (besides starve) if you don't teach? Thanks largely to the explosion of computer technology, technical writers are in demand. I was extremely fortunate to be offered a technical writing internship in the Computing and Telecommunications Division of Argonne National Laboratory, a major research institution, during the summer of 1988. This paper is a report on that internship and consists of five parts: introduction, narrative, analysis and evaluation, comment, and appendix.[2] The introduction describes the setting for my internship and how it related to the Laboratory as a whole. The narrative section consists of a daily journal I kept from May 31 to August 1. The analysis and evaluation section discusses and criticizes the documents I produced on the job. The report concludes with a comment on the value of internships for liberal arts students and samples of all the documents I edited or wrote, as well as other relevant documents.

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[1] Senf, Carol A. "Technical Writing As A Career." The Technical Writing Teacher, Vol. XIV, No. 1, Winter 1987. p 2.

[2] Corey, Jim and M. Jimmie Killingsworth. "The Internship Report." The Technical Writing Teacher, Vol. XIV, No. 2, Spring 1987, pp 133-141.

CONTENTS

CHAPTER 1

INTO THE WOODS

In spring of 1986 I enrolled in a course called Introduction to Technical Report Writing at our local community college. I took the course primarily to fulfill the requirements for an associates degree and because I felt it would help me in my job as assistant cashier and loan officer at a local bank. Little did I realize that I was about to change the direction of my life. In my final semester at Kishwaukee College, I left the bank to become a full-time student. In December 1988, I will graduate from Northern Illinois University with a B.A. in English and begin my search for a position in technical writing. All of these changes are the direct result of the technical writing class and the professor who taught it, Dr. Linda Caruthers. Both Linda and her husband, Cliff, are technical writers. Linda freelances and serves as consultant for various firms while working as a full-time instructor at Kishwaukee College. Cliff works as senior computing publications editor at Argonne National Laboratory. It was through Cliff and Linda that I learned about Argonne's Student Research Participation Program.

A part of the Department of Energy's (DOE) commitment to development and research is the Student Research Participation (SRP) Program. The DOE sponsors the program through the University/DOE Laboratory Cooperative (Lab-Coop) Program. These SRPs provide "a valuable learning opportunity as well as practical experience, under excellent conditions, for work in the student's chosen career path. Assignments are carefully selected and monitored to assure they are meaningful and at an appropriate professional level."[3] To be eligible for a Lab-Coop appointment, students must have a grade point average of 3.2 and be a U. S. citizen or have permanent resident status. During my appointment, the SRP program consisted of more than 200 interns from 25 different colleges and universities, from M.I.T to UCLA-Berkeley. My internship was a full-time appointment (i.e., average of 37.5 hours per week). Since I commuted daily from DeKalb, IL. (about 55 miles one way),I received permission to come in a 7:30 and leave by 4:00 (because of traffic).

My internship began at Argonne National Laboratory (ANL) on May 31, 1988. Argonne is a major research institution operated by The University of Chicago for the U. S. Department of Energy. Located about 25 miles southwest of Chicago, Illinois, Argonne employs approximately 4000 people. Its scientific and technical programs conduct advanced research in the fields of energy (photon, nuclear, and fossil). The division I was assigned to was Computing and Telecommunications (CTD). The mission of CTD is to provide the computing and communications foundation for Argonne's scientific and technical programs and administrative activities. Within the CTD division there are five different sections: Computer Network, Computer Operations, Information Systems, Systems Programming, and User Services (see Appendix A). Since I was under the supervision of Dr. Clifford Caruthers, Senior Publications Editor, my section was User Services.

"User Services provides documentation, courses, and consulting advice on the Laboratory's computer systems for users of the systems. User Services also maintains and distributes information about available systems, languages, software packages, and library routines; provides consultants who

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[3] Vivio, Frank M. and Wayne Stevenson. <u>U.S. Department of Energy Student Research Participation Program Profile and Survey of 1979-1982 Participants.</u> U.S. Government Printing Office, January 1988.

help users obtain, design, debug, and optimize programs for their specific needs; and offers courses on available interactive systems, high-performance computers, parallel computers, applications packages, and various other aspects of computer usage (such as batch processing, data management, program development, and debugging) that enable Argonne scientists and engineers to take advantage of the full capabilities of the systems."[4] As Senior Publications Editor, Cliff supervises the publishing of approximately 25 new or revised user documents each year. According to him, "Providing scientific researchers, technicians, administrators, and other staff with clear and accurate documents that enable them to do their work efficiently is a task that requires continually greater effort."[5] The writing and editing staff, consisting of two full-time editors and (usually) three capable, but inexperienced interns, produce these documents. Cliff acknowledges that the internships have allowed Computing and Telecommunications to satisfy an increasingly heavy demand for computer documentation without employing additional full-time editors. However, the interns do gain invaluable experience with computer systems, text formatters, and online text editing and--a recommendation from Argonne National Laboratory is an invaluable reference.

During my internship I shared an office in Building 221 (see Appendix A) with April Heiberger. April has been with Argonne for 13 years and currently has total responsibility for the monthly *Argonne Computing Newsletter*. While I was at Argonne, I wrote the "Recently Updated and Published Documents" section for the July and August issues and edited several others (see Appendix F). Two of the documents I worked on were Technical Memoranda. These are manuals that CTD provides for their computer users, Argonne, administrators, and for DOE personnel to enable those audiences to use or understand the services of CTD. Therefore, these manuals are written by User Services consultants and reviewed by the Manager of User Services and the Manager of Computing and Telecommunications.

I used *Computing Services Writing and Editing Standards* as my "bible" during my internship. This documents explains how to write and organize technical information clearly and concisely; and it establishes standards for grammar, usage, style, formats, and publication procedures. I familiarized myself with the Conversational Monitor System (CMS), the IBM text editor, the Waterloo Script document-composition programming language, and the Waterloo Generalized Markup Language (GML) text formatter for printing on an Apple LaserWriter.

At the beginning of my internship I had four goals:

- To use my writing and editing skills as a technical writer in a professional setting.

- To hone my own writing and editing skills by observing other professional technical writers.

- To write and edit several documents for ANL over the course of the summer.

- To produce a final paper about the internship experience.

I feel that I accomplished all of my goals; consequently, this paper is a product of the day-by-day learning process.

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[4] *ANL Mission Statement*. Argonne National Laboratory, Argonne, IL. October, 1987. pp 1-4.

[5] Caruthers, Linda and Clifford and Bryan Schmidt. "The Technical Editing Internship: What Makes It Work? *Proceedings 35th Annual International Technical Communicators Conference*. Philadelphia, PA. May, 1988. RET-185-187.

CHAPTER 2

TELL IT LIKE IT IS

Tuesday, May 31, 1988

This was my first day! The weather was hot (90's) and humid. It took me approximately an hour and a half to commute to and from Argonne. I spent the morning meeting lots of people (I'm sure I will remember all their names eventually), filling out forms in the Department of Education, and getting my picture taken.

After eating lunch in the cafeteria with Chris Opitz and Rob Bragg, I began to learn the CMS (Conversational Monitor System). Dr. Caruthers helped me logon to my own disk. He sent me a file (TECHMGML SCRIPT) to read and indicated that this was an important format for me to learn. It looked like gobbledygook to me, but I'm sure by next week I'll understand it much better.

The rest of the afternoon I worked through more of the practice exercises on the computer. Staring at a CRT most of the day does funny things to your eyes. I asked if I could come in at 8:00 am and leave at 4:30. Dr. Caruthers agreed and gave me his key. More tomorrow.

Wednesday, June 1, 1988

Still hot and humid. I cut about 15 minutes of of my commuting time. I think that 75 minutes is about as fast as I can commute. I'm going to either come in at 7:30 in the morning or take only a half an hour for lunch so I can leave at 4:00. This should get me home by 5:30 at the latest. This internship will certainly answer any questions I have on how far I want to commute to work after I graduate in December.

I spent most of yesterday morning completing the computer exercises in the CMS manual. I pulled up the Addendum file and read it, then I printed a script exercise using the Addendum format so I could see what it looks like. In the afternoon Cliff gave me TM 462, revision of *Guide to Computer Graphics at ANL*. This may be one of the documents I will be editing (and perhaps writing some sections) during the summer. A previous intern, Janet Rutkowski, began the revision but had to leave before its completion. There seems to be quite a lot of information still needed before the manual nears completion, so I'm sure it won't be finished while I'm here.

Thursday, June 2, 1988

Until about 11:00 am I spent the morning looking over the TECHMGML format and I printed out a sample for my own information. At 11:00 Cliff, Chris Opitz, Rob Bragg and myself met to discuss a group project--ANL/TM 455 *Using The Central VAX 8700 Computer At ANL*. Cliff assigned different chapters to the three of us. I have Chapter 3. It appears to be a light editing job, but it will give me some practice on the computer. The "powers-that-be" changed its format from two columns to one column, so I will use the insert and delete keys a lot. I asked about rewriting a couple of insertions from an author, and

Cliff told me I could change passive sentence construction, but be careful that I find the correct subject when I do so.

Friday, June 3, 1988

Spent the whole day working on Chapter 3. There are not many revisions but since I was unfamiliar with the computer system, I had some trouble with insertions. I went through all the changes twice trying to indent each paragraph five spaces from the left margin and two spaces between the computer prompt and the actual command. Computing Services uses Waterloo Script as a text formatter. Most documents that Computing Services issues (e.g. addenda, memo, article, etc.) use a macro program that serves as a driver file for the document. We edit each document separately from the driver file. Then, when we finish the editing, we imbed the edited file into the driver and print a draft of the document (using the driver file) on one of several Apple Laserwriters. The driver file contains many printing instructions like typeface and typesize, headers, page layout, tabs, indents, etc.

When I printed my draft of Chapter 3 out, I could see that it would be difficult to get the spacing just right. Rob, Chris, and I discussed this and decided on a plan. Later in the afternoon Chris told me I was to attend a meeting next Tuesday at 10:00 am with several (6) people. At that meeting we will discuss the graphics manual (ANL/TM462). This will apparently be my project while I am here.

Monday, June 6, 1988

Orientation began at 10:00 rather than the 9:00 scheduled time. Since I had filled out all the paperwork when I came last week, this was a waste of time except for the information about security. After lunch I wanted to finish my revisions for Chapter 3. No such luck--it was one of those days! The computer system went down for a short period of time and nobody could do anything. Then, after it came back up, my screen froze. I had just printed one revision and was trying to make another one when it froze. I tried everything to unfreeze it (including finally shutting it off) but nothing seemed to work.

Argonne has a sophisticated computer system; however, it is not a word processing system. Consequently, revisions can be agonizingly slow when you are tied to an interactive system with international users. My frustration peaked about the same time as computer usage. Let's hope tomorrow is better.

Tuesday, June 7, 1988

At 9:30 Cliff, Mike Thommes, Pete Bertoncini, Fred Mozur, April Heiberger, Kevin Louie, Rich Dominiak, and myself met to discuss ANL/TM462. The meeting lasted about 75 minutes. Mike Thommes volunteered to write different sections of various documents that listed Pete Bertoncini as author. It seems Pete's time is extremely limited right now. ANL/TM 462 was discussed only briefly, and I thought it was a typical business meeting--nothing was really decided on this document.

I spent the rest of the day revising Chapter 3 of the VAX document. Most of the time I learned to use Script commands while editing the document. Editing proceeded very slowly!!!!!!! Most of the actual rewriting I did in less than an hour. However, I spent a lot of time rewriting a section in Chapter 3 called "Protecting Files." The information in that section was not clear and it needed to be reorganized.

Wednesday, June 8, 1988

I finished writing the section on protecting files in Chapter Three. Cliff looked at what I had written and made some suggestions. I printed the chapter and gave a hardcopy to Rob for editing. Late in the morning Rob gave me back the copy with his suggested revisions and I incorporated those. I had some trouble with the Script commands for bullets. I inserted an unordered list command before every bullet. I found out from Rob that I only needed to insert one at the beginning of the unordered list rather than at the beginning of every bullet. There was a push to finish this in time for a meeting, so I'm sure there will be more revisions to come.

Thursday, June 9, 1988

Cliff told me that next week I would be in April Heiberger's office. I will help her with editing the ANL newsletter, *(Argonne Computing Newsletter)* and other projects. Cliff suggested that I go talk to Pete Bertoncini about perhaps writing some of the simpler sections missing from the graphics manual, since Pete is one of the authors and has little time to spare. I did as Cliff suggested. Pete indicated he didn't think there was anything he could give me to write, but I could certainly edit the text once he had written it (possibly in three weeks).

Later in the day, Cliff told me that he and Rob had rewritten the section in Chapter 3 on "Protecting Files." He indicated that while I had certainly made the section clearer, it still needed further work.

Chris Opitz is working on a survey to be sent to all department heads. she sent the file to me to work on. I edited it the rest of the day and sent the file back to her. Tomorrow I will spend the day at NIU so I can proof two sociology brochures and take care of department business.

Monday, June 13, 1988

I moved into April Heiberger's office for the duration of my internship. In order to keep track of current projects, Cliff writes the project each person is responsible for next to their name on a blackboard. Lo and behold I discovered there were six projects after my name when I came in Monday morning. After about 30 seconds of extreme panic, I realized that (1) three were group projects, two of which I had already worked on, (2) one project would probably not reach the stage of editing while I am here, and (3) of the remaining two projects, only the *Argonne Computing Newsletter* and *Guide To Computer Protection at ANL* (ANL/TM 413) carried immediate deadlines.

The remainder of the day flew by as April kept transferring newsletter articles to me for editing. I had to keep referring to the standards manual as I edited.

Tuesday, June 14, 1988

I kept busy editing newsletter articles (ten in all) of varying lengths from varying authors. Tis true, tis true, the authors do vary-- in style and writing ability. The authors love passive sentence construction, perhaps because they want to anthropormorphize their computers but can't sanely do so (artificial intelligence lives!), so the misdirected result is passive tense--and lot's of it! In addition to passive construction, there were misspelled words, lack of subject/verb agreement and parallelism, and choppy paragraph construction and organization.

If I edited an article extensively (generally), April told me to go back to the author with my revisions. If we agreed (usually), I could send the article to the section heads for further review. If we didn't agree, I removed my revisions, left the article the way the author wrote it, and sent it for further review.

Wednesday, June 15, 1988

We had a required lecture on safety this morning. If the interns do not attend, they do not get paid. The auditorium overflowed.

I am still working on article revisions for the newsletter. May I lose my subscription to *Working Woman* if I ever complain about someone editing my writing. HOWEVER, I am learning a lot about what an editor really does!! I would highly recommend some type of computer or word processing course before attempting an internship like this. I have had two courses--an introduction to Data Processing and introduction to BASIC--along with word processing experience. This allowed me to relate (however remotely) to the Script commands and not look like an idiot.

Thursday, June 16, 1988

I now have five articles back from the reviewers. April hoped to have all of them back by Friday so a "final" draft could go to the printer on Monday. I don't think that's possible.

My next project is revising ANL/TM 413 with Jean Troyer. However, all that is on the back burner until we finish this month's newsletter. Despite my previous bon mots, I really enjoy editing the newsletter. Cliff indicated that he had requested authorization to hire a full-time newsletter editor. HINT: This might be a possible job opportunity after graduation! Tomorrow's payday.

Friday, June 17, 1988

TGIF. Today Cliff told me there were four new documents that I should write abstracts for. These will go into the July *Argonne Computing Newsletter*.

I wrote a paragraph for each document and gave them to Cliff for review. He had revisions and suggestions on two of them, the other two he had no corrections on. Monday, I need to write an abstract of ANL/TM 460 for the newsletter, contact Jean Troyer about the revisions to ANL/TM 413, and meet with Frank Vivio of the Department of Educational Programs about Argonne's internship program.

Monday-Wednesday, June 20-22

My dad went into the hospital early Monday morning. The next three days I spent making arrangements for him at home.

Thursday, June 23, 1988

I need to find out from April what the status of the newsletter is. It seems like I've been gone a long time. I finished writing the remaining two abstracts for the newsletter. Had two revisions on user minutes to make. When I finished with both tasks, I sent the files to April's terminal. She asked me to track down several people who still had revisions to turn in.

After lunch I went over to DEP to get the most recent survey of the internship program. Talked briefly to Frank Vivio at DEP to get some background material for my final report.

I contacted Jean Troyer about ANL/TM 413. Jean indicated that another project currently had priority (Quality Assurance Program), but to keep checking with her for further revisions. I am currently doing a Level I edit on this document.

Friday, June 24, 1988

The yellow IBM 3033 computer was down most of the morning. Consequently, I couldn't print a copy that I needed on the Apple Laserwriter.

Still editing ANL/TM 413. Talked to Chris about ANL/TM 455. Rob and Cliff made extensive changes to the document last week, then Diane Clark turned in more revisions of the same material. I hope the Laserwriter will be up and running this afternoon.

Monday, June 27, 1988

The system was down until 10:30 this morning. When it came up I made some more revisions on ANL/TM 413 and adjusted the box for Chapter 3: Computer protection policy. Cliff mentioned that I probably would help Chris on ANL/TM 379, but after lunch he gave me ANL/TM 457 *(Using the Hydra Protocol Converter for IBM Full Screen Terminal Emulation at ANL)* as an editing job. I'm to contact Kevin Louie and get the changes he has made so far. I went in search of Kevin. After we talked to Rich Slade, I was told they would get the changes to me. I hope to have it by tomorrow.

The rest of the afternoon I worked on Chapter 3 of ANL/TM 413. Jean Troyer's additions to this section necessitated my "playing around" with the BOX commands and text. With April's coaching, I think I have it right now. I'll print out a copy in the morning and give to Jean.

Tuesday, June 28, 1988

I still had some corrections to make in my file before I could get the box lined up correctly for Chapter 3 of ANL/TM 413. I thought I was missing a command, but it turned out that I needed to eliminate a blank line in the text to allow the entire chart to print on the page where I wanted it rather than at the top of the next. I printed out a copy and gave it to Jean. I asked when she would have more revisions for me, and she indicated it would probably be next week.

I asked Linda Clark to transfer the tape on ANL/TM 457 to my computer so I could begin editing that document. She did and I did (at least half of it so far). I will finish my edit of that document tomorrow and will try to gently encourage Kevin to send me his revisions tomorrow as well. One can only try!

Both of the documents I am editing (ANL/TM 413 and ANL/TM 457) are relatively brief (50 page documents), so I hope to have all the necessary reviews completed before I leave in August.

Wednesday, June 29, 1988

For several hours this morning I revised an article for the newsletter on the Hydra Protocol Converter. It took me a long time primarily because of a need to set a table in a 2 column format. I struggled with the format, changing tabs and font size until it finally fit. I also had to create the GML commands for the table. To do this I read several parts of the GML User's Guide. I felt this was very good experience for me.

I went downstairs to ask Rich Slade and Kevin Louie for the changes in the Hydra document they had promised me Monday. Kevin gave me the changes that he had. I read through those and finished my preliminary edit of ANL/TM 457. If April doesn't have more newsletter revisions for me tomorrow, I'll start with the online revisions for ANL/TM 457.

Thursday, June 30, 1988

Tomorrow marks the end of my fifth week here. My internship is half over with. I began the online revisions of TM 457. The authors of the article are Alan Hinds, Gordon Lurie, and Kevin Louie. There aren't many revisions--yet. I finished the edit this afternoon. The printer is giving everyone problems, so I'll wait until morning to print out the rest of the document. Then, I'll go through and mark this copy with any questions I have before sending a copy to Alan and Kevin for review. Learning more every day about GML and Script. Bye.

Friday, July 1, 1988

This has not been a good week for computers and printers! This morning I turned on my terminal and the screen was blank. I check to see if the system was up. It was but I wasn't. Mike Thommes looked at the terminal, pushed lots of keys, turned it on and off, and said he would get someone to look at it. In the meantime, I proofed the revisions I made yesterday and about 10:30 started pushing keys and turning the terminal on and off myself. Just for fun I decided to key in the logon sequence, even though I could see no characters registering on the screen while I was doing it-

like typing in your password and not having it show. Lo and behold, I was able to log on. When I told Mike Thommes about it he said maybe the timing was just off when I tried to logon this morning.

Next frustration of the day came when I tried to print Chapter 7 of the Hydra document. It gave me an error message related to the table in the chapter. All day I tried sundry and various versions of the command sequence for tables. I printed out the driver file so I could look at the commands. I printed out the commands for Chapter 7 so I could look at those. April had several suggestions on what to look for, but she was very busy and I didn't want to keep bothering her; I needed to find the error myself. I kept looking and by 4:00 p.m. my eyes were permanently crossed. I'll begin again first thing Tuesday.

Tuesday, July 5, 1988

The saga of Chapter 7 continues. This is not fun! It is, however, tedious and frustrating. When I try to print the pages for Chapter 7 the error message I receive is "Illegal Placement of Control Word at line xxx." This particular line begins the commands for a Table that lists the control sequence for different terminal users to connect to the Hydra Protocol Converter. The Hydra Protocol Converter is a microprocessor that lets selected ASCII terminals and personal computers imitating ASCII terminals to use IBM 3277-type terminal full screen capabilities. An IBM 3277-type terminal processes an entire screen's worth of information before transmitting it, and receives information in blocks corresponding to screens. The Hydra makes the central IBM computers "think" an ASCII terminal is an IBM 3277-type terminal and, therefore, gives users the capabilities of an IBM full screen terminal.

I checked and rechecked the Script commands for creating and referencing tables, and they appear to be correct. I tried changing the command positions, as well as anything else I could think of or anyone suggested. Cliff looked at the file and tried various things also. Finally, I suggested that I simply get another copy of the chapter from tape storage, print out the commands for it, and compare it to the commands in my current file. So, after lunch I mounted the tape of TM 457 to my disk drive and retrieved Chapter 7. After comparing the commands between the two chapter's, I still could see no difference in commands or their sequence that would cause the error message I was getting. I decided that I would edit Chapter 7 again, page by page, and use the new new file. After carefully making the document changes, I tried to to print it out and guess what--I got the same error message. Since I had printed out the second Chapter 7 right after I got the tape on my disk, I knew the error had to be something I had just changed. After about 15 minutes of further searching, I found it. A deleted section of text contained a command (:cp end) needed for the formatting to run. Even though it was 15 lines

behind the stated error message, this was where the problem was located. It really had nothing to do with the table at all. The previous editor was trying to keep a block of text together, by using the .cp commands, but should not have included it in the body of the text. So, after two days of frustration, I'm almost ready to have this manual ready for review.

Wednesday, July 6, 1988

I planned to finish editing the Hydra document and send it for review today. However, Computing Services has been working on a Quality Assurance Document for management. Linda Caruthers edited large portions of this document, and the extended deadline on it is today. However, early this morning Linda stopped in and indicated she had edited one section that was written entirely in the passive voice and since that does not meet Computing Services Writing and Editing Standards, I would probably rewrite that section. About 20 minutes later, Cliff gave me 5 pages of text that needed rewriting by early afternoon. So, I rewrote and reordered entire sections of those 5 pages and finished them just after lunch.

Thursday, July 7, 1988

Today I was determined to complete the changes on TM 457 and return it to the authors for review. As I was working on the changes, the phone rang and Cliff asked about the documents status. I told him I would probably have it ready in the afternoon. He said that was fine and told me I would be getting some notes for a class on the Cray X-MP 14 from David Leibfritz. Cliff said he would send me a previous notes file so I could format these notes accordingly.

After checking with one of TM 457's authors about any further changes, I "fine-tuned" the document (i.e., checked table format, spacing, and font and leading settings to ensure appropriate layout), printed out a revised draft, and hand-carried it to the principal author, Alan Hinds. I asked him to return the draft to me with any revisions by next Tuesday, July 12.

Later in the afternoon (about 3:00 p.m.) I began to format the notes from David Leibfritz that Cliff had given me in the morning. Since he will use these notes in the class on an overhead projector, the font size ranges from 17 to 26. I finished the formatting just as the LaserWriter went haywire, so I sent the file to a printer on the first floor of Computing Services. Rich Slade asked to see the notes when I finished and his office is on the first floor, so I dropped them off to him after I picked them up from the printer downstairs.

Friday, July 8, 1988

David Leibfritz gave me more class notes to format this morning. He told me that I would get about 30 pages of notes for a class on July 20. He needs these as soon as possible so he can review them with others prior to the scheduled class. I spent the majority of the day formatting these notes. Each set has to be on one page, so I needed to adjust spacing, type size and, sometimes, face size, and the amount of leading between lines of text.

I finished with the notes I had around 2:30 p.m. and started in on two articles for the August newsletter. Around 3:30 David Leibfritz came to my office with some more notes and some corrections on the notes I had formatted.

I met Cliff in the halls and he told me that apparently there will be more changes on the Hydra document I sent to Alan Hinds for review and I would probably get those Tuesday or Wednesday of next week.

Monday, July 11, 1988

I worked on the 8 pages of notes David Leibfritz's gave me late Friday. Before I finished those, he came up with 14 more pages! I am not typing straight text. These notes have characters (e.g. brackets) that are not on my keyboard, so I have to translate that particular character into another one that is on my keyboard. The command to do this is a simple one, but since I was getting the notes piecemeal from Dave, I had to change this character three times because the current character was used elsewhere in the notes I hadn't received. Also, in the current batch of notes there are two pages that will take more time to do. One contains formulas and the other a graph and a flow chart. I took what notes I had finished down to Dave; he indicated he had completed (18 pages) most of the notes for day 2, and could I have them done by Thursday, since Friday he was going to do a practice session in front of reviewers.

Tuesday, July 12, 1988

This morning I finished the "Recently Updated and Published Documents" article for the August newsletter and went to see Alan Hinds about his review of my edit on the Hydra document. Alan indicated he had given his current revisions to Kevin Louie. I went to see Kevin. He gave me back the revised copy with each author's corrections. I plan to revise this document again as soon as I finish with Dave's class notes.

The rest of the day I spent working on the formulas, graph, and flow chart for the Cray class. The Script codes for formula processing are not difficult to follow; but, again, the time it takes for trial and error is exasperating. The commands for formula processing must be entered like mathematical equations (grouped and spaced accordingly). I probably spent an hour getting these formulas exact. Since the graph was not complicated, I simply entered a line of about 2 inches with appropriate spacing above it, labeled the axes, and hand drew the sides of the graph.

However, the flow chart, which appeared very simple, turned out to be a nightmare. Because it was a flow chart, the lines and text had to line up. My office partner, April Heiberger, suggested trying several things to line it up (i.e. jclon, jcloff, tabs, etc.). I worked on this for four hours and still didn't have it right. I told Dave I would have to put it away and come back to it Wednesday.

Wednesday, July 13, 1988

April wanted me to edit three more articles for the newsletter. These take priority over other things, so I began on those. I finished and distributed these articles for review around noon. Time is just disappearing all of a sudden! Cliff indicated I had done a "nice job" on the pages of the quality assurance document I had edited. That comment gave me a boost of confidence.

In the afternoon I went back to Dave's notes. I need to finish these by tomorrow noon.

Thursday, July 14, 1988

I got here early so I could start on those notes right away. The system was down until 8:30. What a way to start the day! The notes for Day 2 are mostly straight text so they should not present a problem. Dave basically wanted three colums set up for the first section. I asked April how she would set it up, and we decided a hanging indent would be the best way. I finished the notes, except for the flow chart, at 12:30. I took a quick lunch and printed out a set of notes for Dave. I told him that I would work on the flow chart that afternoon and get it down to him. Finally, after playing with the tabs, I formatted the chart. The problem I had was that I was including text and tab positions on one line. When the command for the far tab tried to execute, it inserted extra spaces until it reached the designated tab position and then printed the text.

Cliff indicated Mary Tolte was reformatting the Quality Assurance Document as a Technical Memo and that I would do a high level edit on it after it was formatted. Kevin Louie stopped by and said that there are more changes on the Hydra document. Tomorrow I need to begin the current Hydra revisions and continue editing more articles April sent me.

Friday, July 15, 1988

This morning I edited minutes from two user groups for the newsletter. Both of these were approximately 4 pages in length. The reporter from the one group consistently used "to be able to" plus a verb throughout the minutes. I had edited the other reporter last month, and this month his minutes were far better. Maybe he knew what to expect.

After lunch I checked with Jean Troyer, Computing Services Protection Manager, on the status of ANL/TM 413. Still nothing. I doubt that I will have any editing to do on that document. The same observation holds true for ANL/Tm 462, *Guide to Computer Graphics at ANL.*

Oh, yes. The name of Computing Services has changed for the third time. It is now called Argonne Computing and Telecommunications Division. Lucky us. This will now require reformatting documents to get the name changed.

I gave Kevin a xerox copy of the Hydra document for his changes. This should speed things up a little, I hope. We are aiming for a full (authors and managers) review next Tuesday and August 3 as the date the document goes to printing.

It's hard to believe I have only three weeks left in the internship!

Monday, July 18, 1988

I began the new revisions on the Hydra document this morning. Chapter 8 has the most revisions. Gordon Lurie wrote the revisions, but I need to clarify several sections. Other changes are very minor. I hope to have this out for final review by Thursday.

I received two newsletter articles back from reviewers. Both have changes on every line and one will include a table. Management is fond of using tables at every possible location.

Mary Tolte gave me the most recent draft on the Quality Assurance Document. I will begin editing that as soon as I finish the Hydra and the articles for the newsletter.

Tuesday, July 19, 1988

When I arrived I found an article I had edited for Chuck Harrison on my desk. The reviewers had rewritten most of the article, and I had to decipher many types of handwriting. I wanted to work on the remaining abstract for the section on "Recently Updated and Published Documents". They had just received a new technical report from SAS on their recent changes and enhancements. The LaserWriter was very busy during the morning. At one time I had four jobs waiting to print.

Every time I tried to return to the edit on the Quality Assurance Document, somebody else brought in a newsletter article that I needed to revise. April wants to circulate the draft newsletter tomorrow, so I have to revise these right away. I finished the article revisions about 11:30, but Fred Moszur, Manager of User Services, came in with a new article he wanted in this issue, so I keyed in that article for review.

Earlier in the morning Chris Opitz asked me if I was busy because she needed help on her document; I told her I probably wouldn't have time today, but maybe I could help her tomorrow, if she still needed it.

In the afternoon I finished a high level edit of the Quality Assurance Document (now referred to as *Quality Assurance Plan for Computing and Telecommunications*) and returned it to Mary Tolte. However, I kept Chapter 2 because it needs more work. This is a pivotal chapter in this document, and it simply is not written or organized well. I want to mull this section over tonight and try to correct it.

Tomorrow I need to finish this document and complete the second round of revisions on the Hydra. That document needs to go out for review by Thursday.

Wednesday, July 20, 1988

After reading Chapter 2 about 20 times last night, I decided what was wrong with it was not necessarily the grammar and punctuation (although I did change several sentences)--rather it was the way the text was organized. The chapter set forth the Quality Assurance responsibilities of each manager and sectio n or division head at Argonne. Consequently, each paragraph consisted of one sentence chock full of dependent clauses describing the various duties of each person. I felt the reader would have an easier time assimilating the sentence if these duties were numbered. It simply made these paragraphs easier to follow.

The next area I reorganized was the section on Procedures. This section could be broken into three areas: published procedures, committee and group procedures, and individual procedures. The way the section was written originally could be described as stream-of-consciousness--very disjointed. I also discovered a discrepancy between the definition of quality assurance in Chapter 2 and the definition of it in Appendix A. Since this section was written by Jean Troyer I went to her with the information. She indicated that the appendix had not been written by Argonne and, thus, she felt we could not change it in any way. I pointed out that the definitions really needed to be the same to give the document validity, and she indicated she would reconcile the two versions. She also indicated that she was very pleased with the editing and felt it had improved the document considerably.

I showed my revision to Cliff to get his reaction before submitting it to the main office. Since this document is written by several Computing Services division managers and goes directly to the Department of Energy, I didn't want to step on any toes! However, I was really appalled at some of the writing and organization of this document.

Cliff indicated the revisions I had made were fine and to go ahead with them. Later in the day he indicated he really liked the changes I had made and felt they much improved that section and the overall document.

Later in the morning I revised the Hydra document. The IBM copier was not working, so I couldn't make the five copies I need to distribute for final review. I will do this first thing in the morning. With any luck at all I should have this out on schedule.

Thursday, July 21, 1988

Early this morning I made the five copies of the Hydra and distributed them to the reviewers and authors of ANL/TM 457, *Using the Hydra Protocol Converter for IBM Full Screen Terminal Emulation at ANL.* In the accompanying memo, I asked that reviewers return their comments and revisions to me by next Wednesday, July 27, 1988. Huzzah!!!! Now, IF there are only a few changes-----. The rest of the day I spent poring over the Hydra document--paranoid that I would find an egregious mistake.

Friday, July 22, 1988

Today was basically a catch-up day. I helped April with some minor revisions on the newsletter articles, but I primarily worked on my internship report. I had everything up to date, and no one needed help, so I put the extra time to good use.

Monday, I will remind the reviewers that they should return any final revisions of the Hydra document to me by Wednesday.

Monday, July 25, 1988

This is my last week. I wrote another abstract for the August newsletter for the ANSYS Appendix S. It just arrived at the Document Center. April hopes to have the final draft of the newsletter ready tomorrow. I've received some changes back from most of the authors of the Hydra. Fred Moszur still has the article for review. I've made all the changes I can at the moment. Once I get Fred's changes, this document should be ready for printing.

I talked to Jean Troyer about the status of the quality assurance document. She indicated Quality Assurance was currently reviewing the document. After their review, CTD would meet to discuss the recommendations of Quality Assurance and we would proceed from that point. She indicated it would probably be another three weeks before the document is ready for printing.

Tuesday, July 26, 1988

I made some more changes to the Hydra document that Dave Leibfritz gave me. I checked with Kevin Louie on the Hydra Terminal Selection Menu referenced in Chapter 3. He indicated to me previously that the one I had was not correct. He sent me a file containing the current menu. I found two changes. Gordon Lurie was not here so I'll check things with him tomorrow.

Wednesday, July 27, 1988

I checked with Fred this morning on changes to the Hydra. He hasn't looked it over yet. Hopefully, I will have it by the end of the day. Diane Hale also had a change regarding accidental access to confidential information. I rewrote this paragraph, gave it to her for review, and asked for it back by tomorrow.

Thursday, July 28, 1988

I received Fred's changes on the Hydra document this morning. His changes are basically formatting ones. I checked the changes with Alan Hinds and he agreed with all but the one about moving the Hydra menu to Chapter 1. After talking with Fred about Alan's reservations, the menu will stay where it is. Gordon was here today, so I picked up his final revisions. I hope to have this finalized by tomorrow.

Friday, July 29, 1988 This is my last day. I left Cliff a memo on the status of the two documents I worked on along with the hard copy files for each, and I sent him all the files I had on my disk. Turned in my badge and my key. Sayonara.

CHAPTER 3

AS I SEE IT

THE STUDENT RESEARCH PARTICIPATION PROGRAM AT ARGONNE

The Division of Educational Programs (DEP) organizes and administers the SRP program extremely well. Prior to my appointment, they sent me information on housing and transportation, as well as other information I would need. DEP requires each student to attend an orientation lecture. At this lecture they complete employment and transportation forms, distribute information about what leisure activities are available in the immediate and Chicago area, and discuss what Argonne expects of the program participants.

In addition, DEP arranges for tours of the entire Argonne facility, bus trips to Fermilab in Batavia, IL., and, if there are enough students requesting it, trips to Chicago. They foster group cohesion by having pictures taken of the participants in each division and by holding a graduation program at the end of the term In short, DEP tries to assure the internship experience will be a productive, educational, and enjoyable one.

COMPUTING AND TELECOMMUNICATIONS USER SERVICES SECTION

User Services provides documentation, courses, and consulting advice on the Laboratory's computer systems for users of the systems. User Services also maintains and distributes information about available systems, languages, software packages, and library routines; provides consultants who help users obtain, design, debug, and optimize programs for their specific needs; and offers courses on available interactive systems, high-performance computers, parallel computers, applications packages, and various other aspects of computer usage (such as batch processing, data management, program development, and debugging) that enable Argonne scientists and engineers to take advantage of the full capabilities of the systems.

This section performs an enormous and continually heavy work load with relatively few people.

When I first arrived I got the impression the consultants and office staff didn't quite know how to deal with me. Most of the interns were probably 20 (or so) years younger than I was. Because I had been a student the last 3-1/2 years, I didn't have any trouble relating to them, so I discovered from talking to several of them that, more often than they would like, they were called on by people other than their supervisors to perform "grunt" duty like copying, collating, running errands, answering phones, etc. Some of them felt they were being taken advantage of because of their age. I'm not so sure their assessment is correct because I didn't have that problem. At first people were hesitant about my writing and editing ability--but never said it. After the first couple of weeks, that hesitancy disappeared. However, during a meeting for a project I was initially supposed to work on, I got a distinct impression that the author did not want to relinquish any of the writing on the project, even though that person is overwhelmed with work and becoming a bottleneck.

However, with the other major projects I worked on, *ANL/TM 457, Quality Assurance Plan for Computing and Telecommunications,* and *Argonne Computing Newsletter,* everyone was cooperative and pleasant. Several people went out of their way to indicate I had done a good job editing these documents.

Working in User Services as a technical editor was extremely enjoyable and educational. I am now certain that I would enjoy working as a technical writer or editor in public relations or computer science.

THE WRITING AND EDITING SYSTEM

One of the major reasons the technical editing staff is able to do so much with largely inexperienced help is the existence of online generic script files for producing specific formats (e.g. addenda, articles, bulletins, letters, memoranda, meeting announcements, and technical memoranda) AND *Computing Services Writing and Editing Standards* (see Appendix A).

Both of these writing and editing aids are virtually self-explanatory and effectively take the place of a formal training program. However, the editing staff could definitely use (1) an additional full-time writer/editor and (2) its own Apple LaserWriter. The Apple currently in Room 114 receives constant and heavy use. When April is trying to meet a deadline on the newsletter, invariably there are long documents queued for printing.

THE DOCUMENTS

Chapter 3--The Vax Document (see Appendix B)

The very first document I worked on was a group project with Rob Bragg and Chris Opitz. I had a six-page chapter to edit. Even though this was a small project, I had all I could do to edit it while adjusting to an online editing system. I had some problems with indenting and bullets (see June 2-8).

ANL/TM 457 (see Appendix C)

My major project was ANL/TM 457, *Using the Hydra Protocol Converter for IBM Full Screen Terminal Emulation at ANL.* I had full responsibility for editing this 46-page document.

The Hydra Protocol Converter is a microprocessor that lets selected ASCII terminals and personal computers imitating ASCII terminals use IBM 3277-type terminal full screen capabilities. An IBM 3277-type terminal processes an entire screen's worth of information before transmitting it and receives information in blocks corresponding to screens. The Hydra makes the central IBM computers "think" an ASCII terminal is an IBM 3277-type terminal and, therefore, gives users the capabilities of an IBM full screen terminal.

Bob Slocum, a former intern from Bowling Green, had originally edited this document. He did an excellent job initially, so my editing task was relatively easy. However, I did need to rearrange several of the 9 tables in the document, clean up the spacing within these tables, and rewrite a couple of paragraphs in the document. The major problem I had with this document was the missing command in Chapter 8 (see July 1 and 5).

Quality Assurance Plan for Computing and Telecommunications (see Appendix D)

Of the work I did during my intership, this particular project gave me the most satisfaction. This document will go to Argonne's management and, ultimately, to the DOE. There were several sections in it that were badly written. I rewrote several pages of text, reorganized a pivotal chapter, and made suggestions about format. I thoroughly enjoyed taking text from a quasi-acceptable stage and transforming it into a document that looked and sounded like it came from a major research institution.

Notes for Cray X-MP Class (see Appendix E)

I enjoyed this job the least. The text was a summary of points that Dave Leibfritz planned to cover in his lecture. I couldn't really relate it to anything, and it was a "rush job." However, I did learn a lot about the capabilities of Script that I didn't know before.

Argonne Computing Newsletter (see Appendix F)

The job I enjoyed the most was helping with the monthly newsletter. I worked with April Heiberger, my office partner, in editing this document.

This newsletter circulates to 1800 computer users. It contains information on matters of immediate interest to computer users (i.e., new equipment, new software, available classes, current documentation, procedural changes, user group meeting announcements and minutes, and monthly statistics. Articles are assigned to specific authors based on their expertise and availability.

A newsletter article goes through nine steps from first to final draft:

1. The author writes the first draft.

2. The author revises the article with the editor.

3. The editor circulates the article for review.

4. The author revises the article in light of reviewers comments.

5. The editor assimilates the article into the first draft of the newsletter.

6. The editor circulates the first draft of the newsletter to reviewers.

7. The author revises the article in light of reviewers comments

8. The editor prepares the final draft of the newsletter.

9. The editor sends the newsletter to graphic arts.

There is a lot of built-in frustration in this particular job because of the reluctance to establish a firm deadline for final review. This reluctance causes extremely flexible and extended deadlines; and it stems from a desire for up-to-date information, but that desire is an impossibility. In a rapidly changing computing environment, programs and software are becoming obsolete the minute they are finished. Another problem is that the editor continually has to prod authors to turn their articles in on time.

I was extremely pleased that the articles I wrote for the newsletter had very few changes from reviewers. In fact, the article for August was returned with ony two corrections (one of which asked for the name of the person who wrote the article). I forgot to put my name on the circulating copy.

CHAPTER 4

CATCH-22

The early part of the summer I spent buried in reference stacks of Founders library and elsewhere searching for information on liberal arts internships. To my increasing dismay I found that while there was a wealth of information on student teaching internships, with the exception of the few sources indicated in my paper and a few internships in politics, there was a dearth of anything else. I think this inequity is appalling.

The traditional liberal arts goals of objective thinking, integration of diverse materials and ideas and effective problem-solving can be achieved through experiential learning as well as classroom learning.

Employment prospects for liberal arts graduates are mixed. While liberal arts graduates need to be creative and persistent in the search for employment, employers are beginning to appreciate the value of a liberal arts education for the long term benefit of their organizations. However, employers hire those students who use the college years to mature and develop as well-rounded citizens. Internships, as well as other extracurricular activitiess make students more interesting, more involved, and more employable people. An internship should be the culmination of a student's preparation. Practical experience is still the only way to demonstrate actual ability.

Charles H. Sides presents a good case for English internships. In his paper he indicates that the MIT Technical Writing Cooperative is a means of writing across the curriculum (a traditional liberal arts goal). According to Mr. Sides, MIT's began in 1957 on an *ad hoc* basis with the Departments of English and Mechanical Engineering. "An English faculty member gave a guest lecture on writing and evaluated a set of laboratory reports in a Mechanical Engineering Design laboratory course. This informal arrangement continued until 1976 when the School of Engineering mandated that cooperative writing instruction be made available for each of the school's eight departments of engineering. Included in that mandate were the funds to support one faculty member to provide the instruction."[6]

Liberal arts educators who ignore the benefits of the internship experience for students are doing them a disservice. Participation in a cooperative education or internship program is good preparation for a successful career, since it provides student with an opportunity to blend theory with practical experience. In most cases, work placements earn students academic credit as well as income.

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[6] Sides, Charles H. "The MIT Technical Writing Cooperative." *The Technical Writing Teacher*, Vol. XIII, Vol. XIII, No. 2, Spring 1986. pp 118-120

BENEFITS OF COOPERATIVE EDUCATION AND INTERNSHIP PROGRAMS

During a co-op or internship assignment students will:

- integrate classroom theory with practical experience;

- examine the structure and function of the firm, organization, or agency;

- partially meet educational expenses through the salary received from the field assignment;

- enhance opportunities for permanent placement, starting salary, and promotions through career-related experience;

- develop personal independence and a sense of responsibility;

Interest in academic achievement becomes greater for students as they relate the material they are learning on campus with the jobs they are performing.

CONSEQUENCES OF THE INTERNSHIP EXPERIENCE.

Following are some of the 412 responses from the DOE Survey of 2,752 SRP participants for the period 1979-1982 to the question: Are there any direct or indirect consequences of your appointment on your career.

- "My experience at Argonne was very helpful in receiving my employment at Consumer Systems following graduation from college."

- "The practical work experience I received was of great help to me in picking my career goals."

- "I found that having this experience listed on my resume drew a favorable response from many prospective employers. Exposure to the daily operations of a large research facility helped me fit in better at my current job."

- "There are perhaps many indirect consequences, but it is difficult to say what would have happened otherwise. In any case, I can say without hesitation that the continued support of such student research programs is extremely worthwhile and should be continued."

- "Writing the technical report of my research at Argonne directly affected my career goals--it opened my eyes to the field of technical writing and made me realize I'm better suited to writing and communication than to engineering. I am very happy to have had the experience of working as part of a research team at Argonne--a very unique opportunity for an undergraduate."

As a final note, my internship experience was extremely beneficial. As an older, returning student, I already had several years of work experience to my credit. However, that experience did not make my internship any less valuable; in fact it intensified the value. It allayed any fears I had about my abilities a s a technical writer; it provided tangible evidence of my capabilities; and it provided contacts for entry into my chosen field. I sincerely hope that traditional liberal arts departments, such as English, will avail themselves on behalf of their non-teaching students of the unique opportunities internships offer

BIBLIOGRAPHY

ANL Computing Services Mission Statement Argonne National Laboratories, Argonne, IL. October 1987. 1-4.

Caruthers, Linda and Clifford and Bryan J. Schmidt. "The Technical Editing Internship: What Makes It Work?" *Proceedings 35th Annual International Technical Communicators Conference.* Philadelphia, PA. May 1988. RET-185-187.

Corey, Jim and M. Jimmie Killingsworth. "The Internship Report." *The Technical Writing Teacher*, Vol. XIV, No. 2, Spring, 1987, 133-141.

Senf, Carol A. "Technical Writing As A Career." *The Technical Writing Teacher*, Vol. XIV, No. 1, Winter 1987. 69-75.

Sides, Charles H. "The MIT Technical Writing Cooperative." *The Technical Writing Teacher*, Vol. XIII, No. 2, Spring 1986. 118-21.

Vivio, Frank M. and Wayne Stephenson. *U.S. Department of Energy Student Research Participation Profile and Survey of 1979-82 Participants.* U. S. Government Printing Office. January 1988.

Appendix A

ANL-133 (6-87)

Buildings

- 4 Receiving/Shipping
- 5 Warehouse
- 6 Storage Building
- 33 Credit Union
- 91 Guard Post
- 108 Central Boiler House
- 145 Ampel Facility
- 146 Fossil Energy Users Laboratory
- 181 Meteorology and Ecology
- 185 Ecology Storage and Greenhouse
- 186 Microcosm Facility
- 200 Chemistry
- 201 Administration ANL-DOE/CH
- 202 Biological and Medical Research
- 203 Physics and Environmental Research
- 205 Chemical Technology: Fusion Power Program
- 206 Reactor Analysis and Safety
- 207 Applied Physics: Engineering
- 208 Reactor Analysis and Safety: Applied Physics
- 211 Cyclotron
- 212 Materials Science: Materials and Components Technology
- 213 Cafeteria
- 214 Plant Facilities & Services
- 221 Computing Services: Mathematics and Computer Science
- 222 Electronics: Graphic Arts; Film and Video
- 223 Materials Science; Educational Programs
- 224 Visitors Reception Center
- 291 Guard Post
- 301 Laboratory Office and Storage
- 302 Security
- 306 Plant Systems – Reclamation
- 308 & 309 Materials and Components Technology
- 310 EBR-II
- 314 Fast Neutron Generator
- 315 & 316 Applied Physics: Technical Information Services
- 331 Special Materials – Division Office
- 333 Central Fire Station
- 335 Materials and Components Technology
- 350 New Brunswick Laboratory
- 360 Intense Pulsed Neutron Source/7 GeV Advanced Photon Source Project
- 361 & 375 Intense Pulsed Neutron Source
- 362 High Energy Physics: Auditorium; Energy and Environmental Systems
- 363 Central Shops
- 370 OTEC, EMT and Storage
- 372 International Energy Development Program
- 375 PNS – Experimental Area
- 380 SSD-HP Office
- 399 PNS Users Support Facility
- 600 Lodging Facility Office
- 603 Swimming Pool
- 891 Guard Post
- 949 Concession Stand – Recreation Area
- 950 Pavilion – Recreation Area
- 951 Argonne Recreation Center

ARGONNE NATIONAL LABORATORY

(TO LEMONT RD./I-55 INTERCHANGE)
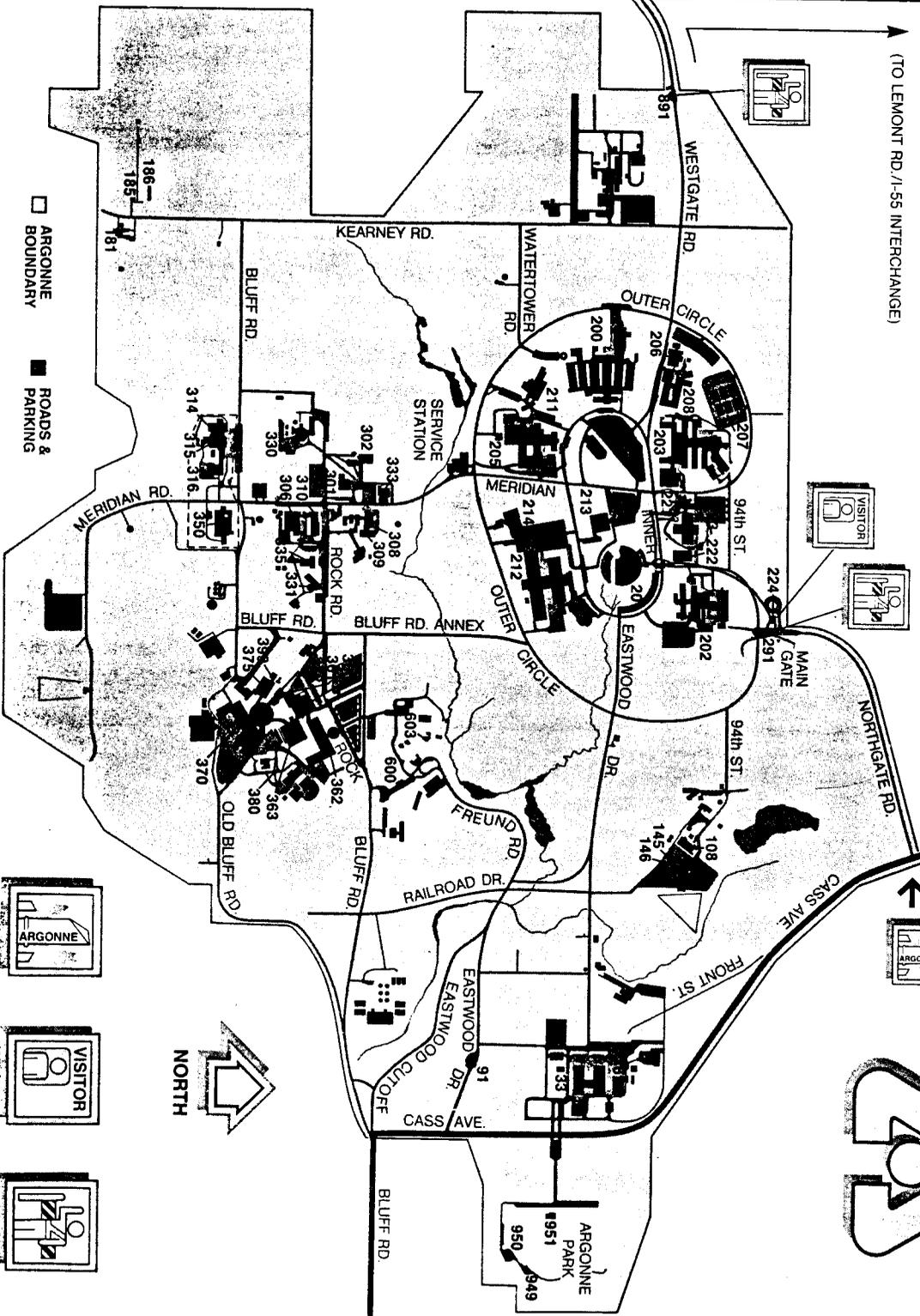
ARGONNE BOUNDARY

ROADS & PARKING

WATER

BUILDINGS

NORTH
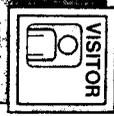
MAIN ENTRANCE

VISITOR RECEPTION

ENTRANCE GATE

WESTGATE RD.
KEARNEY RD.
WATERTOWER RD.
BLUFF RD.
MERIDIAN RD.
MERIDIAN
OUTER CIRCLE
INNER CIRCLE
SERVICE STATION
ROCK RD.
BLUFF RD.
BLUFF RD. ANNEX
OLD BLUFF RD.
EASTWOOD DR.
94th ST.
NORTHGATE RD.
FREUND RD.
RAILROAD DR.
FRONT ST.
CASS AVE.
EASTWOOD CUTOFF
BLUFF RD.
MAIN GATE
VISITOR
ARGONNE
ARGONNE PARK
I-55

NORTH

SUMMER 1988 STUDENT RESEARCH PARTICIPANTS

NAME	UNIVERSITY	SUPERVISOR

ADVANCED PHOTON SOURCE DIVISION (APS)

Schicht, Steven F.	Southern Illinois U.-Carbondale	Y. Cho
Sherman, Robert G.	U. of Illinois-Urbana	Y. Cho

APPLIED PHYSICS DIVISION (AP)

Webb, George S.	Stanford University	Y. Orechwa

ARGONNE-WEST (AW)

Buschman, Tracy D.	Idaho State University	R. Villareal
Hannink, Nancy J.	California State U.-Stanislaus	R. Villareal

ARGONNE-WEST APPLIED PHYSIS DIVISION (AW-AP)

Lanczycki, Christopher J.	U. of Connecticut	H. McFarlane

ARGONNE-WEST REACTOR EXPERIMENTS AND EXAMINATIONS DIVISION (AW-REE)

Danielson, Scott D.	University of Arizona	F. Just
McClure, Lauren A.	University of Rochester	G. Imel

DIVISION OF BIOLOGICAL, ENVIRONMENTAL & MEDICAL RESEARCH (BEM)

Arroyo, May R.	University of South Florida	M. Miller
Bassett, Patricia K.	Roosevelt University	S. Zaromb
Best, Amy E.	DePauw University	T. Fritz
Brice, Laura E.	Ohio Wesleyan University	M. Bhattacharyya
Carrillo, Jose J.	Princeton University	V. Stamoudis
Caslin, Belinda	Spelman College	S. Zaromb
Collins, Waylon G.	Texas A&M University	D. Sisterson
Gavinski, Sheri L.	Pennsylvania State University	G. Woloschak
Goldman, Rona B.	U. of Illinois-Urbana	C. Ehret/K. Groh
Hrynko, Tamara A.	U. of Illinois-Urbana	M. Peak
Ishii, Masaru A.	U. of Minnesota-Minneapolis	M. Inokuti
Jirka, Meredith A.	Illinois Benedictine College	C. Ehret/K. Groh
Kramer, Stephanie A.	St. Mary's College	C. Ehret/K. Groh
Leopold, Seth S.	Dartmouth College	C. Ehret/K. Groh
Lundberg, Derek L.	University of Chicago	T. Seed
Moseley, Marcus E.	Langston University	S. Zaromb
Munson, George P.	Rollins College	G. Woloschak
Seed, Patrick C.	Bowdoin College	F. Stevens
Slocum, Matthew G.	U. of Illinois-Urbana	C. Ehret/K. Groh

CHEMICAL TECHNOLOGY DIVISION (CMT)

Berard, Joseph R.	Worcester Polytechnic Institute	J. Rathke
Bergman, Christy	U. of California-Davis	M. Saboungi
Crabtree, Anna M.	Southwest Missouri State U.	G. Vandegrift
Czech, Berenice A.	Eastern Washington U.	M. Blander/M. Tetenbaum
Epperson, Sarah J.	University of Tulsa	V. Maroni

SUMMER 1988 STUDENT RESEARCH PARTICIPANTS

NAME	UNIVERSITY	SUPERVISOR

ADVANCED PHOTON SOURCE DIVISION (APS)

Schicht, Steven F.	Southern Illinois U.-Carbondale	Y. Cho
Sherman, Robert G.	U. of Illinois-Urbana	Y. Cho

APPLIED PHYSICS DIVISION (AP)

Webb, George S.	Stanford University	Y. Orechwa

ARGONNE-WEST (AW)

Buschman, Tracy D.	Idaho State University	R. Villareal
Hannink, Nancy J.	California State U.-Stanislaus	R. Villareal

ARGONNE-WEST APPLIED PHYSIS DIVISION (AW-AP)

Lanczycki, Christopher J.	U. of Connecticut	H. McFarlane

ARGONNE-WEST REACTOR EXPERIMENTS AND EXAMINATIONS DIVISION (AW-REE)

Danielson, Scott D.	University of Arizona	F. Just
McClure, Lauren A.	University of Rochester	G. Imel

DIVISION OF BIOLOGICAL, ENVIRONMENTAL & MEDICAL RESEARCH (BEM)

Arroyo, May R.	University of South Florida	M. Miller
Bassett, Patricia K.	Roosevelt University	S. Zaromb
Best, Amy E.	DePauw University	T. Fritz
Brice, Laura E.	Ohio Wesleyan University	M. Bhattacharyya
Carrillo, Jose J.	Princeton University	V. Stamoudis
Caslin, Belinda	Spelman College	S. Zaromb
Collins, Waylon G.	Texas A&M University	D. Sisterson
Gavinski, Sheri L.	Pennsylvania State University	G. Woloschak
Goldman, Rona B.	U. of Illinois-Urbana	C. Ehret/K. Groh
Hrynko, Tamara A.	U. of Illinois-Urbana	M. Peak
Ishii, Masaru A.	U. of Minnesota-Minneapolis	M. Inokuti
Jirka, Meredith A.	Illinois Benedictine College	C. Ehret/K. Groh
Kramer, Stephanie A.	St. Mary's College	C. Ehret/K. Groh
Leopold, Seth S.	Dartmouth College	C. Ehret/K. Groh
Lundberg, Derek L.	University of Chicago	T. Seed
Moseley, Marcus E.	Langston University	S. Zaromb
Munson, George P.	Rollins College	G. Woloschak
Seed, Patrick C.	Bowdoin College	F. Stevens
Slocum, Matthew G.	U. of Illinois-Urbana	C. Ehret/K. Groh

CHEMICAL TECHNOLOGY DIVISION (CMT)

Berard, Joseph R.	Worcester Polytechnic Institute	J. Rathke
Bergman, Christy	U. of California-Davis	M. Saboungi
Crabtree, Anna M.	Southwest Missouri State U.	G. Vandegrift
Czech, Berenice A.	Eastern Washington U.	M. Blander/M. Tetenbaum
Epperson, Sarah J.	University of Tulsa	V. Maroni

NAME	UNIVERSITY	SUPERVISOR

CHEMICAL TECHNOLOGY DIVISION (con't.)

NAME	UNIVERSITY	SUPERVISOR
Freeman, Charles J.	Washington State University	J. Helt/R. Varma
Gallery, Jean	Chicago State University	J. Bates
Hoover, Tina A.	Wheaton College	V. Maroni/Z. Nagy
Hougum, Cynthia A.	Viterbo College	T. Johnson
Jurgens, Robin K.	Loras College	L. Curtiss
Kuehler, John F.	Tarleton State University	M. Saboungi
Lorton, Sheila L.	Olivet Nazarene University	G. Vandegrift
Matzen, Gerhard W.	U. of Illinois-Urbana	J. Helt
Mays, Trenton L.	Taylor University	J. Helt
Naud, Darren L.	The Cooper Union	T. Kaun
Oberley, Alan J.	St. Mary of the Plains College	G. Vandegrift
Pinter, Jonathan H.	Grinnell College	J. Bates
Rose, Alita R.	Olivet Nazarene University	D. Reed
Saito, Hiroshi H.	Carnegie-Mellon University	V. Maroni
Schneider, Ken R.	U. of Illinois-Urbana	J. Schneider

CHEMISTRY DIVISION (CHM)

NAME	UNIVERSITY	SUPERVISOR
Bolender, James P.	Wittenberg University	L. Soderholm
Brown, James W.	Butler University	J. Norris
Cariss, Carolyn S.	Humboldt State University	J. Williams
Chavez, Dave P.	Colorado State University	M. Wasielewski
Cook, David E.	West Texas State University	W. Calaway/M. Pellin
Cook, Richard L.	Andrews University	E. Appelman
Fisher, Dan E.	San Diego State University	P. Horwitz
Flores, Francis X.	University of Chicago	L. Stock
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Gallo, Dennis M.	Knox College	G. Gaines
Gluckman, Bruce J.	U. of Illinois-Urbana	J. Berkowitz
Graczyk, Lisa J.	Northeastern Illinois University	P. Neill
Haar, Christopher M.	Iowa State University	L. Morss
Jacobs, Carolyn A.	West Chester University	P. Horwitz
Kessler, Brett H.	University of Iowa	J. Norris
Kleinjan, Stephanie B.	U. of North Dakota-Grand Forks	J. Williams
Platz, Cynthia L.	University of Dallas	K. Carrado
Rohl, Carol A.	Rice University	J. Williams
Son, David Y.	Andrews University	J. Williams
Stupka, Daniel L.	U. of Illinois-Urbana	J. Williams
Zimmerman, Heidi J.	Eastern Illinois University	R. Winans/R. McBeth

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Brooks, Lynne M.	Northern Illinois University	C. Caruthers
Ross, Daniel L.	U. of Texas-Austin	J. Patterson

DIVISION OF EDUCATIONAL PROGRAMS (DEP)

NAME	UNIVERSITY	SUPERVISOR
Bennett, Michael A.	U. of Michigan-Ann Arbor	J. Mateja
Bulmahn, Jeffrey W.	U. of Illinois-Urbana	H. Myron
Leakeas, Christopher L.	Purdue U.-West Lafayette	H. Myron
Reiser, Laura A.	Beloit College	J. Mateja

NAME	UNIVERSITY	SUPERVISOR

ENERGY AND ENVIRONMENTAL SYSTEMS DIVISION (EES)

NAME	UNIVERSITY	SUPERVISOR
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Chen, Melinda Y.	U. of Illinois-Urbana	D. Poyer/J. Anderson
Cook, Jana L.	Southwestern University	D. Livengood
Ellis, Timothy W.	Lambuth College	C. Yu
Fullerton, Christopher D.	U. of Redlands Johnson Center	L. Johnson
Hsu, Michael C.	Harvey Mudd College	J. Bogner
Marik, Sheri K.	San Diego State University	L. Johnson
Neighmond, Erin K.	Clarkson University	D. Livengood
Renken, Kerris J.	U. of Northern Iowa	S. Chen/Y. Yuan
Rodriguez, Roy	Southern Illinois U.-Carbondale	K. Chun

ENGINEERING DIVISION (ENG)

NAME	UNIVERSITY	SUPERVISOR
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Cotter, John D.	U. of Wisconsin-Parkside	B. Picologlou
Duraski, Robert F.	U. of Illinois-Urbana	C. Reed
Higgins, Patrick J.	U. of Wisconsin-Stevens Point	V. Novick
Jack, Todd M.	Valparaiso University	M. Rosing
Sanchez, Manuel O.	Universidad De Puerto Rico	V. Novick
Thomas, Edward E.	Florida Institute of Technology	C. Reed
Walker, Andre L.	Tulane University	B. Picologlou

ENVIRONMENT, SAFETY AND HEALTH DEPARTMENT (ESH)

NAME	UNIVERSITY	SUPERVISOR
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Haas, Ken	Roanoke College	E. Dolecek
Laughlin, John A.	Luther College	R. Toohey
Stone, Katherine A.	U. of Missouri-Rolla	R. Toohey
Wilks, Marilyn	Mississippi Valley State U.	M. Robinet

EXPERIMENTAL BREEDER REACTOR-II (EBR-II)

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Edwards, David P. (Illinois)	Iowa State University	D. Mohr/H. Planchton
Hudson, Andrea K. (Illinois)	U. of Kentucky-Lexington	K. Gross
Kehrer, Richard S. (Idaho)	Idaho State University	L. Christensen
Schultz, William R. (Illinois)	U. of Illinois-Urbana	G. Hofman
Urbatsch, Todd J. (Idaho)	Iowa State University	C. Lahm

FUSION POWER PROGRAM (FPP)

NAME	UNIVERSITY	SUPERVISOR
Foley, Richard A.	Carroll College	J. Brooks
Gibbard, Seran G.	John Hopkins University	L. Turner
Lide, Allison M.	Miami U. of Ohio	R. Mattas
Roy, Jeffrey A.	Harvard University	R. Mattas
Worthington, Bruce L.	Graceland College	A. Hassanein

HIGH ENERGY PHYSICS DIVISION (HEP)

NAME	UNIVERSITY	SUPERVISOR
Balabanis Evelyn N.	Mount Holyoke College	M. Derrick
Behrens, Bruce H.	North Dakota State University	B. Musgrave
Berg, J. Scott	Cornell University	J. Dawson
Bragg, Lisa A.	U. of Illinois-Urbana	A. Buehring

NAME	UNIVERSITY	SUPERVISOR

HIGH ENERGY PHYSICS DIVISION (con't.)

NAME	UNIVERSITY	SUPERVISOR
Churchill, Christopher W.	California Poly. State U.	A. Yokosawa
Done, James P.	Roosevelt University	M. Goodman
Litzenberg, Dale W.	Purdue U.-West Lafayette	M. Derrick
MacLean, Phillip	State U. of New York-Potsdam	B. Musgrave
Moskowitz, James J.	Swarthmore College	A. Yokosawa
Rowland, Brenda J.	Andrews University	R. Blair
Saulnier, Michael S.	Massachusetts Inst. of Tech.	M. Goodman
Schultz, Peter F.	Knox College	J. Dawson
Smith, Karenlyn R.	Southern University	P. Schoessow
Williams, Ricardo J.	College of Charleston	J. Norem/J. Simpson

INTENSE PULSED NEUTRON SOURCE DIVISION (IPNS)

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Bywater, Russell L.	Iowa State University	J. Carpenter
Grande, Corinne M.	Willamette University	D. Montague/B. Brown
Griffith, George W.	Iowa State University	J. Carpenter
Iverson, Erik B.	Iowa State University	J. Carpenter
Knotz, Christopher J.	Willamette University	D. Montague/B. Brown
Kriz, Mary E.	Illinois Institute of Technology	D. Bohringer
Nockleby, Mark D.	Willamette University	D. Montague/B. Brown
Osmer, James M.	Willamette University	D. Montague/B. Brown
Truedson, John R.	Colorado State University	S. Kern/B. Brown

MATERIALS AND COMPONENTS TECHNOLOGY DIVISION (MCT)

NAME	UNIVERSITY	SUPERVISOR
Anderson, Paul E.	Governors State University	G. Popper
Antonik, Matthew D.	State U. of New York-Albany	F. Nichols
Bloomberg, David E.	U. of Illinois-Urbana	R. Poeppel
Carter, Heidi L.	North Dakota State U.	G. Popper
Cicela, Frank W.	U. of Illinois-Urbana	G. Popper
Graham, Stephen W.	Southern Illinois U.-Carbondale	R. Poeppel
Klassen, Gertrude	Alfred University	R. Poeppel
Lee, Deborah E.	U. of Illinois-Urbana	T. Kassner/O. Chopra/A. Hull
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Markovich, Joseph G.	Purdue U.-Calumet	A. Raptis/R. Roberts
Mathias, Pamela J.	U. of Michigan-Ann Arbor	R. Poeppel
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Pena, Alejandro	U. of Texas-El Paso	W. Sha/J. Hull
Smith, Charles L.	Creighton University	R. Poeppel
Solomon, Irene M.	U. of Michigan-Ann Arbor	R. Poeppel
Swanson, Randall J.	Southwest Missouri State U.	R. Carlson/G. Popper
Van Voorhees, Eric J.	Pennsylvania State University	R. Poeppel
Winsley, Kathy A.	North Carolina A&T State U.	V. Shah

MATERIALS SCIENCE DIVISION (MSD)

NAME	UNIVERSITY	SUPERVISOR
Albrecht, Andrew S.	Kenyon College	G. Crabtree
Bergstrom, David S.	U. of Illinois-Urbana	R. Birtcher/L. Rehn
Blank, Monica	Catholic U. of America	D. Hinks
Day, David W.	Louisiana State University	R. Kampwirth
Dressel, Paul R.	U. of Wisconsin-Eau Claire	K. Strandburg
Kaplanes, Marc B.	U. of Illinois-Urbana	K. Merkle/D. Wolf
McKay, Douglas M.	Wheaton College	K. Gray

NAME	UNIVERSITY	SUPERVISOR

MATERIALS SCIENCE DIVISION (con't.)

Rosenbloom, Brian S.	State U. of New York-Geneseo	G. Crabtree
Wagner, Andrew V.	Brown University	K. Gray
Wallis, Corinne R.	Allegheny College	G. Crabtree

MATHEMATICS AND COMPUTER SCIENCE DIVISION (MCS)

Cohoon, Deborah S.	Temple University	M. Kwong
Drake, Richard R.	University of Idaho	A. Griewank
Kuske, Rachel A.	Northwestern University	M. Minkoff/G. Leaf
Mansfield, Tung T.	University of Tulsa	J. Boyle
McRae, Shari L.	University of Arkansas	L. Wos/W. McCune
Pfluger, Nathan J.	New College of USF	G. Leaf/M. Minkoff
Price, Morgan N.	University of Chicago	R. Overbeek
Ratliff, Kelly R.	Southwest Missouri State U.	R. Stevens
Stone, Thomas J.	Moorhead State University	G. Leaf/M. Minkoff
Tuecke, Steven J.	St. Olaf College	R. Overbeek
Vaver, Jon G.	Cornell College	A. Griewank
Wick, Cynthia A.	Swarthmore College	L. Wos

PHYSICS DIVISION (PHY)

Buttler, William T.	U. of Texas-Austin	R. Holt
Dawson, Jay W.	Carnegie-Mellon University	K. Shepard
Dey, Joseph E.	Washington University	R. Pardo
Dunston, Douglas E.	Harvey Mudd College	K. Shepard
Ellmaker, Richard A.	Millersville University	E. Kanter
Glezen, Paul F.	University of Arkansas	L. Welch
Haase, Scooter E.	Eastern New Mexico U.	C. Davids
Moore, Chad B.	Bloomsburg University	R. Holt
Rafac, Robert J.	University of Chicago	J. Schiffer
Sundberg, Jennifer A.	Bowling Green State University	G. Berry/L. Young/W. Childs

PLANT FACILITIES & SERVICES - WASTE MANAGEMENT OPERATIONS (PFS-WMO)

| Kevin, Noreen M. | Illinois State University | C.L. Cheever |

REACTOR ANALYSIS AND SAFETY DIVISION (RAS)

Burke, Matthew M.	Earlham College	T. Wei
Davis, Darryl E.	Southern Illinois U.-Carbondale	T. Anderson
King, Tina C.	Rice University	A. DeVolpi
Roth, David E.	Iowa State University	A. DeVolpi

TECHNOLOGY TRANSFER CENTER (TTC)

| Hamilton, Jeffrey R. | U. of Illinois-Urbana | E. Levine |

Computing and Telecommunications Division
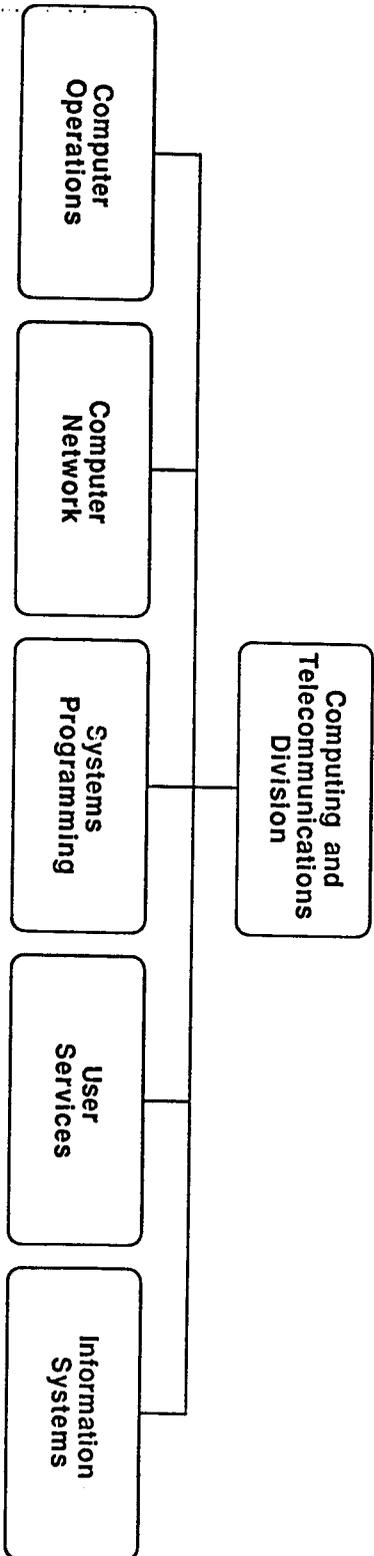
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│Operations│ │Network│ │Programming│ │Services│ │  Systems    │
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To: L. W. Amiot   D. E. Engert   R. G. Slade
    L. M. Boxberger D. O. Hale   D. F. Sietina
    F. C. Carnaghi   F. M. Moszur   D. P. Weber
    C. M. Caruthers   C. G. Schlesselman

From: April Heiberger

Subject: Current Status of Publications in Progress

TM No.	Author	Title	To Be Received From Author	Send to Final Review	Final Review Comments Back	Send to GA for Printing	Current Status	Net Copies	Category*
					Sent to Graphic Arts				
		DEC VAX/VMS Station Primer for UNICOS (SV-0361) (Draft)					G.A. has printed.	30	(1)
		DEC VAX/VMS Station Primer for UNICOS (SV-0361) (Addendum)					G.A. has printed.	30	(1)
		DEC VAX/VMS Station Reference Manual (SV-0020) (Draft)					G.A. has printed.	20	(1)
				Currently Active					
436	Linda Clark	Computing Services Software Library (Revision 1)	2/26/88	5/27/88	6/3/88	7/8/88	(last printed 3/86)	100	(1)
455	Cliff Caruthers	Using the Central VAX 8700 Computer at ANL	2/11/88	5/18/88	5/24/88	7/18/88	CMC is editing.	250	(1)
460	Al Hinds	Guide to UNICOS at ANL					We will update the draft monthly (available at the Document Distribution Counter) until we produce a final document. (last printed 6/6/88)	100	(1)
379	Chris Opitz, Lynne Brooks	Recommended Documentation for Computer Users at ANL (Revision)	6/1/88	7/1/88			LCO and LMB are collating stock with document listings. (last printed 7/86)		(1)
459	Chris Opitz	Survey of ANL Organization Plans for Word Processors, Personal Computers, Work Stations, and Associated Software (Revision)					Will include specific information from ANL/TM 433.		(1)
	Mike Thonnes	Cuechart User's Manual (Addendum)	5/25/88				Will include specific information from ANL/TM 433. MMT has.		(1)
	Mike Thonnes	Tellagraf User's Manual (Addendum)	5/25/88				Will include specific information from ANL/TM 433. MMT has.		(1)
	Mike Thonnes	Disspla User's Manual (Addendum)					Will include specific information from ANL/TM 433.		(1)

TM No.	Author	Title	Received From Author	Send to Final Review	Final Review Comments Back	Send to GA for Printing	Current Status	Net Copies	Category*
					Currently Active				
413	Jean Troyer	Guide to Computer Protection at ANL (Revision)					LIT is revising. LMB is editing. (last printed 3/84)	100	(1)
402	Mike Thommes	Retrieving and Analyzing Computer Usage Accounting Data at ANL (Revision)					Needs to include VAX and Cray information. (last printed 12/82) AAH is editing.		(1)
457	Kevin Louie	Using the Hydra Protocol Converter for IBM Full Screen Terminal Emulation at ANL					LMB will edit.		(1)
4nn	Rich Dominiak	VAX Help Files	6/6/88				DTL has.		(1)
4nn	Rich Carlson	Asynchronous Data Communications User Guide (Revision)					RAC has.		(1)
422	Rich Carlson	MKO and Non-MKO Reference Card					One or two cards. RAC has.		(1)
422	Rich Carlson	Guide to Telecommunications at ANL (Addendum)					RAC has.		(1)
	Al Hinds	DEC VAX/VMS Station Reference Manual (SV-0020) (Addendum)							(1)
462	Pete Bertoncini	Guide to Computer Graphics at ANL					PJB will revise. LMB will edit. Will include general information from ANL/TM 433 and a topical index.	150	(1)
		Supercomputing at ANL (Brochure)					Awaiting DOE approval.		(1)
431	Barry Finkel	Electronic Mail at ANL (Revision)					AAH has converted to GML. BSF has a copy. (last printed 3/86)		(1)
411	Al Hinds	Guide to Fortran at ANL (Revision)					(last printed 11/83)	100	(1)
405	Bob McMahon	Using ARPAnet at ANL (Revision)					LCO will edit. Awaiting MCS extended gateway protocol. (last printed 5/83)		(1)
4nn	Fred Moszur	Guide to Computer Typesetting at ANL					FMM is writing.		(1)
4nn	Roxanne Izzo	Guide to Personal Computing at ANL (Revision)					(last printed 9/84)		(1)
412	Not Assigned	MVS Batch Utilities for File Management at ANL (Revision)					(last printed 12/83)		(1)

ARGONNE NATIONAL LABORATORY

Computing Services

SUMMER 1988 STUDENT INTERNSHIP MIDTERM REPORT

July 6, 1988

Lynne M. Brooks

SUMMER 1988 TECHNICAL WRITING/EDITING INTERNSHIP IN

COMPUTING SERVICES

PURPOSE

The purpose of my internship at Argonne is threefold. First, I will gain experience and first-hand knowledge of what it means to work as a technical writer/editor on a daily basis. Second, I will better understand technical communication in an organizational context and; third, I will complete my capstone requirement for upper division university honors.

MOTIVATION AND GOALS

My internship at Argonne National Laboratories will allow me to use my skills as an English major in a practical, on-the-job situation. Consequently, I have several goals for my capstone project:

1. To use my writing and editing skills as a technical writer in a professional setting.

2. To hone my own writing and editing skills by observing other professional technical writers.

3. To write and edit several documents for Argonne National Laboratories over the course of the summer

4. To produce a final paper about the internship experience which, along with the documents I produce at Argonne and a daily journal, will comprise my capstone.

METHODOLOGY OF INTERNSHIP

The methodology of my capstone is as follows:

1. I will commute daily to Argonne National Laboratories, Argonne, IL., from 5/31/88 to 8/5/88. I will work in Computing Services under the supervision of Dr. Clifford Caruthers.

2. I will edit and write several different types of documents that may include addendums, articles, bulletins, letters, manuals, and memos. My writing or editing tasks will be assigned by Dr. Caruthers.

3. I will edit and write online documents using CMS and Script and follow the editing and writing procedures established by Computing Services at Argonne in their *Writing and Editing Standards.*

4. I will produce a final paper at the end of my internship which will include

    -   an *introduction* that explains the setting and how my job related to the overall work at Argonne,

    -   a *narrative* that gives a daily, detailed account of the activities I was involved in,

    -   an *analysis and evaluation* in which I will discuss and criticize the writings produced on the job, and

    -   an *appendix* which will include samples of my written work, as well as letters of evaluation and other documents of interest.

Computing Services
Writing and Editing Standards

Computing Services
Writing and Editing Standards

By

Clifford M. Caruthers
April A. Heiberger

ACKNOWLEDGMENTS

PREFACE

Computing Services Writing and Editing Standards explains how to write and organize technical information clearly and concisely; it also establishes Computing Services standards for grammar, usage, style, formats, and publication procedures.

This manual will enable writers to produce better documents consistent with Computing Services standards in less time. Applying the specified principles will also speed up the editing, review, and revision processes.

CONTENTS

TABLES

FIGURES

CHAPTER 1

INTRODUCTION

Good writing is particularly important in Computing Services. Our success and reputation depend upon the communication of clear, accurate information to Argonne computer users. These computer users range from computer novices to experts and from high school students to Ph.D.'s. Effective communication with such a varied audience demands clarity and accuracy.

Computing Services personnel who write, edit, review, or type documents are responsible for knowing and applying the standards established in this document and for adhering to the standards set forth in the recommended reference guides and formatting guides.

STRUCTURE AND CONTENT

Computing Services Writing and Editing Standards provides information that can save you time and help you to write clear and accurate documents in standard formats. Note, however, that it is *not* in itself a comprehensive reference guide to good technical writing. We have chosen not to cover subjects and areas that are well covered in the reference guides recommended below. For example, *Computing Services Writing and Editing Standards* is silent on how to write requests for proposals (RFPs), because the *Handbook of Technical Writing* covers that procedure in detail. Rather, we confine ourselves to focusing on certain specifics of good writing that the recommended reference guides do not cover adequately or that are particularly relevant to Computing Services documentation.

Chapter 1 points you to these "Recommended Reference Guides" (see below) covering general rules of grammar and effective writing. Chapter 1 also covers recommended or required text formatters, text formatter guides, and generic computer files for formatting documents.

Chapter 2 offers some specific suggestions for improving technical writing in Computing Services.

Chapter 3 outlines Computing Services procedures for communicating pertinent news to Argonne computer users. These procedures include publication of the monthly *Argonne Computing Newsletter*.

Chapter 4 defines procedures for publishing technical information (technical memoranda, ANL reports, addenda, online HELP) in standard formats.

Chapter 5 explains how to prepare Computing Services correspondence (letters, memoranda, and meeting announcements) and forms for completion by others.

Chapter 6 explains many of the Computing Services usage conventions.

RECOMMENDED REFERENCE GUIDES

The three documents listed below complement *Computing Services Writing and Editing Standards* in various specified ways. As a set (including *Computing Services Writing and Editing Standards*), they provide comprehensive technical writing guidance. Every member of Computing Services who must communicate technical information in writing should be familiar with them. These documents are available for reading in the Mathematics-Physics Library (Building 203, Room D-101) and for purchase at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting copies).

- For anyone wishing a short classic introduction to the principles of clear English, we recommend *The Elements of Style* by William Strunk, Jr., and E. B. White (3rd edition, New York: Macmillan, 1979). Sensitivity to language is still the most important asset for any technical writer or editor. The advice on achieving a clear, graceful expository style should be required reading for all writers, and the emphasis on conciseness is particularly relevant to technical communication.

- As a primary desktop reference to grammar, usage, style, formats, and methods of development, we recommend the *Handbook of Technical Writing* by Charles T. Brusaw, Gerald J. Alred, and Walter E. Oliu, (3rd edition, New York: St. Martin's Press, 1987). This book is practical for anyone working in research, industry, or government. In addition to treating grammar, usage, style, format, and writing procedures (planning, research, outlining, methods of development) comprehensively, it provides information on and examples of various kinds of technical communication--reports, proposals, instructions, specifications, job descriptions, letters, and memoranda.

  To find the information you want, this book offers four means of access: (1) it is organized alphabetically, so that you can go immediately to the topic you need; (2) it also contains an excellent index that includes not only terms actually used in the alphabetical entries but also common synonyms for those terms; (3) it contains a "Topical Key to the Alphabetical Entries" that groups entries into more general categories so that you can more easily see relationships among entries; and (4) it offers "Five Steps to Successful Writing," a brief review of the writing process which includes page references to pertinent entries.

- For those who must communicate regularly in writing, we recommend *Guidelines for Document Designers* by Daniel B. Felker *et al.* (Washington: American Institutes for Research, 1981) as a desktop reference to guidelines and principles for making public documents easier to read and understand. The National Institute of Education produced this document specifically for professionals who must write a great deal in their jobs but are not trained writers.

RECOMMENDED DICTIONARIES

You should also use an authoritative, recent dictionary. We recommend *The American Heritage Dictionary* (Boston: Houghton Mifflin, 1982), which is available through the Argonne Materials Order System (AMOS).[1] Those who wish to consult a larger, more comprehensive dictionary will find copies of the *Webster's Third New International Dictionary of the Eng-*

lish Language, Unabridged (Springfield, Massachusetts: G. & C. Merriam, 1964) available in the Mathematics-Physics Library and in the Computing Services Office.

RECOMMENDED TEXT FORMATTERS AND FORMATTING GUIDES

Currently, Computing Services recommends the Script and Syspub computer text formatters with Xedit in the Conversational Monitor System (CMS) to produce documents. However, the University of Waterloo has recently released Generalized Markup Language (GML) as a recommended replacement for Syspub. While Syspub is still compatible with Script Version 86.1 (the version currently in production status at Argonne), Waterloo now considers Syspub obsolete. Computing Services is testing the capabilities of GML to produce desired layouts, with Script as a companion text formatter underneath GML. Several generic Script-GML files in test status are available to users (see "Mandatory Generic Script Files" below).

Anyone who communicates on the job in writing or who is otherwise involved in any document publication process should become familiar with these text formatters. Users who are not familiar with Script should at the first opportunity take the Script courses that Computing Services periodically offers: *Using Script in CMS* and *Using Script and a PostScript Printer*. When GML replaces Syspub in production status, we will offer a course in *Using Script with GML*. Check the *Argonne Computing Newsletter* for class schedules.

Those who use Script and Syspub or GML may wish to obtain the following documents, which are available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting copies).

- The *Waterloo Script User's Guide* explains the basic Script control words and how to use them.

- The *Waterloo Script Reference Manual* provides you with the various options of the Script control words.

- The *Waterloo Syspub User's Guide* explains the use of Syspub in conjunction with Script to define the format and structure of your document.

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[1] The AMOS catalog number (in the *Publix* catalog) for *The American Heritage Dictionary* is B5-H0-5063.

- The *Waterloo Script GML User's Guide* explains the use of GML in conjunction with Script to define the format and structure of your document.

OTHER HELPFUL DOCUMENTS

Although we do not stock the following documents, they are available in the Mathematics-Physics Library.

The Chicago Manual of Style (13th edition, Chicago: University of Chicago, 1982) and the *United States Government Printing Office Style Manual* (Washington: U.S. Government Printing Office, 1984) cover principles of punctuation, spelling, and word usage. Finding desired information in *The Chicago Manual of Style* can be time-consuming, but this text does contain a wealth of information, including extensive guidelines on the editing and publishing of documents. We recommend especially Chapter 5: "Punctuation" and Chapter 6: "Spelling and Distinctive Treatment of Words." The *United States Government Printing Office Style Manual* is a standard reference for abbreviations, acronyms, and punctuation.

For specialized vocabulary in computing, you may also wish to refer to the *American National Dictionary for Information Processing Systems* (Washington: Computer and Business Equipment Manufacturers Association, 1982) or to *Vocabulary for Data Processing, Telecommunications, and Office Systems* (7th edition, Poughkeepsie, N.Y.: IBM, 1981).

MANDATORY GENERIC SCRIPT FILES

Computing Services has always advocated editorial standards that would allow maximum use of computer text formatter defaults and word processing defaults in the production not only of publications but also of other common forms of written communication. Formats that cannot easily be produced by computer text formatters or word processors require more manipulation, more time, and more expense.

If you write, edit, review, or type Computing Services documents (technical memoranda, addenda, *Newsletter* articles, bulletins, letters, meeting announcements, or memos), you are responsible for using the generic files described below and adhering to the standard formats that these files produce. Use of these standard files and formats ensures greater efficiency and a consistent, professional appearance for all writing issuing from Computing Services.

Several generic Script files are available to generate these standard document formats (see Table 1). *Use these files as a basis for writing and formatting your documents.* They take advantage of many Script and Syspub defaults.

These generic files reside on the public minidisk PUBLICAT. To obtain a copy of the desired file, issue the CP LINK command to link to PUBLICAT:

```
CP LINK PUBLICAT 191 vaddr
ACCESS vaddr filemode
```

where "vaddr" and "filemode" are any unassigned virtual address and filemode letter in your virtual machine. Next, create a new CMS Script file with the COPY command:

```
COPY fn ft fm new-fn = new-fm
```

where "fn," "ft," and "fm" are the filename, filetype, and filemode, respectively, of the file you wish to copy, "new-fn" is a new filename appropriate to your needs for this file, and "new-fm" is the filemode you wish to assign the newly created file.

The generic Script files listed in Table 1 contain documentation that explains the functions of the code where necessary.

Table 1

Generic Script-Syspub Files for
Producing Specific Formats

Format	*Filename*
Addenda	ADDENDUM
Articles	ARTICLE
Bulletins	BULLETIN
Letters	LETTER
Meeting Announcements	MEETING
Memoranda	MEMO
Technical Memoranda	TECHMEMO

Currently, several Script-GML files are available in test status on the PUBLICAT 2 minidisk (see Table 2). You may obtain copies of these files in the same

manner as you obtain files from the PUBLICAT mini-disk. When Computing Services decides to replace Syspub with GML as our production-status companion to Script, we will move the files on the PUBLICAT 2 minidisk to the PUBLICAT disk.

Table 2

**Generic Script-GML Files for
Producing Specific Formats**

Format	*Filename*
Addenda	ADDGML
Articles	ARTGML
Bulletins	BULLGML
Letters	LETGML
Meeting Announcements	MEETGML
Memoranda	MEMOGML
Technical Memoranda	TECHMGML

For Producing a Technical Memorandum

Whether you are using the TECHMEMO file (on the PUBLICAT minidisk) or the TECHMGML file in test status (on the PUBLICAT 2 minidisk), you will need to follow the instructions in the file carefully.

Note, for example, that the technical memorandum as it stands is labeled as a draft. Computing Services requires that all drafts of documents be labeled as drafts, so that readers will not confuse them with final products. (Under no circumstances are drafts to have covers or be bound.) When you are ready to print the final copy, you will of course remove the "DRAFT" notation and provide the date (month and year) of the final copy.

To complete the title page of the technical memorandum, you must add the document number and title and the names of all authors and editors. Normally, you should specify the first name, middle initial, and last name of each person.

Note that acknowledgments (when not part of the preface) normally appear on the back of the title page (although it is permissible to place an acknowledgments section anywhere before the table of contents). This section should recognize by name all persons (excluding those listed on the title page as authors or editors) who have reviewed the document or otherwise contributed substantially to its development.

The preface should introduce the book and explain its purpose, the audience for whom it is intended, its scope, and perhaps its background.

If you are using the TECHMEMO file, you will need to fill in top titles for both the even and odd numbered pages. Follow the instructions in the file. If you are using the TECHMGML file, GML will provide those top titles automatically (from information you have already supplied for the title page and chapter titles).

Proceed with your chapters according to the instructions in your file. If your document is long, you may wish to create a separate file for each chapter (and appendix) and use the

```
.IM filename
```

command in the Script-Syspub TECHMEMO file or the

```
:INCLUDE FILE=filename
```

command in the Script-GML TECHMGML file to imbed each chapter (and appendix) in the proper place. If your document is short (less than 50 pages), you may wish simply to put the entire document in one file.

Computing Services documents usually include indexes for user convenience. (These indexes are also available online as parts of the Master Index available to all computer users in CMS through the LOOKUP public execute file. Enter HELP LOOKUP in CMS for more information.) To learn how to create the index, read the instructions in your file and consult the *Waterloo Script User's Guide*. (Note that we do not currently use the indexing code defined in the *Waterloo Script GML User's Guide*.)

See Appendix B for more specific information on the TECHMGML file. Also consult the *Waterloo Syspub User's Guide* or the *Waterloo Script GML User's Guide* for more layout information.

- The *Waterloo Script GML User's Guide* explains the use of GML in conjunction with Script to define the format and structure of your document.

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Technical Memoranda	TECHMEMO

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For Producing an Addendum

Whether you are using the ADDENDUM file or the ADDGMS file, the instructions within the file will allow you to complete the file properly. Follow them carefully.

The purpose of an addendum is to describe installation-dependent options and to point out features and commands described in the main document that are not available or perform differently in the Argonne implementation. The addendum should not repeat information that already appears in the manual. Typically, most of the information appearing in Computing Services addenda comes from *Newsletter* articles published earlier on the same subjects.

For Producing a Newsletter Article

All you need to do with the ARTICLE file (or its ARTGML equivalent) is to supply a title (reflective of the content of the article) where indicated and type in the article itself. Articles should follow the journalistic formula of specifying all the essential information on the subject in the first paragraph (see "Writing the First Draft of an Article" in Chapter 3). Normally, they should be brief and to the point.

For Producing a Letter

In the LETTER file (or its LETGML equivalent), be sure to provide your telephone number with the letterhead information. Then provide the name and address of the person you are addressing, the appropriate salutation, and the rest of the letter where indicated.

Do not indent paragraphs in your text, but be sure to skip a line between them.

For Producing a Memorandum

In the MEMO file (or its MEMOGML equivalent), be sure to provide your telephone number with the letterhead information. Provide the name(s) of the person(s) addressed, your name, the subject of the memorandum, and the text as indicated.

Always include the names of all the people to whom you are sending the memorandum. Do not identify a list of persons as "distribution" (indicating the presence of a distribution list). Place each name on a separate line; if you have many names, you may wish to create double columns. It is sometimes important for a recipient to know who else has received the same memorandum.

Be sure that your specified subject is meaningful. A meaningful subject is one that accurately and concisely reflects the contents and will provide easy reference to this memorandum in the future. Supply the same subject as part of your top title if your memorandum is longer than one page.

Do not indent paragraphs in your text, but be sure to skip a line between them.

For Producing a Meeting Announcement

In your MEETING (or MEETGML) file, you must provide the subject of the meeting where specified, the date, time, and place of the meeting, the chairperson, the secretary, the agenda items, the participants, and the observers (one name to a line). Note that protocol requires participants to participate in discussions of agenda items, while observers may participate or merely observe.

For Producing a Bulletin

Once you have created your file with the copied generic BULLETIN (or BULLGML) file, all you need to do is provide the text for the bulletin. The generic file will create the standard Computing Services bulletin format.

CHAPTER 2

SUGGESTIONS FOR IMPROVING YOUR WRITING

The reference guides that we have recommended in the previous chapter answer many questions about style (see Appendix C for a definition of "style"). The advice in Chapter 2 complements these guides by emphasizing principles particularly relevant to your writing tasks in Computing Services. Please heed this advice to save time writing, time editing, and time reviewing during the publication process.

WRITE TO YOUR SPECIFIC AUDIENCE

The clear communication of technical information requires thoughtful and precise identification of the audience and a firm idea of what the audience should be able to do after reading the document. All too often in the field of computer documentation, the people who write the documentation are not very good at communicating with the many different audiences who use their products. When such failure to communicate occurs, good work is wasted, good products are ignored, and users are not as productive as they could be. In many cases of product failure, the "user interface" is at the heart of the failure.

Know who your readers are, what they know, and what they don't know. You will not, for example, want to use the same analogy to illustrate systems networking to computer telecommunications specialists that you would use to illustrate systems networking to student interns about to use electronic mail for the first time. You must know what you need to explain and what you can assume they already know. A clear explanation should enable the reader to understand your point, but examples or analogies often speed up comprehension or emphasize the point. If you need to instruct a novice user on how to format job control language cards, provide examples of job control language code. If you want to explain quantum values to a group of city counselors, use the analogy of multistory buildings. You need to know when you should provide examples or analogies. You must know when you can use a specialized word and when you cannot use that word. Be aware that readers bring their experience, and their experience only, to their reading. What you as a writer bring to them must be compatible with their experience.

Use of the proper tone is also extremely important in technical communication. Your tone is your attitude toward your subject and your audience. It can be serious, humorous, ironic, straightforward, zealous, casual, brisk, or nostalgic, depending on which tone will best obtain your reader's attention and sympathy. A news item titled "Effects of Decommissioning the IBM 370/195 Computer" may attract the attention of a given audience. "Pulling the Plug on the IBM 370/195 Computer" might more effectively catch the eyes of a less formal audience. Certainly, you do not want to treat a serious subject flippantly, but a sense of humor can help you establish rapport with many audiences.

Writing to an audience that varies greatly in education and expertise (as we often must in Computing Services) is a particularly challenging task and one to which you should give considerable thought when you first complete a publication worksheet (see "Completing the Publication Worksheet" in Chapter 4). If your audience is varied, you should identify each part of that audience (e.g., do they include laymen? technicians? administrators? experts?) and attempt to communicate clearly with each part. This task of identifying your audience is not easy, but it is invaluable to communicating with that audience.

For further information on the importance of considering your audience, see "Readers" in the *Handbook of Technical Writing*.

USE THE ACTIVE VOICE

A prominent flaw in technical writing is overuse of passive sentence construction. The Computing Services editorial policy is emphatic on this point. Other laboratories increasingly follow the guidelines established in such computer-assisted programs as Unix Writer's Workbench or IBM Proofread and allow only a minor percentage of passive verbs.

When you use a verb in the passive voice, the subject of the sentence is the person or the object that *receives* the action rather than the person or the object that *performs* the action. Compare these sentences:

> Bell Atlanticom Systems, Inc., will install the PBX-based digital telecommunications system at ANL.
>
> The PBX-based digital telecommunications system will be installed at ANL.

In the first sentence (in the active voice), the subject (Bell Atlanticom Systems, Inc.) is performing the action; in the second sentence (in the passive voice), the subject (PBX-based digital telecommunications system) receives the action.

Overuse of the passive voice can create difficulties for the reader:

- The passive voice often fails to specify who is performing the action. This introduction of vagueness into the text is especially popular when the writer is unsure who or what the real actor is. In the passive voice example above, who is installing the "PBX-based digital telecommunications system"? The vendor? Computing Services? Someone else? Does the writer know? The reader certainly does not. Include on each page four or five such sentences without actors and you will have forced the reader into a foggy, ambiguous world in which no one does anything; things just happen. Only the hardiest readers can persevere in such a world.

- The passive voice often leads to faulty modification. Introductory phrases that modify the actor often have no actor to modify. Consider this example:

> By specifying the secondary device in the Tellagraf profile file, efficiently coded graphics output files can be created to use device-specific features.

The introductory phrase "By specifying . . . file," appears to modify "graphics output files," but of course it logically does not. The phrase really modifies the absent actor (the user? the terminal? the system? the computer? the file? Tellagraf?) who created the "graphics output files." Again, a sentence or two like this one in the same context will destroy most readers' desire to continue reading.

- The passive voice slows the reader down in recognizing the pattern of a sentence. When the mind perceives an act--installing digital voice communications, for example--it visualizes an entity performing the act. It does not visualize "digital voice communications being installed." To convert the passive into the active, the reader must reverse the pattern of the sentence. The conversion is, of course, almost instantaneous, and the occasional use of the passive voice causes no great loss of time. But when it appears over and over, the conversion time begins to build up.

- The passive voice produces wordiness. If the previous example of a passive voice sentence ("The PBX-based digital telecommunications system will be installed at ANL.") were to contain the same information as its active voice equivalent, it would read:

> The PBX-based digital telecommunications system will be installed at ANL by Bell Atlanticom Systems, Inc.

This sixteen-word sentence is two words longer than its active voice counterpart. Wordy writing tends to be less interesting to read, and the effect is cumulative.

Use active verbs to save both words and time. The active voice is more natural, and it enables readers to recognize sentence patterns quickly.

To convert a passive verb into an active verb without changing the meaning of the sentence, follow this procedure:

- Locate the most significant action in the sentence, perhaps, but not necessarily, found in the verb. The action may be implicit.

- Ask who is performing the action.

- Make the actor or performer of the action the subject of the verb, whether the performer is in the original sentence or not.

Revising the passive voice example about the Tellagraf profile file according to this procedure should produce a much clearer sentence:

> When you specify the secondary device in the Tellagraf profile file, Tellagraf will create efficiently coded graphics output files that use device-specific features.

The passive voice does have its legitimate uses. For example, it allows you to focus on the process or the object of the action if that is what you need to emphasize. It can increase the variety of your sentences. In technical communication, however, clarity is far more important than elegant variety. Tell your reader who is doing what, and you will make the whole process of grasping and understanding information much easier.

For further commentary on the active voice, see "Use the Active Voice" in *Guidelines for Document Designers* and "Use the Active Voice" in *The Elements of Style*.

MAKE PARALLEL IDEAS PARALLEL IN STRUCTURE

In an attempt to convey complex information concisely, technical writers often load their sentences with relative clauses and loosely connected phrases. The resulting density of thought and complexity of structure tend to obscure communication. One way to resolve this difficulty is to write shorter sentences (see "Simpli-

fy Your Sentences" below). Longer sentences with parallel ideas should use parallel phrasing to make the relationships among those ideas clear.

You have appropriate parallelism when sentence elements that are alike in function are alike in construction as well. Parallel structure achieves an economy of words, clarifies meaning, and conveys the equality of ideas.

Using parallelism assists readers because they are able to anticipate the meaning of a sentence element on the basis of its parallel construction. When readers recognize the similarity of word order or construction, they know that the relationship between the new sentence element and the subject is the same as the relationship between the last sentence element and the subject. Because of this recognition, readers can go from one idea to another more quickly and confidently. The following sentences illustrate the principle (parallel elements are italicized):

> The committee recommends completely *revising* the proposal to reflect new trends in database management and *modifying* the administrative structure to reflect the new organization.
>
> The committee recommends complete *revision* of the proposal to reflect new trends in database management and *modification* of the administrative structure to reflect the new organization.

Either of the above sentences is clear; however, it would be less clear to write:

> The committee recommends completely *revising* the proposal to reflect new trends in database management and *modification* of the administrative structure to reflect the new organization.

Parallel ideas should be parallel in form and structure.

If you cannot bring the second element closer than ten or twelve words to the first element, you should repeat the key structure that connects them:

> Writers ought *to be* aware of their responsibility to communicate clearly and effectively through vigorous sentences and *to keep* in mind that using short subjects and strong verbs is the most efficient way to achieve vigorous sentences.

Parallel structure can extend to more than one sentence:

> Writers *should be* aware of their responsibility to communicate clearly and effectively through vigorous sentences. They *should keep* in mind that short subjects and strong verbs are the most efficient way to achieve vigorous sentences.

In Computing Services, writers frequently use lists to explain procedures or state purposes. Each element in a list should be parallel in structure. The first entry sets the structure for all the following entries. For example, the entries in a list of purposes might all begin with an infinitive:

> 1. To develop a working model
>
> 2. To recommend application of the model in specific programs
>
> 3. To evaluate the performance of the model
>
> 4. To determine the feasibility of the model's use on a broader scale

The same list might begin each entry with a noun:

> 1. Development of a working model
>
> 2. Recommendation of its use in specific programs
>
> 3. Evaluation of the performance of the model
>
> 4. Determination of the feasibility of the model's use on a broader scale

Either parallel structure is correct, but you should not mix the two.

In any type of writing, use of parallel structure channels the reader's attention and helps to draw together related ideas or to line up dissimilar ideas for contrast.

For additional commentary on parallelism, see "Parallel Structure" in the *Handbook of Technical Writing.*

AVOID JARGON

Some words lose their specific meanings because writers have used them to express many different concepts. Such words are often a source of confusion, especially if they become jargon in a particular field. Such words as "support," "facilitate," "problem," "considerations," "means" (as a verb), and "impact" (as a verb) are vague in most contexts. No audience, however sophisticated, responds well to imprecision, even if the members of that audience know vaguely what the term denotes in the specific context.

Perhaps the most frequently used jargon word in Computing Services (and in computing at large) is "support." If you mean "fund," "allow," "maintain," "endorse," "recognize," "recommend," "provide," "enhance," "accommodate," "fulfill," "use," or "assist," say so. "Support" is not an all-purpose word that covers all these possibilities; don't use it.

Most vendors' proofreading programs include a list of such terms. These programs, like Writer's Workbench or Proofread, inform the writer that these words appear in the document and suggest the writer consider alternatives. Their intent is to make you, as a writer,

more aware of how often and in what contexts you use imprecise words. For such information (as well as for spell-checking), we encourage you to use the Proofread program available in CMS at Argonne.[2] One of Proofread's more helpful capabilities is identifying abstract words and phrases such as the following:

Abstractions	Suggested Substitutions
facilitate	ease, simplify, help
impact (verb)	affect, force, influence, pressure
input (verb)	supply, enter, provide, put in
interface	connect, communicate
prioritize	rank, order

Research at the Document Design Center in Washington, D.C., indicates that easy readability is particularly important in writing which deals with functional, technical material. Among the more influential factors in creating readable documents is precise word choice. (Various readability analyses can be valuable in making writers aware of the vagueness inherent in jargon. Specific lists of substitutes are available and necessary to the technical writer.)

For further commentary on avoiding jargon, see "Jargon" in the *Handbook of Technical Writing*.

BE SPECIFIC

The extent to which we can classify items (Cray X-MP) in general categories (supercomputers) is one capability that differentiates us as human beings from other species. Moving up and down this "abstraction ladder" has enabled us to develop sophisticated languages. It has also enabled some of us to communicate more effectively than others. Good writers must be capable of generalizing, but they must also be careful to use specific words. Abstractions cannot provide details that are frequently necessary for clear communication. Do not say "bad weather" when you mean "heavy rain." Do not say "The computers were busy last month" when you mean "CMS usage in May increased to 37,879 user hours of session time." Writ-

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[2] Proofread is part of the IBM Professional Office System (PROFS) package, but it is also available (as PROOFREAd) outside PROFS in CMS. To learn how to use Proofread in PROFS, consult Chapter 12 of *Using the Professional Office System* (SH20-5604-0), available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting a copy). To use PROOFREAd in CMS, enter PROOFREA and follow the menus. Enter HELP PROOFREA in CMS for more information.

ing that uses too many abstractions is vague.

In setting up standards for selection of a personal desktop computer, the writer who composed the following was lazy:

1. The cost must not be excessive.

2. The machine execution time must be satisfactory for your purposes.

3. The letter quality of the printer must be good.
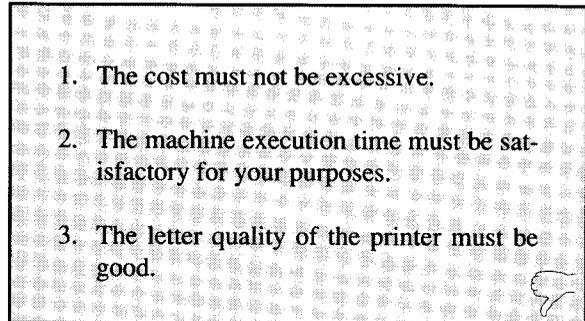
This writer has said very little. Some research on specific details could have produced the following:

1. The cost should not exceed five thousand dollars.

2. The computer must recalculate a typical spreadsheet (50 columns by 20 rows) in less than one minute.

3. The printer must produce text with true descenders, fully-formed characters, and a format suitable for correspondence outside the Laboratory.
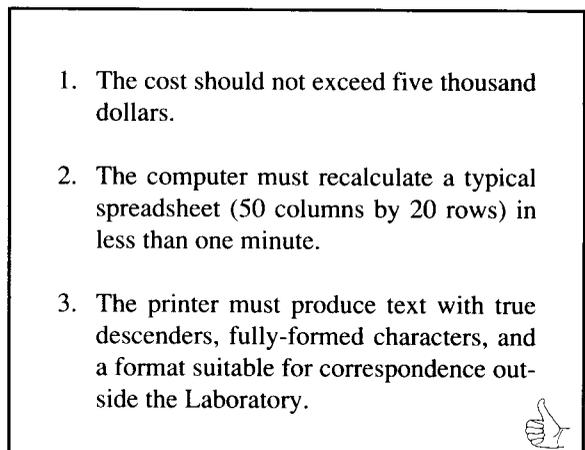
Words can symbolize somewhat different ideas to different people. Be sure you have identified precisely what you are talking about. Do not, for example, be content with referring to the "central IBM computing complex" at Argonne. If you mean:

a place--use "Building 221, Room A-134."

an organization--use "Computing Services."

a financial unit--use "Cost Center 245, Supergroup A."

a set of computers--use "Argonne's central Cray, IBM, and DEC computers."

a specific machine--use "Cray X-MP/14 computer," "yellow IBM 3033 computer," "red IBM 3033 computer," or "VAX 8700 computer."

a specific service--use "CMS," "Wylbur," "MVS batch."

BE SUCCINCT

Be direct and to the point. Needless repetition and circumlocution fill space but add nothing to meaning. For example, the often-used phrase "at this point in time" requires five words to say "now." Read "Conciseness/Wordiness" in the *Handbook of Technical Writing* for a full discussion of wordiness caused by modifiers that repeat an idea, by redundant words and phrases, and by overuse of relative pronouns and adjectives. See also "Omit Needless Words" in *The Elements of Style*.

One of the more common kinds of wordiness in scientific literature is the overuse of noun forms based on verbs (e.g., "assistance" from "assist," "establishment" from "establish") or from adjectives (e.g., "worthlessness" from "worthless," "intelligence" from "intelligent"). Such noun forms require prepositional phrases to explain or define the concept the noun expresses. These nouns tend to be abstract, to name concepts rather than living things or objects in the physical world. Writers then must add words to make the noun definition clear. Consider this sentence, in which the writer wants to tell the reader why a vendor reduced its sales force:

A reduction in the vendor sales force was the result of the lack of a favorable response by too many customers to its new software products.

Notice how each prepositional phrase leaves the reader with an unanswered question. The initial use of the noun "reduction" leads to a succession of prepositional phrases, which makes the sentence difficult to read. A good way to identify sentences in which abstract noun forms appear too frequently is to look for sentences cluttered with prepositional phrases.

For further commentary on overuse of noun forms, read "Avoid Nouns Created from Verbs; Use Action Verbs" in *Guidelines for Document Designers*.

Abstract nouns of this sort also limit the writer's options to choose accurate, active verbs. Indeed, such abstractions most often lead to the equally imprecise, indefinite "to be" forms. "Reduction" will most likely be followed by "was" or a similar non-specific verb, not by an action-oriented or descriptive verb. Substitute "the vendor" for "reduction" and notice how many more verb forms come to mind when the subject of the sentence names a specific entity. The concrete noun generates many more verb options for you to choose from. "To be" verbs express no action at all. Avoiding abstract nouns will enliven your writing and make most of your sentences much more directly informative.

For additional information on using concrete language, see "Use Definite, Concrete, Specific Language" in *The Elements of Style*.

SIMPLIFY YOUR SENTENCES

Short sentences and precise words can communicate highly technical information efficiently. A significant cause of obscurity in technical writing (in memos and letters as well as publications) is the desire of the writer to include as much detail as possible. Writers typically feel strong pressure to communicate as much information as they can in a single sentence.

While many formulas are available for determining the ideal length and grammatical complexity of a technical sentence, nearly everyone agrees that a writer's prime concern in determining sentence length and

complexity should be the relationship between the audience and the subject matter. The less knowledgeable your audience is, the simpler and shorter your sentences should be. The average reader is usually comfortable with sentences in the five-to-fifteen-word range. While managers and other professionals (probably your most frequent readers) can grasp well-constructed sentences that run much longer (more than thirty words), they are often pressed for time and will appreciate short memos that consist of short sentences. A widely practiced rule-of-thumb in technical writing is to strive for an average of about seventeen words per sentence.[3]

Regardless of audience, there should be an inverse relationship between the complexity of the subject matter and the complexity of the sentence that expresses it. The denser or more technical the information you are discussing, the shorter and more direct your sentence structure should be. Consider that analyses of Albert Einstein's prose show that he wrote consistently at the eighth grade reading level. Do not fall into the trap of packing too much information into one sentence by hanging numerous words, phrases, and clauses onto the basic subject-verb-object (or complement) sentence pattern.

For further commentary, see "Write Short Sentences" in *Guidelines for Document Designers*.

PROVIDE VIVID ILLUSTRATIVE DETAILS

In striving for economy, clarity, and accuracy, technical writers can sometimes produce a maddeningly monotonous "committee" style. This monotony is unnecessary. Vivid illustrative details of key concepts will go far towards making any writing clearer and more interesting. The authors of the passage below make the capabilities of an international computer mail network clear and memorable by providing a specific example of electronic communication:

> To illustrate electronic mail in action, we present a hypothetical interaction among four fictitious researchers, two in America and two in West Germany:

Tom Nimms of Argonne's High Energy Physics Division has heard third-hand about some recent West German research that, he thinks, could aid his own work. He isn't entirely sure how to find the electronic mail address of the German researcher who can provide the information he needs, but a colleague of his, Scott Wiggins at Yale University, has contacts in Europe. Tom knows from a previous conversation that Scott has a computer terminal on the Yale high energy physics DEC VAX computer and regularly reads electronic mail. Tom's terminal accesses Argonne's file transfer network, which accesses BITnet, an international electronic mail network. The DEC VAX system at Yale is also connected to BITnet.

Tom, on his terminal (connected to ANLHEP VAX) composes an electronic note addressed to Scott at YALEHEP. BITnet recognizes YALEHEP as the name of the Yale high energy physics computer. When Tom sends his note, he doesn't have to concern himself with the path his electronic note takes in reaching Scott; BITnet determines the path. After local software has routed the note to Argonne's central system (network name ANLOS), BITnet routes the note to the computer at University of Illinois at Chicago (UICVM), then to Ohio State University (OHSTVMA), Penn State (PSUVM), City University of New York (CUNYVM), onward to Yale's computer center (YALEVM), through Yale's Astronomy Department (YALASTRO), and, finally, it arrives at YALEHEP. Tom's note is not long (about one screen's worth), all computers are up, and electronic mail traffic is light, so it takes about two minutes for the note to show up in Scott's electronic mailbox.

Scott is away from Yale on travel. However, he has taken a portable terminal with him and is linked to the Yale computers via a modem. He

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[3] Kenneth W. Houp and Thomas E. Pearsall, *Reporting Technical Information*, 4th ed. (Encino, California: Glencoe Publishing Company, 1980), p. 168.

checks his electronic mailbox every day. Let's assume Scott reads the note soon. He doesn't know the electronic mail address of the German researcher either, but his associate, Dr. Heim, at the University of Heidelberg, would know, he's sure.

Scott addresses a note to Germany; Dr. Heim is at node DHDURZ2. Scott's note, after being sent, retraces the steps of the first note as far as Penn State. From that node, it is sent to George Washington University (GWUVM), crosses the Atlantic to DEARN (the central West German node on EARN, BITnet's European counterpart) and from there, goes to Dr. Heim at DHDURZ2. Herr Doktor Professor Heim reads Scott's request written on the behalf of Tom and says, "Ach ja, die Addresse ist Z456789@DHDIHEP1."

For our example, it's immaterial whether Dr. Heim communicates this information back to Tom or to Scott. Either path is fine. In any event, Tom now knows the address of the German researcher and can now communicate with him via electronic mail. The two researchers write to each other easily and quickly (assuming no language problem), trade files, and, with luck, discover the ultimate constituent of matter.[4]

USE FIGURATIVE LANGUAGE

To make your writing clearer and more interesting, it is often desirable to indulge in figurative language. Prior to the passage quoted above, the same authors define electronic mail through an analogy:

Electronic mail is to written communication what the telephone is to spoken communication. Rather than the telephone's streams of electrified

speech, picture an envelope made of bits and bytes winging across the copper wires, fiber optics, and microwave links of international telecommunication networks, carrying digitized words to the widely scattered electronic mailboxes of computer users around the world.

The following passage also indulges profitably in an analogy:

Imagine that we stand on an ordinary seaside pier and watch the waves rolling in and striking against the iron columns of the pier. Large waves pay very little attention to the columns--they divide right and left and reunite after passing each column, much as a regiment of soldiers would if a tree stood in their road: it is almost as though the columns had not been there. But the short waves and ripples find the columns of the pier a much more formidable obstacle. When the short waves impinge on the columns, they are reflected back and spread as new ripples in all directions. To use the technical term, they are "scattered." The obstacle provided by the iron columns hardly affects the long waves at all, but scatters the short ripples.

We have been watching a sort of working model of the way in which sunlight straggles through the earth's atmosphere.[5]

USE HUMOR

Using humor is sometimes the best way to make a serious point.[6] In fact, humor is usually effective par-

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[4] Barry Finkel, Mark Andre, and Kenneth Janoski, *Electronic Mail at ANL*, ANL/TM 431 (Argonne National Laboratory: Computing Services, March 1986), pp. 4-5.

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[5] James Jeans, *Stars in Their Courses* (Cambridge: Cambridge University Press, 1931), p.23.

[6] On the role and value of humor in technical writing, see Joseph Harmon, "Perturbations in the Scientific Literature," *Journal of Technical Writing and Communication*, 16, no. 4 (Fall 1986), 311-317 and Gail W. Pieper, "The Scoop on Good Humor," *The Technical Writing Teacher*, 14, no. 2 (Spring 1987), 174-177. Both authors are

tially *because* it has at its core much of the time a serious message. For example, in the following book review (of J.V.A. Weaver's *In American),* Ring Lardner uses semi-literate dialect to emphasize the importance of reproducing modern English dialogue accurately:

> We can't hope to land the old K.O. on the writer's jaw, but we can fret him a little with a few pokes to the ear.
>
> For the most part this organ has served Mr. Weaver well. But I think that on occasion it consciously or unconsciously plays him false. It has told him, for example, that we say *everythin'* and *anythin'.* We don't. We say *somethin'* and *nothin',* but we say *anything* and *everything.* There appears to be somethin' about the *y* near the middle of both these words that impels us to acknowledge the *g* on the end of them. Mr. Weaver's ear has also give or gave (not gi'n) him a bum hunch on *thing* itself. It has told him to make it *thin'.* But it's a real effort to drop the *g* off this little word and, as a rule, our language is not looking for trouble. His ear has gone wrong on the American for *fellow, kind of,* and *sort of.* Only on the stage or in "comic strips" do we use *feller, kinder,* and *sorter. Kinda* and *sorta* are what us common fellas say.[7]

The excerpt below, from a popular computing text, uses a humorous example to put readers at ease (and make it easier to remember some Unix file-processing commands):

> To make the discussion concrete, we'll use a file called **poem** that contains a familiar verse by Augustus De Morgan. Let's create it with **ed**:

```
$ ed
a
Great fleas have little fleas
    upon their backs to bite 'em,
And little fleas have lesser fleas,
    and so ad infinitum.
And the great fleas themselves, in turn,
    have greater fleas to go on
While these again have greater still,
    and greater still, and so on.
.
poem
q
$
```

The first command counts the lines, words and characters in one or more files; it is named **wc** after its word-counting function:

```
$ wc poem
      8    46    263 poem
$
```

That is, **poem** has 8 lines, 46 words, and 263 characters. . . .

The second command is called **grep**; it searches files for lines that match a pattern. (The name comes from the **ed** command **g/regular-expression/p** ...) Suppose you want to look for the word "fleas" in **poem**:

```
$ grep fleas poem
Great fleas have little fleas
And little fleas have lesser fleas,
And the great fleas themselves, in turn,
    have greater fleas to go on
$ 8
```

Use any or all of the techniques described in this chapter to communicate more effectively.

Argonne technical editors.

[7] Ring Lardner, "What Is the 'American Language'?" *Bookman,* 53 (March 1921), 81-82.

[8] Brian W. Kernighan and Rob Pike, *The UNIX Programming Environment* (Murray Hill, N.J.: Bell Laboratories, 1984). p. 18.

CHAPTER 3

COMMUNICATING NEWS

It is Computing Services policy to announce system changes and service interruptions in advance to users, with the timing and form of the announcement proportional to the scope of impact or duration of interruption.

Newsletter articles announce information on matters of immediate interest to computer users, including new equipment, new software, available classes, current documentation, procedural changes, user group meeting announcements and minutes, and monthly statistics.

Bulletins announce changes when the need to communicate those changes is more urgent than other avenues, such as the *Newsletter,* will satisfy or when the changes are so important as to require additional notice immediately before they are effective.

Online NEWS items make information available directly on a computer system via a terminal. Computing Services updates the NEWS file with news items as they develop.

In addition, we update online logon messages, batch messages, and recorded telephone messages to repeat announcements of system changes and service interruptions.

Computing Services personnel who plan system changes and service interruptions are responsible for planning the appropriate user announcements as part of their project and for ensuring that appropriate announcements are actually issued. The success of projects involving system changes or service interruptions is dependent on the issuance of appropriate announcements at appropriate times.

Authors should circulate these announcements for appropriate review well in advance of the change. Only in rare and well-justified circumstances should you use the press of time as an excuse for composing and issuing these user announcements in a rush.

NEWSLETTER ARTICLES

Computing Services publishes the *Argonne Computing Newsletter* once a month and circulates the publication to approximately 1,800 Argonne computer users. The *Newsletter* contains information on matters of immediate interest to computer users, including new equipment, new software, available classes, current documentation, procedural changes, user group meeting announcements and minutes, and monthly statistics. An article for the *Newsletter* is, therefore, more specific, more limited in content, more "journalistic" in nature than other kinds of writing. For example, *Guide to Graphics at ANL* (ANL/TM 335) gives an overview of all the graphics systems and equipment onsite, along with instructions for their use. A February 1985 *Newsletter* article announces the Matrix full-frame slide camera (a recent addition to graphics equipment at ANL) and describes its capabilities briefly. An addendum now being written to *Guide to Graphics at ANL* describes the use of the camera more fully.

Articles published in the *Argonne Computing Newsletter* often find their way into Computing Services technical memoranda either as part of an addendum or as part of a revision of a technical memorandum. This procedure is a Computing Services method for refining important information and moving that information from a relatively transient to a more permanent form.

The *Newsletter* editor holds a monthly meeting with the section managers to determine what articles will appear in the *Newsletter.* The editor, in consultation with the Manager of User Services, may add other subjects as the need arises during the month. A part of the planning involves assignments of articles to specific authors, again on the basis of expertise as well as other commitments, and gives authors sufficient time to prepare their articles.

Newsletter articles often establish matters of policy and design. Authors of such articles should resolve

controversial issues before submitting first drafts for review. Issues will occasionally arise during the review process; however, do not rely on the review as a forum for determining policy and design. Such reliance is inefficient and is likely to interfere with the *Newsletter* production schedule. Do your homework earlier. If necessary, the author should prepare and circulate an early draft in *Newsletter* format to raise the issue and settle it before the first formal review.

Writing the First Draft of an Article

Newsletter articles provide all the information our users need but are brief and to the point. Because a *Newsletter* article is about news, you should follow the principles of organization for a news article. Fundamentally, journalistic organization means that (1) the title of the article should accurately reflect the content of the article and (2) the first paragraph of the article you write should include all the information a reader needs to know about the subject you are treating. The traditional "who," "what," "when," "where," and "why" should all appear in the first paragraph. You can expand from there, but be sure the basic information is present, briefly stated, in the initial paragraph.

The pragmatic reason for this form in newspapers arises from the practice of cutting an article from the end forward if space is not available for the entire article. For the *Argonne Computing Newsletter*, the pragmatic reason stems from the well-known fact that readers will read the first paragraph to find out if they need to read the rest of the article. If readers do not see what they want to know in the first paragraph, they usually will not expend either the time or the effort to read further in hopes of finding the information they were looking for.

You must make a conscious effort to incorporate all the basic information in the first paragraph. This kind of organization is not natural to most writers. It is, however, essential for a news article. You will most likely find that craftsmanship in the first paragraph will be helpful in later paragraphs because, having covered the essentials first, you will see less need for extensive discussion later. Your article will be brief and to the point--necessary attributes for news articles.

Use the generic ARTICLE SCRIPT file on the public minidisk PUBLICAT (or the ARTGML SCRIPT file on the PUBLICAT 2 minidisk) to format your article. This file allows you to Script a listing of the article during your writing and revision process.

Revising with the Editor

When you have completed the writing of your article, submit the draft to the *Newsletter* editor for revision. The editor may have suggestions for changes to tighten, smooth, and sometimes shorten the material submitted. You and the editor must agree before the individual article circulates for review.

Reviewing the Article

The editor will circulate your individual article for review by your supervisor, selected section managers, the Computing Services Manager, the Information Technology Resources Planning Manager, the Computer Program Protection Manager, and others. Their comments and suggestions will help you determine how clearly and directly you have communicated the information. You will be the last recipient of the draft article in the cycle and will thus have the opportunity to accommodate reviewer comments before returning the draft to the editor.

Revising after Review

When you go over the comments of the reviewers, keep in mind that their one major concern is accuracy of content. Try to resolve any conflicts which may occur. Discuss differences of opinions with the reviewers. You may discover approaches that will be useful for more than this one article, since many *Newsletter* articles appear in different forms in addenda or technical memoranda. Revise in the light of the comments. The editor will assist you in making the necessary changes.

Assimilating the First Draft of the Newsletter

The editor will inform you of the deadline for assembling the first draft of the entire *Newsletter*. This deadline is necessary because the monthly schedule of publication does not allow much time for flexibility. (By agreement with the Computer Users Group, Computing Services should complete the *Newsletter* in time for readers to receive copies through intra-Laboratory mail before the monthly Computer Users Group meeting, normally on the first Tuesday of each month.) The editor will assimilate the individual pieces into the *Newsletter* format. Some editorial choices may be necessary at this stage. The

requirements of the format may force some rewriting or reorganization.

Reviewing the First Newsletter Draft

The section managers, the Manager of Computing Services, the Information Technology Resources Planning Manager, and the Computer Program Protection Manager review the first draft of the *Newsletter*. This review may lead to extensive revision. Often, articles produce different reactions when they are in juxtaposition with other articles and information. Revision at this stage may be troublesome to the author, but the overall impact of the *Newsletter* must be a consideration in its final approval. The first review of the *Newsletter* as a whole marks the point at which the communal effort begins to supersede the individual effort.

Revising after the Review

After the first review of the *Newsletter* as a whole, the editor will return your individual article with the reviewers' comments and suggestions. It is your responsibility to check information and deal with suggestions from the reviewers. As part of the regular procedure, the editor asks the reviewers to see an author directly if the reviewers have substantial comments about an article. The editor will transmit all other suggestions to you. Revise your article in accordance with the suggestions and comments, and return it to the editor for the final review.

Preparing the Final Draft of the Newsletter

When the revision of the first draft is complete (and again the deadline is important), the editor will circulate the second draft to selected section managers, the Manager of Computing Services, the Information Technology Resources Planning Manager, and the Computer Program Protection Manager. This second review should complete the process, but changing circumstances (e.g., delays in delivery of equipment) may cause further revisions in the *Newsletter* articles. The second review is very close to the publication deadline, but the need for accuracy may yet require revisions. If necessary, the Manager of User Services and the editor of the *Newsletter* will make the changes. The editor makes every effort to consult with the authors of the articles involved in the changes, but consultation is not always possible. Note that the

Newsletter must receive approval from both the Manager of User Services and the Manager of Computing Services before publication. Since the final copy of the *Newsletter,* unlike a technical memorandum, does not contain the authors' names, the primary responsibility for its content rests with Computing Services as an entity.

Sending the Newsletter to Graphic Arts

The editor will run a copy of the final draft on the Linotype L300P typesetter and perform a final formatting check. The *Newsletter* goes to Graphic Arts for printing. The editor runs a Human Resource System SAS program to produce mailing labels for current computer users onsite, and the Argonne Post Office monitors the distribution of the *Newsletter* to the account holders on those labels. User Services also maintains a mailing list of approximately 200 offsite users and other interested persons. People who are not onsite users may subscribe to the *Newsletter* by calling the User Services consultant at extension 2-5405 and requesting that they be added to the mailing list.

The care with which Computing Services produces the *Argonne Computing Newsletter* results in clear, accurate, and concise articles of value to computer users in all sections of ANL. A monthly publication demands the cooperation and concentration of everybody concerned. You, as an author, provide the basic material. Its eventual form of presentation is the result of an extensive communal effort to provide a valuable service to computer users.

ONLINE NEWS

Online NEWS is current information available directly from a computer system via a terminal. Computing Services updates this NEWS file with news items as they develop. CMS users may scan online NEWS by entering NEWS in CMS. Wylbur users must enter DO NEWS. VAX users must enter $NEWS.

Online NEWS is subject to the same demands for readability and accuracy that other technical writing should exhibit, with special emphasis on conciseness, clarity, and general viewability.

Normally, the User Services secretary types the online NEWS in Wylbur. Procedures for updating the NEWS are available in the User Services secretarial

office. Each NEWS item has a number, a descriptive title, and the date of entry. These items have a maximum line length of 65 and are left-justified. A blank line separates each paragraph, and each paragraph begins with a 3-space indentation.

Anyone wishing to look at old NEWS items may check the archives of all previous NEWS items in the User Services office (Building 221, Room A-121). These old NEWS items are frequently useful when you are writing a NEWS item on a recurring topic.

BULLETINS

When you need to inform users of important changes more quickly than other avenues such as the *Newsletter* allow, use the bulletin format designed by Computing Services. Submit your bulletin to the Manager of User Services (Building 221, Room A-117) for approval. After approval, the User Services secretary normally types the bulletin in the proper format and oversees its duplication and distribution.

To produce a bulletin, use the Computing Services generic Script file BULLETIN on the public minidisk PUBLICAT (or BULLGML on PUBLICAT 2).

CHAPTER 4

PUBLISHING TECHNICAL INFORMATION

Computing Services publishes approximately thirty manuals yearly, most of which are new or updated ANL technical memoranda. A few are ANL reports. We also publish numerous addenda to our available manuals. And we provide online HELP as further documentation of ANL computer services. Computing Services personnel (with rare exceptions) compose this information with supervisory approval as part of their regular assignments.

We require that writers adhere to the established formats for these communications. Use the generic Script files available on public minidisk PUBLICAT (or their counterparts in test status on PUBLICAT 2) to develop these communications in accord with our established formats. These files make maximum use of computer text-formatter defaults; using them will save you time and effort.

Computing Services does not recognize internal manuals that have not completed the regular review process. Such "informal" manuals have no authority; reliance on them can get you into trouble. Do not circumvent normal procedures, even inadvertently.

TECHNICAL MEMORANDA

Computing Services technical memoranda are manuals that we provide for our computer users, for Argonne administrators, and for DOE personnel to enable those audiences to use or understand our services. The production of these manuals therefore has high priority within the Computing Services workload.

Normally, our User Services consultants write these manuals. Since Computing Services manuals list authors and editors on the title pages, the authors and editors, along with the Manager of User Services and the Manager of Computing Services, must approve the final draft. In the unlikely event of an unresolvable disagreement, management will prevail. Computing Services documents represent Computing Services first and individuals second.

These manuals include computer operation instructions, theories of operation, and guidelines for acquiring, using, and maintaining equipment. The tone is informal, with utilitarian language that exhibits exactness rather than elegance. See "Technical Manuals" and "Technical Writing Style" in the *Handbook of Technical Writing* for more information.

Brainstorming

Ordinarily, the initial step in developing a technical memorandum consists of a brainstorming session involving the author(s), the editor, the people who will later review the publication worksheet and the document itself, and the Manager of User Services. The objectives of this session are to discuss the needs of the intended audience and the purpose, scope, and structure of the document.

Completing the Publication Worksheet

Following the brainstorming session, Computing Services requires that you, the author, complete a publication worksheet. This worksheet asks a number of specific questions in each area to encourage thoughtful answers prior to your beginning the actual writing of the document. Basically, the worksheet requires you to consider the audience for whom you are writing the document, the purposes that the document will serve, and the logical structure of the document. Careful completion of the worksheet will save you much time, because it will reduce false starts and deficiencies in organization, and it will force a clear concept of the purpose of the document *before* you actually begin writing.

The skeletal Script computer file that will produce this publication worksheet for you has a filename of WORKSHEE and a filetype of SCRIPT. It resides on the public minidisk PUBLICAT. To obtain a copy of the file, issue the CP LINK command to link to PUBLICAT:

```
CP LINK PUBLICAT 191 vaddr
ACCESS vaddr filemode
```

where "vaddr" and "filemode" are any unassigned virtual address and filemode letter in your virtual machine. Next, create a new CMS Script file with the COPY command:

```
COPY fn ft fm new-fn = new-fm
```

where "fn," "ft," and "fm," are the filename, filetype, and filemode, respectively, of the file you wish to copy, "new-fn" is a new filename appropriate to your needs, and "new-fm" is the filemode you wish to assign the newly created file. Figure 1 provides a skeletal version of the Computing Services publication worksheet.

WRITER:

SUBJECT:

READER:

    Technical level (education, existing knowledge of subject, experience, etc.):

    Position (job title and/or relationship to writer):

    Attitude toward subject and writer's purpose (friendly, indifferent, hostile):

    Other significant factors in identifying the reader:

READER'S PURPOSE(S):

    Why will reader read the publication?

    What should the reader know after reading?

    What should the reader be able to do after reading?

WRITER'S PURPOSE(S):

CONTENT AND PLAN:

    Source materials:

    Reference materials:

    Primary organizational plan (attached, if necessary):

AVAILABLE AIDS (visual, tables, etc.):

RESEARCH NECESSARY?

Figure 1: **Skeletal Publication Worksheet**

RELATIONSHIP (IF ANY) TO ONGOING WORK AT ANL:

Are other ANL actions dependent on completion of this document?

Is completion of this document dependent on other ANL actions?

RELATIONSHIP (IF ANY) TO OTHER DOCUMENTS AT ANL:

How does this proposed document fit into the entire Computing Services suite of documents?

What overlaps will exist?

What cross references are necessary?

What material should be removed from another manual because it more properly belongs in the proposed manual?

COMPLETION DATE OF DRAFT FOR EDITING AND REVIEW:

Figure 1 (Continued)

After you have identified the authors and subject of the proposed manual, this worksheet asks a series of questions (under "READER") that oblige you to analyze thoroughly the audience to whom you are directing the document. The technical level of the reader has obvious implications for you as an author. Manifestly, you would not attempt a highly technical explanation of the functions of CMS if you knew your reader had extensive education and experience in management, but little knowledge of computer operations and their capabilities. Conversely, you would include technical information in detail for a reader whose education and experience included those subjects.

Similarly, the relationship of the reader to the writer can and should influence the attitude with which you approach the material you wish to convey. Awareness of relative responsibilities and position should shape the tone in which you address the reader.

The third worksheet question about the reader requires you, as the author, to evaluate the probable attitude of your audience toward your subject and your purpose in writing. If you know your audience will be hostile to your subject, for instance, you will want to include a more detailed rationale and at least attempt to forestall their objections. A friendly audience, on the other hand, frees you as a writer to deal with your material in a more relaxed manner. Your determination of the audience's probable attitude may be the single most important aspect of the preparatory worksheet.

The next section of the worksheet ("READER'S PURPOSE(S)") continues your examination of the document's audience in terms of its benefits to the reader. The first question in this area deals with the reader's motivation. If your document is to achieve any communication, the reader must have a reason for reading it in the first place. The reader may need the information to increase his productivity. In that case, you will want to present the material as efficiently and directly as possible. The reader may be looking for a specific technique or method to use immediately. You may, therefore, consider "packaging" the information in tables, graphs, or charts rather than straight text. Why the reader will read the document may influence format and content at the same time.

Your answers to the parallel questions of what the reader should know and what the reader should be able to do after reading your document should help you, the author, focus on the material that will be most helpful to the reader. This kind of focusing of your own thought will be useful to you in determining the best organization of your information and in deciding what

aspects of the subject you should emphasize when you write.

The worksheet next requests a statement of the content and plan of the manual. The time spent formulating a detailed plan for the presentation of your material is time well invested. Effort at this stage will eliminate lengthier effort in later stages of the writing. It is here that the questions concerning audience attitude and requirements come into play again. Using all you have decided about your audience and its needs, you can analyze the subject thoroughly and arrive at a clear program for the writing you will do. The plan is the skeleton of your document. It requires focus, clarity, and logic at this point to achieve those same qualities in the completed writing. The success of your document hinges on your careful consideration of your objectives, audience, and methods of presentation in the pre-writing stages. The content and plan section of the publication worksheet will mirror the care you have taken to think through the document and its audience.

The research you will need to do also requires thought and planning. In many instances, you will have the necessary materials on hand, but your examination of the audience and purpose of the document may suggest alternatives or additions. Occasionally, you will need to consult other divisions and departments of the Laboratory for information. You will probably find this section easy to complete. Here, you are the expert.

The final two sections of the publication worksheet suggest that you consider how the document you propose to write will fit into the entire suite of Computing Services documents and whether it will overlap with existing documents. Thoughtful completion of these sections will help to eliminate redundancy. If other documents contain the same information or supplement your information, you will certainly wish to make use of what is already available. You do not want to waste your time repeating what someone else has already done. At the same time, you want to be sure that you have used available references and made the necessary connections for your reader. *Recommended Documentation for Computer Users at ANL* (ANL/TM 379) lists all available materials, with annotations. Use that document as a checklist to verify the relationship of your document to existing publications.

The completion date you give at the end of the worksheet should be a realistic estimate of when you will have completed the writing stage of the document. Completion in this case refers to the point at which your document will go to the editor for initial review.

The editor will use your completion date for planning the production of your and others' documents. Be as precise as you can. Remember that other responsibilities may interfere, so plan accordingly.

See Appendix A for an example of a completed worksheet.

In Computing Services, the completed publication worksheet goes to all the individuals who will participate in the review of the final document. The review of the worksheet serves two purposes. First, it enables the author to learn the attitudes of the several reviewers toward the subject at hand and to anticipate the comments those reviewers will make in the later stages. The communal effort at this point allows the author to reconcile differences in approach and concept before those differences become significant obstacles to publication. Second, approval of the publication worksheet through the review process ensures that all should agree on purpose and structure, as well as approach; this agreement simplifies the review of the completed draft. Authors should appreciate the commitment of the reviewers to their proposed formats before they begin to write. Reviewing at this point guards against requests for radical alterations later, to the extent that the worksheet is explicit. While research and writing do sometimes naturally result in changes to the plan, both authors and reviewers should regard the worksheet as a means of discipline to keep the project on track.

The reviewers of your publication worksheet will include the Manager of Computing Services, the Information Technology Resources Planning Manager, the Computer Program Protection Manager, the section managers, and other individuals in Computing Services with expertise in the subject matter of the document. The editor will determine the reviewer list for each document in consultation with the author and the Manager of User Services.

Writing the First Draft

The first draft of any document is only a working text. It is the raw material for revision and refinement into a finished product. The editor and reviewers can improve the style and form, but the substance is the author's. With the completed publication worksheet in hand, you should find the writing of the first draft a possible task. You will find the revision process more efficient if you type your initial text in Script, using the generic Script file TECHMEMO available on the

public minidisk PUBLICAT (or TECHMGML on PUBLICAT 2).

Following the structure you created for the publications worksheet, write the first draft as quickly as possible. Do not concern yourself at this stage with gaps in the continuity of your document or with the details of sentence construction. You can deal with these matters in the revision stages. Right now, your main concern should be to get accurate information down on paper as fully and as quickly as you can. Many writers have difficulty with the first draft simply because they want to revise as they go along. This procedure is not efficient. *While you are writing the first draft, keep going. Do not stop to polish a sentence or agonize over exactly which word you want to use.* One word triggers another and the successive words create a context for the ideas you want to communicate. If you simply write down what you have to say--following the outline in the worksheet, of course--you can revise the initial mass of material into a correct form later. You will at least have a starting point. And by accepting the likely gaps and poorly constructed sentences as inevitable, you will save a great deal of time. "Writer's block" occurs most often with the first draft because people try to do too much with it. You are creating a first draft, not a penultimate draft. Expect less than perfection.

Once you have completed your first draft, you must separate yourself from the document if you are going to revise effectively. The distance you need usually comes most easily with time. Ideally, give yourself from an hour to a day before you go back to the first draft and begin to rewrite. If you do not have that much time, create distance by changing the form of activity. Change your physical location, take a walk, learn a new programming language, do something different from writing for a few minutes. Then come back to the draft. Read through the sections, looking for gaps in continuity. Mark poorly constructed sentences or inadequate phrases in the margin. You should notice most of the obvious flaws very easily if you have achieved sufficient psychological separation.

Now you must revise your draft, concentrating on accuracy and completeness. The first revision still should not be concerned with the mechanics of writing. Consider how well you have presented each area of information. Fill in the gaps and complete the discussions. In the process, you will quite naturally rephrase and rewrite some of the sentences you noticed as faulty in the first reading. Your emphasis should be

on the flow and relationship of ideas. The information is the heart of the document. Check its accuracy. Note in what areas you will need to do more research or provide more examples. This first revision will leave you with some additional work, perhaps, but also with a good sense of how your document reads and how well you have presented your information.

The second revision should also be the last revision before you submit your document to the editor. Add whatever information you decided you needed after your first revision, then go through the document with an eye to its style and readability. Just as you must know the principles governing your discipline, so, too, must you know the principles governing acceptable writing. Check punctuation, spelling, subject-verb agreement, use of the passive voice, wordiness, and transitions.

If you are uncertain about matters of grammar and style, keep one of the guides recommended in the first chapter at your elbow and consult it whenever you have a question. For helpful reminders about style and substance in writing, you may wish to review "An Approach to Style" in *The Elements of Style*. A second source for help in revising is the Proofread program available in CMS and through PROFS. That program will check spelling against a standard dictionary, provide synonyms if you need them, highlight possible sentence errors, and point out redundancies, awkward phrases, and cliches. You must make the choices for corrections, but Proofread can be an extremely useful guide.

Revising with the Editor

While clear, concise writing is an important prerequisite, much of the success of a technical document depends upon the ability of the author--a mature professional in the field, but not necessarily a trained writer--and the editor--a person trained in the art of written communication--to work together to produce a quality document that achieves the desired purposes. The author(s) and the editor share the responsibility for producing a reviewable draft *on schedule* (in accord with the "Document Status Sheet").

When you have completed your writing and revising, turn your document over to the editor, who will provide the first external evaluation of your work. Normally, the editor will do an online Level IV edit of the entire document (see Appendix D for an explanation of the four Computing Services levels of

edit), reading for style and clarity and marking all editorial changes with a vertical bar in the left-hand margin.[9] When the editor returns the draft to you, you should review all the marked lines to make sure stylistic changes have not affected the accuracy of the information. Consult with the editor about the rationale for change. You should reach agreement on all the editorial changes before the draft goes out for review.

Reviewing the Draft

The editor will circulate the draft to the same reviewers who reviewed the publication worksheet. The main purpose of a review is to check for accuracy and clarity of content. In a sense, you yourself conduct the first review even before you submit the document. Many reviewers also look beyond the content to questions of clarity, completeness, internal consistency, and consistency with Computing Services policies and directions. Reviewers should be certain that their suggestions for changes are themselves clear and unambiguous. The comments from reviewers can be very helpful in preparing the next draft.

The editor will serve as your intermediary in the review process. The editor establishes the deadline for the reviewers and collects all the comments for transmission to you, the author. Part of the editor's job is to attempt reconciliation of differences before the draft comes back to you. The review system involves considerable group effort, and, occasionally, serious disagreements will arise. All reviewers receive copies of the document at the same time. Their comments may, therefore, sometimes conflict with each other. In the process of transmitting reviewers' comments to you, the editor will note any areas in which the reviewers disagree, as well as any areas of special concern.

Revising after Reviews

You will receive all the comments the reviewers have made on your document. The editor will work with you to incorporate whatever changes those comments make necessary. Some comments may themselves be inaccurate or may suggest changes you consider inappropriate; you may choose to address

those comments yourself with the reviewer or simply to annotate the reviewer's comments with your reasons for not incorporating the suggested changes. Check with the reviewer if you do not understand the point of a comment or how the reviewer wants it incorporated. Some comments you may wish to include as stated. Be sure to save all comments so the editor can return them to the reviewers as part of the final review.

You, as the author, have responsibility for the content of the document, but Computing Services as an entity also has a responsibility to ensure its accuracy, completeness, clarity, and exactness of expression. The review process allows the kind of exchange that can and should produce a clear, accurate, usable document. As an author you must be willing to enter into that exchange objectively. On occasion, the editor may call a meeting with the reviewers to discuss a particular point of conflict if the divergent views raise a serious question about the content of the document. Such a meeting usually resolves the dispute. The editor also determines whether the revisions arising from the reviews are sufficiently substantive to warrant another full review.

Holding Follow-Up Sessions

Follow-up sessions (involving the same people who participated in the brainstorming session) may be desirable to help the author(s) establish procedures or other concepts in flux, to maintain momentum and a sense of direction, and to complete the manual on time. The Manager of User Services, the editor, and the author(s) will determine whether such sessions are appropriate for a particular project.

Submitting the Penultimate Draft to Final Review

In most cases the revisions arising from the reviews will require a final review. After these revisions, the editor should provide each reviewer with a copy of what is now the penultimate draft (with all changed or added lines marked in the left margin with vertical bars), along with that reviewer's original review, for the purpose of comparison. Reviewers should satisfy themselves that their comments have been addressed adequately and that the document is clear and accurate.

Ordinarily, it is improper for a reviewer of the penultimate draft to insist on the addition of new information at that stage. Drafts that are continually

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[9] The REVISION macro that enables an editor or author to mark lines with vertical bars is available on the public Z-disk. Enter HELP XEDIT REVISION in CMS for more information.

revised to reflect constantly developing computer programs and policies run the risk of never being published. Information that becomes available after completion of the initial review should appear as an addendum to the published document.

Revising after the Final Review

The author and editor will again work together to incorporate whatever changes are necessary. At this point, revisions should deal only with wording, style, and perhaps minor format changes. Agreement on content and structure should be complete as a result of the earlier reviews. Introducing new material or drastically altering content is not appropriate after the thorough reviews you have received. Accuracy and clarity remain the overriding concerns.

At this point the editor will normally remove all the revision codes marking the earlier changes. (Occasionally, in an updated manual, when we wish to stress particularly the changes, the editor will leave the revision codes to mark all changed lines in the printed version with change bars.) The editor will also replace the "DRAFT" notations and "&sysdate" set symbol with the current date (month and year).

Once the text is established, the author and editor will normally build an index with Script. To learn how to build an index, consult the *Waterloo Script User's Guide*, available at the Document Distribution Counter or through the mail (by calling extension 2-5405 and requesting a copy).

Sending the Final Copy to Graphic Arts

When your manual is in its final form and is ready to print, the editor will run a copy on an Apple LaserWriter to check the format. The editor is responsible for the details of the copy that goes to Graphic Arts. Therefore, the editor will check page breaks, numbering, page locations, and other areas in which the setup on the LaserWriter may introduce errors. With the approval of the Manager of User Services, the editor sends the final copy to Graphic Arts, either in the form of LaserWriter hardcopy output for direct reproduction or in the form of a PostScript file for printing on the Linotype L300P typesetter. The editor works with Graphic Arts to set up any special tables or unusual formats, lays out the cover and spine following the Computing Services guidelines, and orders the number to be printed (and three-hole

punched). The Technical Publications Section (of Technical Information Services) must clear the manual before Graphic Arts can print it. The editor also transmits the Script files that contain the document to the Systems Software Librarian, along with a statement of the procedures used to produce the document. The Librarian stores the tape in the archives, where it is available for future reference.

Graphic Arts returns the printed product to the Document Distribution Counter in Building 221.

Most technical memoranda are then available for user purchase at the Counter or offsite through the U.S. Department of Energy Technical Information Center (P.O. Box 62, Oak Ridge, Tennessee 37830; FTS 626-2413 or 615 576-1301) and through National Technical Information Services (U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161; FTS 202 487-4660 or 703 487-4660). Because of their specialized in-house content, some memoranda are available only through the author and Technical Information Services. Because of their sensitive nature, still other technical memoranda are available only by distribution and through the Computing Services office (Building 221, Room A-241, extension 2-7155).

ANL REPORTS

While Computing Services technical memoranda often reflect research and development in various areas of computer machinery and software, their primary purpose is to provide needed information to Argonne computer users. The primary purpose of ANL reports is to communicate research performed at Argonne to other scientists and professionals both onsite and offsite.

The publication process for ANL reports is identical to the process for technical memoranda (use the same TECHMEMO SCRIPT file or TECHMGML file to create the report), with the following exceptions. The ANL *Technical Publications Guide* requires a different format for the title page and may require minor changes in organization. The editor must provide Graphic Arts with a distribution category and a distribution list. Graphic Arts is responsible for the cover design and distribution of all ANL reports. The maximum print run (without special permission) is 100 copies. See the *Technical Publications Guide* (available from the Technical Publications Section of Technical Information Services) for more details.

REVISED MANUALS

The publication process for revised manuals is basically the same as that for new manuals. The major differences are:

- The brainstorming session, while focusing on all relevant changes in policy and procedure, will take into account particularly any consultants' records and any other relevant information in the User Services consulting log. A convenient source for much new information will, of course, be all relevant articles that have appeared in the *Argonne Computing Newsletter* since publication of the existing manual.

- Instead of preparing a worksheet, the author assigned to revise the document usually marks up a copy of the document, specifying where additions, deletions, and modifications are necessary. The author then submits this marked-up document to the Manager of User Services and perhaps to the other designated reviewers.

ADDENDA TO MANUALS

An addendum is literally a quantity added. We periodically update our technical memoranda by adding new information on pink pages that we place inside the front cover of a technical memorandum. These addenda are structurally precise: they normally cover (1) new services, (2) changes, and (3) discontinuations, in that order.

Addenda are an important part of computer publications. They are the means by which users are informed of changes in their computing environment; as such, they receive the same careful attention as full-scale manuals. The Manager of User Services, the section managers, and other members of Computing Services devote considerable effort to reviews of addenda to ensure accuracy and timeliness.

The publication process for addenda to manuals is the same as that for manuals. Computing Services' consultants or section managers recommend publication of addenda as programs and services change. These shorter documents are necessary additions to publications already available, serving to keep the information current for computer users. They may explain a new release, explore an enhanced capability, or communicate changes in an established system.

The Manager of User Services, in consultation with the Computer Publications Editor, assigns addenda to appropriate authors, usually the member of Computing Services with the most expertise in the subject of the addendum. Since an addendum meets specific, limited needs and the published document already addresses a clearly defined audience, Computing Services does not usually require a separate publications worksheet for each addendum, but we do require clear agreement among the author, the editor, and the Manager of User Services on the objectives of the addendum. The author, by virtue of his experience with the particular subject and the document, should be well aware of the specific facet he is addressing.

The author prepares the addendum by using the Computing Services generic Script file ADDENDUM on the public minidisk PUBLICAT (or ADDGML on PUBLICAT 2) and by following the steps in the writing process of composing a draft for revision with the editor.

The review process is essentially the same, with the author receiving the comments and revising in their light before sending the final draft to the editor for publication.

Graphic Arts prints our addenda on pink paper, and we insert (or bind) those addenda into the appropriate printed documents available at the Document Distribution Counter. Users may then purchase the current document with the current addendum. We do not, as a rule, stock or distribute addenda separately from documents.

We inform users of addenda through the online DOCUMENT program. In addition to titles and abstracts of documents, the DOCUMENT program provides price, date of publication, and date of the current addendum (if any).[10]

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[10] To request document information in CMS or from a VAX in the Argonne file transfer network, enter:

DOCUMENT topic

where "topic" is a portion of the title of the document, the ANL/TM number of the document, or a category of documents (such as Fortran). In CMS, DOCUMENT will display the document information at your terminal. From a VAX, the DOCUMENT command will send the document information you requested to your VAX user directory. To obtain a list of all documents that Computing Services distributes, use the word ALL instead of a specific topic.

ONLINE HELP

Online HELP is information available directly from a computer system through a terminal. Authors of HELP files should remember that computer users will view online HELP files on a terminal rather than as hardcopy and that some users will have line-oriented terminals rather than full screen terminals. While online HELP is subject to the same demands for readability and accuracy that other technical writing should exemplify, conciseness, clarity, and general viewability are especially important. Examples of commands should appear on separate lines, and blank lines should always separate paragraphs.

Online HELP must also be easy to find. Users who enter the HELP command in CMS (or corresponding commands in other systems) should be able to follow the instructions in the resulting menus and find all relevant online HELP information on a given subject. For example, CMS users can find online information for SAS by first entering HELP in CMS. HELP in turn (through the menu) instructs the user to enter HELP SOFTWARE, which in turn instructs the user to enter HELP SAS. New HELP files may require a pointer in

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To request a document abstract in CMS or from a VAX, enter:

DOCUMENT ABSTRACT document-code

where "document-code" is a unique code (up to 16 characters) that corresponds to vendor-assigned reference codes. When vendors do not use such codes, Computing Services arbitrarily generates a unique code from the document title. We prefer that users refer to documents by their titles. When we refer to these documents in our regular documentation, we use only the document titles, not the arbitrarily assigned document codes.

To use DOCUMENT in Wylbur, enter:

DO DOCUMENT

and respond to the prompt for a topic. DOCUMENT will send the document information you requested to your Wylbur fetch queue.

DOCUMENT for Wylbur users and VAX users is a prototype service. The way you request information and the responses you receive are subject to change. Charges for DOCUMENT queries are based on CMS interactive rates.

To obtain further information on DOCUMENT, enter HELP DOCUMENT in CMS, in Wylbur, or in VAX/VMS.

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a menu of another HELP file so that users can eventually find it.

The textual format for online HELP should emulate as nearly as practical the standard textual format of our technical memoranda. To be consistent with the HELP file default formats and the HELP naming conventions, authors of HELP files should use the standard HELP features of the system in which they are working (CMS, Wylbur, VAX/VMS, Unix). The default line length for HELP files is 80 columns. For more information on CMS HELP file conventions, consult the *IBM Virtual Machine/System Product: CMS User's Guide*, Part 4: "The HELP Facility."

CMS HELP files must be preformatted. Note that the *CMS User's Guide* gives users the option of formatting their own files or using the HELPCONV command to format unformatted HELP files. At ANL we format our own files (with Script) and use left margin justification only, so that the HELP files will be more readable (the HELPCONV command creates files with both left and right justification). We then use the SCRIPT command with the DISK option to create a new file with the filetype of LISTING. It is important that the author rename the file in accord with the HELP naming conventions and designate a filemode of A2.

For more information on the Wylbur HELP file conventions, consult the *OBS Wylbur Reference Manual*. For more information on the VAX/VMS HELP file conventions, see "Creating HELP Files" and "Formatting HELP Files" in the *VAX/VMS Librarian Reference Manual*. For the Unix conventions, enter (in Unix):

`man catman`

Authors write or update online HELP files when changes in policy or procedures occur. Usually these additions or updates coincide with new manuals, addenda to manuals, updates of manuals, or *Newsletter* articles. After the editor and the author(s) agree on the contents of the online HELP file, it undergoes a review by selected Computing Services personnel. When the author(s), editor, and reviewers are in agreement, the editor transmits a CMS file to Systems Programming for installation on the Y-disk. When in doubt about total agreement, assume that online text may raise sensitive issues and must be reviewed with the same care as *Newsletter* articles and technical memoranda.

Note that some HELP files may reside with the product on a separate minidisk. Wylbur HELP files are stored in the partitioned dataset ANL1.WYL.HELP.

The VAX/VMS HELP files reside in the directory SYS$HELP (see "HELP" in the *VAX/VMS DCL Dictionary* for more information). Special-purpose HELP libraries are identified by the system logical names HLP$LIBRARY-n, where "n" is an integer. Online copies of Unix HELP files reside in the subdirectories of the "/usr/man" directory.

CHAPTER 5

PREPARING CORRESPONDENCE AND FORMS

Correspondence (both internal and external) and forms are other kinds of publication. The letters or memoranda you send as part of your job should receive the same attention and care that you devote to *Newsletter* articles and technical memoranda. Forms that you create for others to complete require clear, concise formats and instructions. Review the content of all communications carefully to be sure you have said what you meant to say directly and succinctly.

LETTERS

We write business letters (rather than memoranda) to individuals or organizations outside Argonne National Laboratory.

Note that Computing Services maintains reading files of all letters and memoranda sent by employees as part of their professional activities. These files serve to maintain a record of Computing Services activities and to keep those with management responsibilities aware of the whole spectrum of activities in Computing Services. You must therefore supply a copy of any letter or memorandum you write for the Reading Files in Room A-241.[11]

For detailed coverage of the characteristics of a business letter, see "Correspondence" in the *Handbook of Technical Writing*.

To produce a business letter in the Computing Services standard format, use the generic Script file LETTER on the public minidisk PUBLICAT (or LETGML on PUBLICAT 2).

MEMORANDA

For written communication between individuals or organizations *within* Argonne National Laboratory, we use the memorandum format (rather than the business letter). Memos (for short) are the appropriate format for internal written communications of various kinds, from brief notes to small reports.

Address all memos to specific persons, not just to "Distribution." Recipients of memos often need to know who else has received the same information. When the distribution list is very long, you should provide that list in multiple columns on the back of the memo. For more detailed coverage of memos, see "Memorandums" in the *Handbook of Technical Writing*.

Note that Computing Services maintains reading files of all memoranda and letters sent by employees as part of their professional activities. These files serve to maintain a record of Computing Services activities and to keep those with management responsibilities aware of the whole spectrum of activities in Computing Services. You must therefore supply a copy of any memorandum or letter you write for the Reading Files in Room A-241.[12]

To produce a memo conforming to the standard format, use the generic Script file MEMO on the public minidisk PUBLICAT (or MEMOGML on PUBLICAT 2).

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[11] Secretaries will normally place in the Reading Files a copy of any letter or memorandum they type for you.

[12] See previous footnote.

MEETING ANNOUNCEMENTS

For announcements of meetings, please follow the established Computing Services format. Note that meetings involving several people consume many work hours. Schedule such meetings only when they will be productive. Issue a specific agenda in advance as part of the meeting announcement, to save time at the meeting. Always assign a chairman to run the meeting and a secretary to produce notes afterward that will preserve the value of having the meeting in the first place. When you list participants and observers, categorize as participants those from whom you expect participation in the meeting discussions; categorize as observers those from whom you do not require participation (but who may participate if they wish).

To produce a Computing Services announcement in standard format, use the Script generic file MEETING on the public minidisk PUBLICAT (or MEETGML on PUBLICAT 2).

FORMS

Forms for obtaining information from others constitute a stylized kind of correspondence with a required format. Do not create such forms unless they are necessary for effective operation and offer substantial benefits over other, less formal ways of communicating the same information. We do not proliferate these forms gratuitously.

Avoid creating expensive multipart forms. Generate originals of forms on the IBM 3800 laser printer, the IBM 6670 Information Distributor, or the Apple LaserWriter[13] if possible. Better yet, create generic computer files for your forms, so that others can access the generic file, complete the form, and print both the form and its contents at the same time. You will have to make appropriate arrangements to make the file available on a public disk where others may access the file when they wish to complete the form.

Regardless of whether the form you have created is a generic computer file or a printed blank form, you must adhere to the following requirements:

- At the top of the form, make clear what organization originated it. Specify:

  Argonne National Laboratory
  Computing Services

- Make the form totally self-contained. All necessary instructions for filling out the form must be present (often on the back of the form); whatever policies and procedures relate to the content of the form should also be part of the form. These instructions must explain the use of the form, what the form is for, who fills it out, definitions of any blank fields, and what to do with the form after its completion.

- At the bottom of the form, provide the originator's initials and the date.

When you must duplicate printed copies of a blank form, have the Computing Services office complete a purchase requisition (ANL-451) and send it with the form to Graphic Arts. Graphic Arts will assign a number to the form and label the final version of the form with that number. All forms must have this assigned number.

Forms destined for widespread use should be available in Central Stores (Building 5). Have the Computing Services office send the forms to Central Stores with a "Stores Request" (ANL-53A) to carry these forms in stock.

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[13] You can print on the LaserWriter directly from CMS, MVS batch, or the Apple Macintosh.

CHAPTER 6

COMPUTING SERVICES USAGE CONVENTIONS

Computing Services has adopted policies on language usage that fit the particular requirements of our documents and promote consistency and clarity within those documents. This chapter details the conventions writers in Computing Services should follow in addition to (or instead of) the conventions described in the recommended guides. Conforming to these conventions in your early drafts will save time and effort for all in the long run.

ABBREVIATIONS

In general, do not abbreviate. For the sake of clarity, use the full phrase or name of the division, department, organization, system, program, or equipment. It is better to be somewhat repetitious than to introduce abbreviations that convey no clear meaning. Readers of a passage on the duties of "TPS" may not know or recall what that abbreviation signifies, but they will comprehend (by definition) that the "Technical Publications Section" deals with technical publications.

When the resulting repetition is clearly excessive in a given context, use the full phrase or title the first time it appears, followed by the abbreviation in parentheses--e.g., Digital Equipment Corporation (DEC). Thereafter, use the abbreviation in that context.

Appendix F contains a list of defined abbreviations and acronyms that you are likely to encounter in other writing at Argonne.

ACRONYMS AND OTHER NAMES

Computer scientists and users coin many words, often from acronyms, to name the programs and systems with which they work. In Computing Services,

we discourage the use of such abbreviations (see "Abbreviations" above). Where such acronyms or other names seem necessary, we follow a policy of capitalization based on the premise that acronyms and other names first written in all-uppercase letters, when they gain currency from repeated usage (and if they are easily pronounceable), soon become words in themselves and should be written with initial capitals only. Fairly new terms like "PROFS" retain full capitalization; however, as usage increases, "PROFS" will become "Profs" because it will gain status as a word and lose its original meaning of Professional Office System. Because such acronyms and titles change meaning as they become accepted into the language, capitalization will change to fit. Note that very short words tend to retain capitalization; "VAX" is a good example. The list below reflects current status. (For a much more extensive list of words and phrases peculiar to the computing world, see Appendix G.) This list will change as word usage changes. For uniformity, capitalize the following expressions as shown:

Abend	FY1987	SIM3270
ANSYS	Hewlett-Packard	Speakeasy
ARPAnet	Imagewriter	SuperCalc
Basic	InFoToGo	Syspub
BITnet	Inquire	Tektronix
CalComp	Itel	Tellagraf
CCnet	Kermit	Tymnet
Cobol	Komand	Unix
Cray	LaserWriter	Vadic
Cuechart	Librarian	VAX
Cyber	Macintosh	VisiCalc
DBase	MFEnet	V/Spell
DECnet	MILnet	Watfiv
Disspla	PHYSnet	Wylbur
EDUCOM	Plotutl	Xedit
Ethernet	PROFS	
Ezpert	Proofread	
Fortran	Script	

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ADDRESSES

For consistency, use the following formula when referring to documentation availability:

You may obtain *Guide to Personal Desktop Computing at ANL* (ANL/TM 404) at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting a copy).

When writing out addresses in a text, separate each item with commas (except for the zip code):

Send your comments to Computing Services, Argonne National Laboratory, 9700 South Cass Avenue, Argonne, Illinois 60439.

COMMANDS AND COLONS

Ordinarily, commands are in uppercase letters (e.g., HELP EXEC), so that they are easily identifiable from the rest of the text. Computing Services omits quotation marks around all uppercase commands to avoid creating any impression that the quotation marks are part of the command. When part of the command is in lowercase letters, introduce the command with a colon and put it on a separate line (in bold non-proportional type) from the rest of the text to avoid any possible confusion:

To send the graphics file to a batch graphics output device, enter:

```
HARDCOPY SAS device
```

where "device" is the name of the batch graphics output device driver you want.

If the cited command is one that you merely read on your terminal (and not one that you must reproduce), it is better not to put it on a separate line:

When you receive the "ftp>" prompt, enter:

```
quit
```

COMPOUND WORDS

Common compound words used in Computing Services appear in the list below in the form in which you should use them. Remember, however, that the forms of compound words do change with frequent use. Frequently used phrases tend to evolve from separate words to hyphenated words to combined words. In matters of dispute, consult *The American Heritage Dictionary* or *Webster's Third New International Dictionary of the English Language, Unabridged.*

A-disk	minicomputer
ASCII line-by-line terminal	minidisk
callback	MVS-format JOB card
control-S	offline
data processing	offsite
database	online
dataset	onsite
front-end (adjective)	PDP-11/70
front end (noun)	pointsize
global-data-set-enqueue	printout
hardcopy	procstepname
Hewlett-Packard Company	Room A-142
IBM 3270-compatible display terminal	RSX-11M
	spreadsheet
in-house	standalone
jobid	stepname
jobname	supercomputer
job-net	text editing
jobnumber	text formatting
job step	timesharing
job time	uppercase
Laboratory-wide	userid
linkedit	VAX-11/780
lowercase	viewgraph
mainframe	word processing
microcomputer	workstation
microprocessor	Z-disk
microfiche	9-track drives

COMPUTER, PERIPHERIES, SYSTEM, AND SERVICE REFERENCE

Use the full and correct name of the computer equipment. Include manufacturer, model number, and item description:

IBM 1403 printer
IBM 3800 laser (or page) printer
IBM 6670 Information Distributor
IBM 3274 Cluster Controller
IBM 3380 disk drive
Macintosh 512K Personal Computer
Hewlett Packard 3278 Emulation Accessory

As a rule, do not use numbers alone to designate these items. "IBM 3274" really functions as an adjective to modify "Cluster Controller." However, when you use an item description repeatedly in the same context (e.g., IBM 6670 Information Distributor), you may shorten the item description (e.g., IBM 6670) in references after the first reference.

For consistency in referring to Argonne's central IBM and DEC computers, the related systems, and their services, refer to them as:

the red IBM 3033 computer
the yellow IBM 3033 computer
the VAX 8700 computer
the VAX 11/750 gateway computer to MFEnet
the IBM 3042 Attached Processor

the VM operating system
the MVS operating system
the VMS operating system

the S33A JES3 main processor
the S33B JES3 main processor

the Wylbur interactive service
the TSO interactive service
the CMS interactive service
the VMS interactive service

The four computers are Argonne's central IBM and DEC computers. The yellow IBM 3033 runs the MVS operating system (and has an IBM 3042 Attached Processor). The red IBM 3033 runs the VM operating system. The two DEC computers run the VMS operating system (the VAX 11/750 computer serves mainly as a gateway computer to MFEnet). These systems offer a number of services. MVS JES3 batch runs on the yellow IBM 3033 (as the S33A JES3 main processor) and on the red IBM 3033 in VM (as the S33B JES3 main processor). The Wylbur interactive service runs on the yellow IBM 3033; in the backup configuration, it runs on the red IBM 3033. The TSO interactive service runs on the yellow IBM 3033; there is no backup configuration for TSO. The CMS interactive service runs on the red IBM 3033; in the backup configuration, it runs on the yellow IBM 3033. The VMS interactive

service runs on the VAX 8700.

The paragraph above refers to programs and operating systems (software) that run "on" computers (hardware). It is appropriate to use "on" in this context. However, when you are referring to programs (software) that are part of operating systems (other software) or run "in" virtual machines (other software), be sure to use the word "in," not "on," "under," "underneath," etc. (e.g., "CMS runs in VM/SP"). When you are referring to programs (software) that run on a given computer parallel with--but not as a part of--an operating system or another program (other software), use "under": e.g., "CMS runs under CP." (CMS is not part of CP, but both CMS and CP run concurrently "in" VM/SP.) Follow these conventions carefully to avoid confusion and maintain clarity in describing the relationships among programs, operating systems, and computers.

COMPUTING SERVICES AND ITS ORGANIZATIONAL UNITS

Computing Services has evolved from a service-oriented organization created at Argonne in November 1956 to make the developed computing hardware, software, and techniques of applied mathematics available to Argonne's scientific and engineering researchers. Laboratory management established the Computing Services Division in July 1982 by combining the service-oriented sections of the former Applied Mathematics Division. At that time, the research-oriented section within the Applied Mathematics Division became the new Mathematics and Computer Science Division. On November 1, 1984, as part of a consolidation move in the interest of expenditures management, Computing Services became part of the newly created Support Services Division, along with Electronics, Central Shops, Procurement, Materials and Services, and Occupational Health and Safety.

To establish consistency in present and future references to our operational unit, use the following name:

Argonne National Laboratory Computing Services

In correspondence and other documents, writers may wish to shorten the name; the following short forms are acceptable:

Argonne Computing Services
ANL Computing Services
Computing Services

Do not use any other short forms or abbreviations; in particular, avoid any attempts to abbreviate "Computing" or "Services." Use the acronym "CSD" *only* on forms that do not provide enough space to allow for the eighteen characters in "Computing Services."

Do not use "Central Computing Facility" (or its abbreviation "CCF"), because it is no longer an organizational entity.

Use the exact titles for each organizational unit within Computing Services:

- **Computer Network Section**
  - **Communication Services Group**
  - **Service Engineering Group**
- **Computer Operations Section**
  - **Day and Weekend Group**
  - **Evening and Overnight Group**
- **Information Systems Section**
  - **Human Resource and Plant Systems Group**
  - **Financial Systems Group**
  - **Material Systems Group**
- **Systems Programming Section**
- **User Services Section**
  - **Account Services**
  - **Education and Assistance Group**

DATA (NUMBER OF)

Like "strata" and "media," "data" is a plural Latin form ("datum" is the singular form) that in English usage has become acceptable either as a plural or as a collective singular term. You should determine from the context whether you are using "data" to denote a single collection or a group of individual facts. Then make sure your pronouns and verbs agree in number with your selected usage:

The data are misleading. They indicate a greater demand.

The data is misleading. It indicates a greater demand.

DATES

When specifying a date in a sentence, indicate the day of the week as well as the calendar date:

The Computer Users Group will meet on Tuesday, June 2, 1987.

This added information allows people to think not only in terms of dates but also in terms of days of the week.

FILENAMES FOR EXECS AND MODULES

When naming new execs or modules, spell out names rather than form acronyms from the initial characters of several words. It is difficult to apply or remember a rule for dropping out characters, and whole English words are easier to remember than acronyms.

The Computing Services method is ordinarily to truncate the most meaningful word defining the file or exec (e.g., WORKSHEE for the publication worksheet; PROOFREA for the proofread program) at eight characters rather than to delete characters in the middle of the word. Users will not get into trouble by supplying all nine characters of a nine-character name, because CMS just throws away any characters over eight.

Name local counterparts of documented commands "ANLxxxxx." By using a prefix of "ANL" followed by the first five characters of the corresponding official CMS command, we call attention to the local variation and allow the truncation rule above to shorten the name.

Name experimental versions of commands "Xxxxxxxx"; name previous versions "OLDxxxxx." Include internal documentation and provide HELP for all local system execs.

FOOTNOTES

For consistency, follow GML footnoting conventions; that is, place footnotes at the bottom of the page rather than in the text or on a separate reference page. We especially deplore the Modern Language Association *Stylesheet* practice of including notes in parentheses in the text itself. We feel that text should be as clear and uncluttered as possible; the proper place for notes is at the bottom of the page, where readers can still easily see them.

For the Syspub or GML coding procedure, see the *Waterloo Syspub User's Guide* or the *Waterloo Script GML User's Guide*, respectively. To review the proper footnote formats, refer to "Footnotes" in the *Handbook of Technical Writing*.

FORBIDDEN WORDS

Do not use words or phrases unclear to your audience. Typically, such words and phrases are of two kinds: those that have clear meanings but are ingredients of over-specialized shop talk (e.g., "output service element," "protection key," "link pack area," "blanking," "buffering," "fluerics," "multiplexing") or those that are ambiguous because they may have any of several meanings (but not all) in a given context (e.g., "support," "facilitate," "problem," "considerations").

Avoid verbs that have been unnecessarily derived from nouns. It is pretentious to use such false verbs as "impact," "facilitate," "prioritize, "input," and "interface," because existing true verbs (e.g., "affect," "rank," "put in," "connect") can communicate these same actions.

See "Avoid Jargon" in Chapter 2 for more commentary on avoiding inappropriate words.

"INTERACTIVE" VERSUS "ONLINE" AND "TIMESHARING"

In Computing Services, our primary concern must be the user; therefore, we strongly recommend emphasis in our writing on people rather than on machines. For example, when you refer to a shared system in which a continuous dialog takes place between users and the system, use the term "interactive" to describe that process. This term is preferable to "online," which often in context implies interaction but generally means only that a user has accessed a computer via a terminal. Use the term "timesharing" only when your focus is on how the machines function.

"JOB" AS A WORD

Put "job" in lowercase letters when referring to jobs (e.g., batch jobs).

When you refer to "Job Control Language," use initial capital letters only or (after the first reference) abbreviate to "JCL."

Capitalize "JOB" as a rule when referring to JCL code (JOB card, JOB statement) or using "JOB" in JCL code:

```
//jobname JOB (,Fnnnnn)
```

NOTES AND WARNINGS

Use the NOTE and WARNING formulas sparingly in your text and only when the information deserves the emphasis that these "signs" convey. Using them too frequently lessens their impact. A WARNING conveys a greater degree of urgency or necessity than a NOTE does. When you do use NOTE or WARNING in a document, adhere to the following formulas.

Write NOTE in capital letters followed by a colon (:). Use the Script hanging indent command with an indent of 7 (.hi 7), so that all the text for the note lines up. (If you are printing with proportional spacing on the Apple LaserWriter, you will have to use a different hanging indent number to obtain the proper indentation.)

When using "WARNING:" in a document, write WARNING in capital letters followed by a colon (:). Use the Script hanging indent command with an indent of 10 (.hi 10), so that all the text for the warning lines up. (If you are printing with proportional spacing on the Apple LaserWriter, you will have to use a different hanging indent number to obtain the proper indentation.)

Be sure to turn off the hanging indent (.hi 0) afterward.

PERSONAL PRONOUN USAGE

To make Computing Services writing more direct, informal, and clear, we encourage the use of personal pronouns such as "we" and "you." Use of such pronouns encourages the active voice and "humanizes" our writing.

However, do not be illogically possessive. Do not refer to "our" IBM 3033s or "our" Workstation Evaluation and Demonstration Room. We manage this equipment, but we do not own it.

For more explanation, see "Use Personal Pronouns" in *Guidelines for Document Designers*. See also "Sexist Language" below.

QUOTATION MARKS AND APOSTROPHES

Use quotation marks (") around words or expressions referred to as words, around quoted material (except when you separate and indent long quoted passages), and around titles of short works (sections, chapters, essays). Do not use apostrophes (') unless you are indicating the possessive or unless the operating system code demands it. See "Quotation Marks" and "Apostrophes" in the *Handbook of Technical Writing* for further information.

SEXIST LANGUAGE

Avoid sexist language as far as clear and succinct use of the English language will permit. The casual use of sexist language will offend readers. On the other hand, departing from standard usage to avoid the appearance of sexism can distract from content. The English language is an inheritance that reflects past values but does not immediately assimilate new values. Sometimes it does not permit clear, succinct prose (especially in pronoun usage) that reflects equality of the sexes.

When common sense allows, avoid sexism. Use gender-neutral terms such as "to operate" instead of "to man," "supervisor" instead of "foreman," "work hours" instead of "man hours," "committee members" instead of "committeemen." Avoid using "his/her," but preserve pronoun agreement. Observe the following sentence:

> Each consultant wore ____ own identification badge.

When an indefinite noun or pronoun refers to man and woman, either use the masculine pronoun "his" or--better yet--recast the sentence in the plural to preserve pronoun agreement:

> The consultants wore their own identification badges.

SLASHES

See the *Handbook of Technical Writing* for appropriate uses of the slash. *Do not* use the slash (e.g., "he/she," "and/or") as a substitute for "and" or "or"; its meaning in that context is ambiguous.

SYMBOLS FOR GENERIC ALPHANUMERICS AND NUMERICS

When specifying generic alphanumerics or numerics in job control language or in text, use the lowercase "x" (or the uppercase "X" if the designated letter should be capitalized) or the lowercase "n," respectively:

XXnn-nnnn is the number of a vendor document. ANL/TM nnn is the number of a technical memorandum. John Smith's badge number is Bnnnnn.

In some instances, programmers may wish to refer to numerics with the name of the numeric representation (e.g., "jobid").

TIME OF DAY

When referring to time of day, use conventional time (5:00 p.m.). Do not specify military time (1700 hrs.).

TITLES AND NUMBERS OF DOCUMENTS

When referring to titles of chapters or sections of documents or to other short works (such as letters), place those titles in quotation marks. Italicize or underline titles of entire documents and other long works. Designate document titles and numbers as:

> *Argonne Computing Newsletter*
> *Title of Vendor Document* (XXnn-nnnn)
> *Title of Technical Memorandum* (ANL/TM nnn)
> *Title of Report* (ANL-nn-nnn)

If the technical memorandum is an older one (not recognized by National Technical Information Services) without the ANL prefix to its number, designate it as:

> *Title of Technical Memorandum* (Technical Memorandum nnn)

VM/SP, CMS, AND CP

To achieve consistency and accuracy of reference, Computing Services consistently uses "VM/SP" to designate the IBM Virtual Machine/System Product interactive system. Do *not* use the obsolete "VM/CMS" designation, because it confuses the relationships

among the Conversational Monitor System (CMS), the Control Program (CP), and VM/SP. The "VM/SP" designation conforms to current IBM practice.

VM/SP consists of CMS, CP, and some capabilities peculiar to VM/SP. Refer to those components that operate within VM/SP--but are exclusive of the parts (CMS, CP) *or* involve more than one of those parts--as "VM/SP components." Note the following examples:

> **VM/SP account**
> **VM/SP disk (unformatted)**
> **VM/SP enrollment**
> **VM/SP graphics**
> **VM/SP input stack**
> **VM/SP operator**
> **VM/SP reader**
> **VM/SP session**
> **VM/SP tape mounting**
> **VM/SP terminal**
> **VM/SP usage**
> **VM/SP userid**
> **VM/SP users**

CMS provides general interaction, program development, and problem-solving capabilities for VM/SP. Refer to those components that operate within CMS or deal only with CMS as "CMS components." Note the following examples:

> **CMS command**
> **CMS disk (formatted)**
> **CMS editor**
> **CMS electronic mail**
> **CMS electronic note**
> **CMS exec**
> **CMS file**
> **CMS graphics**
> **CMS graphics driver**
> **CMS minidisk**
> **CMS online telephone directory**

CP manages the resources of VM/SP in such a way that multiple remote terminal users have a functional simulation of a computing system (a virtual machine) at their disposal. Refer to those components that operate within CP as "CP components." Note the following examples:

> **CP command**
> **CP LOGON command**
> **CP manager**
> **CP mode**
> **CP paging**
> **CP privilege class**
> **CP responses**
> **CP SPOOL command**
> **CP spooling**
> **CP TAG command**
> **CP trace table**

Your discussions of system components, as well as your references, should reflect these rules and relationships.

The *Virtual Machine/System Product CMS Command and Macro Reference* (SC19-6209) and the *Virtual Machine/System Product CP Command Reference for General Users* (SC19-6211) may be of some help in properly identifying some components.

APPENDIX A

SAMPLE COMPLETED PUBLICATION WORKSHEET

Publication Worksheet

WRITERS: Bob McMahon, Barry Finkel

SUBJECT: *Electronic Mail at ANL*

READER:

Technical level (education, existing knowledge of subject, experience, etc.):

We assume that the readers will have varying levels of education and expertise ranging from secretaries to scientists. We have to write clearly to all of these levels. We also assume that most readers will be familiar with at least one system having an electronic mail capability. There will be a short introduction to electronic mail for those who are unfamiliar with the subject.

Position (job title and/or relationship to writer):

Readers may be secretaries who are more familiar with traditional mail than with computer mail; readers may be scientists who are more familiar with computers than with mail.

Attitude toward subject and writer's purpose (friendly, indifferent, hostile):

Most readers will be friendly, using the document as a quick reference to review the electronic mail features. This guide will not be a teaching tool, as teaching information is available in the various system primers. Some readers will be ordered by their bosses to read the document; some will be forced to use electronic mail, even though they hate it.

Other significant factors in identifying the reader:

We must write the appendices on gateways so that the reader can

easily understand and take advantage of the gateway facilities
connected to the Argonne heterogeneous file transfer network and,
if needed, create mail in the proper format to use those
gateways.

READER'S PURPOSE(S):

Why will reader read the publication?

The reader would refer to this document to learn how to send and
receive electronic mail and to be able to answer questions when
they arise. Frequently, the reader will want to find out how to
send mail to a person located on one of the other attached
networks.

What should the reader know after reading?

The reader should understand the functions that electronic mail
performs, be able to determine which networks are accessible with
ANL electronic mail commands, and be able to find additional
sources of information (e.g., consultants, other documents) when
needed. The reader should know the general policies and
etiquette for each network (e.g., ARPAnet is for DOD work,
small BITnet files during the day, etc.)

What should the reader be able to do after reading?

After reading this technical memorandum, the reader should be able
to exercise basic use of electronic mail at ANL. The reader
should be able to use "companion" documents and online help to
become more familiar with system specifics. Also, the reader
should be able to use the gateway services that are available
to ANL electronic mail users.

WRITER'S PURPOSE(S):

The primary purpose of this document is to expand the options and
capabilities of ANL electronic mail users by providing a "map" of and
directions to the available electronic mail "universe." The document
will serve as a guide to ANL employees, including office automation
users, distributed computing users, and users of the central IBM
computers. It will encourage the use of electronic mail at ANL.

CONTENT AND PLAN:

The content of this technical memorandum will describe all electronic
mail systems at ANL. The major areas covered will be CMS electronic
mail, electronic mail for the friendly neighborhood computers of DEC VAX
machines, and electronic mail for users connected to ANL by gateway
computers. It will contain only simple overviews and examples, leaving

technical information about how to use each mail system to the various vendor manuals.

Source materials:

The source material for this technical memorandum will be from members of Computing Services, other ANL publications, and from collaborative efforts with electronic mail users at gateway sites. We will refer to vendor manuals when appropriate.

Reference materials:

This guide must be kept to a minimum; we will therefore reference other documentation whenever possible. However, to ensure continuity, we will occasionally need to duplicate some small amount of material from other sources.

Primary organizational plan:

Electronic Mail at ANL

   I.   Preface

  II.   Overview of Electronic Mail

       A.   What is Electronic Mail?
       B.   What is Electronic Mail Good For?
       C.   Disclaimer

 III.   The Available Universe for ANL Electronic Mail Users

  IV.   Mail Networks

       A.   BITnet
       B.   ARPAnet
       C.   CSnet
       D.   MAILnet
       E.   CCnet
       F.   USEnet (UUCP)
       G.   IBM VNET

   V.   Description of Electronic Mail Systems at ANL

       A.   CMS (Replacing TM 403)
       B.   PROFS in CMS
       C.   VAX/VMS (Based on ANL/TM 383)
       D.   Wylbur
       E.   VAX/Unix
       F.   NBI Office Automation System
       G.   Other Interactive Systems

VI.   Using CMS Mail while Travelling

    A.   How To Use Tymnet Public Packet Switching Network
    B.   Tymnet Access Locations

VII. Other Separate Mail Systems Used at ANL

    A.   DIALCOM
    B.   MCI
    C.   SLAC/LBL High Energy Physics DECnet

APPENDICES

1.   BITnet University Network

    A.   Description of BITnet
        1.   Primary users
        2.   Dealing with naming conventions
        3.   Limitations because of data type (e.g., binary files)
        4.   BITnet's sites
        5.   How to use the BITSERVE information service

    B.   The BITnet Essentials
        1.   File attributes
        2.   Header information
        3.   Miscellaneous constraints

    C.   BITnet Online HELP Files

2.   Advanced Research Projects Agency Network (ARPAnet) Gateway

    A.   Description of ARPAnet
        1.   Primary users
        2.   Dealing with naming conventions
        3.   Limitations because of data type (e.g., binary files)
        4.   ARPAnet's sites
        5.   Using service machines, if any

    B.   The ARPAnet Essentials
        1.   File attributes
        2.   Header information
        3.   Miscellaneous constraints

    C.   ARPAnet Online HELP Files

3.   Computer Science Network (CSnet)

    A.   Description of CSnet
        1.   Primary users
        2.   Dealing with naming conventions
        3.   Limitations because of data type (e.g., binary

```
                    files)
               4.  CSnet's sites
               5.  Using service machines, if any

          B.   The CSnet Essentials
               1.  File attributes
               2.  Header information
               3.  Miscellaneous constraints

          C.   CSnet Online HELP Files

     4.   MAILnet Gateway

          A.   Description of MAILnet
               1.  Primary users
               2.  Dealing with naming conventions
               3.  Limitations because of data type (e.g., binary
                   files)
               4.  MAILnet's sites
               5.  Using service machines, if any

          B.   The Characteristics of MAILnet Electronic Mail
               1.  File attributes
               2.  Header information
               3.  Miscellaneous constraints

          C.   MAILnet Online HELP Files

     5.   CCnet Gateway

          A.   Description of CCnet
               1.  Primary users
               2.  Dealing with naming conventions
               3.  Limitations because of data type (e.g., binary
                   files)
               4.  CCnet's sites
               5.  Using service machines, if any

          B.   The Characteristics of CCnet Electronic Mail
               1.  File attributes
               2.  Header information
               3.  Miscellaneous constraints

          C.   CCnet Online HELP Files

     6.   USEnet Gateway

          A.   Description of USEnet
               1.  Primary users
               2.  Dealing with naming conventions
               3.  Limitations because of data type (e.g., binary
                   files)
               4.  USEnet's sites
               5.  Using service machines, if any
```

B. The Characteristics of USEnet Electronic Mail
    1. File attributes
    2. Header information
    3. Miscellaneous constraints

C. USEnet Online HELP Files

AVAILABLE AIDS (visual, tables, etc.):

There will be little need for diagrams and figures.

RESEARCH NECESSARY?

Some investigation will be necessary before we write the gateway appendices; much of the needed header information is in the SENDGATE exec that we have received from SLAC.

RELATIONSHIP (IF ANY) TO ONGOING WORK AT ANL:

This technical memorandum will contain the information necessary to use electronic mail at ANL. As such it will be widely used for ongoing work at ANL. As systems and networks evolve, we will need to update this guide periodically.

Are there other ANL actions dependent on completion of this document?

No.

Is the completion of this document dependent on other ANL actions?

No.

RELATIONSHIP (IF ANY) TO OTHER DOCUMENTS AT ANL:

This technical memorandum is related to many documents available to Computing Services users. It is closely related to the following documents:

Friendly Neighborhood Computer Project: Extension of IBM NJE Network for DEC VAX Computers (ANL/TM 383)

How does this proposed document fit into the entire Computing Services suite of documents?

This document will replace Technical Memorandum 403 in the Computing Services suite of documents.

What overlaps will exist?

Some overlap will exist. We will document these overlaps where

necessary to provide the user with more detailed information.

What cross references are necessary?

We will include references to other documents available to Computing Services users. As we update other technical memoranda, we will insert references to this document.

What material should be removed from another manual because it more properly belongs in the proposed manual?

This document replaces Technical Memorandum 403. Other manuals should be changed to reference this document. These include *Guide to Computing at ANL* (ANL/TM 336), *Guide to Telecommunications at ANL* (ANL/TM 422), *CMS at ANL* (ANL/TM 423), *Extension of the IBM NJE Network to DEC VAX Computers* (ANL/TM 383), and *Recommended Documentation for Computer Users at ANL* (ANL/TM 379).

COMPLETION DATE OF DRAFT FOR EDITING AND REVIEW: July 15, 1985

APPENDIX B

THE TECHMGML FILE FOR FORMATTING TECHNICAL MEMORANDA

Computing Services has modified the Generalized Markup Language (GML) layout file GMLREFG to obtain the precise layout we wish for the technical memoranda we print. We have named this modified file TECHMGML. After an appropriate test period, TECHMGML should replace the older TECHMEMO file (a Script-Syspub layout file) currently in production status. We encourage users to try the TECHMGML file for producing documents. This appendix tells you what you will need to know to use TECHMGML. You will also find the *Waterloo Script GML User's Guide* essential for general information about GML.

This locally modified TECHMGML file accomplishes three goals for Computing Services: (1) it formats technical memoranda in accord with the new Computing Services technical memorandum formats, (2) it allows Script users to switch from Syspub (an obsolete text formatter) to GML (the University of Waterloo's replacement for Syspub), and (3) it produces output printable on a PostScript printer (such as the Apple LaserWriter) and on a computer typesetter (such as the Linotype L300P in Graphic Arts).

Note that TECHMGML imbeds a locally created file called ANLTM, which in turn calls several ANL$xxx files. These ANL$xxx files are modified versions of certain GML$xxx files. ANLTM also redefines some GML symbols for GML source code, defines running titles, and defines some page controls.

OBTAINING THE NEW LAYOUT

TECHMGML resides on the PUBLICAT 2 minidisk along with other new generic Script files (including ANLTM) in "test" status. You can obtain a copy of it by using the procedure outlined in "Mandatory Generic Script Files" in Chapter 1.

MODIFICATIONS OF GML

In modifying GML for the TECHMGML file, we have (1) achieved the desired layouts without writing local macros and (2) maintained compatibility with the standard GML tag set. Thus, you can follow directions in the *Waterloo SCRIPT GML User's Guide* for using the GML tags that TECHMGML employs. However, when using TECHMGML (with ANLTM imbedded) keep in mind that there are some exceptions to the guidelines set forth in the *GML User's Guide*. The rest of this section explains these exceptions in detail.

Title Page

Computing Services has changed the defaults of the GML tags ":DOCNUM," ":AUTHOR," and ":COPYRIGHT" so that they are suitable for formatting the title page of technical memoranda. The default text for ":DOCNUM" is now "ANL/TM," and the default byline for ":AUTHOR" is "By." The ":COPYRIGHT" tag no longer will cause GML to insert a "(C)" before its text.

Computing Services has defined a new GML tag for identifying the editor(s) of a technical memoranda. This tag is ":EDITOR," and you can use it as you use the ":AUTHOR" tag. Its default byline is "Edited by."

Computing Services has also defined a new attribute for the ":DATE" GML tag--the DATESKIP attribute. You can specify this attribute with a ":SET" tag to maintain the symmetry of the title page when there is more than one author or editor. The value of DATESKIP is numerical, and it represents the number of blank lines *both* before and after the date. The default value is "8."

Acknowledgments

Computing Services has defined a new GML tag for an acknowledgments page. This is the ":ACKNOW" tag, and you should use it as you use the GML tags for the preface and abstract. As long as you enter the acknowledgments immediately after the title page in the source file, the acknowledgments will automatically appear on page "ii."

Chapters

For the TECHMGML file only, Computing Services has changed the default of the ":H0" tag so GML will always label it as a "Chapter." Use the ":H1," ":H2," and ":H3" GML tags for sections, subsections, and subsubsections, respectively.

Figures and Tables

Computing Services has changed the defaults for the GML tags for figures and tables (":FIG" and ":TAB"). For the ":FIG" tag, the default setting for the CAP attribute is now SHORT, which centers both the figure's label and title on the same line. For the ":TAB" tag, the default setting for the CAP attribute is now LONG, which centers both the table's label and title on separate lines. For both GML tags, the default setting for the PLACE attribute is now INLINE, which prints the figure or table where you entered it in the source file (i.e., text that follows it in the source file will follow it on the printed page).

Computing Services has implemented a new attribute for the ":FIG" and ":TAB" tags. Computing Services designed this new attribute, COLUMNS, for use when producing a document in two-column layout. The default value for COLUMNS is one, and you can specify two. Use "COLUMNS=two" when you are using two columns and want the figure or table printed in only one of the columns. If you do not specify the COLUMNS attribute, the figure or table will have the width of a one-column layout. The following code prints a table that has the width of one column in a two-column layout.

```
:TAB ID=table-identifier COLUMNS=two
```

Boxes

Computing Services has implemented two new attributes for the GML tag for boxes (":BOX"). One of the new attributes is the COLUMNS attribute described above. The other new attribute is the VERT attribute for generating vertical descenders in a box. The VERT attribute accepts numerical operands that you can specify as absolute column numbers or in incremental values. Both of the following examples begin a box that will be split by vertical lines in columns 15 and 25.

```
:BOX VERT=15 25
```

```
:BOX VERT=+15 +10
```

Appendices

Use the ":APPENDIX" GML tag as described in the *Waterloo Script GML User's Guide*, but use the ":H0" tag instead of the ":H1" tag to specify appendix titles.

Back Material

Computing Services has defined two new GML tags for use within the ":BACKM" and ":EBACKM" tags: ":GLOSSARY" and ":BIBLIOGRAPHY" will format the titles for a Glossary and Bibiliography, respectively. Disregard the *GML User's Guide* instructions for specifying these titles with the ":H1" tag.

USING THE TECHMGML GENERIC SCRIPT FILE

Once you have obtained a copy of TECHMGML from the PUBLICAT 2 minidisk, read it carefully. You will need to enter certain information, as explained in the rest of this section.

If you are printing your document in two columns, make the following changes in the code preceding the ":GDOC" tag. In the tag

```
:SET ITEM=COLS VALUE=1
```

change "VALUE=1" to "VALUE=2." In the tag

```
:SET TAG=P ITEM IN VALUE=5
```

change "VALUE=5" to "VALUE=3." In the tag

    :GDOC HY=off

change "HY=off" to "HY=on." You may also wish to modify the ".jclon" and ".jcloff" macros to indent fewer than seven spaces.

In the ":DOCNUM.nnn" tag, replace the "nnn" with the publication number of the technical memorandum. Enter the title of the technical memorandum immediately following the period in the ":TITLE." tag. If the title is too long to fit on one line, repeat the ":TITLE." tag to specify additional lines. In the ":AUTHOR." tag immediately following the period, enter the author's name (first name, middle initial, last name). Use the ":ALINE." tag to enter additional authors. Repeat the ":ALINE." tag as needed. Enter the editor(s) name(s) in the same manner on the ":EDITOR." and ":ALINE." tag lines. If the number of authors or editors (or other modifications on the title page) necessitates reducing the number of blank lines before and after the date, enter the tag

    :SET TAG=DATE ITEM=DATESKIP VALUE=n

as specified in the file documentation.

You do not need to specify running titles with this layout because the ":TITLE" tag generates a running title on even pages and the GML tags for chapters, appendices, and other components (such as ":H0" and ":PREFACE") generate a running title on odd pages. If you want a running title different from the title specified by a ":TITLE" or ":H0" tag, you can do so with the STITLE attribute as explained by documentation in the file.

Any preliminary sections, such as the acknowledgments and preface (see documentation in file), will go before the first chapter. Enter the text for these sections where indicated. Use the ":P." tag to begin paragraphs.

Note that the GML tags for chapter, appendix, section, subsection, and subsubsection are different from the Syspub heading macros. Enter the title for the first chapter following the period in the ":H0." tag specified for the title of the first chapter (remember that this title will also be the odd running title unless you use the STITLE attribute). For other headings within chapters, use the other ":H" tags as indicated. (If you wish, you may create chapters as separate files and imbed them with the ".im" Script control word or the ":INCLUDE" tag.)

To create appendices, follow a similar procedure. Note that the appendix component of the document must follow both the ":EBODY" and ":APPENDIX" tags. Specify appendix titles with the ":H0" tag as you do for chapters. The ":EAPPENDIX" tag specifies the end of the appendices.

Refer to the *Waterloo Script GML User's Guide* for more information about creating other document components such as figures, tables, and lists. The procedures for coding figures, tables, and boxes are also documented in the file.

While you can create index entries by using the GML index tags documented in the file, we find this procedure cumbersome and recommend that you continue to use the ".ix" Script control word to generate index entries.

Note that the ":DATE.DRAFT &sysdate" tag in the title page identifies the technical memorandum as a draft and specifies the current date. When the document is ready for publication, the editor must change "DRAFT &sysdate" to the month and year of publication. It is also the editor's responsibility to ensure that the date of publication is midway between the title and the authors' name(s). If there is more than one author or editor, adjust the spacing on the title page with a ":SET" tag as explained earlier (and in the documentation in the file).

APPENDIX C

ON STYLE

While the meaning (or content) of a document is, of course, *what* the document says, the style of that document is *the way in which that information is expressed.*

In the not-so-distant past, a typical Computing Services scenario would consist of an author bringing a draft of a technical memorandum, report, letter, memo, or other document to a staff editor and saying, "Here's the information. Please fix the style, but don't change the meaning." After a certain amount of online editing and some collaboration between the editor and the author to assure that the meaning had not "changed," this scenario would close with the issuance of the official version of the document.

The end result of this scenario was positive in the sense that the published document satisfied both the author and the editor, but the effort was probably excessive, because this scenario included some frustration and much argument over "changed meanings" after editing for diction, modification, voice, etc. In such debate, the principal cause of argument is a misconception of "style" and its relationship to "meaning."

This misconception arises from the assumption that an author can deal separately with "meaning" and an editor can deal separately with "style." In truth, "meaning" and "style" are inseparable. The meaning conveyed by a document is always dependent on *how* that meaning is expressed. In technical writing, if the style consists of a clear and precise logical structure, sentences that conform to grammatical (and aesthetic) standards, and words that symbolize precisely the right concepts, then the style will convey the meaning effectively. Conversely, if the structure is illogical, the grammar is faulty, or the vocabulary is imprecise, then the meaning will be unclear to the degree that these flaws exist. Polishing the "style" at the same time refines the "meaning" of the document.

Efficient production of quality documents therefore depends on authors and editors working harmoniously to obtain clear and accurate expression of needed information.

A second popular definition of style is Comte George Louis Leclerc de Buffon's timeworn epigram--"The style is the man himself." In other words, the style of a document is the personality of the author as reflected in the ink of that document. Certainly, this definition is valid in literature, where Hemingway's "I ate the ham and eggs and drank the beer," is as reflective of that author's choppy, mono-syllabic view of life as the following (somewhat ungrammatical) lyrical passage is reflective of William Faulkner's romantic view of an old bear in a shrinking wilderness:

It ran in his knowledge before he ever saw it. It loomed and towered in his dreams before he even saw the unaxed woods where it left its crooked print, shaggy, huge, red-eyed, not malevolent but just big--too big for the dogs which tried to bay it, for the horses which tried to ride it down, for the men and the bullets they fired into it, too big for the very country which was its constricting scope. He seemed to see it with a child's complete divination before he ever laid eyes on either--the doomed wilderness whose edges were being constantly and punily gnawed at by men with axes and plows who feared it because it was wilderness, men myriad and nameless even to one another in the land where the old bear had earned a name, through which ran not even a mortal animal but an anachronism, indomitable and invincible, out of an old dead time, a phantom, epitome and apotheosis of the old wild life at which the puny humans swarmed and hacked in a fury of abhorrence and fear, like pyg-

mies about the ankles of a drowsing element: the old bear solitary, indomitable and alone, widowered, childless, and absolved of mortality-- old Priam reft of his old wife and having outlived all his sons.

Obviously, if you are going to write technical documents, you should try to emulate Hemingway's terseness rather than Faulkner's lyrical verbosity. In any case, both writers' styles are unmistakable; each style reflects the author's literary values. Likewise, Buffon's definition applies to Computing Services technical documentation; the style exhibited by that documentation reflects the values of its authors (and of Computing Services). These values should include a strong commitment to natural, clear, correct English, to a reasonable, friendly tone, and to a balanced perspective.

It is important to remember that such a commitment does not in any way prevent the "artful simplicity" that we often associate with quality writing. Hemingway's apparently simple style, for example, describes an uncontrollable fictional world in which even the bravest inhabitants can only endure. Likewise, in the following passage (from *My Early Life*) Winston Churchill describes a triumph born out of an early defeat:

> Being so long in the lowest form I gained an immense advantage over the cleverer boys. They all went on to learn Latin and Greek and splendid things like that. But I was taught English. We were considered such dunces that we could learn only English. Mr. Somervell--a most delightful man, to whom my debt is great-- was charged with the duty of teaching the stupidest boys the most disregarded thing--namely, to write mere English. He knew how to do it. He taught it as no one else has ever taught it. Not only did we learn English parsing thoroughly, but we also practised continually English analysis. Mr. Somervell had a system of his own. He took a fairly long sentence and broke it up into its components by means of black, red, blue, and green inks. Subject, verb, object:

> Relative Clauses, Conditional Clauses, Conjunctive and Disjunctive Clauses! Each had its colour and its bracket. It was a kind of drill. We did it almost daily. As I remained in the Third Fourth . . . three times as long as anyone else, I had three times as much of it. I learned it thoroughly. Thus I got into my bones the essential structure of the ordinary British sentence--which is a noble thing. And when in after years my schoolfellows who had won prizes and distinction for writing such beautiful Latin poetry and pithy Greek epigrams had to come down again to common English, to earn their living or make their way, I did not feel myself at any disadvantage. Naturally I am biased in favor of boys learning English. I would make them all learn English: and then I would let the clever ones learn Latin as an honour, and Greek as a treat. But the only thing I would whip them for is not knowing English. I would whip them hard for that.

The simplicity of this style is an illusion. Writing in 1930, Churchill recalls his punishment for failing to excel as a schoolboy at Harrow in 1887. He had a triple exposure to "common English" rather than to "beautiful" Latin and Greek (note the irony here). With choppy, rhythmic sentences, he emphasizes the thoroughness and repetitiveness with which Mr. Somervell taught English to "the stupidest boys" ("He knew how to do it. He taught it as no one else has ever taught it"). The key statement--"Thus I got into my bones the essential structure of the ordinary British sentence-- which is a noble thing."--is a masterpiece of understatement that conveys nobility on the "British sentence" and infers why Churchill was so eloquent as a statesman. The passage ends with more repetition of Churchill's belief in the value of "learning English"-- still understated for greater effect. The style of this passage may be "simple," but it is as carefully and artfully crafted as any poem.

While we cannot all write like Churchill, perhaps we should try.

APPENDIX D

ON LEVELS OF EDIT

Many professionals are as confused by the word "edit" as they are by the word "style." This confusion stems largely from the fact that editing involves different levels of revision, depending on the desired clarity and exactness of expression for the document at hand.

For Computing Services documentation, the Computing Services editors offer four ascending levels of editing. A Level I edit (the lowest) merely checks for the more obvious errors in grammar and logic. Level II checks in addition for faulty punctuation and elementary inconsistencies or flaws in word use and sentence structure. A Level III edit also corrects wordiness, more subtle errors in sentence structure, and non-conformity to standard formats. A Level IV edit-- which Computing Services normally requires for documents--also checks for any logical flaws in the overall structure of the document.

Level II

In addition to the items in Level I:

- Internal inconsistencies in acronyms, hyphenation, format, abbreviations, etc.

- Non-standard word use and punctuation.

- Misplaced modifiers and sentence fragments.

Level I

- Subject-verb disagreements

- Typographical errors and misspellings

- Internally inconsistent headings and non-standard pagination

- Errors in sequencing of tables, figures, references, appendices, etc.

- Misalignment or misorientation of figures

- Inadequate footnotes or references to find the documents cited

- Parts of document in disagreement (e.g., text with figures)

Level III

In addition to the items in Level II:

- Faulty sentence structure:

    --Overly complex sentences.
    --Incomplete comparisons.
    --Faulty parallelism.

- Wordiness

- Overuse of passive voice.

- Unclear figures and tables.

- Non-standard format.

Level IV
In addition to the items in Level III: • Any deficiencies in organization (e.g., poorly organized paragraphs, structurally deficient chapters, illogical overall organization).

Unless authors or managers specify otherwise, the Computing Services editors will assume a Level IV edit for documents at hand.

APPENDIX E

GENERIC MAILING LISTS

To use current mailing lists, link to the public minidisk PUBLICAT. Use the Script imbed (.im) control word to insert the contents of the list into the printout of your main file. (Remember that CMS searches your minidisks in alphabetical order by filemode letter.)

Table 3 identifies available mailing lists.

Table 3

Available Mailing Lists

Type of List	Filename	Filetype
Computing Services Section Managers and Group Leaders	CSSHGL	SCRIPT
Computer Users Group Data Acquisition Subcommittee	CUGDAS	SCRIPT
Computer Users Group Data Management Subcommittee	CUGDMS	SCRIPT
Computer Users Group Distributed Computing Subcommittee	CUGDCS	SCRIPT
Computer Users Group Graphics Subcommittee	CUGGS	SCRIPT
Computer Users Group Installation Advisory Subcommittee	CUGIAS	SCRIPT
Computer Users Group Personal Desktop Computer Subcommittee	CUGPDCS	SCRIPT
Computer Users Group Representatives	CUGREP	SCRIPT
Computer Users Group Timesharing Subcommittee	CUGTS	SCRIPT
End-of-Month Accounting Report	ACCTLIST	SCRIPT
Region Managers	REGMLIST	SCRIPT

APPENDIX F

DEFINITIONS OF COMMON ABBREVIATIONS AND ACRONYMS

While we recommend that you *not* use acronyms or abbreviations (see "Abbreviations" in Chapter 6), the following alphabetized list will aid you in identifying abbreviations and acronyms that you are likely to encounter in other writing at Argonne. (This list does not include all Argonne organizations. For a complete list of Argonne organizations, see "Organization Abbreviations" on page two of the *Argonne Directory 1985.)*

ACME	Annual Conference of Managing Editors
ACRF	Advanced Computer Research Facility
ADI	Asynchronous Data Interface
ADP	Administrative Data Processing
ADPO	Administrative Data Processing Oversight
ALD	Associate Laboratory Director
AMOS	Argonne Materials Order System
AMPS	Automated Materials Payables System
AMS	Applied Mathematical Sciences
ANL	Argonne National Laboratory
ANSI	American National Standards Institute
APAR	Authorized Program Analysis Report
APDA	Apple Programmer's and Developer's Association
APS	Advanced Photon Source
ARPAnet	Advanced Research Projects Agency network
ASCII	American Standard Code for Information Interchange
ASP	Asymmetric Multiprocessing System
BASI	Bell Atlanticom Systems, Inc.
Basic	Beginners All-purpose Symbolic Instruction Code
BIOS	Basic Input/Output System
BITnet	Because It's Time network
BLP	bypass label processing
BMDP	Biomedical Computer Programs
BNL	Brookhaven National Laboratory
bpi	bits per inch
bps	bits per second
BSC	Binary Synchronous Communications
B&R	Budget and Reporting
CAD	Computer-Aided Design
CAE	Computer-Aided Engineering
CAM	Computer-Aided Manufacturing
CBT	computer-based training
CCnet	Computer Center network
CCP	communication control processor
CDC	Control Data Corporation
CFT	Cray Fortran
CGA	color graphics adapter
CGM	computer graphics metafiles

CICS	Customer Information Control System
CLG	compile, load, and go
CMS	Conversational Monitor System
	Code Management System
Cobol	Common Business Oriented Language
COS	class of service
	Cray Operating System
CostBud	Cost and Budget Monthly Estimating System
CostPro	Cost Projection System
CP	Control Program
CPC	Computing Policy Committee
cpi	characters per inch
CPM	critical path method
cps	characters per second
CPU	Central Processing Unit
CRAS	Computer Resource Accounting System
CRT	cathode-ray tube
CSMP	Continuous System Modeling Program
CSnet	Computer Science network
CSR	Customer Service Representative
CTC	channel-to-channel (adapter)
CTSS	Cray Timesharing System
CUG	Computer Users Group
DARPA	Defense Advanced Research Projects Agency
DASD	direct access storage device
DBAO	Database Administration Office
DBMS	Data Base Management Systems
DCA	Defense Communication Agency DCA Digital Communications Associate
DCB	data control block
DCF	Document Composition Facility
DCL	Digital Command Language
DD	data definition
DDD	Direct Distance Dialing
DEC	Digital Equipment Corporation
DECnet	Digital Equipment Corporation network
DECUS	Digital Equipment Computer Users Society
DID	Direct Inward Dialing
DIF3D	Three-Dimensional Neutron Diffusion Program
DIRMAINT	Directory Maintenance Program Product
Disspla	Display Integrated Software System and Plotting Language
DIU	Data Interface Unit
DIVBUD	Divisional Budget System
DJC	dependent job control
DLS	Directory Lookup System
DMS	Display Management System
DOB	Data Option Board
DOD	Department of Defense
	Direct Outward Dialing
DOE-CH	Department of Energy Chicago Operations Office
DOS	Disk Operating System
dpi	dots per inch
DSCB	dataset control block
DSN	dataset name
DSP	Dynamic Support Programs
DTA	Dynamic Table Allocation

DTMF	Dual Tone Multi-Frequency
DTR	data-terminal ready
DTS	Digital Telecommunications System
EARN	European Academic Research Network
EBCDIC	Extended Binary Coded Decimal Interchange Code
EDUCOM	educational community
	Interuniversity Communications Council
EGA	Enhanced Graphics Adapter
EIS	Environmental Impact Studies
	Executive Information Services
ER	Energy Research
FACET	Financial Applications Committee to Effect Telesis
FB	fixed blocked
FIFO	first in, first out
FIS	Financial Information System
FMS	Financial Management System
	Forms Management System
FNAL	Fermi National Accelerator Laboratory
Fortran	Formula Translator
FPS	Floating Point System
FSP	Full-Screen Product (SAS)
FTS	Federal Telecommunications System
FX	foreign exchange
FY	fiscal year
Gbyte	gigabyte
GES	Government Expert Series
GKS	Graphics Kernel Standard
GPE	general purpose equipment
GPO	Government Printing Office
	Group Processing Option
GSA	General Services Administration
HEP	Heterogeneous Element Processor
HEPnet	High Energy Physics research network
HFS	Hierarchical Filing System
HP	Hewlett-Packard
HRS	Human Resource System
HVAC	heating, ventilating, and air conditioning
Hz	hertz
IBM	International Business Machines Corporation
IBS	Interactive Budget System
IBT	Illinois Bell Telephone
IBX	Integrated Business Exchange
ICU	Integrated Control Unit
IE	information expert
IEP	International Energy Development Programs
IFR	Integral Fast Reactor
IFS	Integrated Financial System
IGES	Initial Graphics Exchange Specification
ILN	Intra-Laboratory Network
IMSL	International Mathematical and Statistical Libraries
INFN	Instituto Nazionale Fisica Nucleare
IPL	initial program load
IPNS	Intense Pulsed Neutron Source Program
IRG	inter-record gap
IRIS	Integrated Raster Imaging System

ISI	Integral Systems, Inc.
ISN	internal sequence numbers
ISO	International Standards Organization
ISPF	Interactive System Productivity Facility
ISS	Information Systems Section
ITE	Integrated Terminal Equipment
I/O	input/output
JAD	Joint Analysis Directorate
JAnet	Joint Academic Network
JCL	Job Control Language
JES3	Job Entry Subsystem 3
JUR	Job Utilization Record
KHz	kilohertz
KWIC	Key-Word-in-Context
LADB	Laboratory-Wide Administrative Database
LAN	local area network
LANL	Los Alamos National Laboratory
LASL	Los Alamos Scientific Laboratory
LAT	Local Area Transport
LBL	Lawrence Berkeley Laboratory
LIFO	last in, first out
LLNL	Lawrence Livermore National Laboratory
lpi	lines per inch
LRECL	logical record length
LSE	Language-Sensitive Editor
LWG	Language Working Group
MAILnet	Mail network
MAST	Materials and Services Tracking
Mbyte	megabyte
METC	Morgantown Energy Technology Center
MFE	Magnetic Fusion Energy
MFEnet	Magnetic Fusion Energy network
MHz	megahertz
MILnet	U.S. Military network
MInet	European U.S. Military network
MKO	Machine Keyboard Originate
MMS	Module Management System
MNP	Microcom Network Protocol
modem	modulator-demodulator
MSA	Management Science America, Inc.
MUR	Miscellaneous Utilization Record
MVS	Multiple Virtual Storage
MVS/SP	Multiple Virtual Storage/System Product
MVS/XA	Multiple Virtual Storage/Extended Architecture
MVT	multiprogramming with a variable number of tasks
NAG	Numerical Algorithms Group
NAP	network access port
NCP	Network Control Program
NESC	National Energy Software Center
NJE	Network Job Entry
NJI	Network Job Interface
NMFECC	National Magnetic Fusion Energy Computer Center
NSU	normalized service unit
NTIS	National Technical Information Services
OASys	Office Automation System

OBS	On-Line Business Systems, Inc.
OMB	Office of Management and Budget
OPA	Office of Public Affairs
ORNL	Oak Ridge National Laboratory
OS	operating system
OSI	Open Systems Interconnect
OUTSERV	Output Service
PBX	Private Branch Exchange
PDS	partitioned dataset
PGA	Professional Graphics Adapter
PHIGS	Programmers Hierarchical Interactive Graphics System
PHYSnet	High Energy Physics research DECnet
PIRS	Purchase Information Reporting System
PLP	Personal LaserPrinter
PL/I	Programming Language/I
PME	performance measurement and evaluation
PMS IV	Project Management System IV
PMT	photo-mechanical transfer
POB	proof-of-breeding
PROFS	Professional Office System
PSW	program status word
PTF	Program Temporary Fix
PVM	VM/Pass-Through Facility
QMS	Quality Micro Systems
RACF	Resource Access Control Facility
RADS	Remote Access Data Station
RAI	Resource Availability Index
RAM	random-access memory
RCU	relative capacity unit
RECFM	record format
RFI	Request for Information
RFP	Request for Proposals
RJE	remote job entry
RJP	remote job printer
	remote job processing
ROM	read-only memory
RSCS	Remote Spooling Communications Subsystem
SAS	Statistical Analysis System
SCSI	Small Computer Systems Interface
SDA	System Design Alternative
SDLC	synchronous data link control
SDM	System Development Methodology
SES	System External Specifications
SGML	Standard Generalized Markup Language
SIG	special interest groups
SIS	System Internal Specifications
SLAC	Stanford Linear Accelerator Center
SMDR	Station Message Detail Record
SMF	System Management Facilities
SNA	System Network Architecture
SPSS	Statistical Package for the Social Sciences
SRD	System Requirements Definition
SRL	Savannah River Laboratory
STC	Society for Technical Communication
	Storage Technology Corporation

STE	standard telephone equipment
STS	Stocktracker System
SUR	Step Utilization Record
TAPS	Terminal Application Processing System
TCP/IP	Transmission Control Protocol/Internet Protocol
TDMS	Terminal Data Management System
THTB	Transient Heat Transfer, Version B
TI	Texas Instruments, Incorporated
tpi	tracks per inch
TRC	Technical Review Committee
TSO	Time Sharing Option
TSPERM	Time Sharing Permanent
TTY	teletypewriter
UCRS	Uniform Contractor Reporting System
UNICOS	Unix-Based Operating System
UPX	Unix Parallel Executive
UTS	Universal Timesharing System
VAX	Virtual Address Extension
VB	variable blocked
VBS	variable blocked and spanned
VM	Virtual Machine
VMA	Virtual Machine Assist
VMS	Virtual Memory System
VM/SP	Virtual Machine/System Product
VM/370	Virtual Machine Facility/370
VRM	voice response message
VSAM	virtual storage access method
VTAM	Virtual Telecommunications Access Method
VTOC	volume table of contents
WATS	Wide Area Telephone Service
XNS	Xerox Network System

APPENDIX G

FREQUENTLY USED WORDS, PHRASES, AND ACRONYMS

The following master list of words and phrases peculiar to the world of computing demonstrates how we customarily spell, punctuate, or capitalize these words and phrases. For their definitions, you may wish to refer to Appendix F: "Definitions of Common Abbreviations and Acronyms" or to the *Argonne Directory 1985. (Note that the appearance of an acronym in this list does not imply approval of its use in Computing Services documents.)* For items not listed in those two sources, you may wish to consult the *Vocabulary for Data Processing, Telecommunications, and Office Systems* or the *American National Dictionary for Information Processing Systems,* both of which are available for examination in the Mathematics-Physics Library and in the Computer Publications Editors' office (Building 221, Room B-211).

A-disk	AZPC2
Abend	Base SAS
Account Services	BASI
ACME	Basic
ACRF	batch (use MVS in front of it)
ADI	BIOS
ADP	BITnet
ADPO	BLP
ALD	BMDP
AMDLIB	BNL
AMOS	bpi
AMPS	bps
AMS	BSC
Anderson Jacobson modem	Building 221
ANL Organizational Assessment Council	B&R
ANSI	C (programming language)
ANSYS	CAD
APAR	CAE
APDA	CalComp
Apple IIe personal computer	Callback
Apple II+ personal computer	CAM
APS	catalog
Argonne computing network	cataloged procedures
Argonne Computing Newsletter	CBT
Argonne-East	CCnet
Argonne file transfer network	CCP
Argonne-West	CDC
ARPAnet	central Argonne computers
ASCII line-oriented terminal	central VAX cluster services
ASD	CFT
Ashton-Tate	CGA
ASP	CGM
Assembler language	CICS
AutoCAD	Class U

Class VI computer
CLG
CMS interactive service
co-processor
Cobol
COLLECT Users Group
Communication Services
Computer Callback Service
Computer Network Section
Computer Operations Manager
Computer Users Group
Computing Services Consulting Office
control-S
COS
cost center RACF administrator
cost-effective
CostBud
CostPro
CP
CPC
cpi
CPM
cps
CPU
CRAS
Cray X-MP/14
Cray-1S
Cricket Graph
CRT
CSMP
CSnet
CSR
CTC
CTSS
Cuechart
CUG
Cyber
DARPA
DASD
data processing
data streaming
database
DatagraphiX AutoCOM II
dataset
DBAO
DBase III Plus
DBMS
DCA
DCB
DCF
DCL
DD statement
DDD
DEC
DECnet

DECUS
DEC PDP-10
DEC VAX-11/750
DEC VAX 8700 computer
DEC VT100
DECnet-DOS
dial-up
DID
DIF3D
DIRMAINT
DisplayWriter
Disspla
DISSPOP
DIU
DIVBUD
DJC
DLS
DMS
DOB
Document Distribution Counter
DOD
DOE-CH
DOS
double-space
dpi
DSCB
DSN
DSP
DTA
DTMF
DTR
DTS
EARN
EBCDIC
EDUCOM
EGA
EIS
Energy Research Cray X-MP computer
ER
Ethernet
Etherseries
ex officio
EXCP
EXEC statement
EXEC ZDISK
execs
Exxon
Ezpert
FACET
FB
FIFO
FIS
FMS
FNAL
fontname

fontsize
Fortran
Fortran H Extended (Enhanced) compiler
FPS
front-end (adjective)
front end (noun)
FR80
FSP
FTS
full screen terminal
FX
FY1987
Gandalf modem
global-data-set-enqueue
GRAPHICS 1 minidisk
Gbyte
GES
GKS
GPE
GPO
GSA
hardcopy
Hayes Smartmodem
HEP
HEPnet
Hewlett-Packard Company
Hewlett-Packard 3278 Emulation Accessory
HFS
HP 3000
HRS
HVAC
Hydra Protocol Converter
Hypercard
Hz
IBM PC (after first reference)
IBM PC-AT
IBM PC-XT
IBM Personal Computer
IBM PS/2
IBM 1403 printer
IBM 3042 Attached Processor
IBM 3270-compatible display terminal
IBM 3274 Cluster Controller
IBM 3350-equivalent disk
IBM 3380 disk drive
IBM 3380-type disk
IBM 3800 laser printer
IBM 6670 Information Distributor
IBS
IBT
IBX
ICU
IE
IEP
IFR

IFS
IGES
ILN
ImageWriter
IMSL library
in-house
indices
INFN
InFoToGo
Inquire
InteCom S/80 PBX
Intra-Laboratory Network
IPL
IPNS
IRG
IRIS
ISI
ISN
ISO
ISPF
ISS
ITE
Itel 7330-12 direct access dataset
ITIME timing subroutine
I/O
JAD
JAnet
JCL
JES3
JOB card
Job Control Language   No CAPS
job-net
JOB statement
jobid
jobname
jobnumber
job step
job time
JUR
Kermit-CMS
Kermit-MS
KHz
Komand
KWIC
Laboratory-wide
LADB
LAN
LANL
LANmark Ethernet
LaserWriter
LASL
LAT
LBL
Librarian
LIFO

line-oriented terminal
linkedit
Linotype L300P typesetter
Lisa 2 personal computer
LLL
LLNL
long-range plan
LOOKUP
Lotus 1-2-3
lowercase
lpi
LRECL
LSE
LWG
Macintosh personal computer
Macintosh Plus personal computer
Macintosh 512K personal computer
MacTerminal
MAILnet
Mark IV
Mass-11 text formatter
MAST
math co-processor
Matrix camera
Mbyte
METC
MFE
MFEnet
MHz
microcomputer
microfiche
microprocessor
MicroVAX
MILnet
MInet
minicomputer
minidisk
MKO
MMS
MNP
modem
Mortran
MS DOS
MSA
multiprocessing
multitasking
multiuser
MUR
MVS batch
MVS-format JOB card
MVS JES3
MVS operating system
MVS TSO
MVS/SP
MVS/XA

MVT
NAG library
NAP
NCP
NESC
NJE file transfer network
NJI
NMFECC
nodename
non-programmatic
NSU
NTIS
OASys 64
OBS
offline
offsite
OMB
online HELP
online NEWS
onsite
OPA
ORNL
OS
OSI
OUTSERV
Pascal
passthrough
PBX
PDP-11/70
PDS
personal computer (non-IBM)
PGA
PHIGS
PHYSnet
PIRS
Plotutl
PLP
PL/I
PME
PMS IV
PMT
POB
pointsize
postprocessor
PostScript
printout
procstepname
PROFS
Proofread
PROOFREAd command
PSW
PTF
PVM
QMS
Racal-Vadic modem

RACF Administrator
RACF-protected
RADS
RAI
RAM
RCU
RECFM
red IBM 3033 computer
RELAY Gold
RFI
RFP
RJE
RJP
ROM
Room A-142
RSCS
RSX-11M
SAS
SAS/Graph
scheduling area
Script
SCSI
SDA
SDLC
SDM
SES
SGML
shutdown (noun)
SIG
SIM3270
SIM3278
SIS
SLAC
Slides
SMDR
SMF
SNA
Softerm II
SORT/MERGE Program
spreadsheet
Speakeasy
SPSS
SRD
SRL
SSD
standalone
STC
STE
stepname
Stocktracker
Stores Section of the
    Materials Department
STS
subgroup
SuperCalc

supercomputer
SUR
Syspub
System 2000
S33A JES3 main processor
S33B JES3 main processor
Tape Librarian
TAPS
TCP/IP
TDMS
Tektronix
Telenet
TELE950
Tellagraf
TELNET command
Terminals
    IBM 3270-compatible display
    line-oriented
TESTSERV
TeX text formatter
text editing
text formatting
THTB
TI
timesharing
TN train
tpi
TRC
TSO interactive service
TSPERM
TSR
TTY
Tymnet
UCC-1 tape management system
UCRS
UNICOS
Unix
uppercase
uptime
UPX
User Services consultants
User Services Consulting Office
userid
UTS
Vadic
VAX
VAX   Vax cluster
VAXes
VAX/VMS NJE
VAX-11/780
VAX 8700
VB
VBS
Versaterm
viewgraph

VisiCalc
VM
VMA
VMBACKUP
VMS
VMSCHEDULE
VM/SP
VM/SP backup system
VM/SP4
VM/370
VM operating system
VRM
VSAM
VTAM
VTOC
VT100
V/Spell
wall-clock time
Watfiv

WATS
word processing
workstation
Workstation Evaluation and
   Demonstration Room
Wylbur
Wylbur interactive service
Xedit
XNS
yellow IBM 3033 computer
Z-disk
3Com
3Server
7GeV
9-track drives
512K
//*FORMAT statement
//*MAIN statement
//stepname EXEC

INDEX

work much faster than Hypercard. Hypertalk script can be in all sorts of places in Hypercard. Therein lies both the strength and the weakness of Hypercard. Rodney has written a XCMD to very quickly plot the data collected. Such an XCMD is installed in the stack with a resource editor and, then, can be used by putting just the XCMD name into the appropriate place in a Hypertalk script.

Overall, working with the Apple Macintosh SE, Rodney can read in 3-5 points/second in an open loop, 5-10 points/second in a tight loop, and about 100 points/second in an XCMD loop. If they read in a whole buffer of data at once, this Hypercard setup could be as fast as a Fortran program. In this last setup, the National Instruments board would control the speed. With the data read directly into Hypercard, it is easy to organize, store, and (when needed) access.

The Programmer's Special Interest Group will have a special meeting the last Wednesday of July (July 27, 1988), when a MPW demonstration will be given. At an earlier meeting, compilers (including Lightspeed Parcel, Turbo Pascal, TML Pascal, MacFortran 020, Lightspeed C, and MPW) were evaluated based on the experience of those present. A list giving the results of this evaluation is available from John Mattson. John would also appreciate further information on Apple Macintosh compilers to add to the list. The Programmer's Special Interest Group normally meets the first Wednesday of each month at 11:00 a.m. in Building 221, Room C-201. Call John Mattson at extension 2-5535 for details.

The Excel Special Interest Group normally meets the third Wednesday of each month at 11:00 a.m. in Building 221, Room A-216. In July, the meeting will provide a first look at Excel Version 1.5. There will be no meeting in August. The September meeting will feature the use of function macros in iterative calculations and the conversion of a Fortran program to an Excel worksheet. Call Ralph Leonard (Chemical Technology) at extension 2-3229 for details.

The latest version of Expressionist, a desk accessory (DA) for writing equations, was said to be very easy to learn and to use. Duane Maas (Apple Computer) warned that MacDraw II can be used with System 5.0 but that the Apple LaserWriter driver Version 5.2 from System 6.0 is needed to print on the Apple LaserWriter without trouble.

Excel Version 1.5 has been released. A new version of 4th Dimension is also out. They both will work with System 6.0. A System 6.0.1 is expected out in August 1988. When installing a new system, Duane Maas recommended that the Apple-supplied installer be used at least once so that it writes the boot blocks. The installer saves the fonts and DAs from the old system and installs them on the new system. With System 6.0 and higher, one gets MacroMaker (like QuicKeys but not as good), CloseView (magnifies the screen up to 16x) with white letters on black screen as an option, the use of Apple Macintosh II sounds on the Apple Macintosh Plus and the Apple Macintosh SE, the version number shown in the Get Info box outside the comment area so that it cannot be erased, and the ability of Multifinder to open a new file of an already open application from the finder. A new driver for the Apple LQ printer is expected next month.

Duane Maas explained how all versions of Microsoft Excel (up to and including Version 1.5) were written in Microsoft P code. This is why Excel can use only one megabyte of RAM in the Apple Macintosh. When Excel Version 2.0 comes out, it will be written using a Microsoft C compiler and will use more than one megabyte of RAM.

The August meeting was moved back to the THIRD week in August (Wednesday, August 17, 1988) so that Duane Maas can demonstrate the slide making capabilities of the Cricket Presents and Microsoft PowerPoint presentation programs. Lee Wagar (Graphic Arts) indicated that Graphic Arts is considering the purchase of equipment for making 35mm color slides from the Apple Macintosh output after an initial shakedown of the slide-making hardware establishes a system that is clearly suitable.

The Macintosh Users Group normally meets the second Wednesday of each month at 11:00 a.m. in Building 221, Room A-216. Contact Bob Kampwirth (Materials Science), Ron Shepard (Chemistry), Ray Carlson (Computing and Telecommunications), Lee Wagar (Graphic Arts), Jim Lewellen (Computing and Telecommunications), or Ralph Leonard (Chemical Technology) for further meeting information.

The meeting adjourned at 12:35 p.m.

Ralph Leonard, Macintosh Users Group Secretary

WORKLOAD STATISTICS (MAY 31 THROUGH JUNE 29, 1988)

NUMBER OF ENROLLED USERS

	BEGINNING OF MONTH	END OF MONTH	ACTIVE DURING MONTH
CMS	1,346	1,357	566
Wylbur	1,617	1,642	523
MVS TSO	54	54	11
CICS	1,617	1,642	72
MVS Batch	2,003	2,048	795
VAX/VMS	313	328	172
Cray	200	235	111
All Systems	2,003	2,048	1,035

INTERACTIVE AND BATCH USE

| | NUMBER OF SESSIONS OR JOBS RUN | | | | SESSION | CPU |
	PRIME	NIGHT	WEEKEND	TOTAL	TIME (HRS)	TIME (HRS)
INTERACTIVE						
CMS	13,818	2,294	1,258	17,370	34,702.1	105.84
Wylbur	11,260	464	413	12,137	10,559.6	11.57
MVS TSO	39	2	6	47	24.1	0.03
CICS	25	0	0	25	0.0	0.82
VAX/VMS	7,531	428	402	8,361	10,145.9	64.07
Cray	782	50	51	883	366.8	2.09
IBM BATCH						
Class U	12,056	2,287	939	15,282	n.a.	39.33
Class W	20,104	2,095	1,009	23,208	n.a.	175.38
Class X	1	1,317	81	1,399	n.a.	144.91
Class Y	0	0	354	354	n.a.	25.78
Class Z	0	0	151	151	n.a.	22.02
Nonmain	13,844	1,420	628	15,892	n.a.	0.00
Total	46,005	7,119	3,162	56,286	n.a.	407.42
CRAY BATCH						
Prime	3,965	504	257	4,726	n.a.	90.72
Night	0	436	31	467	n.a.	59.13
Weekend	0	0	195	195	n.a.	42.79
Standby	0	128	148	276	n.a.	39.94
Total	3,965	1,068	631	5,664	n.a.	232.58
VMS BATCH						
Prime	1,154	253	158	1,565	n.a.	137.31
Night	7	60	21	88	n.a.	26.01
Weekend	0	2	41	43	n.a.	6.96
Standby	0	0	0	0	n.a.	0.00
Total	1,161	315	220	1,696	n.a.	170.28

INPUT/OUTPUT

Lines Printed	
Local	63,803,692
Remote	57,200,469
Fiche	36,745,567
Cards Punched-Local Only	8,807
Tape Mounts	8,577
Microfiche Developed	4,433
Microfiche Frames Developed	801,321

GRAPHICS

	# OF JOBS	# OF FRAMES
CalComp Jobs	0	0
Versatec Jobs	23	230
Matrix 35mm Color	287	1,193
Matrix-8 x 10	3	6
Matrix-Negative	2	4
FR80 Film Plots		
35mm Black/White/Unsprocketed	129	1,168
35mm Black/White/Sprocketed	15	182
35mm Color	1	7
16mm Black/White/Sprocketed	0	0
16mm Color	0	0
105mm Black/White/Unsprocketed	0	0

DATA MANAGEMENT

Tapes Stored	22,355
New Tapes Saved	962
Tapes Released	1,008
Datasets Exported to Tape	3,130
Datasets Imported from Tape	549

* n.a. = not applicable

AVAILABILITY STATISTICS, BY MACHINE (MAY 31 THROUGH JUNE 29, 1988)

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
YELLOW IBM 3033							
All Shifts							
Interruptions	17	2	11		2	1	1
Hrs Unavailable	56.76	2.00	9.16		6.65	0.78	38.16
MTF/Unscheduled	165.80				331.61	663.23	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	14	2	11			1	
Hrs Unavailable	11.95	2.00	9.16			0.78	
MTF/Unscheduled	252.05					252.05	
RED IBM 3033							
All Shifts							
Interruptions	5	3				1	1
Hrs Unavailable	41.65	4.53				0.16	36.95
MTF/Unscheduled	339.17					678.35	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	3	2				1	
Hrs Unavailable	3.00	2.83				0.16	
MTF/Unscheduled	261.00					261.00	

AVAILABILITY STATISTICS, BY SERVICE (MAY 31 THROUGH JUNE 29, 1988)

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
CMS							
All Shifts							
Interruptions	5	3				1	1
Hrs Unavailable	41.65	4.53				0.16	36.95
MTF/Unscheduled	339.17					678.35	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	3	2				2	
Hrs Unavailable	3.00	2.83				0.16	
MTF/Unscheduled	261.00					261.00	
WYLBUR							
All Shifts							
Interruptions	20	3	12		2	2	1
Hrs Unavailable	60.61	3.96	10.46		6.86	1.15	38.16
MTF/Unscheduled	131.87				329.69	329.69	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	16	2	12			2	
Hrs Unavailable	13.71	2.10	10.46			1.15	
MTF/Unscheduled	125.14					125.14	
MVS TSO							
All Shifts							
Interruptions	20	3	12		2	2	1
Hrs Unavailable	60.61	3.96	10.46		6.86	1.15	38.16
MTF/Unscheduled	131.87				329.69	329.69	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	16	2	12			2	
Hrs Unavailable	13.71	2.10	10.46			1.15	
MTF/Unscheduled	125.14					125.14	
JES3							
All Shifts							
Interruptions	18	2	11		2	2	1
Hrs Unavailable	57.30	2.10	9.20		6.86	0.96	38.16
MTF/Unscheduled	132.54				331.35	331.35	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	15	2	11			2	
Hrs Unavailable	12.26	2.10	9.20			0.96	
MTF/Unscheduled	125.86					125.86	
CICS							
All Shifts							
Interruptions	3				1	1	1
Hrs Unavailable	6.50				2.33	0.91	3.25
MTF/Unscheduled	237.83				713.50	713.50	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	3				1	1	1
Hrs Unavailable	6.50				2.33	0.91	3.25
MTF/Unscheduled	85.83				257.50	257.50	
VAX/VMS							
All Shifts							
Interruptions	7	2	3		1		1
Hrs Unavailable	8.41	3.33	3.78		0.30		1.00
MTF/Unscheduled	355.79				711.58		
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	6	2	3		1		
Hrs Unavailable	7.41	3.33	3.78		0.30		
MTF/Unscheduled	256.58				256.58		
CRAY							
All Shifts							
Interruptions	30	9	14			4	3
Hrs Unavailable	59.90	21.00	9.18			2.13	27.58
MTF/Unscheduled	94.30					165.02	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	18		14			2	2
Hrs Unavailable	10.61		9.18			0.85	0.58
MTF/Unscheduled	63.34					126.69	

COMPUTING CENTER TELEPHONE NUMBERS

Information and Assistance	Onsite (Illinois)	Onsite (Idaho)	Offsite (Area Code 312)
Current System Status Recorded Message	2-5466	8-972-5466	972-5466
User Consultant	2-5405	8-972-5405	972-5405
Documentation	2-5405	8-972-5405	972-5405
Computer Operations	2-5421	8-972-5421	972-5421
VM/SP Operator	2-8442	8-972-8442	972-8442
RADS Maintenance	2-7273	6-7463	972-7273

Computer Callback Service 1-800-332-1478 (only within Illinois)

CICS, CMS, Wylbur, and TSO Interactive Computing Services

	Onsite (Illinois)	Onsite (Idaho)	Offsite (Area Code 312)
IBM 3270 Protocol Converter 1200 to 19.2K Bits Per Second (Onsite) 1200 to 2400 Bits Per Second (Offsite)	2-3270	n.a.	972-3270
X.25 Terminal Multiplexor (9.6K Bits Per Second)	2-2525	n.a.	n.a.
IBM 3174 Cluster Controller	2-3174	n.a.	n.a.
1,200 Bits Per Second Full-Duplex (Bell 212 and Hayes Compatible Modems)	2-2212	6-7005	972-2212
1,200 Bits Per Second Full-Duplex (Vadic 3400 Compatible Modems)	2-7612	6-7005	972-7612
300 Bits Per Second	2-7603	6-7005	972-7603

Batch Remote Job Entry Service

	Onsite (Illinois)	Onsite (Idaho)	Offsite (Area Code 312)
2,000 or 2,400 Bits Per Second (Bell 201A and 201C Compatible Modems)	2-7989	n.a.	972-7989
4,800 Bits Per Second (Bell 208B Compatible Modems)	2-7573	n.a.	972-7573

Central DEC VAX 8700 and Cray VMS Station

	Onsite (Illinois)	Onsite (Idaho)	Offsite (Area Code 312)
1200 to 19.2K Bits Per Second (Onsite) 1200 to 2400 Bits Per Second (Offsite)	2-8700	6-8700	972-8700

Argonne MFEnet Dial-Up

	Onsite (Illinois)	Onsite (Idaho)	Offsite (Area Code 312)
300 or 1200 Bits Per Second	2-7920	n.a.	972-7920

ARPAnet Data Communications Network

	Onsite (Illinois)	Onsite (Idaho)	Offsite (Area Code 312)
1,200 to 2,400 Bits Per Second Full-Duplex	2-7490	n.a.	972-7490

Tymnet Commercial Packet-Switching Network
Use the CMS TYMNET Zdisk exec for the phone numbers in major U.S. cities.

COMPUTING CENTER SERVICE SCHEDULE
(All Times Are Central Standard Time)

	MVS JES3 Batch, UNICOS Wylbur, and TSO	VM/SP	VMS	MFEnet Gateway	ARPAnet
Monday to Thursday	00:00-07:00* 08:30-24:00	00:00-07:00* 08:30-24:00	00:00-07:00* 08:30-24:00	00:00-07:00* 08:30-24:00	00:00-24:00
Friday to Sunday	00:00-24:00	00:00-24:00	00:00-24:00	00:00-24:00	00:00-24:00

* Except for the interruption of UNICOS from 6:00 a.m. until 8:30 a.m. on Tuesdays and Thursdays for maintenance, service continues uninterrupted past 7:00 a.m. unless time is necessary for system work or to permit scheduled hardware and software maintenance. Computing and Telecommunications will not routinely schedule interruptions of computing center interactive, batch, and network services on Friday, Saturday, or Sunday mornings. By 4:30 p.m. each day, Computer Operations will announce the next day's planned service interruptions in the Current System Status Recorded Message (extension 2-5466) and in logon messages of the affected interactive systems. Computing and Telecommunications will announce planned interruptions to service on Friday, Saturday, Sunday, or for more than two-and-a-half hours at any time in the online NEWS as many days in advance as possible. Call or logon to check these announcements after 4:30 p.m. before making plans that require the availability of a service the following morning.

SUBJECT INDEX FOR CALENDAR YEAR 1988 (8/88)

These entries refer to *Newsletters* published in 1988. All previous *Newsletters* are indexed in the December 1987 issue of the *Newsletter* or use the LOOKUP command in CMS, Wylbur, and distributed VAX computers.

COMPUTING CENTER CLASSES

The Computing and Telecommunications Division (CTD) is offering one demonstration and four computing classes. There is no charge for attending classes unless otherwise indicated. To register, call or visit the Computing and Telecommunications Consulting Office (Building 221, Room A-139, extension 2-5405). All prospective attendees should register so that we can gauge the size of the class and notify attendees of any schedule changes. CTD will reschedule or cancel any classes with fewer than six registrants *one week* prior to the scheduled date of the class.

Obtaining the recommended documents and reading portions of them before you take a class will increase the benefits of attending the class.

INTRODUCTION TO COMPUTING FACILITIES AND SERVICES

Goals:	To develop an overview of available computing facilities and services provided by CTD.
Length of Class:	One 3-hour session
Date and Time:	September 7, 1988 (Wednesday), 9:00 a.m. to noon
Location:	Building 221, Room A-261
Suggested Reading:	*Guide to Computing at ANL* (ANL/TM 336) *Recommended Documentation for Computer Users at ANL* (ANL/TM 379) *Guide to Telecommunications at ANL* (ANL/TM 422)
Instructor:	Rich Slade

USING COMPUTER-BASED TRAINING

Goals:	To provide a demonstration of how to use computer-based training (CBT) courses in CMS to allow prospective students to learn more about available CBT courses.
Length of Demonstration:	One hour
Date and Time:	September 8, 1988 (Thursday), 9:30 a.m. to 10:30 a.m.
Location:	Building 221, Room A-261
Instructor:	Dave Leibfritz

COMPUTER-BASED TRAINING COURSES

CTD currently offers 25 different computer-based training courses in CMS and five courses on the central VAX 8700. These courses are listed below. For further information on any of the courses, call the User Services consultants at extension 2-5405.

DEC CBT Courses on the Central VAX 8700

Course Name	Course Title
VMSCAI	Introduction to VAX/VMS
EDTCAI	Introduction to the VMS editor
LSECAI	Introduction to the Language Sensitive Editor
EVECAI	Introduction to the Extensible VAX Editor
DTRCAI	Datatrieve for Users

IBM CBT Course

SLFTEACH   Introduction and Advanced Concepts of Xedit

CRWTH CBT Courses

General Data Processing Courses

DPINTRO	Introduction to Data Processing
DPDEV	Developing Data Processing Skills for End Users
DCCOMM	Data Communications, Connectivity, and LANs: An Introduction
ICUSER	Basic Information About Computer Information Center

Application System Courses

ASUSE5	Using Application System for Inquiry and Reporting
ASPROJ	Managing Projects with AS

CMS Courses

CMS	Using CMS
XEDIT	Using XEDIT

PROFS Courses

PROFOVER	Overview of Using PROFS V2
PROFCAL	Using PROFS V2--Calendar
PROFNOTE	Using PROFS V2--Notes & Messages
PROFMAIL	Using PROFS V2--Mail & Documents

SAS Courses

SASINTRO	Using SAS--Introduction & DMS
SASLANG	Using SAS--SAS Language
SASSTAT	Using SAS--Statistics
SASADVAN	Using SAS--Advanced Features
SASFSP	Using FSP--SAS/FSP
SASGRAPH	Using SAS/Graph

Tellagraf Course

TELLAGRA   Using TELLAGRAF

MVS Batch Courses

JCL	Introduction to Basic JCL
SORTMRG	Using SORT/MERGE Utilities

Basic Project Management Course

MANAGE   Project Management Concepts and Principles (see also ASPROJ)

TSO Course

TSOUSE	Using TSO
SPFUSE	Using ISPF

Miscellaneous Courses
(The following topics are part of the standard CRWTH courseware; however, the software is not installed at Argonne.)

ANSDB	Using Answer/DB
ADRUSE	Using ADRS II
DWRITE	Using DisplayWrite/370
FOCS1	Using Focus: Basic Reporting
FOCS2	Using Focus: Advanced Reporting
FOCS3	Using Focus: DataBase Maintenance and Design
IFUSER	Using IFPS
RAUSE1	Using RAMIS Information System: Basic Reporting
RAUSE2	Using RAMIS Information System: Advanced Reporting
RAUSE3	Using RAMIS Information System: DataBase Design and Management
RADMF	Using RAMIS II DMF
RDBUSE	Overview of Relational DataBase
SQLDB2	Using SQL/QMF (DB2): Basic Reporting
SQLDB3	Using SQL/QMF (DB2): Advanced Reporting
SQLDS2	Using SQL/QMF (DS): Basic Reporting
SQLDS3	Using SQL/QMF (DS): Advanced Reporting

INTRODUCTION TO VAX/VMS

Goals:	To learn some basic concepts of VAX/VMS (including how to logon to VMS, create files, set up subdirectories, compile and link programs, submit batch jobs, use the online HELP facilities, and access the companion computer-based instruction courses in VMS).
Length of Class:	One 3-hour session
Date and Time:	September 8, 1988 (Thursday), 1:30 p.m. to 4:30 p.m.
Location:	Building 221, Room A-261
Instructor:	Diane Lark

INTRODUCTION TO WYLBUR FOR TEXT EDITING

Goals:	To learn to use Wylbur, an interactive system that provides a convenient interface for MVS batch processing. To learn about the MVS batch system at Argonne (including how to compile and execute programs and obtain printer output). Wylbur is efficient, easy-to-learn, and powerful for editing data and programs and for submitting jobs for batch execution.
Length of Class:	One 3-hour session
Date and Time:	September 12, 1988 (Monday), 1:30 p.m. to 4:30 p.m.
Location:	Building 221, Room A-261
Suggested Reading:	*SLAC Wylbur Tutorial* *OBS Wylbur Reference Manual*
Instructor:	Mike Thommes

NOTE: Depending on the class attendance and the needs of the attendees, CTD may offer one or more of the additional Wylbur and MVS batch computing classes later in June or July 1988.

USING VAX/VMS

Goals:	To learn to use the VAX/VMS system. This class will include suggestions for writing basic DCL command procedures (including a LOGIN.COM), an overview of the aspects of VMS internals affecting program performance, and the usage of the VMS system debugger and the interprocess communications features.
Length of Class:	One 3-hour session
Date and Time:	September 13, 1988 (Tuesday), 1:30 p.m. to 4:30 p.m.
Location:	Building 221, Room A-261
Instructor:	Diane Lark

MVS BATCH SCHEDULING PERFORMANCE FROM MAY 31 AT 7:00 A.M. TO JUNE 29, 1988, AT 7:00 A.M.

	STARTED IN PRIME SHIFT	STARTED IN OVERNIGHT SHIFT	STARTED IN WEEKEND SHIFT	TOTAL OF ALL SHIFTS
CLASS U EXPEDITED BATCH				
Number Started	12,056	2,287	939	15,282
Number Started in 12 Minutes	11,630	1,666	763	14,059
Percent Started in 12 Minutes	96.5	72.8	81.3	92.0
25th Percentile Start Delay (Minutes)	0.1	0.1	0.1	0.1
50th Percentile Start Delay (Minutes)	0.1	0.3	0.1	0.1
75th Percentile Start Delay (Minutes)	0.2	15.3	2.5	0.3
90th Percentile Start Delay (Minutes)	1.8	44.2	30.6	6.2
99th Percentile Start Delay (Minutes)	70.2	228.3	220.6	99.9
CLASS W REGULAR BATCH				
Number Started	20,104	2,095	1,009	23,208
Number Started in 2 Hours	19,866	1,854	1,001	22,721
Percent Started in 2 Hours	98.8	88.5	99.2	97.9
25th Percentile Start Delay (Hours)	0.0	0.0	0.0	0.0
50th Percentile Start Delay (Hours)	0.0	0.0	0.0	0.0
75th Percentile Start Delay (Hours)	0.0	0.2	0.0	0.0
90th Percentile Start Delay (Hours)	0.1	2.4	0.0	0.1
99th Percentile Start Delay (Hours)	2.7	12.8	0.9	5.2
CLASS X DEFERRED OVERNIGHT BATCH				
Number Started	1	1,317	81	1,399
Number Started in 15 Hours	1	1,316	77	1,394
Percent Started in 15 Hours	100.0	99.9	95.1	99.6
25th Percentile Start Delay (Hours)	9.5	3.0	0.0	2.8
50th Percentile Start Delay (Hours)	9.5	3.8	0.0	3.6
75th Percentile Start Delay (Hours)	9.5	6.8	0.1	6.7
90th Percentile Start Delay (Hours)	9.5	9.4	1.3	9.4
99th Percentile Start Delay (Hours)	9.5	12.0	27.4	12.1
CLASS Y DEFERRED WEEKEND BATCH				
Number Started	0	0	354	354
25th Percentile Start Delay (Hours)	0.0	0.0	0.0	0.0
50th Percentile Start Delay (Hours)	0.0	0.0	14.9	14.9
75th Percentile Start Delay (Hours)	0.0	0.0	18.5	18.5
90th Percentile Start Delay (Hours)	0.0	0.0	33.3	33.3
99th Percentile Start Delay (Hours)	0.0	0.0	61.0	61.0
CLASS Z LIMITED DEFERRED WEEKEND BATCH				
Number Started	0	0	151	151
25th Percentile Start Delay (Hours)	0.0	0.0	0.0	0.0
50th Percentile Start Delay (Hours)	0.0	0.0	75.6	75.6
75th Percentile Start Delay (Hours)	0.0	0.0	79.1	79.1
90th Percentile Start Delay (Hours)	0.0	0.0	79.4	79.4
99th Percentile Start Delay (Hours)	0.0	0.0	89.9	89.9
TOTAL OF ALL CLASSES				
Number Started	32,161	5,699	2,534	40,394

INTRODUCTION TO VAX/VMS

Goals:
To learn some basic concepts of VAX/VMS (including how to logon to VMS, create files, set up subdirectories, compile and link programs, submit batch jobs, use the online HELP facilities, and access the companion computer-based instruction courses in VMS).

Length of Class:
One 3-hour session

Date and Time:
September 8, 1988 (Thursday), 1:30 p.m. to 4:30 p.m.

Location:
Building 221, Room A-261

Instructor:
Diane Lark

INTRODUCTION TO WYLBUR FOR TEXT EDITING

Goals:
To learn to use Wylbur, an interactive system that provides a convenient interface for MVS batch processing. To learn about the MVS batch system at Argonne (including how to compile and execute programs and obtain printer output). Wylbur is efficient, easy-to-learn, and powerful for editing data and programs and for submitting jobs for batch execution.

Length of Class:
One 3-hour session

Date and Time:
September 12, 1988 (Monday), 1:30 p.m. to 4:30 p.m.

Location:
Building 221, Room A-261

Suggested Reading:
SLAC Wylbur Tutorial
OBS Wylbur Reference Manual

Instructor:
Mike Thommes

NOTE: Depending on the class attendance and the needs of the attendees, CTD may offer one or more of the additional Wylbur and MVS batch computing classes later in June or July 1988.

USING VAX/VMS

Goals:
To learn to use the VAX/VMS system. This class will include suggestions for writing basic DCL command procedures (including a LOGIN.COM), an overview of the aspects of VMS internals affecting program performance, and the usage of the VMS system debugger and the interprocess communications features.

Length of Class:
One 3-hour session

Date and Time:
September 13, 1988 (Tuesday), 1:30 p.m. to 4:30 p.m.

Location:
Building 221, Room A-261

Instructor:
Diane Lark

COMPUTING CENTER USE IN DOLLARS BY COST CENTER (MAY 31 THROUGH JUNE 29, 1988)

COST	CENTER	BATCH	WYLBUR	CMS	MVS TSO	VAX/VMS	CRAY	DISK	OTHER	TOTAL
102	EBR-AW	708	1,282	237						
104	EBR-IL	4,051	1,071	1,378		2	5,233	1,837	440	9,737
105	MSD	1,742	263	504				3,029	1,973	11,505
107	CMT	4,345	319	1,687		1,975	12,631	3,604	4,541	25,261
109	PHY	722	635	1,696		2,754		1,544	14,504	25,152
110	BIM	1,930	325	1,759	2	833	3,413	3,057	2,001	12,357
112	RAS	8,637	4,006	1,080		2,712	1,425	4,626	2,185	14,963
113	REE-SRF	58	4			379	4,252	10,249	5,177	33,780
114	MCT	3,254	765	2,269				10	19	90
115	ENG-IL	1,062	252	828		1,208	21	4,237	2,325	14,080
116	AP-IL	32,004	8,672	4,857	13	116		1,028	571	3,857
117	AP-AW	5,025	954	1		1,120	9,741	29,265	5,802	91,473
118	REE-AW	392	238	349			3,718	5,364	165	15,227
119	AL-AW					321		1,676	127	3,104
120	CHM								24	24
130	APS	552	196	91		6,403	4,818	3,526	2,177	17,763
136	PNS	524	14	326		436	34	1,608	284	3,226
137	HEP	82	5	28		29	2	132	516	794
139	DEP	125	2	240	15	157	2,121	2,219	1,368	6,249
143	SSD-EL	1,229	1,044	2,348		5		1,441	890	6,957
145	MCS	287	15	133		7		114	936	1,492
148	HD	44	2	88		42	1,089	819	5,424	7,507
149	ER	334	11	107				867	140	1,459
150	SPM	744	152	1,043		6,297	1,039	2,154	4,123	15,551
161	TIS	112	0	53				163	7	336
171	RPD	2,570	95	16		1		748	294	3,725
174	EEP							120	71	190
178	FP	216	26					68	41	351
190	EES	88	16	1		1		361	289	755
197	IEP	12,368	3,463	936		24,362	171	19,501	306	61,106
201	OTD	447	24	372				157	40	1,040
202	OPS	47	1	173				373	281	874
210	SSD-CS	17	1	23				43	104	188
211	ENG-DE	114	5	213				57	88	476
216	SSD	105	10	62				267	224	491
222	SSD-LF							172	73	422
232	SEC	20	0						24	24
234	SSD-HP	28	4	124				492	64	576
235	SSD-OHS	166	23	214				144	41	340
236	OHS-FD							536	158	1,098
245	SSD-CSD	4,269	310	1,365					24	24
246	TIS-NESC	22	0	13			6,186	2,683		14,813
247	SSD-COM	818	79	1,403				56	714	805
260	SSD-GA	103		57				1,097	640	4,037
269	CMT-AC	100	12	32				183	985	1,329
271	OTD-RPA	775	86	162				101	43	288
272	APS			8				221	141	1,385
273	OTD-PR	35	2	112				18	0	27
274	OTD-EET	43	1	18				50	33	231
275	OPA	90	1	300				129	54	245
276	OPA-MP	28	3	5				270	47	707
315	SSD-MS	80	5	1,983				44	2	81
316	PFS-VM	21						1,473	420	3,961
317	PFS-DR	59	1					49	61	131
319	SSD-TVL			261				19	24	104
322	SSD-PRO	1	0					12	24	297
333	QAD-PQ	55	19					61	34	96
336	QAD-IN	10						227	57	358
400	CR-CTR	8,021	528	776						10
401	CR-ACT	6,299	595	506				8,022	1,615	18,963
402	OCF-DE							14,803	380	22,583
403	CR-BUD								100	100
410	HR	3,313	156	8,875					24	24
412	AAP			7				4,657	983	17,984
501	PFS-BM	16						98	109	213
502	PFS-IN							44	61	120
503	PFS-GR								24	24
504	PFS-CU								24	24
505	PFS-WMO			59					24	24
506	PFS-PMO	317	1	115				61	49	169
510	PFS-US							216	66	715
512	PFS-FPE	335	74	51					25	25
530	AW-SMO	92	3	4				683	95	1,239
531	AW-HR		6	65				49	25	174
532	AW-SPM	433	4	411	70			36	24	131
533	AW-ACT							509	118	1,545
534	AW-PUR								24	24
535	AW-SEC							18	24	42
536	AW-SS	4	1	44				31	24	55
537	AW-IS							260	25	334
538	AW-MHD	1	29	18					24	24
550	AW-CAS	261	36	71				62	24	134
551	AW-RM							120	44	531
554	AW-MS		1	26				12	24	36
556	AW-SE	256	11	134				26	24	76
557	AW-PS	3	7	131				81	29	511
558	AW-PS							68	24	234
559	AW-FS							6		6
561	QAD-AW								24	24
563	AW-TRP							14	25	38
750	OUTSIDE	730	556						24	24
751	FNAL	4,169	1					770	495	2,551
752	NAVY	4,257	1,269	12				1,361	392	5,936
753	METC			796				6,589	3,623	16,533
754	DOE-CH			17				37	600	653
757	COLLABOR	11	14	415				6	117	123
								427	542	1,409
TOTAL CHARGE		$119,176	$27,708	$41,487	$101	$49,160	$49,708	$154,868	$73,676	$515,885
245	SSD-CSD	12,985	1,873	90,959	21	6,455	2,787	27,375	32,065	174,522
800	CSD-OPS	24,676	709	26,953	12	4,915	423	3,269	6,299	67,257
TOTAL NO CHARGE		$37,661	$2,582	$117,913	$33	$11,370	$3,211	$30,644	$38,365	$241,779
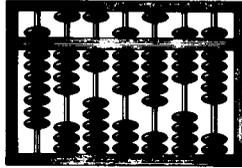
ARGONNE COMPUTING NEWSLETTER

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COMPUTING SERVICES
Argonne National Laboratory
Building 221
Argonne, Illinois 60439

Computing Services provides the computing and communications foundation for Argonne's scientific and technical programs and administrative activities. We operate computers to provide interactive and batch services, operate the Laboratory's voice and data communications systems, and perform analysis and programming services. Computing Services coordinates the development of and provides assistance for an integrated hierarchy of systems: personal desktop computers, distributed minicomputers, large-scale central computers, and supercomputers; we have special responsibility for placing the Laboratory in a position to exploit technological advances tied to state-of-the-art computing. Computing Services provides leadership in optimizing computing and information services and disseminating computer-related technologies throughout the Laboratory. Computing Services implements computing policy formulated by the Argonne Computing Policy Committee, for which we draft plans and prepare recommendations; and we work with the other Argonne divisions and programs, user groups, and Laboratory management to determine specific needs and priorities.

		Room	Phone	Electronic Mail Address
Manager of Computing Services	David Weber	A251	2-7155	B22788 AT ANLVM
Computer Networks	Larry Amiot	B243	2-5432	B10523 AT ANLVM
Telephone Services	Allen Winter	B247	2-2764	B07059 AT ANLVM
Telecommunications	Bob McMahon	B239	2-7270	B17385 AT ANLVM
Service Engineering	Forrest Salter	B159	2-5427	B06225 AT ANLVM
Computer Operations	Gary Schlesselman	A113	2-5437	B09819 AT ANLVM
Day and Weekend Operation	Bob Bilshausen	A134	2-5421	
Document Distribution Counter		A134		
Evening and Overnight Operation	Mike Monczynski	A134	2-5421	
Tape Librarian	Sandra Vasko	A134	2-7681	B18669 AT ANLVM
Computer Protection Program Manager	Jean Troyer	A237	2-7440	B18216 AT ANLVM
Information Systems	Diane Hale	A217	2-7167	B26424 AT ANLVM
Financial Systems	Nick Moore	A209	2-8075	B31048 AT ANLVM
Human Resource and Plant Services Systems	Bob Hischier	A221	2-7272	B22639 AT ANLVM
Material Systems	Miriam Bretscher	A205	2-7252	B26187 AT ANLVM
Information Technology Resources Planning	Mike Boxberger	A245	2-5639	B34540 AT ANLVM
Systems Programming	Doug Engert	B231	2-5444	B17783 AT ANLVM
User Services	Fred Moszur	A121	2-7419	B27564 AT ANLVM
Computer Use Authorizations	Fran Carnaghi	A147	2-5425	B27596 AT ANLVM
Consultants		A139	2-5405	CONSULT AT ANLVM
Documentation Advice		A139	2-5405	CONSULT AT ANLVM
Education and Assistance	Rich Slade	B139	2-7674	B32848 AT ANLVM

Computing Services operates a Cray X-MP/14 with UNICOS 3.0, a DEC VAX-11/750, a DEC VAX 8700, a DEC VAX 8250, two IBM 3033s (one with an IBM 3042 Attached Processor), and two Hewlett-Packard Series 3000 computers. Software on the IBM computers includes VM/SP CMS Release 4, MVS SP Release 1.3.5 with JES3 Release 1.3.4 and the Time Sharing Option (TSO), and OBS Wylbur Release 7.0. Manuals, back copies of the *Newsletter*, program write-ups, and other documentation are available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting a copy). To be added to the *Newsletter* mailing list, call Claudette DaCosse at 312-972-5415.

COMPUTING COMMENTS

SUMMER INSTITUTE IN PARALLEL COMPUTING

The Advanced Computing Research Facility (ACRF) in the Mathematics and Computer Science Division will host a two-week Institute in Parallel Computing from September 6 through 16, 1988. The Institute, funded by the National Science Foundation and the U.S. Department of Energy, will host 25 graduate students and postdoctoral researchers. Faculty will include Argonne staff members and visitors from universities and industry. To find out more about the Institute, contact Teri Huml at (312) 972-7163 or at electronic mail address huml@anl-mcs.arpa.

MATHEMATICS AND COMPUTER SCIENCE SIMD PROGRAMMING TECHNIQUES SEMINAR

The Mathematics and Computer Science Division will hold a two-day seminar (Monday and Tuesday, July 25-26, 1988) on techniques for programming the two single-instruction multiple-data (SIMD) machines in the Advanced Computing Research Facility (ACRF): the Connection Machine-2 (CM-2) and the Distributed Array Processor (DAP). Some previous experience in programming other parallel computers is necessary. The seminar will cover SIMD programming models and programming in DAP Fortran, C*, C/Paris, and Fortran/Paris. The seminar will also include an opportunity to run programs on the 16,384 processor CM-2 and the 1,024 processor DAP 510.

To register for the seminar, contact:

Teri Huml
Mathematics and Computer Science Division
Argonne National Laboratory
Argonne, IL 60439-4844
(312) 972-7163
huml@anl-mcs.arpa

There is a $25.00 charge for this class, and no financial assistance for attendees is available.

MATHEMATICS AND COMPUTER SCIENCE PARALLEL COMPUTING CLASS

The Mathematics and Computer Science Division is offering a three-day class (9:00 a.m. to 4:30 p.m. on Wednesday, Thursday, and Friday, July 27-29, 1988) on how to use the Argonne Advanced Computing Research Facility (ACRF). The class will instruct users on how to write programs for the parallel computer systems in the ACRF.

The class will cover the following topics: (1) automatic parallelizing compilers, (2) packages for portable parallel programming (including the Monitor package and the Schedule package), (3) hypercube programming, (4) programming the Distributed Array Processor (DAP), and (5) programming the Connection Machine-2. On the third day, a portion of class time will be spent on each attendee's project. The class will include hands-on experience in writing and running programs on each machine. Participants will become familiar with the ACRF environment. Some knowledge of the Unix file system, an editor, and Fortran is necessary. To become familiar with Unix, refer to *A Practical Guide to UNIX System V* (0-8053-8915-6), available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting a copy).

To register for the class, contact Teri Huml at (312) 972-7163 or at electronic mail address huml@anl-mcs.arpa. There is a $25.00 charge for this class.

COMPUTING CLASSES SCHEDULED FOR JULY 1988

During July 1988, Computing Services will offer three classes. The schedule is appended to this *Newsletter*. To register, call or visit the Computing Services Consulting Office (Building 221, Room A-139, extension 2-5405). All prospective attendees should register so that we can gauge the size of classes and notify attendees of any schedule changes. Computing Services will reschedule or cancel classes with fewer than six registrants *one week* prior to the scheduled date of the class.

Using VAX/VMS (one 3-hour session) will acquaint VMS users with features of VMS. Topics include writing DCL (Digital Command Language) procedures; reviewing VMS internals; and using

the VMS system debugger, the runtime library, and system services.

Using the Cray X-MP from the VAX Supercomputer Gateway (two 3-hour sessions) is for Cray X-MP/14 users who want to learn how to submit jobs and to manage Cray files from the recently installed Digital Equipment Corporation (DEC) VAX station. Like the counterpart MVS station class, this class requires familiarity with UNICOS and shell programming. This class focuses on using the VAX station to access the Cray in a batch environment (although it will include some basic instruction for using UNICOS interactively).

Cray X-MP Architecture and Vectorization Techniques (two 3-hour sessions) is for users who want to optimize their Fortran program to take full advantage of the Cray X-MP/14 high performance computer. Topics include Cray X-MP architecture, vectorization, optimization, programming techniques, and code examples.

NEW CICS APPLICATION MENU SCREEN

On Monday, July 18, 1988, Computing Services will provide a new application menu screen under the Customer Information Control System (CICS). This screen covers all online administrative applications currently available under CICS plus any news items of interest to CICS users. Figure 1 shows the new menu screen, which simplifies user procedures for accessing selected administrative applications.

You will receive the menu screen immediately after logging onto CICS. You can also invoke the menu screen by entering

    MENU

or

    HELP

and pressing the ENTER key at any time during your CICS session. You may select any administrative application for which you have been enrolled. If you happen to select one for which you are not enrolled, the system will issue a security violation message, and you will need to follow new instructions that appear on the screen.

CMS NEWS

SPEAKEASY IV VERSION EPSILON AVAILABLE FOR TESTING IN CMS

Speakeasy IV Version Epsilon is available for user testing on the SPEAKEZ 2 minidisk in CMS. The new features in this release of the Speakeasy IV System are fully described in *Highlights of Epsilon,* available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting a copy).

Among the new features of Epsilon are the first official release of a major new graphics package and a preliminary release of keyword-driven online documentation. Since these features are still under development, you can report difficulties or suggestions to the User Services consultants, who will report them to the vendor.

Also included with this release are a variety of new matrix manipulation operations, a new Speakeasy interface to Fortran subroutines and functions, and many efficiency enhancements.

To use Speakeasy IV Epsilon, issue the following commands:

```
CP LINK SPEAKEZ 2 vaddr
ACCESS vaddr filemode
SPEAKEZ
```

where "vaddr" is any unassigned virtual address and "filemode" is any unassigned filemode letter occurring alphabetically before any filemode letter associated with the SPEAKEZ 1 minidisk in your virtual machine.

For a complete description of Speakeasy, see the *Speakeasy IV Reference Manual,* available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting a copy). For information on the new features and the changes in Speakeasy IV Epsilon, enter (in Speakeasy):

    HELP NEWS

```
ANL/CICS              ADMINISTRATIVE APPLICATIONS              MENU

REQUEST:_____              05/16/88  14:08:06


===============================================================================

Enter the number of your selection and press the ENTER key.

   1 LOGOFF
   2 NEWS
   3 Materials Catalog (MCAT)
   4 Financial Systems - Not available in production
   5 Information Expert
   6 Payroll System
   7 Personnel System
   8 Medical System
   9 Argonne Materials Order System (AMOS)
```

Figure 1:   New CICS Application Menu Screen

CRAY NEWS

TCP/IP ACCESS FOR CRAY UNICOS TESTING

Computing Services has installed the Transmission Control Protocol/Internet Protocol (TCP/IP) Supercomputer Gateway to provide TCP/IP access to the ANL Cray UNICOS system. This Gateway consists of a Sun-3/280 computer with a FEI-3S VME interface from Cray Research, Inc. and TCP/IP software on the Cray. Initial testing by Computing Services and a small group of "pioneers," who agreed to test the gateway under potentially disruptive conditions, is now underway. Once we have satisfactorily completed testing, the TCP/IP gateway will be available to users. Computing Services is providing TCP/IP access for those users who are already familiar with TCP/IP capabilities and plans no TCP/IP classes at the present time.

Users on workstations and multi-user systems that run the TCP/IP suite of network protocols and are connected to the Laboratory-wide Ethernet network may use the **rlogin** or **telnet** commands to log-on interactively to the Cray and may use the **ftp** and **rcp** commands to copy files between their local file system and the Cray file system. Presently, you cannot submit NQS batch jobs from your TCP/IP host to UNICOS. However, you can prepare NQS batch jobs on your host, transfer them to the Cray with **ftp** or **rcp**, and submit them with the UNICOS **qsub** command during an interactive UNICOS session established with the **telnet** or **rlogin** command. Central computers available for TCP/IP access to the Cray are the VAX 8700 (ANLCV1) and the IBM 3033 running VM/SP (ANLVM). We advise users that interactive access to the Cray is expensive; therefore, activities like file editing are more appropriate for local workstations or other time-sharing systems.

TCP/IP software running on the Cray under UNICOS is derived from the 4.2 release of the Berkeley Software Distribution (4.2BSD); there-

COMPUTING SERVICES TESTS IBM DISKS ATTACHED TO CRAY X-MP

Computing Services has initiated a project to attach IBM 3380 disk drives to the Cray X-MP running UNICOS. To date, Computing Services has demonstrated the feasibility of this approach by successfully creating and retrieving UNICOS files on the IBM disks. Further testing is necessary on error recovery and performance, but we expect that these disks will be available for general use in August 1988.

We will use these IBM 3380 UNICOS-formatted disks for low activity and small files. By complementing the current Cray disks (which have limited capacity) with these highly reliable, large-capacity, inexpensive disks, we can change our data management policies so UNICOS users can keep more data on the UNICOS system and reduce the need to stage data to and from the various front-end systems.

The increase in directly attached disk storage on the Cray X-MP/14 will provide more disk storage for Cray online files; will reduce dependencies on front-end availability for dataset staging; and will permit Computing Services to review its disk storage charges and its policies on the number, size, and duration of files stored on Cray disks.

GRAPHICS NEWS

REVISED FILM PROCESSING SCHEDULE INCLUDES VIEWGRAPHS ON MATRIX CAMERA

Computing Services has revised its film processing schedule to include viewgraphs (8 inches by 10 inches) available on the Matrix camera. Table 1 shows the revised film processing schedule.

Users who have a particular deadline to meet should contact Computer Operations at extension 2-5421 to confirm this schedule and to make special arrangements when necessary. Changes in this schedule (because of equipment failure) are also announced in the System Status Recorded Message on extension 2-5466.

DISSPLA 10.5 NOW AVAILABLE FOR TESTING IN MVS

Disspla 10.5 is available for user testing in MVS. Disspla 10.5 contains several enhancements and corrections for reported bugs. The enhancements include (1) the use of User Map Files, (2) advanced pie features, (3) the elimination of the need to declare blank common or call routine BCOMON to use the land blanking function, (4) the ability to use both contouring and land blanking in the same program, and (5) improved device interface capabilities (including the American National Standards Institute (ANSI) standard Computer Graphics Metafile (CGM) device driver.

To use Disspla 10.5 with VS Fortran in MVS, add the parameter

```
PRELIB='SYS2.DISLIBVS'
```

to the cataloged procedure you use when linkediting or loading your plotting programs. Fortran H Extended users should use:

```
PRELIB='SYS2.DISLIBHX'
```

The *Disspla User's Manual Version 10.5* is the latest documentation available. This document is available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting a copy). Users may update Version 10.0 of the *Disspla User's Manual* with the CA-DISSPLA 10.5 update package consisting of Disspla Part F and the *CA-DISSPLA Bulletin of Release Information on Enhancement Fixes, Version 10.5*, which is also available at the Document Distribution Counter.

Table 1: Film Processing Schedule

Film Type	Days of Week	Batch Job Completed By[1]	Output Distributed By[2]
Color Film			
MATRIX			
35mm Slides and Negatives	Monday to Friday	7:30 a.m.	12:00 noon
		11:00 a.m.	1:30 p.m.
		3:30 p.m.	8:30 a.m. next day
Viewgraphs (8x10)	**Monday to Friday**	**11:00 a.m.**	**1:30 p.m.**
		3:30 p.m.	**9:00 a.m. next day**
FR80			
S35CLR (Slides)	Monday to Friday	10:00 a.m.	1:30 p.m.
		2:00 p.m.	8:30 a.m. next day
S35CLR (Negatives)	Monday to Friday	1:00 p.m.	11:30 a.m. next day
S16CLR	Monday to Friday	3:30 p.m.	2 Days Later
Black and White Film			
U35BW	Monday to Friday	7:30 a.m.	8:30 a.m.
	Monday to Friday	11:00 a.m.	12:15 p.m.
	Monday to Friday	2:30 p.m.	3:30 p.m.
	Saturday	8:30 a.m.	12:30 p.m.
S35BW	Monday to Friday	9:00 a.m.	10:00 a.m.
S16BW	Monday to Friday	9:30 a.m.	2:00 p.m.
U105BW	Monday to Friday	1:00 p.m.	2:00 p.m.

[1]The job must be completed and data (tape or spooled reader file) available to be processed at the FR80 or Matrix camera by the indicated time.

[2]Black and white film is scheduled for distribution as indicated except on Christmas Eve, Christmas Day, New Year's Eve, and New Year's Day when no operators are present. No color film is scheduled for distribution on any Laboratory holiday or during the Laboratory closing period at Christmas through New Year's. Also, distribution of color film scheduled for "next day" will be distributed on the next business day when "next day" is a weekend day or Laboratory holiday. **When you have special requirements that are not met by this schedule, contact the Computer Operations Manager at extension 2-5437.**

MVS NEWS

MAXIMUM MVS REGION SIZE REDUCED

The MVS user region is being reduced because of the additional memory requirements of computer networking, the Integrated Financial System, Computing Services software testing, and already heavy job management duties. Consequently, Computing Services is lowering its guaranteed maximum user region size to 6 megabytes (REGION=6144K) from the previous 8 megabytes. However, at special request, Computing Services will provide an 8-megabyte region for weekend processing (CLASS=Y). We must shut down the production system to provide this service.

Computing Services cannot regularly predict the exact size of the user region, because it is determined dynamically each time the MVS operating system is initialized. In fact, Computing Services has observed that the available user region can vary by approximately 300K, depending on the software testing being performed.

Computing Services believes that this reduction in maximum region size does not affect most users, particularly with the availability of the Cray X-MP/14 computer and the VAX 8700 computer. The Cray X-MP/14 can provide up to 24 megabytes of memory for user programs, and the VAX 8700 can provide regions as large as 35 megabytes. Users who believe that the lack of an 8-megabyte MVS region will adversely affect them should notify the User Services consultants at extension 2-5405.

TELECOMMUNICATIONS NEWS

PBX ACCEPTANCE

Argonne has now accepted the InteCom S/80 Private Branch Exchange (PBX) installed by Bell Atlanticom Systems, Inc. Since the cutover (September 19, 1987), we have been testing the system and correcting some post cutover difficulties. The system is now very reliable both in voice and data communications. The acceptance of the system is the culmination of a large two-year installation effort by Procurement, Plant Facilities and Services, Computing Services, and Bell Atlanticom personnel. The use of the system has grown dramatically. Currently, there are approximately 35,000 calls per day. We have 5,560 lines; 1,203 of these lines have asynchronous or synchronous electronic data stations associated with them. Thirty-nine stations provide connections to LANmark, the PBX facility that emulates a Laboratory-wide local area network (including gateways to 24 distributed Ethernet networks). Bell Atlanticom will continue to maintain the PBX and will work with the Laboratory and InteCom for future improvements and enhancements. To report difficulties, call extension 2-4400.

ARGONNE USERS SHOULD USE MKO WITH ASYNCHRONOUS DATA INTERFACES

The Private Branch Exchange (PBX) offers the Machine Keyboard Origination (MKO) service option to allow users to originate data calls from their terminal keyboard. To use MKO, you must have an Asynchronous Data Interface (ADI) connected to your terminal. MKO prompts the user for calling information and places data calls without interfering with voice service. We automatically assign MKO to ADI's without telephones. Users who have an ADI with a telephone who wish to have MKO must request it by contacting their local data coordinator.

You may place data calls by using MKO without affecting voice calls. Without MKO, before you place a data call while conducting a voice call, you must first place the voice call on hold and retrieve it after placing the data call.

MKO does not permit you to type ahead. If you enter characters before MKO asks the question, it ignores them. Offsite calls always use dial-7 access. MKO automatically enters the 7--you must not enter it. Dashes (-) are valid separators when you enter phone numbers. MKO ignores them. MKO has a 10-second idle timer that starts after each message sent to the user and after each character received from the user. If you do not respond to a message within 10 seconds, MKO sends the message **timeout** and drops the call. You will have to start over.

UPGRADED HYDRA PROTOCOL CONVERTER AVAILABLE FOR TESTING

Users will soon notice a change in the terminal selection menu when they logon to the central IBM systems through the Hydra Protocol Converter. The new selection menu enables a greater variety of terminals to work with the Hydra. Additionally, the upgraded Hydra fixes the difficulty of local terminal definitions disappearing when the Hydra resets itself. To allow for more terminal types, the manufacturers have replaced the single-character terminal selection symbols with a four-character descriptor. Table 2 describes new and old responses for the most popular terminals.

Table 2: New Hydra Descriptors		
Terminal	**New Response**	**Old Response**
VT100	V100	V
Televideo 950	T950	T
ANL VT100	ANVT	(
ANL Televideo 950	ANTV	!
VT52	VT52	D
IBM PC/RELAY Gold	IBMP	=

We have set up some test ports at extension 2-7707 for users to try the new hardware. We plan to upgrade all the ports by August 15, 1988; therefore, we suggest that users try the upgraded Hydra before then and report any difficulties to the User Services consultants at extension 2-5405.

Following is the new logon procedure:

- Configure your terminal according to the specifications in Chapter 2 of *Using the Hydra Protocol Converter for IBM Full Screen Terminal Emulation at ANL* (ANL/TM 457). This manual is available at the Document Distribution Counter (Building 221, Room A-134) or through the

mail (by calling extension 2-5405 and requesting a copy). (We are updating this manual to reflect the upgraded Hydra Protocol Converter.)

- Connect your terminal to the Hydra at extension 2-3270 (extension 2-7707 for the test period) by using either a modem or an ADI 100.

- Press RETURN and the space bar alternately until a terminal selection menu appears.

- Enter the four-character descriptor for your terminal.

- Continue with your usual logon procedure.

Users of the RELAY Gold software who have their own scripts for logging on will have to modify their script file for selecting the four-character descriptor (IBMP instead of =). Computing Services will change the appropriate Hydra key files and RELAY Gold script file on the CMS Z-disk and create updated Kermit and MacKermit disks that reflect key file changes when we upgrade all ports for the Hydra Protocol Converter. In the past, when using the Hydra Protocol Converter, there was a possibility of another person accidentally gaining access to your session if you did not logoff properly. Although such circumstances were rare, we believe the potential difficulty still exists and caution users who have access to sensitive information.

ELECTRONIC MAIL DISCUSSION GROUPS AVAILABLE ON BITNET

Computer users of CMS, Wylbur, and VAX/VMS systems connected to the Argonne network have an opportunity to join various discussion groups that use the BITnet network as a means of electronic communication.

Table 3 shows a sampling of topics currently available.

Table 3: Sampling of BITnet Discussion Topics

Topic Description	Listname	Nodename
DECUS	DECUS-L	UBVM
Epidemiology and biostatistics	EPID-L	QUCDN
Finite element modeling	CAEDS-L	FINHUTC
Issues related to handicapped people in education	L-HCAP	NDSUVM1
Organic chemistry	ORGCHE-L	EB0UB011
Polymer physics	PolymerP	HEARN
Statistical Analysis System (SAS)	SAS-L	UGA
VS-Fortran use	VFORT-L	JHUVM

Many other discussion groups are available. To receive a list of available groups with a brief description of each, use one of the following commands (depending on the interactive system you use):

With the CMS NOTE command:

NOTE NICSERVE AT BITNIC

Then SEND the note after inputting the following line:

SENDME LISTSERV GROUPS

(You will receive the file LISTSERV GROUPS in your virtual reader.)

With VAX/VMS:

```
MAIL
SEND
TO:  GATEWAY::"NICSERVE@BITNIC"
SUBJ:  C/R
```

Then press crtl/Z after inputting the following line:

SENDME LISTSERV GROUPS

(You will receive the file LISTSERV GROUPS in your VMS reader directory, typically, [Bnnnnn.READER] .)

With Wylbur:

```
COMMAND? COLLECT
  1.00 SENDME LISTSERV GROUPS
  2.00 <attn>
COMMAND? DO SENDFILE
     SENDFILE will send the ACTIVE file to the
addressee specified. Enter full network address of
addressee, HELP, or press RETURN to quit.
ENTER? NICSERVE AT BITNIC
OK to send file (Yes/OK/Save/No) OK
JOB Bnnnnnnn SUBMITTED
```

(You will receive the file LISTSERV GROUPS as a FETCH file.)

Once you have found a BITnet discussion group that you find interesting, you will need to send a command to the appropriate BITnet node that manages the discussion group:

In CMS:

NOTE LISTSERV AT nodename

Then SEND the note after inputting the following line:

SUBSCRIBE listname yourname

In VAX/VMS:

```
MAIL
SEND
TO:  GATEWAY::"LISTSERV@nodename"
SUBJ:  C/R
```

Then press crtl/Z after inputting the following line:

SUBSCRIBE listname yourname

In Wylbur:

Create a line in ACTIVE:

```
SUBSCRIBE listname yourname
```

Enter:

```
DO SENDFILE
```

Specify address:

```
LISTSERV AT nodename
```

where "nodename" is the BITnet nodename hosting the discussion group, "listname" is the name of the discussion group, and "yourname" is your name (for example, John Doe).

To cancel your subscription, use the above procedures to send the command:

```
SIGNOFF listname
```

VAX/VMS NEWS

CENTRAL VAX CLUSTER REMOTE PRINTER SERVICE AVAILABLE

Central VAX cluster users can now have their output printed on remote printers. If there is a printer attached to a Local Area Transport (LAT) Ethernet terminal server in your area, you can direct your print output to that printer. The printer must be either an ASCII or a PostScript printer.

Many LAT terminal servers already have printers attached to them. VAXes connected to the Laboratory-wide Ethernet can send files to these LAT terminal server printers. Each of these VAXes must have a VMS print queue for each printer to be served. The LAT terminal server in each printer area coordinates the use of the attached printer.

LAT printer owners can now have VMS print queues defined on the central VAX cluster to queue output for their remote printers. Owners interested in this remote printer service are responsible for the operation and maintenance of their printers. When multiple users share the remote printer, the printer owner will be responsible for assisting and coordinating this use. The owner will need to designate someone at the remote printer site to serve as a coordinator for printer users and Computing Services operators.

The printer coordinators need accounts on the central VAX cluster. They will be authorized to perform functions on their central VAX cluster print queue (such as starting, stopping, and modifying the print queue). They will also need to configure the LAT terminal server port to which the printer is attached. Cost centers that have assigned a central VAX cluster group manager may wish to have this individual also be their printer coordinator. The printer coordinator handles questions about the order of printing files, rerouting print files, canceling print files, and coordinating the use of different print forms and fonts. Computing Services can only provide limited assistance by (1) starting the central VAX cluster print queue, (2) rerouting, reordering, or canceling jobs for a specific user at that user's request (when the user cannot do it), and (3) redirecting output to another printer according to prearranged instructions from the printer's owner.

To establish a central VAX cluster print queue, the printer owner must complete an application. The application contains information to specify the print queue, the printer type, a contact person, and the printer location. The application can be viewed from a central VAX cluster account by entering:

```
TYPE/PAGE ANLCVC_COMMON:[SYSMGR]REMOTE_PRINTER.APPLICATION
```

Print the application form, complete it, and send it to the Computing Services Software Librarian (Building 221, Room B-220). Computing Services will process the application and will establish the required print queue on the central VAX cluster. Computing Services' existing "Remote Printing" line rate will apply for output sent to the remote printers. See *Computing Services Rates*, available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting a copy).

If you have any questions about this service, contact either Rich Raffenetti at extension 2-8497 or Barry Miller at extension 2-6808.

MACSYMA AVAILABLE ON THE VAX 8700

MACSYMA is a computer tool that performs both symbolic and numerical mathematical manipulations. With MACSYMA, you can differentiate, integrate, take limits, solve systems of linear or polynomial equations, factor polynomials, expand functions in Laurent or Taylor series, solve differential equations (by using direct or transform meth-

ods), compute Poisson series, plot curves, and manipulate matrices and tensors. In MACSYMA you use the LISP language. This language permits you to write programs transforming symbolic expressions. The *MACSYMA Reference Manual* (Volumes I and II) are available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting copies).

To use MACSYMA on the VAX 8700, first enter

    $ SETUP MACSYMA

to create the MACSYMA environment. To run MACSYMA, enter:

    $ MACSYMA

To exit MACSYMA, enter:

    QUIT();

DESK CALCULATOR AVAILABLE ON THE VAX 8700

Computing Services has implemented a full screen online desk calculator with scientific and engineering functions for use from Digital VT terminals and VT terminal emulators. A window creates the image of a calculator on the screen to show the mapping of the terminal keypad to the calculator keys. Command qualifiers create additional windows on the terminal to display help and configuration options and to view the calculation history tape (analogous to a calculator's paper tape).

The program offers the four basic arithmetic functions, thirteen additional math functions, a degrees/radians switch, a constant key, and a six-function memory register. You can (1) get a record of your calculations by using the calculation history, (2) specify fixed-point or floating-point display, and (3) choose the numbering system of the display (octal, hex, or decimal). The program operates the same as a standard desk calculator. To invoke the calculator, enter:

    $ DSCALC /options

There is no user manual, but online HELP is available to guide you in discovering all of the calculator features and option values and to provide usage hints. To invoke online HELP, enter:

    $ HELP DSCALC

LATEX AND TEX NOW AVAILABLE ON THE CENTRAL VAX 8700 COMPUTER

LaTeX and TeX are now available on the central VAX 8700 computer. TeX is a typesetting language developed by Donald E. Knuth of Stanford University to create technical documents containing complex mathematical equations. Both LaTeX and TeX require a great deal of time to master; however, LaTeX is easier to learn than TeX. Figure 2[1] is an example of text[2] produced by the TeX program. Although most users consider the generation of mathematical expressions to be TeX's forte, TeX also produces tables. You can obtain *The TeXbook* and the *LaTeX User's Guide and Reference Manual* at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting copies).

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[1] We extracted the example in Figure 2 from *The Equivalence of Dirac-Kähler and Staggered Lattice Fermions in Two Dimensions* (ANL-HEP-PR-87-112) provided by Geoffrey T. Bodwin (High Energy Physics).

[2] We prepared the text for this article by using Waterloo Script and creating the PostScript output file. TeX and DVIALW created a PostScript file for Figure 2 that was merged with the PostScript file for the text.

In order to derive the graphical Ward identities, we concentrate on L_f. In general, the terms in the Lagrangian consist of products of fermion bilinears and gauge field link variables U (which are defined in (2.17)). We expand the link variables in L_f in a power series in the coupling e and introduce the Fourier transforms of the gauge field $\mathcal{A}_\mu$ and the fermion field ψ:

$$\psi(x) = \int_{-\pi/a}^{\pi/a} \frac{d^d k}{(2\pi)^d} e^{ik \cdot x} \psi(k),$$

$$\mathcal{A}_\mu(x) = \int_{-\pi/a}^{\pi/a} \frac{d^d l}{(2\pi)^d} e^{il \cdot [x + (a/2)\hat{\mu}]} \mathcal{A}_\mu(l).$$

Figure 2:   Example of Text and Equations Produced by TeX

To use LaTeX or TeX, you must create a file .tex that contains LaTeX or TeX commands. Then enter (at the DCL level)

     $ SETUP TEX

to create the TeX environment. (This statement is the same for both TeX and LaTeX.)

To invoke LaTeX or TeX, enter

     $ LATEX filename.filetype

or

     $ TEX filename.filetype

The default filetype is **.tex.**

This process may require you to respond to TeX messages: in some cases a carriage return will suffice. Refer to the reference manuals for the appropriate action. When the program returns you to the DCL level, you will find that the TeX program has created additional files with the filetypes of **.aux, .lis,** and **.dvi** to your current directory. The **.aux** file is used by TeX, and the **.lis** file contains a listing of the messages you received when TeX or

LaTeX was invoked. TeX creates a **.dvi** file as the standard TeX output file (which is device-independent). To create files for a PostScript printer (which is currently the only printer type available on the central VAX 8700 for TeX) from the **.dvi** file, enter:

     $ DVIALW filename

The default filetype for this command is **.dvi.**

The DVIALW program has optional parameters ("d" is a digit reflecting the appropriate unit). They are:

-cd   Select the number of copies. The default is one.

-md   Select font magnification. The default is 1500. Other valid magnifications are 913 for a smaller font and 1800 for a larger font. If the number you specify is unavailable, the program will substitute the closest size available.

-xdin   Select the width of the left margin. By default, your page margin will be calculated from any TeX or LaTeX settings and magnification parameter.

This option will override all others if you use it. The number can be negative (for example, -x-.3in, where 1.0in = one inch).

-ydin   Select your top margin. By default, your page margins will be calculated from any TeX or LaTeX settings and magnification parameter. This option will override all margin settings if you use it. The number can be negative (for example, -y-1.0in, where 1.0in = one inch).

An example with these options is:

```
$ DVIALW -c5 -m946 -x.2in -y.2in sample
```

This PostScript device driver will create a file with a filetype of **.dvi-alw**. This file contains all the PostScript commands necessary to print your file on a PostScript device. You can send this file to any PostScript output device. For example:

```
$ SEND PRINT filename.DVI-ALW ANLOS RM111PR1 POSTSCRI
```

where "RM111PR1" refers to the typesetter in Graphic Arts and "POSTSCRI" designates the file as a PostScript file. You can also send this file to any ANLOS PostScript output device with the **PSLIST** command. The **PSLIST** command designates the file as a PostScript file. For example:

```
$ PSLIST filename.DVI-ALW RM113PR2
```

where "RM113PR2" refers to the Computing Services Apple LaserWriter.

PERSONAL COMPUTING

RECOMMENDED ETHERNET BOARDS FOR IBM PERSONAL COMPUTERS

Computing Services advises users to consider three factors when selecting an Ethernet adapter board for connecting IBM Personal Computers and IBM Personal System/2s (PS/2s) to Ethernet local area networks: connectivity, software compatibility, and computer type. Table 4 summarizes the connectivity options of several software packages that Computing Services has evaluated.

Table 4:	Connectivity of Personal Computer Software Products
Software Product	*Uses*
3Com 3Plus	3Com XNS networks
DEC DECnet-DOS	DECnet networks
Sun PC NFS	TCP/IP networks, Network File System
Univ. of Illinois NCSA Telnet	TCP/IP networks

Table 5 lists the software compatibility of the recommended 3Com Ethernet boards for various computer types.

BITS & BYTES

RECENTLY UPDATED AND PUBLISHED DOCUMENTS

Computing Services periodically publishes manuals to reflect changes in computing at Argonne. We also stock many vendor manuals for user convenience. The following new or recently revised documents are available at the Document Distribution Counter (Building 221, Room A-134) or through the mail (by calling extension 2-5405 and requesting copies):

Computing Services Documents

The June 6, 1988, draft of *Guide to UNICOS at ANL* (ANL/TM 460) describes how to use the Central Cray X-MP computer at ANL. It covers the Cray X-MP/14 hardware, the Cray UNICOS operating system, the Cray Network Queuing System (NQS) batch subsystem, and the MVS and VAX/VMS front-end station services that provide access to the Cray. Because this document is a rapidly changing draft, formatting inconsistencies occasionally appear. Please inform us of factual errors and inconsistencies (call Alan Hinds at extension 2-8124 or leave a message at extension 2-5415).

Table 5:   Software Compatibility of Recommended 3Com Ethernet Boards for IBM Personal Computers

	3Com 3Plus	DECnet DOS	Sun PC NFS	NCSA Telnet
For PC, PC-XT, PC-AT, and PS/2 Model 30:				
Etherlink 3C501	Y	Y	Y	Y
Etherlink II 3C503	Y	N	Y	N
Etherlink Plus 3C505B	Y	N	Y	N
For PS/2 Models 50,60, and 80:				
Etherlink/MC 3C523	Y	N	Y	Y

Y = compatible
N = not compatible

The *ANL Site Response for the DOE FY1990 Information Technology Resources Long-Range Plan* (ANL/TM 461) is one of many contributions to the DOE information technology resources long-range planning process. It provides data on these resources over an eight-year period consisting of the base year (FY1987), the current year (FY1988), the budget year (FY1989), the plan year (FY1990), and the out years (FY1991-FY1994). This document consists of four parts: Part 1, "Site Overview," describes the ANL mission, the overall organizational structure, the strategic approach toward meeting information technology resource needs, the planning process, major issues, and points of contact. Part 2A, "IS Plans for DOE Contractors," defines the current and planned automated information systems associated with the management of ANL, the stewardship of its resources, and the provision of day-to-day general operations and services. Part 3, "Computing Resources Plan," defines the requirements, resources, acquisitions, and budget for computing at ANL for FY1987 through FY1994. Part 4, "Telecommunications Plan," documents the existing and planned telecommunications resources required at ANL from FY1987 through FY1994.

CMS at ANL (ANL/TM 423, Revision 1) is an ANL supplement to IBM VM/SP technical documentation on VM/SP. In most instances it serves as the single repository for VM/SP policy and enhancements at Argonne National Laboratory. When appropriate, it points to material available in other documents; it does not ordinarily duplicate information available in vendor documentation or in other Computing Services technical memoranda.

This revision supersedes the first printing of *CMS at ANL*.

The *Reference Card For Using The Online Materials Catalog Through CICS* describes the Materials Catalog and how to use it through the Customer Information Control System (CICS). The *Card* contains a section on accessing the online catalog through CICS (that is, logging on and off procedures from different networks) and instructions on seven options available to the user: responding to prompts, identifying a catalog code, searching for an item, requesting an expanded item description, scrolling through the catalog, printing a catalog listing, and exiting from the catalog.

Computer Associates, Inc. Documents

The *CA-CUECHART User's Guide* (RG 99 CC 2001S) provides information for all levels of users on Cuechart--a software for chart making. It consists of five chapters: (1) "An Overview of Cuechart" describes what it is and what its capabilities are; (2) "Getting Started" discusses terminal selection, data collection, file creation, and commands; (3) "Running Cuechart" describes how to start and to stop Cuechart, to select a chart, to get help, and to draw a chart; (4) "Sample Session" leads a user through a practice session; and (5) "Sample Charts" provides descriptions and examples of bar, line area, error bar, pie, and word charts and the variations of each available with Cuechart.

The *CA-DISSPLA User's Manual, Version 10.5* (RG 99 DS 1001S) provides information on Disspla--a comprehensive system for computer

display. The *Manual* consists of nine major [parts] for easy reference: Part A, "Introductory [Con]cepts"; Part B, "Enhancements"; Part C, "[Thr]ee-Dimensional Data Presentation"; Part D, "[Gr]id Coastline Utilities"; Part E, "Page Layout [Option]s"; Part F, "DISSPOP Device Independent [Outpu]t"; Part G, "Business Features"; Part H, "[Cont]ouring"; and Part I, "Dynamics." You can [mak]e simple plots after studying only the [materi]al in Part A. You can make further plot [enhan]cements by referring to selected sections in [Part B]. You can reference various other parts of [the Man]ual for more sophisticated plotting applica[tion]s. This *Manual* supersedes the previous [DISSP]LA *User's Manual*.

The *CA-DISSPLA Pocket Guide Current With [Versio]n 10.0* is a compact reference that describes [al]l features and lists routine parameters for [the Dissp]la Graphics Software package. It also [lists s]everal device-dependent routines as well [as DISS]POP postprocessor commands and direc[tives. The] organization of the *Guide* is identical to [the DIS]SPLA *User's Manual* (see above).

[C]A-DISSPLA Bulletin of Release Informa[tion: En]hancement Fixes, Version 10.5 (UD 99 [DS ...]) describes the new features that have [been added] and the software difficulties that have [been f]ixed in Disspla Version 10.5. This *Bul[letin upda]tes the CA-DISSPLA User's Manual, Ver-*

[C]A-DISSPLA Update User's Manual Part [2, Version 1]0.5 (UD 99 DS 105FS) describes the [Dissp]la metafiles for producing plots. [These all]ow you to produce and to reproduce [plots for a] variety of devices without adjusting or [rewrit]ing your Disspla program. You can also [use pl]ots from metafiles to use within other [Disspla/]Tellagraf plots.

[C]A-TELLAGRAF Pocket Guide Current [Versi]on 5.0 is a compact reference for users [with an] understanding of the Tellagraf system. [The Guide] consists of two parts. The first part [lists c]ommands for plots and area, bar, and pie [charts] with optional Tellagraf features like [text a]nd shaded fonts). It also lists com[mon m]istakes. The second part contains sam[ples, f]ont illustrations, and descriptions of col[or a]nd defaults.

USERS GROUP HIGHLIGHTS

MINUTES OF COMPUTER USERS GROUP MEETING HELD JUNE 7, 1988

The Chairperson, Dotti Bingaman (Energy and Environmental Systems), opened the meeting at 3:03 p.m.

Reorganization Plans. Dave Weber (Computing Services) reported on his response to the Management Council's request for recommended changes to the Computing Services administrative structure. Dave has recommended placing "scientific computing" (a phrase as yet undefined) under one of the programmatic Associate Laboratory Directors (ALDs). One reason for this reorganization is to provide state-of-the-art capabilities for scientific computing and to place Computing Services in a more strategic position. Management meetings to develop a plan are underway; at present, the outcome is not clear.

Dave was asked about the rate schedules for FY1989; he replied that the Computing Policy Committee will discuss the topic at its June 10, 1988, meeting.

Computer Security Audit. Jean Troyer (Computing Services) announced that an audit team appointed by the Office of the DOE Inspector General will conduct a survey of computer facility management at the Laboratory. The audit manager has already visited here; he was particularly interested in the protection checklist that Computer Protection Program representatives have submitted to Jean. Starting later this month and continuing for a month, two auditors will be onsite. They will look at protection plans for sensitive computers and computer applications, among other things.[3]

Cray X-MP/14 Update. Doug Engert (Computing Services) reported on the status of the Cray X-MP/14 computer. The Transmission Control Protocol/Internet Protocol (TCP/IP) gateway will be shipped on June 17, 1988. The Laboratory has decided to accept Cray's proposal to trade in our DD-49 disks for a DS-40 disk subsystem that will quadruple our capacity. General purpose equipment (GPE) funds will accommodate, in part, the

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[3] The Laboratory was later informed that the survey by the audit team has been postponed because of the changes to the administrative structure of Computing Services.

data display. The *Manual* consists of nine major parts for easy reference: Part A, "Introductory Concepts"; Part B, "Enhancements"; Part C, "Three-Dimensional Data Presentation"; Part D, "World Coastline Utilities"; Part E, "Page Layout Utilities"; Part F, "DISSPOP Device Independent Output"; Part G, "Business Features"; Part H, "Contouring"; and Part I, "Dynamics." You can produce simple plots after studying only the material in Part A. You can make further plot enhancements by referring to selected sections in Part B. You can reference various other parts of the *Manual* for more sophisticated plotting applications. This *Manual* supersedes the previous *DISSPLA User's Manual.*

The *CA-DISSPLA Pocket Guide Current With Version 10.0* is a compact reference that describes technical features and lists routine parameters for the Disspla Graphics Software package. It also includes several device-dependent routines as well as DISSPOP postprocessor commands and directives. The organization of the *Guide* is identical to the *CA-DISSPLA User's Manual* (see above).

The *CA-DISSPLA Bulletin of Release Information on Enhancement Fixes, Version 10.5* (UD 99 DS 100BS) describes the new features that have been added and the software difficulties that have been corrected in Disspla Version 10.5. This *Bulletin* updates the *CA-DISSPLA User's Manual, Version 10.0.*

The *CA-DISSPLA Update User's Manual Part F, Version 10.5* (UD 99 DS 105FS) describes the use of Disspla metafiles for producing plots. Metafiles allow you to produce and to reproduce plots on a variety of devices without adjusting or re-executing your Disspla program. You can also retrieve plots from metafiles to use within other Disspla or Tellagraf plots.

The *CA-TELLAGRAF Pocket Guide Current With Version 5.0* is a compact reference for users with a basic understanding of the Tellagraf system. This *Guide* consists of two parts. The first part contains commands for plots and area, bar, and pie charts (along with optional Tellagraf features like use of text and shaded fonts). It also lists common user mistakes. The second part contains sample plots, font illustrations, and descriptions of color systems and defaults.

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[3] The Laboratory was later informed that the survey by the audit team has been postponed because of the changes to the administrative structure of Computing Services.

Powerstation provides speed and convenience in getting from application to application and from file to file. It allows him to have pertinent documents, applications, utilities, and files in one place.

Disktop 3.0 gives access to files through the desk accessory (DA) route. It searches for a file by using any part of its name and considers the file type and creator. It can rename, move, and delete files and check their "get info" box.

Disk Tools 2.0 does the same thing as Disktop 3.0. Bill uses Disktop 3.0 because he likes its interface better, even though Disk Tools 2.0 is faster. Bill felt that Disktop 3.0 was better than the Find File DA supplied by Apple Computer, because it provided more information.

Bill said that although these utilities are useful, one can pretty much replace them by using Multifinder with 2 megabytes of random-access memory (RAM).

In addition to his discussion of the Finder replacement utilities, Bill gave four reasons why he thinks Diskfit from SuperMac Software is the best hard disk backup utility: (1) Diskfit reclaims the space left by deleted files and reuses it; consequently, it is economical in its use of floppy disks. (2) Diskfit creates ordinary Apple Macintosh files that one can read directly off disks. (3) Diskfit creates an expanded report that gives the location of each file on the backup disks. (4) Diskfit handles large files that require more than one floppy disk and rejoins them easily. Bill also noted that it does a good job duplicating floppy disks for users with only one disk drive. Bill said he keeps one set of backup disks for his applications and two sets of backup disks for his documents.

Scott Shannon (Hewlett-Packard) and Bob Johnson (Farnsworth Computer) demonstrated the Scanjet scanner from Hewlett-Packard. This new flatbed scanner provides up to 16 levels of gray and up to 600 dots per inch. Special hardware and software allow it to run on the Macintosh. Other hardware and software are available so other personal computers can use it. The Scanjet scanner is easy to use. It puts a quick scan of an 8.5-inch by 11-inch page on the Apple Macintosh screen where one can then choose an area to be scanned more carefully. The hardware sets the contrast, brightness, and image type (line art, halftone, or gray scale). Available file formats are TIFF, MacPaint, Clipboard, and PICT. The scanner is also very fast as it uses the Small Computer Systems Interface

(SCSI) port on the Apple Macintosh (it takes only 20 seconds to scan an 8.5-inch by 11-inch page at 300 dots per inch). The scanner is fast, easy to use, and competitive in price with other scanners.

Two Special Interest Groups--Excel and Programmers--are now meeting. The Excel Special Interest Group normally meets the third Wednesday of each month at 11:00 a.m. in Building 221, Room A-216. The May and June meetings were canceled; so no meeting notice was sent out. The July meeting will feature the use of function macros in iterative calculations and the conversion of a Fortran program to an Excel worksheet. Please call Ralph Leonard at extension 2-3229 for details. The Programmers Special Interest Group meets the first Wednesday of each month at 11:00 a.m. in Building 221, Room C-201. The July meeting will feature comparisons of various programming languages on the Macintosh. Please call John Mattson (Materials Science) at extension-5535 for details.

Macintosh System Version 6.0 is now available on the two Macintosh IIs in the Workstation Evaluation and Demonstration Room (Building 221, Room A-142). Rumor is that some software does not work with System Version 6.0 (for example, Excel and Fourth Dimension). The solution for Excel is to get Excel Version 1.5, which is being shipped. A new version of Fourth Dimension is also coming out and will, no doubt, work with the new Apple Macintosh system. One of the features of System 6.0 is that a user can set a minimum configuration so that the Apple Macintosh Plus and Apple Macintosh SE have more working room within the one megabyte of RAM. A new Apple LaserWriter driver, Version 5.2, has separate options for bitmap and font printing. Also, this driver will print on 11-inch by 17-inch paper.

Rodney East (Materials Science) responded to questions about where the HyperCard stacks are in our public domain library and how to find the useful ones. Rodney indicated the HyperCard stacks are in a separate notebook from the rest of the public domain library. You must ask for the Macintosh Hypercard notebook to see the HyperCard stacks. There are now 46 (800K) disks in the library.

A new official release of Kermit for the Apple Macintosh, Version 0.9(40), will be available through User Services or the Apple Macintosh IIs in the Workstation Evaluation and Demonstration Room (Building 221, Room A-142). For people who have or who are buying Microsoft Word 3.0,

Microsoft is giving out a Thesaurus Desk Accessory and a macro program for the Apple Macintosh. The initial response to these two items is that they are very good and work well.

✦ At the July meeting, there will be a demonstration of Trapeze (a spreadsheet with graphics capabilities for the Macintosh) and a presentation of new HyperCard stacks.

The Macintosh Users Group meets the second Wednesday of each month at 11:00 a.m. in Building 221, Room A-216. Contact Bob Kampwirth (Materials Science), Ron Shepard (Chemistry), Ray Carlson (Computing Services), Lee Wagar (Graphic Arts), Jim Lewellen (Computing Services), or Ralph Leonard (Chemical Technology) for further meeting information.

The meeting adjourned at 12:30 p.m.

Ralph Leonard, Macintosh Users Group Secretary

MINUTES OF GRAPHIC ARTS USERS GROUP MEETING HELD JUNE 9, 1988

The meeting was opened at 12:15 p.m.

Rich Nixon (Graphic Arts) summarized the status of the Site-Wide Copier Management project. All bids have been reviewed. A few were substantially lower than expected; consequently, Argonne may be in a position to save $1 million or more in the first three years under the new system. The responses will be presented to the Management Council on June 13, 1988. New copiers should be onsite within 30 days after a contract is signed. Ultimately, Materials and Services will be responsible for copier management.

The new system will work as follows. Existing copier leases will not be renewed, and the Management Council will decide on a policy for owned copiers. A single contractor will install new copiers throughout the Laboratory and will keep at least one technician onsite at all times to maintain them. Each division will decide the sites for its copiers and will estimate the anticipated volume (that is, number of copies per month) per copier. The contractor will offer specific types of copiers for various volumes. The monthly fee for each copier will depend on both type and actual volume.

Next, Lee Wagar (Graphic Arts) provided an update on the Texet composition system. Equation training has been completed, and Linda Graf (Graphic Arts), the lead operator, has commented favorably on the usability of the system. At present, Texet is writing new software to solve some serious problems that Adobe Systems created by changing their PostScript fonts to binary. Lee summarized the status of Argonne's typesetting capabilities as follows:

At present, there are three ways to send a file to the typesetter: (1) creating it from scratch in the Texet system; (2) loading it into the Graphic Arts Apple Macintosh that is hard-wired to the typesetter (if it is on an Apple Macintosh disk); and (3) sending it over the NJE network.

Currently, Graphic Arts can do the following: (1) keyboard text and simple charts (for example, flow charts and organizational charts) into the Texet system and send them to the typesetter, (2) transfer ASCII files and some NBI files to Texet via Ethernet, and (3) download some Apple Macintosh files to Texet for merging with non-Macintosh files. Other capabilities that Graphic Arts is working on include transferring larger and more complex NBI files (after that, the next priority will be transferring Mass-11 files) and printing Apple Macintosh files in oversized formats (for example, to generate camera-ready conference papers). The latter capability would save Apple Macintosh and other PostScript users from spending about $17,000 for a Data Products laser printer that can handle 11-inch by 17-inch paper.

Bill Jepsen (Graphic Arts) is considering the lease of a blueprint-copying machine that can copy material on paper up to 36 inches wide, any length. He would like to hear from potential users so that he can assess the demand for this service. Bill also pointed out that July and August are good times to submit printing jobs to Graphic Arts, since those months are usually slow.

The next Graphic Arts Users Group meeting will be held on Thursday, August 11, 1988 (noon in Building 221, Room C-201).

Liz Stefanski, Acting Graphic Arts Users Group Secretary.

WORKLOAD STATISTICS (APRIL 29 THROUGH MAY 30, 1988)

NUMBER OF ENROLLED USERS

	BEGINNING OF MONTH	END OF MONTH	ACTIVE DURING MONTH
CMS	1,352	1,346	556
Wylbur	1,624	1,617	513
MVS TSO	54	54	20
CICS	1,624	1,617	73
MVS Batch	2,015	2,003	753
VAX/VMS	293	313	146
Cray	156	200	95
All Systems	2,015	2,003	1,007

INTERACTIVE AND BATCH USE

	NUMBER OF SESSIONS OR JOBS RUN				SESSION	CPU
	PRIME	NIGHT	WEEKEND	TOTAL	TIME (HRS)	TIME (HRS)
INTERACTIVE						
CMS	12,287	2,218	1,699	16,204	36,094.6	108.55
Wylbur	10,887	484	764	12,135	10,206.5	10.68
MVS TSO	171	32	0	203	234.2	0.12
CICS	23	0	0	23	0.0	0.69
VAX/VMS	6,715	560	558	7,833	8,944.6	48.34
Cray	538	49	52	639	374.6	1.01
IBM BATCH						
Class U	11,782	2,069	1,622	15,473	n.a.	47.04
Class W	18,811	1,935	1,663	22,409	n.a.	158.78
Class X	13	1,220	159	1,392	n.a.	110.76
Class Y	0	1	528	592	n.a.	62.95
Class Z	0	0	220	220	n.a.	42.19
Nonmain	13,422	1,238	1,310	15,970	n.a.	0.00
Total	44,028	6,463	5,502	55,993	n.a.	421.72
CRAY BATCH						
Prime	5,232	396	479	6,107	n.a.	111.48
Night	6	347	9	362	n.a.	56.12
Weekend	0	0	234	234	n.a.	41.97
Standby	0	88	111	199	n.a.	90.11
Total	5,238	831	833	6,902	n.a.	299.68
VMS BATCH						
Prime	1,175	229	130	1,534	n.a.	106.56
Night	7	76	39	122	n.a.	23.96
Weekend	2	0	30	32	n.a.	10.52
Standby	0	0	0	0	n.a.	0.00
Total	1,184	305	199	1,688	n.a.	141.04

INPUT/OUTPUT

Lines Printed	
Local	58,744,109
Remote	51,223,172
Fiche	34,670,579
Cards Punched-Local Only	24,106
Tape Mounts	8,676
Microfiche Developed	4,357
Microfiche Frames Developed	773,022

GRAPHICS

	# OF JOBS	# OF FRAMES
CalComp Jobs	0	0
Versatec Jobs	205	1,374
Matrix 35mm Color	307	1,501
Matrix-8 x 10	15	19
Matrix-negative	0	0
FR80 Film Plots		
35mm Black/White/Unsprocketed	57	465
35mm Black/White/Sprocketed	9	72
35mm Color	1	7
16mm Black/White/Sprocketed	11	5,681
16mm Color	1	215
105mm Black/White/Unsprocketed	0	0

DATA MANAGEMENT

Tapes Stored	22,131
New Tapes Saved	856
Tapes Released	769
Datasets Exported to Tape	2,926
Datasets Imported from Tape	527

* n.a. = not applicable

MVS BATCH SCHEDULING PERFORMANCE FROM APRIL 29 AT 7:00 A.M. TO MAY 30, 1988, AT 7:00 A.M.

	STARTED IN PRIME SHIFT	STARTED IN OVERNIGHT SHIFT	STARTED IN WEEKEND SHIFT	TOTAL OF ALL SHIFTS
CLASS U EXPEDITED BATCH				
Number Started	11,782	2,069	1,622	15,473
Number Started in 12 Minutes	11,216	1,447	1,404	14,067
Percent Started in 12 Minutes	95.2	69.9	86.6	90.9
25th Percentile Start Delay (Minutes)	0.1	0.1	0.1	0.1
50th Percentile Start Delay (Minutes)	0.1	0.4	0.1	0.1
75th Percentile Start Delay (Minutes)	0.3	19.5	0.7	0.4
90th Percentile Start Delay (Minutes)	3.5	46.2	20.0	9.6
99th Percentile Start Delay (Minutes)	117.8	230.1	225.2	162.7
CLASS W REGULAR BATCH				
Number Started	18,811	1,935	1,663	22,409
Number Started in 2 Hours	18,259	1,703	1,651	21,613
Percent Started in 2 Hours	97.1	88.0	99.3	96.4
25th Percentile Start Delay (Hours)	0.0	0.0	0.0	0.0
50th Percentile Start Delay (Hours)	0.0	0.0	0.0	0.0
75th Percentile Start Delay (Hours)	0.0	0.3	0.0	0.0
90th Percentile Start Delay (Hours)	0.2	3.0	0.0	0.2
99th Percentile Start Delay (Hours)	4.3	16.7	1.1	5.3
CLASS X DEFERRED OVERNIGHT BATCH				
Number Started	13	1,220	159	1,392
Number Started in 15 Hours	13	1,219	159	1,391
Percent Started in 15 Hours	100.0	99.9	100.0	99.9
25th Percentile Start Delay (Hours)	5.4	2.4	0.0	1.7
50th Percentile Start Delay (Hours)	6.9	4.6	0.0	3.9
75th Percentile Start Delay (Hours)	9.5	9.1	0.0	8.5
90th Percentile Start Delay (Hours)	9.6	11.8	0.0	11.7
99th Percentile Start Delay (Hours)	9.6	13.7	1.5	13.6
CLASS Y DEFERRED WEEKEND BATCH				
Number Started	0	1	528	529
25th Percentile Start Delay (Hours)	0.0	80.9	0.0	0.0
50th Percentile Start Delay (Hours)	0.0	80.9	0.0	0.0
75th Percentile Start Delay (Hours)	0.0	80.9	15.5	15.6
90th Percentile Start Delay (Hours)	0.0	80.9	20.9	20.9
99th Percentile Start Delay (Hours)	0.0	80.9	81.6	83.8
CLASS Z LIMITED DEFERRED WEEKEND BATCH				
Number Started	0	0	220	220
25th Percentile Start Delay (Hours)	0.0	0.0	37.0	37.0
50th Percentile Start Delay (Hours)	0.0	0.0	41.0	41.0
75th Percentile Start Delay (Hours)	0.0	0.0	44.9	44.9
90th Percentile Start Delay (Hours)	0.0	0.0	46.4	46.4
99th Percentile Start Delay (Hours)	0.0	0.0	49.4	49.4
TOTAL OF ALL CLASSES				
Number Started	30,606	5,225	4,192	40,023

AVAILABILITY STATISTICS, BY MACHINE (APRIL 29 THROUGH MAY 30, 1988)

YELLOW IBM 3033

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	16	7	2		4	1	2
Hrs Unavailable	14.11	5.51	1.58		1.06	0.15	5.80
MTF/Unscheduled	107.69				188.47	753.88	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	10	5	2		2		1
Hrs Unavailable	7.31	4.63	1.58		0.60		0.50
MTF/Unscheduled	85.56				128.34		

RED IBM 3033

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	8	3	2			2	1
Hrs Unavailable	10.65	4.18	0.23			0.31	5.91
MTF/Unscheduled	252.45					378.67	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	6	3	1			2	
Hrs Unavailable	4.60	4.18	0.10			0.31	
MTF/Unscheduled	129.70					129.70	

AVAILABILITY STATISTICS, BY SERVICE (APRIL 29 THROUGH MAY 30, 1988)

CMS

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	8	3	2			2	1
Hrs Unavailable	10.65	4.18	0.23			0.31	5.91
MTF/Unscheduled	252.45					378.67	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	6	3	1			2	
Hrs Unavailable	4.60	4.18	0.10			0.31	
MTF/Unscheduled	129.70					129.70	

WYLBUR

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	27	8	4		6	6	3
Hrs Unavailable	20.08	7.83	2.50		2.23	0.91	6.60
MTF/Unscheduled	49.86				124.65	124.65	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	20	5	4		4	5	2
Hrs Unavailable	11.01	5.06	2.50		1.56	0.70	1.18
MTF/Unscheduled	22.99				63.24	50.59	

MVS TSO

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	19	7	2		6	1	3
Hrs Unavailable	19.08	8.31	1.71		2.23	0.21	6.60
MTF/Unscheduled	74.89				124.81	748.91	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	13	5	2		4		2
Hrs Unavailable	9.68	5.21	1.71		1.56		1.18
MTF/Unscheduled	42.38				63.57		

JES3

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	19	8	2		5	2	2
Hrs Unavailable	15.16	5.98	1.58		1.43	0.36	5.80
MTF/Unscheduled	83.64				150.56	376.41	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	11	5	2		2	1	1
Hrs Unavailable	7.66	4.76	1.58		0.60	0.21	0.50
MTF/Unscheduled	64.08				128.16	256.33	

CICS

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	3				2		1
Hrs Unavailable	1.25				0.66		0.58
MTF/Unscheduled	255.58				383.37		
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	3				2		1
Hrs Unavailable	1.25				0.66		0.58
MTF/Unscheduled	87.58				131.37		

VAX/VMS

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	10	1	2			4	3
Hrs Unavailable	7.66	0.88	1.53			1.33	3.91
MTF/Unscheduled	108.61					190.08	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	9	1	2			4	2
Hrs Unavailable	6.25	0.88	1.53			1.33	2.50
MTF/Unscheduled	42.95					64.43	

CRAY

	Monthly Totals	Scheduled Hdware	Scheduled Sftware	Other	Unscheduled Hdware	Unscheduled Sftware	Other
All Shifts							
Interruptions	22	9	8		1	2	2
Hrs Unavailable	35.11	17.06	6.66		8.15	0.30	2.93
MTF/Unscheduled	146.57				732.88	366.44	
Monday-Friday, 7:00 a.m.-7:00 p.m.							
Interruptions	11	1	8			1	1
Hrs Unavailable	7.83	0.91	6.66			0.13	0.11
MTF/Unscheduled	128.08					256.16	

COMPUTING CENTER USE IN DOLLARS BY COST CENTER (APRIL 29 THROUGH MAY 30, 1988)

COST	CENTER	BATCH	WYLBUR	CMS	MVS TSO	VAX/VMS	CRAY	DISK	OTHER	TOTAL
102	EBR-AW	1,364	521	60			378	1,969	440	4,732
104	EBR-IL	1,179	659	1,598				2,769	1,624	7,829
105	MSD	1,832	557	734		5,531	16,024	3,799	5,046	33,524
107	CMT	4,160	475	1,003		15		1,502	14,695	21,850
109	PHY	359	907	1,304		1,316	4,634	3,765	1,799	14,084
110	BIM	1,238	226	2,561	13	1,324	1,265	5,302	763	12,692
112	RAS	9,485	4,372	987		223	4,219	9,684	4,482	33,453
113	REE-SRF	43	3					10	20	78
114	MCT	5,488	1,201	3,054		2,686	104	4,900	2,528	19,960
115	ENG-IL	765	187	908		26		1,296	576	3,758
116	AP-IL	26,253	8,659	4,870	19	1,270	20,189	27,939	4,783	93,983
117	AP-AW	4,074	552	0			2,669	7,943	160	15,398
118	REE-AW	1,560	118	256		1		2,056	69	4,060
119	AL-AW								24	24
120	CHM	430	68	249	52	4,129	1,100	2,524	2,041	10,593
130	APS	189	10	143		2,663	1	1,973	140	5,119
136	PNS	67	5	36		6		143	459	716
137	HEP	310	18	283	178	695	1,611	2,113	1,312	6,519
139	DEP	315	208	599				1,343	802	3,267
143	SSD-EL	142	13	78		14		121	228	596
145	MCS	50	20	239		16	612	870	2,876	4,683
148	HD	334	11	167				923	148	1,583
149	ER	896	216	1,054		17	76	2,742	536	5,536
150	SPM	112	0	71				153	8	343
161	TIS	1,771	58	10		5		755	304	2,902
171	RPD	218	8					108	91	426
174	EEP	216	33	1				73	33	357
178	FP	98	6	29				387	55	575
190	EES	14,913	3,198	996	10	10,595	4	18,716	12,685	61,117
197	IEP	519	42	397				158	90	1,206
201	OTD	148	8	269				384	324	1,133
202	OPS			16				46	104	166
210	SSD-CS	70	12	166				61	50	359
211	ENG-DE							137	24	161
216	SSD	154	14	32				182	73	455
222	SSD-LF								24	24
232	SEC	13		24				615	48	700
234	SSD-HP	16	2	453				266	147	884
235	SSD-OHS	535	55	104				599	125	1,417
236	OHS-FD								24	24
245	SSD-CSD	3,663	275	1,450				6,942	2,622	14,952
246	TIS-NESC	40	5	18				113	695	871
247	SSD-COM	461	27	925				1,260	549	3,222
260	SSD-GA	127		33				195	984	1,340
269	CMT-AC	94	8	41				106	25	274
271	OTD-RPA	515	161	115				234	226	1,251
272	APS			1				20	0	21
273	OTD-PR	23	2	86				53	31	195
274	OTD-EET	75	1	34				138	54	301
275	OPA	84	1	768				288	36	1,177
276	OPA-MP	25	2	10				54	31	120
315	SSD-MS	38	7	2,076				1,571	345	4,036
316	PFS-VM	37						59	64	161
317	PFS-DR	58	2					20	24	104
319	SSD-TVL			203				13	24	240
322	SSD-PRO							65	35	100
333	QAD-PQ	42	9					115	59	225
336	QAD-IN	17								17
400	CR-CTR	8,222	592	837				8,875	1,739	20,265
401	CR-ACT	6,386	646	344				9,840	431	17,646
402	OCF-DE								100	100
403	CR-BUD								24	24
410	HR	3,128	109	10,771				4,821	1,004	19,832
412	AAP			40				104	109	254
501	PFS-BM	17						46	62	125
502	PFS-IN								24	24
503	PFS-GR								24	24
504	PFS-CU								24	24
505	PFS-WMO			45				65	49	159
506	PFS-PMO	527	17	66				232	64	906
510	PFS-US								26	26
512	PFS-FPE	535	101	48				726	93	1,503
530	AW-SMO	115	4	5				52	25	202
531	AW-HR		6	58				33	24	121
532	AW-SPM	721	3	661	109			540	172	2,206
533	AW-ACT								24	24
534	AW-PUR							20	24	44
535	AW-SEC							33	24	57
536	AW-SS	17	3					278	25	323
537	AW-IS								24	24
538	AW-MHD		8	14				61	24	107
550	AW-CAS	200	53	72				131	24	481
551	AW-RM							13	24	37
554	AW-MS		2	14				35	24	75
556	AW-SE		1	89				94	24	208
557	AW-PS	2	2	137				73	24	238
558	AW-PS							6		6
559	AW-FS								24	24
561	QAD-AW							15	25	39
563	AW-TRP								24	24
750	OUTSIDE	847	467					709	156	2,179
751	FNAL	4,508	0	50				1,454	415	6,428
752	NAVY	3,504	779	825				6,716	3,992	15,816
753	METC			2				39	780	822
754	DOE-CH							6	117	123
757	COLLABOR	3	11	278				455	517	1,264
	TOTAL CHARGE	$113,347	$25,751	$42,864	$381	$30,531	$52,886	$155,043	$75,870	$496,673
245	SSD-CSD	10,919	1,403	88,870	414	5,685	2,501	29,118	34,404	173,313
800	CSD-OPS	25,462	768	26,372	24	3,922	233	3,599	6,251	66,632
	TOTAL NO CHARGE	$36,382	$2,171	$115,241	$438	$9,608	$2,734	$32,717	$40,656	$239,946

COMPUTING CENTER TELEPHONE NUMBERS

Information and Assistance	Onsite (Illinois)	Onsite (Idaho)	Offsite (Area Code 312)
Current System Status Recorded Message	2-5466	8-972-5466	972-5466
User Consultant	2-5405	8-972-5405	972-5405
Documentation	2-5405	8-972-5405	972-5405
Computer Operations	2-5421	8-972-5421	972-5421
VM/SP Operator	2-8442	8-972-8442	972-8442
RADS Maintenance	2-7273	6-7463	972-7273
Computer Callback Service	1-800-332-1478 (only within Illinois)		

CMS, Wylbur, and TSO Interactive Computing Services			
300 Bits Per Second	2-7603	6-7005	972-7603
1,200 Bits Per Second Full-Duplex (Vadic 3400 Compatible Modems)	2-7612	6-7005	972-7612
1,200 Bits Per Second Full-Duplex (Bell 212 and Hayes Compatible Modems)	2-2212	6-7005	972-2212
IBM 3174 Cluster Controller	2-3174	n.a.	n.a.
X.25 Terminal Multiplexor	2-2525	n.a.	n.a.
IBM 3270 Protocol Converter	2-3270	n.a.	972-3270

Batch Remote Job Entry Service			
2,000 or 2,400 Bits Per Second (Bell 201A and 201C Compatible Modems)	2-7989	n.a.	972-7989
4,800 Bits Per Second (Bell 208B Compatible Modems)	2-7573	n.a.	972-7573

Central DEC VAX 8700 and Cray VMS Station			
1200 to 19.2K Bits Per Second (Onsite) 1200 to 2400 Bits Per Second (Offsite)	2-8700	6-8700	972-8700

Argonne MFEnet Dial-Up			
300 or 1200 Bits Per Second	2-7920	n.a.	972-7920

ARPAnet Data Communications Network			
1,200 to 2,400 Bits Per Second Full-Duplex	2-7490	n.a.	972-7490

Tymnet Commercial Packet-Switching Network
Use the CMS TYMNET Zdisk exec for the phone numbers in major U.S. cities.

COMPUTING CENTER SERVICE SCHEDULE
(All Times Are Central Standard Time)

	MVS JES3 Batch, UNICOS Wylbur, and TSO	VM/SP	VMS	MFEnet Gateway	ARPAnet
Monday to Thursday	00:00-07:00* 08:30-24:00	00:00-07:00* 08:30-24:00	00:00-07:00* 08:30-24:00	00:00-07:00* 08:30-24:00	00:00-24:00
Friday to Sunday	00:00-24:00	00:00-24:00	00:00-24:00	00:00-24:00	00:00-24:00

* Except for the interruption of UNICOS from 6:00 a.m. until 8:30 a.m. on Tuesdays and Thursdays for maintenance, service continues uninterrupted past 7:00 a.m. unless time is necessary for system work or to permit scheduled hardware and software maintenance. Computing Services will not routinely schedule interruptions of computing center interactive, batch, and network services on Friday, Saturday, or Sunday mornings. By 4:30 p.m. each day, Computer Operations will announce the next day's planned service interruptions in the Current System Status Recorded Message (extension 2-5466) and in logon messages of the affected interactive systems. Computing Services will announce planned interruptions to service on Friday, Saturday, Sunday, or for more than two-and-a-half hours at any time in the online NEWS as many days in advance as possible. Call or logon to check these announcements after 4:30 p.m. before making plans that require the availability of a service the following morning.

...tries refer to *Newsletters* published in 1988. All previous *Newsletters* are indexed in the December 1987 issue of the ...ter or use the LOOKUP command in CMS, Wylbur, and distributed VAX computers.

COMPUTING CENTER CLASSES

Computing Services is offering three computing classes. There is no charge for attending classes unless otherwise indicated. To register, call or visit the Computing Services Consulting Office (Building 221, Room A-139, extension 2-5405). All prospective attendees should register so that we can gauge the size of the class and notify attendees of any schedule changes. Computing Services will reschedule or cancel any classes with fewer than six registrants *one week* prior to the scheduled date of the class.

Obtaining the recommended documents and reading portions of them before you take a class will increase the benefits of attending the class.

USING VAX/VMS

Goals:	To learn to use the VAX/VMS system. This class will include suggestions for writing basic DCL command procedures (including a LOGIN.COM), an overview of the aspects of VMS internals affecting program performance, and the usage of the VMS system debugger and the interprocess communications features.
Length of Class:	One 3-hour session
Date and Time:	July 13, 1988 (Wednesday), 9:00 a.m. to noon
Location:	Building 221, Room A-216
Instructor:	Diane Lark

USING THE CRAY X-MP FROM THE VAX SUPERCOMPUTER GATEWAY (RESCHEDULED)

Goals:	To learn how to use the Network Queuing System (NQS) for Cray batch processing and how to submit work and to manage Cray files from the VAX station.
Prerequisite:	"Introduction to UNICOS and Shell Programming" class or equivalent experience with Unix.
Length of Class:	Two 3-hour sessions
Dates and Times:	July 14, 1988 (Thursday), 9:00 a.m. to noon July 15, 1988 (Friday), 9:00 a.m. to noon
Location:	Building 221, Room A-261
Suggested Reading:	*DEC VAX/VMS Station Reference Manual* (SV-0020) *Guide to UNICOS at ANL* (ANL/TM 460)
Instructor:	Tony Kubalak from Cray Research, Inc.

CRAY X-MP ARCHITECTURE AND VECTORIZATION TECHNIQUES

Goals: To learn to optimize Fortran programs on the Cray X-MP/14 high performance
                    computer. Topics include Cray X-MP architecture, vectorization, optimization,
                    programming techniques, and code examples.

Length of Class: Two 3-hour sessions

Date and Time: July 20, 1988 (Wednesday), 1:30 p.m. to 4:30 p.m.
                    July 21, 1988 (Thursday), 1:30 p.m. to 4:30 p.m.
                    July 22, 1988 (Friday), 1:30 p.m. to 4:30 p.m. (optional workshop)

Location: Building 221, Room A-216

Instructors: Dave Leibfritz, Al Hinds

NOTE: An optional follow-up workshop is available to users who want to work on their code with the
        assistance of the instructor.

COMPUTER-BASED TRAINING COURSES

Computing Services currently offers 25 different computer-based training courses in CMS and five courses on the central VAX 8700. These courses are listed below. For further information on any of the courses, call the User Services consultants at extension 2-5405.

DEC CBT Courses on the Central VAX 8700

Course Name	Course Title
VMSCAI	Introduction to VAX/VMS
EDTCAI	Introduction to the VMS editor
LSECAI	Introduction to the Language Sensitive Editor
EVECAI	Introduction to the Extensible VAX Editor
DTRCAI	Datatrieve for Users

IBM CBT Course

SLFTEACH	Introduction and Advanced Concepts of Xedit

CRWTH CBT Courses

General Data Processing Courses

DPINTRO	Introduction to Data Processing
DPDEV	Developing Data Processing Skills for End Users
DCCOMM	Data Communications, Connectivity, and LANs: An Introduction
ICUSER	Basic Information About Computer Information Center

Application System Courses

ASUSE5	Using Application System for Inquiry and Reporting
ASPROJ	Managing Projects with AS

CMS Courses

CMS	Using CMS
XEDIT	Using XEDIT

PROFS Courses

PROFOVER	Overview of Using PROFS V2
PROFCAL	Using PROFS V2--Calendar
PROFNOTE	Using PROFS V2--Notes & Messages
PROFMAIL	Using PROFS V2--Mail & Documents

SAS Courses

SASINTRO	Using SAS--Introduction & DMS
SASLANG	Using SAS--SAS Language
SASSTAT	Using SAS--Statistics
SASADVAN	Using SAS--Advanced Features
SASFSP	Using FSP--SAS/FSP
SASGRAPH	Using SAS/Graph

Tellagraf Course

TELLAGRA	Using TELLAGRAF

MVS Batch Courses

JCL	Introduction to Basic JCL
SORTMRG	Using SORT/MERGE Utilities

Basic Project Management Course

MANAGE	Project Management Concepts and Principles (see also ASPROJ)

TSO Course

TSOUSE	Using TSO
SPFUSE	Using ISPF

Miscellaneous Courses
(The following topics are part of the standard CRWTH courseware; however, the software is not installed at Argonne.)

ANSDB	Using Answer/DB
ADRUSE	Using ADRS II
DWRITE	Using DisplayWrite/370
FOCS1	Using Focus: Basic Reporting
FOCS2	Using Focus: Advanced Reporting
FOCS3	Using Focus: DataBase Maintenance and Design
IFUSER	Using IFPS
RAUSE1	Using RAMIS Information System: Basic Reporting
RAUSE2	Using RAMIS Information System: Advanced Reporting
RAUSE3	Using RAMIS Information System: DataBase Design and Management
RADMF	Using RAMIS II DMF
RDBUSE	Overview of Relational DataBase
SQLDB2	Using SQL/QMF (DB2): Basic Reporting
SQLDB3	Using SQL/QMF (DB2): Advanced Reporting
SQLDS2	Using SQL/QMF (DS): Basic Reporting
SQLDS3	Using SQL/QMF (DS): Advanced Reporting