The process of writing and designing the Automated Underwriting System (AUS) User Manual

Maureen Therese Dostert
Iowa State University

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The process of writing and designing
the Automated Underwriting System (AUS) User Manual

by

Maureen Therese Dostert

A Thesis Submitted to the
Graduate Faculty in Partial Fulfillment of the
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Signatures have been redacted for privacy

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Introduction to Thesis</td>
<td>1</td>
</tr>
<tr>
<td>LITERATURE REVIEW</td>
<td>7</td>
</tr>
<tr>
<td>Instruction and Computer Manuals</td>
<td>7</td>
</tr>
<tr>
<td>FORMAT AND DESIGN CHOICES</td>
<td>22</td>
</tr>
<tr>
<td>Legibility</td>
<td>23</td>
</tr>
<tr>
<td>Accessibility</td>
<td>30</td>
</tr>
<tr>
<td>PROMINENT PROBLEMS</td>
<td>37</td>
</tr>
<tr>
<td>Planning the Manual</td>
<td>38</td>
</tr>
<tr>
<td>Defining Discourse Communities</td>
<td>48</td>
</tr>
<tr>
<td>CONCLUSION</td>
<td>57</td>
</tr>
<tr>
<td>Planning the Manual</td>
<td>58</td>
</tr>
<tr>
<td>Defining Discourse Communities</td>
<td>61</td>
</tr>
<tr>
<td>WORKS CITED</td>
<td>64</td>
</tr>
<tr>
<td>WORKS CONSULTED</td>
<td>67</td>
</tr>
<tr>
<td>APPENDIX A. AUTOMATED UNDERWRITING SYSTEM (AUS) USER MANUAL STYLE SHEET</td>
<td>71</td>
</tr>
<tr>
<td>APPENDIX B. AUTOMATED UNDERWRITING SYSTEM (AUS) USER MANUAL</td>
<td>74</td>
</tr>
</tbody>
</table>
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chart showing contacts and relationships.</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Recursive writing process from Burnett's <em>Technical Communication</em>.</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Planning process from Weiss' <em>How to Write Usable User Manuals</em>.</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>Text in 12-point Times New Roman.</td>
<td>25</td>
</tr>
<tr>
<td>5</td>
<td>Line-length of 36 picas followed by a line-length of 33 picas, both with 44-point leading.</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>Examples of uppercase and underline.</td>
<td>28</td>
</tr>
<tr>
<td>7</td>
<td>Examples of buttons and field titles.</td>
<td>29</td>
</tr>
<tr>
<td>8</td>
<td>Road maps (two detailed tables of contents, conventions, and terms) from the AUS User Manual.</td>
<td>31</td>
</tr>
<tr>
<td>9</td>
<td>Examples of Headings.</td>
<td>32</td>
</tr>
<tr>
<td>10</td>
<td>Examples of horizontal and vertical white space.</td>
<td>35</td>
</tr>
<tr>
<td>11</td>
<td>The larger context of AUS.</td>
<td>39</td>
</tr>
<tr>
<td>12</td>
<td>Examples of headings from the AUS style sheet.</td>
<td>44</td>
</tr>
<tr>
<td>13</td>
<td>Some features of the AUS style sheet.</td>
<td>44</td>
</tr>
<tr>
<td>14</td>
<td>Two examples of white space separating two processes.</td>
<td>53</td>
</tr>
<tr>
<td>15</td>
<td>Introduction and What is AUS?</td>
<td>55</td>
</tr>
<tr>
<td>16</td>
<td>Note and message boxes.</td>
<td>55</td>
</tr>
</tbody>
</table>
iv

LIST OF TABLES

Table 1. Tinker's "safety zones." 26
I wish to thank Professors Carol David, Charles Kostelnick, and Herbert T. David for their help in preparing and editing this thesis. I am grateful to Cindy Saul at Norwest Mortgage for granting me permission to use the AUS manual for my thesis. I am also grateful to Irv Tiffany at Norwest Mortgage for his availability and help in preparing the AUS manual.
INTRODUCTION

Introduction to Thesis

The purpose of this thesis is to describe the process of writing and designing the Automated Underwriting System (AUS) computer user manual for Norwest Mortgage and to discuss the development of two prominent problems that evolved during this process: (1) planning the content, format, and style as changes were continually being made to the application, and (2) working with a variety of personnel from different discourse communities.

In this section, I discuss the project description, define AUS, and explain the purpose and the audience for the manual. In the literature review that follows, I discuss some of the research on planning instruction and computer manuals, visual communication, and usability testing. In this section, I provide a background of applicable research for the production of usable manuals. In the section on format and design choices, I discuss some of the specific decisions I made for the design of the manual, how and why I made these decisions, and what research supports my decisions. In the section on prominent problems, I discuss the two major problems that developed during this project: planning the AUS manual and defining discourse communities. During the project, planning the manual was difficult because of the minimal amount of information available and the daily changes in the computer application. I resolved the planning problems by asking for information and clarification and requesting computer applications from the business analyst. The result was a recursive planning and writing process. The problem of defining discourse communities arose because the individuals involved had their own agendas during each stage.
of the writing and designing process that were based on their expertise and responsibilities in the project. I resolved these issues by listening to and evaluating comments from the personnel involved in the project, using what information was useful and disregarding the rest. In the final section, I provide a brief discussion of the seven conclusions I have drawn from working on the AUS project, conclusions which may be useful to technical writers hired to work on similar projects.

Introduction to Project

The purpose of this section is to provide background information about the Automated Underwriting System (AUS) documentation project. This section describes both the project and AUS, and discusses the purpose and audience for the document.

Description of the AUS Project

On January 4, 1994 I began work as a contract technical writer for Norwest Mortgage in Des Moines. I was hired to write computer user documentation for a new computer application for the Underwriting Center in Minneapolis. The project developers and the programmers, located in Des Moines, produced software called the Automated Underwriting System (AUS) for the underwriters at the Underwriting Center in Minneapolis. I wrote and designed the user documentation for the data entry people, who worked for the underwriters at Norwest Mortgage in Minneapolis.
Description of the AUS Project Personnel

The project team consisted of underwriters, programmers, a project leader, a quality assurance representative, and a business analyst working under a project manager. My contacts on this project were Irv (project leader), Dean (business analyst), Scott (quality assurance tester), Mike, Prathap, and Joe (programmers), Julie (senior technical writer and my supervisor), Claudia and Sarah (underwriters), and Matthew (user). See the lateral hierarchy for this project in the diagram in Figure 1.

Legend:
Bill = project manager
Claudia, Sarah = underwriters, clients
Dean = business analyst
Irv = project leader
Julie = senior technical writer, supervisor
Matthew = data entry clerk, user
Maureen, Carol = contract technical writers
Mike, Joe, Prathap = programmers
Scott = quality assurance representative

Figure 1. Chart showing contacts and relationships.
The major editors of my work were Julie, Scott, Sarah, and Carol (contract writer). Julie edited documents leading up to the first draft, and Scott edited the first draft of the manual for content and accuracy. After Sarah received a draft of the manual and subsequent updated pages, she edited the manual and updated pages for details regarding style, usage, and accuracy. The windows, the application, and the underwriter's requests about the AUS application's functionality constantly changed, making the task of keeping the document up to date difficult if not almost impossible. Because of the constant changes, the project team worked long hours and concentrated an enormous amount of energy in producing a product that was satisfactory to the clients, Bill, and Irv. Often, Bill and Irv would have to make decisions about functionality changes, which were essential to the application, and requests from the underwriters that were not essential for operating the program but would contribute worthwhile features. For me, the constant changes resulted in my relearning, rewriting, and clarifying.

Description of AUS

AUS is an automated underwriting system computer application created to process standard mortgage loans through a rule base for any rule violations, a calculation base for any calculations, and a judgment base resulting in decisions about these loans (approve or refer). AUS is designed as a user-friendly shell surrounding another system called COGENSYS (the judgment processor). After the data are entered into the AUS database, and the data entry procedure is complete, the data are then sent to COGENSYS. COGENSYS is the system that receives data from the AUS database, processes the information, and makes
decisions on standard loans based on the rules and calculations. COGENSYS is taught to make judgments by teaching the system with information from approximately 200 loans that demonstrate scenarios about the criteria for mortgage loan information resulting in a judgment of either "approve" or "refer." Once a loan is processed, the underwriters receive a judgment (approve or refer) and a summary of any rule violations. The underwriters must review and "OK" all loan reports.

The Automated Underwriting System application in conjunction with COGENSYS is expected to save the underwriters' time so they can devote more effort to evaluating less standard loans. This system also saves Norwest Mortgage money by decreasing the loan processing time.

Purpose of the AUS Manual

The AUS user manual has more than one purpose although the overall purpose is to convey information about the AUS application to the users. A specific purpose is to provide the users with necessary background information needed to operate the AUS program; thus, the first section is written for a reading-to-learn task. Another purpose is to provide specific instructions to the users about the data entry procedure.

This manual informs the users about the data entry procedure by showing forty-six screen displays and by describing button and field functions. The major benefit for the users is that they have access to accurate and detailed user-friendly documentation about the data entry procedure. On the other hand, the major benefit for the underwriters (Sarah and Claudia) is they have access to a reference and training manual, eliminating the need for "walking" the users through the
data entry procedure. This benefit saves the underwriters' time in evaluating fewer "standard" mortgage loans.

As a tool for learning, reference, and training, this manual enables users to complete the data entry procedure for mortgage loan applications. Once the data are entered into the AUS database, the data can then be sent through the loan processing procedure, resulting in faster turn-around time.

Audience for the AUS Manual

My initial contacts were Sarah and Claudia, the underwriters in the Minneapolis underwriting office. Their purpose was to review the manual and provide me with comments about content and usage. Sarah and Claudia were also the clients because the programmers were designing the computer application to fulfill Sarah and Claudia's specifications. Thus, Sarah and Claudia became my secondary audience.

The primary users are high-school graduates with minimal computer experience who are hired as temporary employees for the data entry procedure. The users show average motivation for using the manual and neutral to negative attitudes about using the manual. The data entry personnel receive on-the-job training in that Sarah walks them through the data entry procedure for an entire loan and answers any questions. The personnel work in an office with cubicles providing a low level of distraction. They are not under tight deadlines to enter the information. Sarah requested that I make the manual simple because she felt the data entry personnel did not have the experience to follow complicated instructions.
LITERATURE REVIEW

The following literature review explores the topic of planning instruction manuals by providing background information about some of the issues that are important to consider before writing begins. This information includes complex considerations a writer must address when designing instruction and computer manuals such as the steps needed for planning, the visual aspects of including format and graphics, and methods for testing manuals. Although writing manuals involves other issues, these are the important concerns I address in this thesis.

Many issues arise about information design when writers are faced with the task of writing instruction manuals. More specifically, issues that need to be evaluated are task, audience, format, text, tone, visuals, graphics and illustrations, the environment where the document will be used, and gathering, revising, and composing information. These decisions must be made based on task analysis, audience analysis, and purpose of the manual. These issues all affect the manual production process and allow writers to recursively formulate detailed plans.

Instruction and Computer Manuals

Many researchers (Burnett; Carroll; Duffy; Frascara; Hartley; Horton; Redish and Schell; Southard; Weiss) have written about the process of planning instructional manuals; therefore, a wide variety of materials exists.
Planning Instruction Manuals

Researchers have provided documentation planning processes at varying levels of complexity, depending upon the audience for the manuals and the type of manuals they wish to produce (Bradford; Burnett; Carroll; Conklin; Horton; Oster; Weiss; Williams and Beason; Wise). Fundamental information including project plans, document organization, and the application of specific writing techniques are available in reference format with many visual-aids and in easy-to-read text.

Researchers emphasize the planning process required before writing manuals (Burnett; Carroll; Duffy; Hartley; Weiss; Williams and Beason). The critical concerns that writers must respond to are the purpose and the audience for the manuals. To write usable instruction manuals, writers must possess the "ability to analyze and respond to the audience" (Duffy 390). However, not all professional writers possess the skills to deliver the appropriate level of information to their audience, which often results in manuals that meet specifications but not user requirements. Duffy makes a distinction between "professional writers" and "professionally trained writers," who are those who have been trained in task analysis, audience analysis, and usability testing. The planning process thus incorporates writing and designing specifications determined at the beginning of the planning process in conjunction with adequate task analysis, audience analysis, and document testing (Duffy 390-91).

Legibility (readability), accessibility, and usability are critical issues to manual writers. Many researchers have found that usable manuals are those that help readers perceive the organization and hierarchy of information, thus giving readers control over the choice of information they want to selectively
read (Benson; Burnett; Duin; Huckin; Rude; Southard). In varying degrees, these researchers discuss research that supports the use of format as a functional feature of manuals by improving comprehension. Effective formatting increases the reader's ability to access the contents of the text and facilitates comprehension by saving the readers a step in the coding process (Rude 66). Therefore, writers that use formatting techniques such as typographical cues and graphic displays to facilitate readers' comprehension produce more usable manuals.

Researchers (Burnett; Carroll; Hartley; Huckin; Weiss; Williams and Beason) agree that at the beginning of the process of creating manuals, writers must analyze the task the users must accomplish, and they must analyze the audience for position, attitude, education, and experience. In addition, many authors call for document testing throughout the design and writing phase (Burnett; Hartley; Horton; Redish; Williams and Beason; Weiss). The researchers' backgrounds further define their own audience and their approach to planning. For example, Burnett and Weiss have differing approaches. Burnett's is applicable to a wide variety of writers producing various kinds of manuals, whereas Weiss seems to be aiming at those who write industrial or engineering manuals.

Burnett discusses three steps required for designing instructional texts. The first step, task analysis, requires writers to identify the purpose of the task, the resources required, and the steps required to complete the task. In addition, writers must identify the constraints that are placed on the user to complete the task and the environment in which the user will complete the task. The second step, audience analysis, requires writers to identify the users and their attitude, education, and experience with the task so writers can adjust features in the
manual to the level of the audience. The third step, testing, requires writers to identify the types of testing (user, expert, text) and the dates scheduled (in-process and final date) for document testing (403-7). Burnett states:

Although the writing process divides into broad general stages of invention and exploring, planning and organizing, drafting, revising, editing, proofreading, and publishing, individual writers differ in the time they spend in various stages, in the sequences of the stages, and in their thought processes. (26)

Burnett discusses how these cognitive processes that affect the writing process result in a recursive writing process. These processes are illustrated by the diagram on page 26 in her text, *Technical Communication*, which is reproduced in Figure 2.

![Recursive writing process from Burnett's *Technical Communication*](image)

Figure 2. Recursive writing process from Burnett's *Technical Communication*. 
Weiss provides a process of planning and writing user documentation that includes analysis, design, assembly, editing, and maintenance (55-56). The first step, analysis, requires writers to analyze the kinds of documents that the users require to accomplish their task. The second step, design, requires writers to prepare detailed outlines about the working document. The third step, assembly, requires writers to identify the workplan and eventually results in writers producing the first draft. The fourth step, editing, requires writers to test the document for "clarity, correctness, and readability" (54). The last step, maintenance, requires writers to keep track of information that is updated or changed and results in updating the manual. Weiss provides flow diagrams (55-57) in *How to Write a Usable User Manual* that, like Burnett's, demonstrate the recursive nature of planning and writing manuals as shown in Figure 3.

![Data Flow Diagram for Developing User Documentation](Exhibit 5.3)

**Figure 3.** Planning process from Weiss' *How to Write Usable User Manuals.*
Weiss further defines three classes of errors that cause documents to fail the users: strategic, structural, and tactical. Strategic errors result when writers fail to plan a document, analyze the audience, and analyze the task in the analysis and assembly phase. Structural errors result when writers fail to design and model a document, which means that writers may fail to produce substantive outlines in the planning and design process, fail to test these outlines, or fail to include the user in testing these outlines. Tactical errors result from the failure of writers to carefully edit and revise in the editing and maintenance phase (20).

Planning Computer Manuals

A number of researchers have written specifically about how to plan and produce computer manuals (Bradford; Carroll; Carroll et al.; Conklin; Horton; Oster; Scharer; Williams and Beason; Wise). Computer manuals present special problems for writers because of their more complex orientation and because they require explanation about the navigation through the computer application. Two special communication problems occur with graphic communication in computer manuals: (1) Graphics must provide navigational direction and support, and (2) Graphics must clarify text. Screen prints are particularly useful for the user of a computer manual when screen prints are supported and referred to in the text (Wise 677).

A current theory regarding computer manuals is that "less is more" (Carroll; Carroll et al.; Scharer). Often, users don't read manuals, but use smaller quick reference guides or refer to the larger manual when problems arise. Sharer advises that the best materials to provide in a minimal manual are lists of
definitions and purposes of functions, getting started instructions, and
definitions of messages and fields. The minimal manual is a proposed approach
identified by Carroll, Carroll et al., and others to promote learning and efficient
use of manuals by readers who probably will not read manuals. Carroll advises
writers to "slash the verbiage," "force coordination of the system and training," "expect every possible error," "focus on real tasks and activities," and "let the
learner lead" (129-30).

Weiss outlines four criteria for producing effective user documentation.
The first is availability. Weiss claims that sometimes programmers and
companies are simply unaware of users. The second criterion is suitability.
Writers need to analyze what documents are required by the user. The third
criterion is accessibility. Writers must analyze what users need to accomplish
and how they need to accomplish their task, thus producing a task-oriented
document. The fourth criterion is readability. Writers must determine what can
be understood by the users by focusing on user-awareness, information needs,
design and testing, and professional editing (19-20).

Williams and Beason state that the first step of planning a manual is to
describe the project including the purpose of the program, the intended users,
features of the program, related hardware, networks, or other systems, and
functional specifications (16-17).

The second step in the planning phase is to locate existing information
about the documentation project such as software specifications, document
specifications, requirement definitions, design analysis, previous drafts or
versions, and previous notes, diagrams, and flowcharts about the project and
resources (supervisor, programmers, experts, and writers) (17-18).
The third step in planning a document is to define documentation goals, which includes defining the scope and objective of the paper document: Is this document a teaching or reference tool? How much do you want the users to learn? (18)

The fourth step in planning a manual includes writing an audience profile that includes identifying the audience, describing the audience (computer experience, occupation, knowledge about subject, educational level, age), and classifying the primary and the secondary audience (18-20).

The fifth step in planning a manual is to provide a simple or complex physical description of the document. A simple description includes information such as the number of pages in the document, the number of copies, the word processing program, guidelines for highlighting words, and the kind of binding, while a complex description includes all these in addition to page size, front and back side of pages, page layout, graphics, typesetting method, paper stock, and other features (20-23).

Lastly, the sixth step in planning a manual is to identify the team members such as the project supervisor, programmers, product managers, and other writers (22-23).

Williams and Beason do not address behavioral issues regarding readers, but another researcher, David Oborne, provides a summary of research thus far about the reading process, perceptual organization, and the importance of how visual searching is fundamental to information design (267-312). Oborne’s summary must be included in a reading list for those writing instruction manuals.
Visual Communication

That visual communication is important in the process of writing and designing manuals is demonstrated by the number of books and special issues of journals that are dedicated to visual communication. For example, the Society for Technical Communication has produced special issues of *Technical Communication* dedicated to Document Design (Fourth Quarter November 1989) and Visual Communication (Fourth Quarter November 1993). The proliferation of books and journal articles about visuals and graphics provide writers with materials about visual writing at varying levels of complexity such as Parker's (1988) *Looking Good in Print*, Hartley's (1986) *Designing Instructional Text*, and Tufte's (1983) *The Visual Display of Quantitative Information*. Many journal articles are written by those interested in visual communication who are dedicated to writing reader-oriented manuals (Benson; Duffy; Hartley; Kostelnick; Parker; Rude).

Visual writing is another way that writers help readers understand and comprehend technical documents. Some researchers (Benson; Frascara; Hartley; Rude; Southard; Tinker; Tufte; Wright) provide writers with fundamental and pragmatic guidelines based on empirical research in visual communication, which can be used to assist in analyzing the needs of the audience enabling writers to produce reader-oriented documents. Effective format, in this case, can be used as a tool to lure the audience to read the manual, find information quickly, and evaluate the content. Some researchers (Benson; Rude) emphasize formatting solely for the purpose of helping the readers accomplish a task. The choices that writers make must also depend upon the audience and the practical considerations about where and how the manual is used.
Sheri Southard addresses practical format issues without addressing the relationship between content, format, and audience. Her point is that information is processed visually before it is processed cognitively, but she does not acknowledge that implicitly, content influences format decisions (173-4). Jorge Frascara (1981) states this particular view is important when writers write and design instructional materials. He states that "the nature of the message or concept to be communicated determines the optimum form of the information presentation" (472).

Other authors (Benson; Foster; Hartley; Rude; Southard; Wright) discuss format and style issues that arise when writing and designing manuals. Hartley provides guidelines for improving instructional text beginning with categorizing three types of text: prose material, graphic material, and typographical considerations (17). Hartley suggests that pre- and post-text summaries, headings, questions, sentence and word-length, typographical cues, sequencing, and numbering systems help readers use prose more effectively (17-20).

Patricia Wright also asserts that different readers have different needs depending upon context and situation; therefore, headings must be informative to do readers any good (94). Wright claims that headings can serve different functions, for example, helping those who are looking for specific sections. Headings also help those who read the entire report by providing a framework of organization for readers. Subheadings allow readers to make informed estimations about whether to adjust their reading speed (96-99).

Charles Kostelnick (1989) calls for and provides a vocabulary for visually writing documents. He presents four levels of visual design: intra-textual, inter-textual, extra-textual, and supra-textual levels, with each level consisting of three
modes: alphanumeric/symbolic, spatial, and graphic. The resulting twelve features of visual communication provide a useful approach to analyzing and planning visual writing for writers and document designers (77-78).

Researchers also address issues that affect format and design choices writers make about style and graphic elements, such as charts, tables, and illustrations. Hartley, in addition to other researchers (Cochran et al.; Tufte; Wright) provides guidelines for using graphics such as tables, graphs and charts, pictures, illustrations, and diagrams (20-23). Hartley's book (1985), Designing Instructional Text, provides useful information for the manual writer. The author discusses how to plan the layout of manuals and how to analyze type size, typefaces, and spacing in addition to font and spacing. He suggests what to avoid and what to use for emphasis. He also discusses how the use of horizontal and vertical white space affect organization, comprehension, and retrieval, and he demonstrates how to put theory into practice with examples. Hartley discusses how to write the actual text for the manual such as titles, summaries, and tables, charts, and graphics. Wright discusses how flow charts, tables and graphs often have a relationship with the text and that sometimes readers are unable to select which factors in charts and tables are the most important. Therefore, writers need to evaluate ways to make the important information accessible to the reader. Some researchers suggest flow charts are a better way to present information because (American) readers read left to right and thus are less likely to make reading errors with flow charts (100-103).
Usability Testing

Currently, a number of books and special issues of journals are dedicated to usability testing, specifically, *A Practical Guide to Usability Testing* (Dumas and Redish 1993), the *IEEE Transaction on Professional Communication* (December 1989) and journal articles such as "Writing and Testing Instructions" by Redish and Schell. Many writers do not address the significance of document testing with the actual users throughout the writing and designing process. Usability issues cannot always be resolved if writers test only their completed documents. If larger organizational problems are not addressed early in the planning and writing process, writers may have to reorganize and rewrite the entire document late in the writing process, thus increasing the cost of manual production and decreasing the time until the document is in use. Writers who incorporate strategies for usability testing throughout the writing and designing process are better able to produce usable and readable document for their particular audience.

Usability testing is practiced by a variety of professionals who make up usability research groups, each with a different focus to their testing and different testing methods. Human-computer interactions groups are made up of ergonomic engineers, human factors psychologists, and cognitive psychologists, whose purpose is to design interfaces where humans and computers interact by utilizing experiments and case studies as their testing methods. Sociologists and anthropologists focus on classical methods of fieldwork such as interviews, observations, and notes employing ethnography and field methods. Marketing groups consist of marketers whose primary focus is on customer satisfaction, which is determined by customer response cards, interviews, and telephone
surveys. Lastly, the technical communication profession, which is made up of writers, document designers, and educators, focuses on how educational materials help the users learn a system by employing qualitative research, text-based methods, case studies, and field studies to determine the usability of a document (Sullivan 258-61).

Many research methods are employed by usability research groups. Direct questioning includes the use of surveys, interview, and comprehension tests. Observation includes informal observation, laboratory observation, user protocol, reading protocol, reading protocol, and keystroke records. The traditional evaluation methods include computer text analysis, editorial review, and technical review (Sullivan; Schriver).

Text evaluation methods are text-focused, expert-judgment-focused, or reader-focused. Text-focused methods include the well-known readability formulas, computer-based stylistic analysis programs, guidelines and maxims, and checklists. Expert-judgment-focused methods include peer review, technical and subject-matter expert review, editorial review, and external review. Reader-focused methods include concurrent testing and retrospective testing (Sullivan; Schriver).

Traditionally, writers have written instructional manuals for an audience that is non-technical and have provided their audience with descriptions instead of procedures (Redish 63). Redish believes that usability testing is critical to evaluating instructions for a particular audience (67). She discusses the strengths and weaknesses of different types of testing: user edits, protocol-aided revisions, and beta testing. She discourages laboratory-based testing because it is less real world, and the users may act differently in a laboratory setting (68-71). Testing
instructions for their products is a useful and practical way to determine user manual effectiveness for those using documents.

Many researchers (Burnett; Diehl and Mikeulcky; Redish; Schriver; Selzer) have also written about the use and misuse of readability formulas. Readability formulas have evolved into a text-focused tool that measures certain aspects of writing by quantifying certain information in the text using the average word length, sentence length, and the relationship between the two to determine readability (Burnett). The major flaw is that the text-focused formulas do not address content, format, acronyms, grammar, and typography (Burnett; Diehl and Mikulecky; Redish; Selzer).

Other cognitive issues that affect readability are discussed by researchers (Bradford; Duin; Hartley; Haviland and Clark; Horton; Wright). Fundamental to writing for readers is understanding some of the cognitive processes that readers use to learn information.

Duin discusses the complexity of the reading task from the reader's point of view when she states that the complexity of the reading task results from the reader's prior knowledge about and experience with a topic (97-98). Duin believes that knowledge exists as schemata in our minds and that writers can make predictions about the reader's prior knowledge. Duin suggests that there are features that writers can consider in order to promote learning, recognition, and recall (99-101). Since readers bring background knowledge to the text while they are reading, writers can analyze the reader's prior knowledge to reach the reader's skill level, and to provide tools to help readers comprehend the content of the text.
Susan Haviland and Herbert Clark suggest that writers use the Given-New Strategy as an aid for readers trying to comprehend new information. This strategy identifies information syntactically by placing the given (old or known) information in the subject position while placing the new information at the end of the sentence. This strategy is based on the theory that readers learn by attaching the given information to information already in the reader's memory. Readers can then construct a link or a relationship between the new information at the end of the sentence and the given information in the subject position of the sentence that is already linked in the reader's memory. This strategy makes use of the reader's prior knowledge. When writers evaluate and identify the reader's background, they enhance readability and comprehension of text for the readers (512-14).
FORMAT AND DESIGN CHOICES

The purpose of this section is to examine and to provide support for the decisions I made regarding legibility and accessibility. Decisions about legibility include those about typography, type size, upper and lower case, and line-length. Decisions about accessibility include those about the use of road maps, headings, and white space, and they reflect the document's organization.

I had an abundance of freedom to make whatever legibility and accessibility decisions that I chose. Therefore, I could plan and change my mind about many decisions any time. Mostly, my superiors were pleased with the format and design decisions I made. However, before I could begin to make format and design decisions, I had to think about my users' reading tasks and their purpose for using this document.

Most of these decisions were based on information that I learned in courses or on the conventions used in writing and designing computer manuals. Diehl and Mikulecky discuss the importance of identifying the reading task when writing and designing technical documents such as manuals (Diehl and Mikulecky 5). The kind of required reading task (reading-to-do, reading-to-learn, and reading-to-access) influences the reader's choice of reading strategy. Therefore, the design of the document should differ according to the reader's purpose, which is reflected in reading strategies. For example, a reading-to-do document may best serve readers by providing procedural steps combined with relevant information and diagrams, while a reading-to-learn document may best serve readers by providing outlines, pre-text objectives, and post-text summaries (Diehl and Mikulecky 7).
The AUS manual is written for readers facing both a reading-to-do and a reading-to-learn task. Section one is the reading-to-learn section that provides information necessary to perform the data entry procedure. This section provides chunks of information, for instance, about the manual, and it lists the conventions used in the manual beneath content-driven headings (About this Manual and What are the Conventions Used in this Manual?). Section one reflects the document's organization by providing the user with background information and by beginning the data entry procedure (How do I Begin?).

The organization of the AUS document reflects the contents of the AUS program. Background and reference information such as terms and conventions provide fundamental information for those using the AUS application. The remainder of the manual is a reading-to-do document that contains introductory sections corresponding to the titles found in the screen displays. This part of the manual addresses procedural issues such as tabbing order, steps (with field titles highlighted in bold, sans serif 11-point italic typeface), and button definitions (highlighted in bold).

Cohesion in the AUS manual is promoted by the use of typography and format, which provides consistency throughout the manual. For example, headings, subheadings, frame titles, button functions, field titles, steps, and typography are all used consistently throughout the manual.

Legibility

The legibility of a document is determined, in part, by design features such as typeface, type size, case, and line-length. Tinker differentiates legibility from readability because readability has become associated with readability formulas;
therefore, Tinker provides us with the following definition of legibility (4).

Tinker states:

Optimal legibility of print, therefore, is achieved by a typographical arrangement in which shapes of letters and other symbols, characteristic word forms, and all other typographical factors such as type size, line width, leading, etc., are coordinated to produce comfortable vision and easy and rapid reading with comprehension. (20)

The following text explores some of the research in legibility and provides specific examples about my reasoning behind the legibility decisions I made for the AUS manual.

Type Size

Benson advises writers to use between a 9 and 11-point type size and to use from 2 to 4-point leading. She also advises writers to choose a serif or sans serif typeface depending upon the tone they want to create in their documents (37).

Tinker discovered that, based on the ease and speed of reading, his readers preferred an 11-point type size. He found that his readers' second choices were a 10 and 12-point type size (72). Depending upon the type size, Tinker found that leading and line-length were important factors to consider in combination (91-92). For example, he found that 1, 3, or 4-point leading does not affect legibility in a 10-point, 19 pica line-length. Instead, he found that 2-point leading increased legibility by over five percent; therefore, in this case, 2-point leading was the
optimal choice (91). Perhaps the reason for increased legibility was that as the leading increased, the text became lighter from the increased amount of white space.

Like Tinker, Hartley discusses type size and proposes one of several approaches to selecting type size. He suggests that writers use type size, line-length, and word spacing together to enhance legibility (Hartley, Designing 21). Hartley postulates that when choosing the type size, the writer must consider "the maximum permissible line-length," and "the relationship between the word spacing and the line-to-line spacing of the information" (Hartley, Designing 20).

Though Tinker found that a 10-point type size was the most legible for his readers, I used a 12-point Times New Roman typeface because it was the standard type size and type face choice of the user documentation group at Norwest Mortgage, and because my readers were high-school graduates, so the larger type size might be more legible for them when combined with the line-length and word spacing discussed in the next subsection. See Figure 4.

Click the arrow once and a list of choices appears. The drop-down list box stays open until you select an item or click the arrow to close the box. To make a choice, click that item. This action causes your selection to display in the field next to the arrow.

Figure 4. Text in 12-point Times New Roman.
Line-Length

Hartley explains that the main element to consider when choosing a typeface is the line-length. An increase in the type size, for example, will increase the size of the phrases and syntactic units, thus affecting legibility (Hartley, Designing 26). Hartley states:

In brief, the primary consideration is the width of the character groups and syntactically structured word-groups, not the vertical dimensions of a character per se (Hartley, Designing 21).

Tinker also found that the speed of reading for 12-point type size was less important than the line-length (86). He found that with 12-point type size, that very short (9 picas) and very long line-lengths (41 picas) were read significantly slower than the standard line-length. He found those line-lengths that ranged from 17 to 33 pica with 1 to 4-point leading were the most legible (98-99). Tinker provides a list of "safety zones" (106-7) when considering type size, line-length, and leading. These safety zones stipulate that as optimal line-length increases, the leading should also increase. See table 1.

Table 1. Tinker's "safety zones."

For 12-point typefaces, use:
17-pica line-length and 1 to 4-point leading, or
25-pica line-length without leading, or
33-pica line-length and 1 to 4-point leading.
In the AUS manual, I used a number of different line-lengths depending upon where the text or steps were located in the organizational hierarchy that resulted from screen prints, headings, sections, and subsections. Introductory paragraphs had a maximum line-length of five and one-half inches to six inches, which corresponds to 33 to 36 picas. Leading was 4-point for both the 33 and 36 pica line-lengths. While this line-length was greater than those found above in the table of Tinker’s safety zones, the 36 pica line-length probably did not interfere with legibility because the maximum 4-point leading was used. If the 36 pica line-lengths were too long, decreasing the line-length by only 3 picas (half-inch) would have made the line-length fall within Tinker’s safety zones. The conclusion is that the line-length used in the AUS manual was legible. See Figure 5.

This subsection explains the kinds of loan information you type into the AUS database. This loan processing information is used to perform calculations about the loan and to produce reports for the underwriters. These fields (boxes) display words, numbers, or codes. Different kinds of boxes and buttons are described below.

Radio buttons
Radio buttons offer you a choice of options. Only one choice can be active. Two examples follow:

Figure 5. Line-lengths of 36 picas followed by a line-length of 33 picas, both with 4-point leading.

Case
Hartley cautions writers to avoid the use of uppercase, italics, and underlining or to make sure to use them sparingly (Hartley, Designing 26).
Hartley postulates that uppercase words contain "less distinctive information per unit of space than words in lowercase," resulting in less immediate word recognition; therefore, Hartley discourages the use of uppercase (except for proper nouns and the first letter of the first word in a sentence). He does, however, admit that if enough white space surrounds uppercase headings, readers may quickly recognize and perceive these words (Hartley, Designing 24-25). As an alternative to uppercase, Benson suggests writers use bold typeface to emphasize words or short phrases of text, such as in headings (37).

In empirical support of Hartley, Tinker finds that the use of all uppercase retards the reading speed, because uppercase words tend to be read letter by letter and the words take up greater space, requiring more eye fixations than lowercase (65).

In the AUS manual, uppercase and underlining were used predominantly in the Underwriting Main Menu section. In the menu bar, words and phrases were not underlined, but instead a single letter in the words and phrases was underlined, the letter which designated the letter to press on the keyboard to open that menu. These words and phrases included those in the menu bar such as File, Loan Search, and Add New Loans, and others. Uppercase was used with keyboard functions because the convention in software documentation was to do so, such as with ALT, TAB, and ENTER. See Figure 6.

1. Press ALT F or click File to open the File menu
2. Press S or click Loan Search
3. Press A or click List All Loans. This action causes the List All Loans window to appear.

Figure 6. Examples of uppercase and underline.
In addition, initial capital and bold were used to identify button functions that were displayed in the screen print or windows. Since I decided to place buttons in bold, an alternative visual cue had to be found to differentiate the buttons from the field titles. Field titles usually required an action, such as to click yes or no to respond, or to select from a drop-down list box, or to enter some type of data. I experimented and eventually decided upon a bold, italic, 11-point Arial. I reduced the type size from 12-point to 11-point to enlarge the white space surrounding field titles, further setting them apart from the text. See Figure 7.

1. The loan and LPO number appear at the top of the screen. The name appears after you type it into this section and click OK, Next, or Prev.
2. Type in the borrower's first name for the First Name.
3. Type in the borrower's middle name for the Middle Name if you are given

Figure 7. Examples of buttons and field titles.

Justification

Benson suggests using ragged-right margins and white space in the margins between sections. Benson gives three reasons for using ragged-right margins: (1) research suggests ragged-right is easier for poor readers to read, (2) readers prefer ragged-right margins, and (3) ragged-right margins are less expensive to produce (38). In addition, Parker advises that flush left/ragged-right lines also create an informal tone and produce extra white space (59).

In the AUS manual, I used ragged-right margins because they are easier for poor readers to read, and easier for readers to find space to write comments and
notes in. Furthermore, hyphenations would not be a concern because a word that extends past the end of a line would be moved to the next line.

**Accessibility**

Accessibility of information helps readers to assimilate a document's organization, hierarchy, and content. Some of the variables that affect information access include the use of road maps, headings, and white space. Southard explains that if a manual is effectively formatted, readers can find information quickly, process text quickly, and identify trouble-shooting information quickly (174). Because readers perceive the organization of a text before they begin reading, effective formatting makes organized information accessible to readers before they begin reading.

**Road Maps**

Benson discusses the importance of the use of road maps, and their relationship to information accessibility. She advises writers to provide readers with a road map through documents so readers can find information quickly. Road maps include tables of contents, glossaries, indexes, and appendices. Effective road maps offer visual cues that highlight the underlying organization, thus making the organization clearly accessible to the reader (36). See Figure 8.

Another type of road map is the use of section headings and icons to produce visual cues for the reader (Benson 36). Visual cues, in any form, stand out by their relationship to the surrounding white space, and by their physical association on the page when compared with dissimilar items (Foster 189-92).
Visual cues help readers to sort information, select useful information, and dismiss unnecessary information (Rude 65). See Figure 8.

Figure 8. Road maps (detailed tables of contents, conventions, and terms) from the AUS User Manual.

When I planned the AUS manual, I planned to include a table of contents, a list of the conventions used in the manual, and the definitions of terms. Later, I decided since the sections vary in length from eight pages in the Underwriting Main Menu (section two) to fifty-six pages in the Underwriting Sections Summary (section three), it would be helpful to include a detailed table of contents for each section in addition to a general table of contents for the manual as a whole. This choice resulted in an important benefit for the users because previously it was not clear where in the data entry procedure the users would begin or end reading. The definitions of terms and the conventions were mostly written at the beginning of the project during the planning phase and on into the writing and designing phase to include unfamiliar terms and conventions for
users with minimal computer experience. The tables of contents were written towards the end of the process.

Headings

Benson advises that since headings affect the readers' choice about what they will read, headings must be informative, consistent, and parallel in structure. She explains that poor readers may benefit from headings that are statements or questions (38).

The headings in the procedure part (section two and three) of the AUS manual are based on the titles found in the AUS windows, such as those found in sections, subsections, and frames. Most headings are written exactly as they appear in the computer application. In the introductory section, headings are also in the form of statements and questions to lure the reader into considering reading the text in the first section, which contains the reading-to-learn material.

The major headings contain the primary information about the section. Since these are the first headings, readers infer this is the more important information and will remember it. Procedural steps are less important and are placed two to three headings lower in the hierarchy and contain information about accomplishing the steps in the procedure. See Figure 9.

![Automated Underwriting System User Manual](image)

Residence Information

Present Address

Present Address 1

Figure 9. Examples of Headings.
Often, when the programmers changed section and subsection titles, I would have to inform them if they were inconsistent, which results in a loss of cohesion between sections, subsections, and frames. Sometimes the programmers would change the field titles, resulting in further inconsistencies in the application.

**White Space**

Hartley describes white space as an element that separates paragraphs from each other, and words, phrases and punctuated clauses from each other. White space also separates headings, subheadings, and sections. Hartley argues that some studies suggest that the more mature audience depends on spatial cues more heavily than younger audiences who have yet to learn these hierarchical conventions. He argues that consistent spacing helps readers read faster because consistent spacing helps readers predict and understand the document’s organization and structure (Hartley, *Designing* 27).

Hartley states:

> My prime contention, however, is that legibility is a function of clearly defined structural relations, and that this is most easily achieved by the consistent manipulation of space (Hartley, *Space* 504).

Hartley further explains that printing practices have traditionally maintained the same number of lines of text on a page regardless of the text content. Instead, printers have traditionally based the end of a line or page on
where the print falls and not on the logical relationship between content and structure (Hartley, *Space* 505). While printers have traditionally not used white space, text organization is enhanced with white space in the layout of documents. Units of white space can be used consistently to separate and group related parts of a text, and consistent word-spacing can be used as a device for better displaying the text's structure (Hartley, *Designing* 34).

Throughout the AUS manual, I chose the end of a line of text based on the relationship between the content and the structure of the document. For example, instead of starting a new subsection or frame at the bottom of the page, I began the text on the next page so that the related steps were chunked together under the appropriate heading. While dividing and continuing steps in one frame onto the next page may not confuse the readers, if the readers recognize visual form before they recognize content, then the logical visual display provides the readers with predictability about the logical chunking of related content.

Hartley believes that the textual elements in instructions are better communicated to readers with the consistent use of horizontal and vertical white space. The combination of horizontal and vertical white space can help writers design better layouts based on the content of the information (Hartley, *Space* 502). The use of horizontal white space can separate headings, sentences, and paragraphs resulting in a clearly defined spatial structure for readers. The use of vertical white space can group related parts (Hartley, *Space* 499).

In the AUS manual, the horizontal white space results from dividing textual and graphic information into logical units based on screen prints, headings, sections, and subsections. Extra white space is placed, for example,
between frames and subsections, two sets of steps, and two steps with different functions, further separating logical units of information.

In the AUS manuals, the use of vertical white space is easily identified first in the margins, which are created by placement of the screen prints, headings, sections, and subsections. As the reader progresses into the next level of information, the vertical white space becomes further defined based on the sections, subsections, frames, steps, and button definitions indented in the organizational hierarchy.

An example of horizontal and vertical white space is shown in Figure 10, although the best way to view the use of white space is to examine the reduced copies located in Appendix B.

Former Address

Former Address 1
1. Type in the number of years the borrower lived at Former Address 1 for No. years.
2. Click the arrow to open the Status drop-down list box.
   Select one of the following:
   • Own
   • Rent
   • Other
3. Type in the address including the city, state, and zip.

Former Address 2
1. Type in the number of years the borrower lived at Former Address 2 for No. Years.
2. Click the arrow to open the Status drop-down list box.
   Select one of the following:
   • Own
   • Rent
   • Other
3. Type in the address including the city, state, and zip code.

Figure 10. Examples of horizontal and vertical white space.
Graphics: Screen Prints

Williams and Beason and others believe the best illustration in computer documentation is the screen print (42). In the AUS manual, the screen prints correspond to the actual computer screen. I measured the dimensions of my computer screen and made the size of the screen prints proportional to how they would appear on the screen. The screen prints needed to be large and offset with white space so the users wouldn't overlook them. The screen prints provide cohesion through repetition of their form and their location on the page and through labeling as figures. At the minimum, the screens are visual cues to the user's approximate location in the navigational process as they progress through the AUS application.

The best decisions a writer can make regarding legibility and accessibility are based on empirical research and the audience and the purpose of the document. Research in the areas of cognitive psychology, the reading process, typography, and visual writing have produced theoretical and practical information for those writing and designing manuals. For example, Campbell asserts that cohesion can be promoted through parallelism, graphic devices, and repetition of syntactic structure, and typography. If writers understand both the reading and cognitive processes at work, writers can write and design usable information.
PROMINENT PROBLEMS

Although the literature offers much information about planning and writing manuals, the actual process may present a writer with situations not mentioned in published articles. This chapter contains information about the major problems I faced in designing and writing the AUS project at Norwest Mortgage. Because the underwriters constantly evaluated what the AUS program accomplished, the manual was written and modified as the functionality and design of the AUS application changed. As a result, two prominent problems emerged: planning the manual when the program continually changed, and defining the discourse communities of the various personnel working on the manual.

The first prominent problem occurred in the planning process. I had learned from coursework the critical need for planning a writing project. While I knew the fundamental task the users would perform and I could identify features about my primary audience, planning was a frustrating process because I was given a limited amount of information a bit at a time. This information was usually in the form of memos circulated among Irv (project leader) and others involved in programming and development. In addition, the user documentation group did not have standards defined except tentatively for one online project (OASIS) that was still in progress, and the OASIS manuals were not yet written. Furthermore, my boss lacked experience in theory and practical application about the planning process. In fact, she informed me that I was too "academic" and not very "real world."
The second prominent problem that occurred involved defining discourse communities among the personnel working on the manual. Some of my struggles occurred when I tried to determine the role each individual played and my relationship to each person assigned to the project. Some of my questions were as follows: Who had the final say? What was the hierarchy in these groups? Who was supposed to answer my questions? What exactly was my role as the writer? How did I define my audience when I didn't get to meet them? How did I plan a writing project, as I was taught, when I didn't understand the roles and relationships of the individuals involved and I had not yet seen the ever-changing application? In fact, I didn't get to view the application until the first week in February, when the project deadline was February 14. How did I evaluate and respond to editing comments from others? Each individual involved in the project had his or her own agenda. Once I determined the individual roles and the discourse community of the personnel, I could better judge how to interpret the information I received.

Planning the Manual

The planning process is an important and worthy process, especially while writing manuals concurrently with program design and development. In *Writing Effective Software Documentation*, Williams and Beason provide six steps for the software documentation planning process to produce usable computer documentation: describing the project, locating existing information, defining documentation goals, writing an audience profile, describing the document, and listing team members.
Describing the Project

Williams and Beason state that the first step of planning a manual is to describe the project. Within a few weeks of starting at Norwest, I met with Irv (the project leader) and Julie (senior technical writer, my supervisor) for an explanation of the purpose of the AUS application under development. Irv discussed the larger context, which incorporated a number of phases of the project over the next two years. Phase 1 of the AUS application was the first step in a series of software development stages that would automate the process of not just underwriting, but also the loan application process for the mortgage banking business for Norwest Mortgage. The goal was to decrease the loan processing turn-around time, resulting in savings and money-making ventures for Norwest Mortgage.

![Figure 11. The larger context of AUS.](image)

The major problem at this stage, which was very frustrating, was that I was not given nor could I have access to any information specific to AUS such as an application, screen prints, functional specifications, or information about the audience. I did not have any information to analyze that would help me in the
planning process. I received a very general foundation in the larger context of the project, of which the AUS project was only a small part. At this point, I knew I was to write a computer user manual that would serve as a tool to accomplish the data entry procedure for the loan mortgage processing procedure.

Locating Existing Information

The second step in the planning process is to locate existing information about the documentation project. Within a few week's time from the initial meeting with Irv and Julie, I received screen prints from Dean, but not any information about the functionality of the program such as an executable, or functional specifications. Any functionality issues were left to my best guess. This information was given to me over a week's time when I planned other features about the document such as those addressed in steps three, four, and five. I also received previous notes from Julie about the AUS project from an earlier meeting with Irv (December 1993 before I had been hired) which were notes about the larger context of the project, not just AUS. Julie also provided me with general information about the users.

Eventually, Dean gave me a flow chart that provided navigational guidance and window specifications that defined fields, functions, and data types used in the application along with current screen prints. The navigational chart revealed the process flow through the screen prints and subsequently the application, so I became familiar with the contents of the application from the screen prints and flowcharts. I began to think about what kind of sections and what type of content needed to be included in this document so the users could accomplish their task.
I spent most of my time reading, planning, and evaluating other materials and manuals in our department to explore what ideas and information might best be incorporated into the manual, and to evaluate how manuals were typically written in the past for Norwest Mortgage. I also tried to learn something about mortgage banking and to expand my computer language vocabulary.

Defining Documentation Goals

The third step in planning a document is to define documentation goals. The information required for step three was partially provided during the initial meeting with Irv and Julie, so step three was partially completed before step two even started. The documentation goals became further defined and clarified in a recursive process as I talked with Sarah, Irv, and Julie over the next few weeks and learned more about the audience, the task, the AUS project, personnel, and mortgage banking. I was able to define the documentation goals, which were to provide user-friendly documentation about the data entry procedure for the AUS data entry personnel.

Writing an Audience Profile

The fourth step in planning a manual includes writing an audience profile that includes identifying the audience, describing the audience, and classifying the primary and the secondary audience, and defining their computer experience, occupation, knowledge about subject (mortgage banking), educational level, age, and purpose for using the program. Part of the information required for step four was given to me in step one, but most of the information was
supplied during step two. Once I determined that it was Sarah (an underwriter) who knew the audience, I called her to request detailed information about the users. Again, this information was further defined throughout the first month from discussions with Irv, Sarah, and Julie as I learned more about the AUS project and mortgage banking.

Since I determined specific information about my audience through conversations with Sarah and Irv, I decided to keep the text (sentence length and word choice) and the visual design as simple as possible. I decided I had to tell my audience the specific details about what actions they needed to perform. For example, instead of telling them to make a choice, I told them how to open the box so that they could make a choice (1. Click the arrow to open the drop-down list box. 2. Select a Loan Type). I displayed all of the drop-down list boxes in the manual as bulleted lists of items centered on the page listed in the same order as shown in the drop-down list boxes in the window so the users would know what was displayed in these boxes in the window. I also decided that button functions (OK, Next, Cancel, Previous, and Search) would be displayed at the bottom of the page near the screen prints to provide the readers with grouped information in a predictable manner.

Describing the Document

The fifth step in planning a manual is to provide a physical description of the document. During the process, mostly in step two, Irv and Julie informed me that the document must be provided to the user in a heavy plastic binder format with text one-sided on the front pages. I also used Microsoft Word for Windows incorporating screen prints. My supervisor informed me about some
formatting decisions about the document, such as those about page size, binding, screen prints, typesetting method (desktop publishing), and paper stock, which limited the number of decisions I needed to make. Since the document was produced using what I learned and continued to learn about desktop publishing from coursework, from Julie, and other coworkers, this method eliminated the need for an illustrator, photocopy personnel, artists, typesetters, printers, collators, assemblers, and binders.

Even though some of the physical descriptions of the document were already made, I was given abundant freedom to write and design the document subject to comments from my supervisor, which were usually favorable. Mostly, she was supportive of any of the decisions I made, except a few word choices, such as to use information for data, and to use simple words and short sentences.

Some features determined the format choices I made, such as those about the contents and the audience. The manual was written for readers facing a reading-to-learn task in section one and a reading-to-do task throughout the remainder of the manual. Before I received an executable, the decisions I made about formatting were those about type size, font, labeled screen prints, headers, footers, headings, subheadings, and button definitions.

The headings were defined as Arial bold, a contrastive typeface compared to Times New Roman used for the text. Headings ranged from an 18-point to 12-point type size depending upon where they fell in the organizational hierarchy. The number of headings increased after I received an executable in which I identified more screens than I was given. Thus, the type size of the headings required adjusting. See Figure 12.
Headings
First Level Headings 18 pt, bold, arial, left justified
Second Level headings 14 pt., bold, arial, left justified
Third Level Headings 12 pt., bold, arial, normal indent (indent 0.5 in.)
Fourth Level Headings 12 pt., Times New Roman, bold, normal indent

Figure 12. Examples of headings from the AUS style sheet.

Each section had an introductory paragraph about the content including if data was downloaded, input, or calculated. Button functions were in bold (from the OASIS style sheet) and described at the bottom of the page, section, or subsection near its appropriate screen print, thus providing continuity and predictability about button descriptions.

In the early planning stages, it was difficult to create a style sheet and define standards because there were so many variables that were yet undefined about the computer application. Fortunately, I had the luxury of considering only myself so I could think about questions, ideas, and decisions, and review current practices about appropriate formatting and style choices to document in the AUS style sheet. Some of the AUS style sheet is shown in Figure 13.

Abbreviations and Acronyms
> = greater than
2nd = second
Acct. = Account
AUS = Automated Underwriting System
COGENSYS changed to judgment processor
No. = number
Cl = Credit Report 1
Del = Delete
init. = initial
Install = installment
N. A. = not applicable
Rev = revolving
Yr. = year

Figure 13. Some features of the AUS style sheet.
Williams and Beason suggest providing a physical description, simple or complex, based on the type of production methods used. For my document, I could not adequately determine the number of pages because I had only some of the incomplete but ever-changing screen prints and incomplete window specifications. I did not know how large or complex the program was except from the minimal information I received. I thought the document would be about 60 to 70 pages, but it turned out to be 100 pages. What I really needed was an executable (a sample program still in development) to play with to answer my questions, to determine simple functionality issues, to determine what areas might be troublesome for the user, and to determine how many notes to provide the users. I finally received an executable by the end of the month.

Defining AUS Functionality without an Executable I organized a larger global structure that included an introduction with a basic outline. I decided to include a list of definitions, a description of the button functions, a description of the kinds of boxes, fields, and actions in the application. I also wrote some procedural text (without formatting and screen prints) based on the screen prints and the window specifications from Dean.

Some of the decisions I made about procedural text were based on my best guess, which was problematic. For example, I did not know the tabbing order because I did not have access to an executable. I guessed whether the tabbing order was from left to right or top to bottom and if the programmers were consistent with tabbing order throughout the forty-six screen displays. My best guess about the tabbing order resulted in my having to change the order of steps at a later date. I discovered that the programmers were inconsistent with tabbing
order or the tabbing order did not make sense in its present order, so I had to inform Scott that consistency would be valuable for the users in the context of a particular window.

I speculated about how to interpret information from the functional specifications. For example: how does a user enter dates into fields that require dates? Does the user enter dashes or slash marks or will they be present in the field? Does the user insert commas and decimal points when entering dollar amounts? How many significant figures does the user enter for percents and for dollar amounts? Will information always be present in the downloaded fields? Will this information always be correct or will the users have to enter data into some of the downloaded fields? If the users click OK, will the calculated data appear in the appropriate fields while remaining in the current window?

Often, I generated lists of questions for Dean since I did not yet have an executable. For example: How does the user go to the next field? Could the user use the mouse or the tab key, or the arrow keys? How many digits were in the loan numbers and the LPO numbers? Was this constant? Could the users sort the list of loans by name, loan date, and loan number? How large was this list of loans? When could I get an executable?

I had a number of other questions about the window specifications and the actual functioning of certain buttons. For example, the window specifications stated that the cancel button had two functions based on whether the user made changes in the window. If the user had not made any changes, Cancel took the user to the loan summary window. If the user made changes, Cancel caused a message box to appear asking if the user wanted to save the changes. Why does clicking Cancel cause a message box to display asking whether the user wanted to
save any changes when the purpose for clicking Cancel was to cancel any work? Later, after I asked about this issue, I learned that the cancel button was a never-mind button that should take you to the previous window, without asking about saving any changes. In this case, the window specifications contained inaccurate information.

Listing Team Members

Lastly, the sixth step in planning a manual was to identify the team members, such as the project supervisor, programmers, product managers, and other writers. Initially, I only knew Irv, Julie, and Dean, but as the next few weeks progressed, I learned this information from Irv and Julie, and from attending my first developer's meeting. I did not find out about a particular user, Matthew, until one month after I initially talked to Sarah.

As the project progressed over the next two months, I learned that my contacts on this project were Bill (project manager) Irv (project leader), Dean (business analyst), Scott (quality assurance tester), Mike, Prathap, and Joe (programmers), Julie (my supervisor), Sarah and Claudia (underwriters), and Matthew (user). I also learned what was required of each individual for this project and whom I should address regarding my concerns and questions. My main contacts became limited to Irv for the overall picture, functionality questions, and accuracy; Dean for contacts, screen prints, and window specifications; Scott for functionality, accuracy, and executables; Sarah for user information and comments; Matthew for comments; and Julie for any other concerns. (See Figure 1 on page 3 for a chart of contacts and relationships.)
In conclusion, the most important observation about problems during the planning process was that it was a recursive process that required me to further define the task and audience as I learned more about the project. Planning was also difficult because I did not have access to information, except for what the business analyst gave me, and usually I had to request more information. Some of the reasons for this were inherent in any documentation project, but in this case, the problems were made worse because I was given a minimal amount of information and this information changed, often resulting in continual updating, revising, and editing.

In addition, different people I spoke with also had different viewpoints and agendas, resulting in my stopping to evaluate where and how this information was useful for my purposes. Often, the questions I asked had not yet been addressed by the developers, client, or business analyst. This was demonstrated in a memo I wrote to Dean asking about application functionality issues. My memo then became a conference memo with discussion among Dean, Irv, Sarah, and Duane about my questions. Furthermore, I was often given incomplete information, and I had to wait for an issue to be addressed and decided upon by the developers and clients. This situation resulted in recursive planning, updating, drafting, and editing of the project.

Defining Discourse Communities

The second problem that arose was communicating with personnel representing different discourse communities. The crucial feature to identify was that the messages and arguments used for one community may have to be modified to be understood by another community.
The individuals who worked on AUS belonged to different discourse communities, which sometimes resulted in miscommunication about their purpose in the project. For example, I did not belong to the community that understood programming languages, so I often did not understand certain items at the developers' meeting, while often programmers and quality assurance would forget that I was writing the manual for novice users and not expert programmers. While the creative writer and I belonged to similar discourse communities, she did not understand some of the technical writing terms and concepts, such as headings, cueing devices, white space, hierarchy, readability, legibility, accessibility, and visual communication, which made conversing frustrating.

The Personnel

I was quite fortunate to work with a good group of people. Everyone was concerned with producing first-rate work on this project within an unusually limited time frame. While everyone had a different goal, our combined efforts produced a team effort. I knew that this group would answer any questions I had, except for Dean. Part of the reason he was unavailable was that he was often in meetings, or in Minneapolis, or traveling with Bill. When he could, he answered questions, but often he referred me to Scott.

After Dean gave me my first executable, I received a memo from Scott, who informed me that he was responsible for keeping track of the current versions of the executables and that he would see that I received one. I asked Dean who I should talk to about AUS problems and questions. (It was supposed to be Dean's job, but as I mentioned he was unavailable much of the time.) He
suggested that I discuss any questions or comments with Scott. I talked to Scott later in the day about executables and potential problems (bugs) with the executables.

Scott, Dean, and Irv seemed surprised by the depth of my questions, probably because some of my questions were about issues they hadn't yet addressed. When I interrupted Irv's work for questions, he always made time for my questions. He usually provided me with more information than I wanted, but this information further defined contextual elements about the project as a whole and about programming issues. He also provided information about the clients' request for changes and about current development, political, and managerial problems.

By the end of March, Irv told me the document I produced was impressive and Mike told me the document was professional. The programmers even wanted a manual. In fact, at one meeting, Dean stated he did not know where his copy was or if I had given him a copy. (He was the second person who received a copy.) Later, after the developer's meeting, I found his copy in his bookshelf. Since I gave Dean such a difficult time during and after the developer's meeting about his not knowing the whereabouts of his manual, later, when Bill (project manager) asked me for a manual, he promised he would not lose it.

Editing Comments

I asked Scott to edit my document for content and functionality. Scott was an expert because he was computer literate and knew the conventions of standard software functionality.
In addition, it was his job to test the AUS application to identify functionality and programming errors. While he had many good comments about the accuracy of the functionality of the application, he did not understand that some of the ways I worded functions were based on the limited knowledge and experience of the users. He did not understand the community that I was writing for nor what my purpose and goals were for this particular audience. Some of his comments about usage concerned words that Julie requested I change, such as information instead of data.

At a later date, I received many versions of the executable. I brought Scott about ten pages of textual inconsistencies that needed to be fixed. The changes I pointed out were with screen prints that visually demonstrated the inconsistencies in spelling, window titles, and button titles in the windows of the application. Examples of textual inconsistencies are as follows:

- if you click the install/rev details button, you go to the rev/install window
- if you click the Funds To Close section button, you go to the Funds Used for Closing window
- if you click the Asset Accts. ... button, you go to the Account Information window with the frame entitled Asset Account Information
- if you click Schedule of Real Estate Owned, you go to Real Estate Owned Schedule window
- a message box states, X must not be > 240 months instead of the easier to read, X must be < 240 months
• a City field allows you to enter only six letters
• two check boxes are missing Y and N for yes or no
• some fields lack titles (social security window)
• Chargeoff is written as chargeoff or charge off
• OK is spelled ok or Ok
• Cancel is spelled cancel or Cancel
• judgment is spelled judgement and judgment
• number is written four ways: Nbr., No., #, and Number

We proceeded to have a frustrating conversation in which he told me these changes were "cosmetic." I thought he meant they were superficial and unimportant changes. He meant that these items were "not any big deal" and "were not critical to the functionality of the application." I explained that these items would confuse the reader and really should be fixed. Later, we talked and he clarified that cosmetic meant "a quick and easy fix," which is computer shorthand that I didn't know (quotes from memo). He had assumed I knew what he meant by "cosmetic," but I didn't. Later, I received a memo from Scott, who thanked me for my work and apologized for implying that the changes I suggested were not important when they indeed were important. He thanked me for my efforts and told me that they resulted in making AUS a better application.

Editing by a Creative Writer I gave the entire document to another writer (M. A. in Creative Writing), who also worked in the user documentation group, to edit. She identified a few typographical errors that I missed. She also
made comments that suggested that she did not understand issues in technical writing such as format and style considerations that help the reader with his or her task. For example, she wrote comments on the draft such as "sometimes there's spacing between items, sometimes not." What she was referring to was the use of white space that visually separated two major processes in a procedure. White space was used to separate these two processes because the content changed from using keyboard commands to access the menu bar to using the mouse to initiate button commands in the windows. See Figure 14.

1. Press ALT F or click File to open the File menu.
2. Press N or click Add New Loans to open Add New Loans.

New Loan Number Entry Form

3. Type in the Loan Number. Example: 1234567.
4. Press TAB to get to LPO or click LPO. Type in the four-digit Loan Production Office (LPO) number. Example: 7890. TAB to OK and press ENTER or click OK. This causes a pop-up window to appear telling you the loan number and the LPO number. This window is shown on the next page.

1. Press ALT F or click File to open the File menu.
2. Press S or click Loan Search.
3. Press B or click Search By Borrower Name.

4. Type in the borrower's last name for Enter Last Name.
5. Press TAB to OK and press ENTER or click OK. This action causes the List All Loans window. Select your borrower from this list. Be sure to check the first and last name and the LPO number for that loan to appear.
6. Highlight and click Select or double-click the loan.

Figure 14. Two examples of white space separating two processes.

Furthermore, she commented on the usage of the words display and appear. She found one example where I missed adding the object that displayed in the window. She wrote on the draft that, "appear is used at the end of a sentence and does not require an object but display requires an object." She
mentioned that, "this usage is a common problem among computer manual writers but that usually we display something." What she failed to understand was that display was a verb that means that an image appears on the screen as a result of a cathode ray tube shooting electrons, such as in televisions. Display in this context was the appropriate word, and implicit in its definition was the image, the object (such as electrons producing an image), that appeared in the window.

**Editing by a User** Through interoffice mail, I received comments from a user who had written his comments on some of the manual's pages. He was an actual user who was hired as temporary help but was kept permanently on staff. I don't know his background partly because I learned about him two or three months into the project. He made a few comments about word preferences and other accuracy and style issues. For example, he requested that I change reject to refer and accept to approve, which of course, I changed. He also marked lines on every page where the hole-punch fell, and he told me to "check better" some page numbers in the table of contents. I rechecked those two pages and found I was correct so I didn't know what he meant by his comment.

On page 1-1, he suggested that I combine the Introduction and the What is AUS? paragraphs. He did not understand that I needed to give the reluctant users cues about the content in sections and paragraphs, and that I also needed to divide the text into more manageable pieces of information for this particular audience. I did not know where the users would start reading and what information they would read. They might have skipped the introduction altogether if I did not include What is AUS? See Figure 15.
Introduction

AUS is an automated underwriting computer system that makes decisions or judgments on "standard" loan files based on factors and specific file information. This system helps the underwriters process the more "typical" loans quickly.

What is AUS?

AUS stands for Automated Underwriting System. This system receives the details of loans in production from the mainframe. Once all the required information is downloaded (transmitted or sent to the AUS database) or entered into AUS, this information is processed through the rules base. AUS automatically sends this information to the judgment processor. The judgment processor is a computer system that makes decisions about a loan based on similar loan situations, rules, and calculations, which enables the judgment base to approve or refer a loan application. The judgment processor then prints a report about the loan for the underwriters. This report contains a decision (approve or refer) and a summary of rule violations.

Figure 15. Introduction and What is AUS?

On page 1-2, he indicated that some of the information on this page was inaccurate. I checked this information with Dean, the expert, who said the current meaning was correct. On page 1-6, he asked if a note and message box were necessary. I left the note and message box. See Figure 16.

NOTE: You must complete the Credit Report 1 frame and the Legal Records frame before you can access any Details buttons. If you do not follow the proper order, the computer displays a message box asking you to please complete these frames.

Figure 16. Note and message boxes.
He also suggested that I use a current example in the application. Since the application changed, the example I used was not current any longer, so I provided a different and current example.

He also made an interesting comment on page 1-7. He was offended by my description of downloaded fields as those that "may contain inaccurate information." He requested in writing that I "please avoid using the word inaccurate or incorrect to describe downloaded information." Dean, the expert, verified that information downloaded might be inaccurate or incorrect and that my description was correct. Since the user missed the qualifier (may) in the sentence and focused on the descriptors, I modified my description to make sure that both conditions (correct and incorrect information) were clearly stated.

Some of his comments were useful, such as his comments about word choice (approve and refer) and the current example, but many were not useful, such as his comments about style and usability. His comments made me wonder if the decisions I made that he addressed were annoying features that would prevent him from accomplishing the task. I decided this was not the case because he was told by Sarah to edit the document, and I am not sure that he approached this task from the user's perspective. Some of his suggestions were requests for me to change accurate information to inaccurate information, and I found this frustrating. In many of the cases, because he was a user and commented on something, while I did not agree with him, I modified the information for the purpose of clarification and I accepted that if he was confused, perhaps the message was not clear.
Technical communicators have many opportunities today to write computer end-user documentation. Traditional document planning holds true for computer documentation. Writers must perform a task analysis and an audience analysis during the planning process. Writers who write computer documentation face an additional problem: Part of audience analysis involves understanding the software program by hands-on experimentation.

Technical communicators who work as computer user documentation writers should be aware of a few items that may make their task easier to accomplish. I have drawn seven conclusions from the AUS computer documentation project that I discussed, and these conclusions may contribute to the body of knowledge about planning computer user documentation for other technical communicators and writers. In addition, I can warn others about the potential frustrations they may face while working on a computer documentation project while the program is still being developed. Below is a list of the seven conclusions I have drawn from the AUS user documentation project discussed in this thesis. The two prominent areas are (1) planning the manual, which includes dealing with the gulf between academia and business, using executables, implementing program changes to the manual, testing documents, and modifying testing methods, and (2) defining discourse communities, which includes identifying personnel and supporting teamwork.
Dealing with the Gulf Between Academia and Business

The first conclusion is that often professionally trained writers appear to walk a tightrope between an academic and a business community. In my case, since I learned about writing projects in academe and not business, I could implement the latest research into the AUS manual. However, my supervisor and a coworker I was asked to work with directly, both professional writers, did not understand theory and research produced from the academic community, which were the basis for many of my decisions. In one case, it was frustrating to converse with the coworker, who was a professional writer but not a technical writer, and did not understand reading theory, audience analysis, manual production, or visual communication. We could not address planning issues because we did not speak the same language. In addition, business people tend to mistrust academics. For instance, my boss told me at one point that I was "too academic" and not very "real world," which is a common attitude but one that works against the best planning efforts. This attitude also suggests that while some people in business (such as the project leader) clearly appreciate what research has offered, other people in writing communities, because of their varied backgrounds, do not trust the useful research from the academic community.

Using Executables

A second conclusion is that writers must find an existing executable to experiment with to learn the program so they can write effective manuals. Writers may not be offered an executable (the incomplete computer program still
filled with bugs) because other group members may not think to offer writers one, or think that writers need one, so it is important to gain access to one. Better manuals are produced when writers have experimented with the program and know the program and when writers write the preliminary manual based on paper documents such as the screen prints and the window specifications. If features in the application do not work, writers can temporarily skip those features and experiment with other working features in the executable. For example, a writer can address the contents of the application, the tabbing order, and vocabulary items. When the next executable is released, the features that did not work will work and other features that did work will not work or will have changed. So, writers can always work on some feature even though the application is not complete.

Implementing Program Changes to the Manual

A third conclusion is that writing computer documentation as the product changes daily can be frustrating, particularly when writers are brought in late and have a limited time to write the manual. Therefore, it is critical that writers read information they receive from the people in their group and that writers attend meetings faithfully, even if they think they are finished writing the manual. Chances are unlikely they are finished writing and updating the manual. Another reason to keep attending meetings is that often the project leader, manager, and the programmers discuss the functionality behind performing a particular function. This information gives writers background information about functionality for when they receive another updated executable, saving writers time when learning the program and subsequently updating the manual.
Testing Documents

A fourth conclusion addresses the importance of testing the document with experts, peers, and the users throughout the project and not just at the end of the documentation process. If writers learn the actual programs, testing will be easier for the experts because writers will write about the program they have used, as opposed to an intellectual exercise in manual production. Peers can advise about items writers will miss, which is inevitable in a project of this size, because there are so many issues to address.

Modifying Testing Methods

A fifth conclusion is that often, businesses do not have a usability testing center like those at IBM or AT&T, so usability testing methods may have to be modified in order to determine the usability of documents. Researchers who publish journal articles do not address that sometimes there is a need to modify, in practice, usability testing practices. Writers can modify and combine many kinds of individual testing methods when they cannot perform user testing as is typically recommended. For example, writers can observe the user using the manual (informal observation), encourage the user to talk out loud and record the user (reading protocol), administer an open-ended questionnaire at the end (direct questioning-survey), then interview the user afterwards (direct questioning-interview) to gain additional information. Along with the above methods, writers can use text-evaluation methods such as expert-focused methods and peer review.
Another issue to address is how to test a manual when the user is in another state, 200 miles away. If your company will not send you there, you will probably have to modify current testing methods.

Many researchers who publish journal articles do not address the quality control service that writers provide when they write a manual by using the executable and learning the program. Quality control ensures that the application works according to the specifications. Writers provide a valuable quality control service when they experiment with an executable as they learn about the program. In addition, writers can provide this valuable service throughout the project if writers are brought in from the start. Most programming communities employ individuals whose official job is to test the application to make sure calculations, functions, and so on work correctly. In addition, official testers do not address grammar, readability, and logic and may appreciate any paper documents with screen prints and suggestions that writers can offer them.

**Defining Discourse Communities**

**Identifying Personnel**

The sixth conclusion drawn from my experience in the AUS documentation project is the importance of identifying the personnel involved in the project. Sometimes, those who are assigned to work with writers may be unable to answer their questions. If writers are fortunate enough to work with a cooperative team with good leadership and management, the person who is too busy to help will suggest someone else. If writers do not have good leadership
and management, the project and manual will suffer because of inappropriate management attitudes.

Another important reason for identifying project members is that each member will offer information based on the discourse community to which he or she belongs. Once writers identify contacts and their roles, the larger scope and objective of the project may make more sense. For example, the quality assurance personnel may address details regarding how a program actually works and how it is supposed to work. The business analyst may give you a larger perspective about the theoretical approach to the project from the client's perspective.

Once writers have identified the personnel and their roles, writers can determine the materials that each member produces and that writers may subsequently gain access to these materials. For example, a developer in Minneapolis wrote the window specifications for AUS, but the business analyst was the only person who knew about these documents. He offered them to me when I asked him for any concrete information that would help explain the first draft of his screen prints. The materials you receive from other individuals involved in the group will help you write a more accurate manual.

Supporting Teamwork

A seventh conclusion is that if technical communicators and writers are included in a project early, they can learn about the larger scope and concepts and begin to formulate questions to address in the planning stages of the document project. Technical communicators and writers can help programmers design better systems visually and textually by addressing items about the visual design
of the program and the text that speak to the user, which programmers typically do not address. The important bonds that writers and programmers share are that the programs and manuals are designed for an intended audience, the client. If both groups work together as a team, the results will be synergistic for the writers, programmers, project leader, managers, and company, but most importantly for the users.

Summary

These seven conclusions I have drawn are from my experience with the AUS project. While this documentation project was a small project that required only one writer, the project still demonstrates the need for thoughtful planning. To summarize, writers must understand individuals in other discourse communities working on the project to better interpret their editing comments and identify the useful materials they produce that will help with the writing project. It is also important to be aware of the relationship between academic training and your business community. Furthermore, to write effective user documentation, writers must find an executable to learn the computer program and write about the program. Often the program is being developed until the day it is shipped out to the customers; therefore, the manual will change until this date, which can be very frustrating. As writers write and design computer user manuals, they must test the document with experts, users, and peers. Researchers in manual writing provide many methods that can be used to produce good computer documentation, but writers also need to modify and combine these methods to real world circumstances that researchers in journal articles do not always address.


WORKS CONSULTED


Terms
active/activate
alphanumeric
boxes
buttons
click
clicking
data
database cursor
download
drop-down list box
field
frame
function buttons
highlight
inactive/inactivate
keyboard
mainframe
mouse
mouse pointer
page
pointing
radio box
radio buttons
screen
section
select
type
window

Spelling
biweekly
bottom-right
buydown
buypop
check-box
double-click
drop-down
fingertip
hand-held
pop-up (based on other manuals)
read-only
semi-monthly
top-center
top-left

Buttons
OK
Next...
Prev...
Cancel
Add New Borrower
Previous Employment...
Refresh
Borrower Info...
Details of Loan...
Residence Information...
Housing Expense...
Employment...
Income Summary...
Asset Summary...
Credit Report...
Real Estate Owned...
Details of Transaction...
Declarations...
Ratios...
Funds to Close...
Base Income
Social Security/Retirement
Military
Asset Accts...
New
Update
Del
Liability Accts...
Details...
Add New Credit Rpt
Legals...
Headings
First Level Headings 18 pt, bold, arial, left justified
Second Level Headings 14 pt., bold, arial, left justified
Third Level Headings 12 pt., bold, arial, normal indent (indent 0.5 in.)
Fourth Level Headings 12 pt., Times New Roman, bold, normal indent

Style
Buttons in window = 12. pt Times New Roman, bold, first letter cap
Default function button = 12 pt. TNR, bold, italics, first letter cap
Field names = 11 pt. arial, bold, italics, first letter cap
Keyboard functions = all capitals, 12 pt. Times New Roman (TNR)
Notes = 12 pt. TNR, bold, all caps; text 12 pt. TNR
Or = 12 pt. TNR, first letter cap, italics with quotation marks
Radio buttons = 12 pt. TNR, first letter cap, in quotation marks

Abbreviations and Acronyms
> = greater than
2nd = second
Acct. = Account
AUS = Automated Underwriting System
COGENSYS changed to judgment processor
No. = number
C! = Credit Report 1
Del = Delete
init. = initial
Install = installment
N. A. = not applicable
Rev = revolving
Yr. = year
YTD
APPENDIX B

AUTOMATED UNDERWRITING SYSTEM (AUS)
USER MANUAL
Automated Underwriting System

User Documentation

Version 1.07

MIDAS Business Office
April 8, 1994

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Table of Contents

Introduction

Underwriting Main Menu
- Loan Search
- Add New Loan

Underwriting Sections Summary
- Borrower Information
- Details of Loan
- Residence Information
- Housing Expense
- Employment Information
- Income Summary
  - Base Income
  - Social Security/Retirement Income
  - Military Income
- Asset Summary
- Credit Report
- Real Estate Owned Schedule
- Details of Transaction
- Declarations
- Ratios
- Funds to Close

Import

Rules

Export

Delete

Appendix

Abbreviations

ATIS Primary Life cycle

Index
Introduction

AUS is an automated underwriting computer system that makes decisions or judgments on "standard" loan files based on factors and specific file information. This system helps the underwriters process the more "typical" loans quickly.

What is AUS?

AUS stands for Automated Underwriting System. This system receives the details of loans in production from the mainframe. Once all the required information is downloaded (transmitted or sent to the AUS database) or entered into AUS, this information is processed through the rules base. AUS automatically sends this information to the judgment processor. The judgment processor is a computer system that makes decisions about a loan based on similar loan situations, rules, and calculations, which enables the judgment base to approve or refer a loan application. The judgment processor then prints a report about the loan for the underwriters. This report contains a decision (approve or refer) and a summary of rule violations.
About This Manual

This manual defines the terminology, describes the functions, and guides you through the data processing procedure for the Automated Underwriting System (AUS).

The first section includes a model of the user manual pages and the AUS windows. Certain types of information are displayed in the same format throughout the manual. The AUS windows include a few exceptions to this rule.

This section also includes the AUS definition, pages and screen models, the kinds of information entered into the AUS database, a description of button, boxes, field characteristics, field types, and the conventions and terms used in this manual.

The Basic instructions include information about the three ways you can perform functions in AUS -- you can use the hand-held mouse, the keyboard, or a combination of the mouse and keyboard.

The second section includes information about getting started, which files to open, and explanations and procedures about how to add new loans or select current loans. This section is written giving you instructions for using the mouse and the keyboard.

The third section is the body of the data entry procedures. In this section, you also have the option of using the mouse, the keyboard, or a combination of the two to move around the pages on the screen although these sections are written using only the mouse instructions. All of the buttons that are located in the windows are described in the manual at the bottom of the page. Buttons appear in bold throughout the manual.

The fourth section contains the appendix. In the appendix you will find abbreviations used in the windows, examples of the forms located in the files, and a quick reference page.

Manual Page Model

Below is a page model for this manual. Section titles, windows, frame titles, steps, lists, and buttons occur in certain locations. These locations are shown on the page model below.

For example, the section title is located at the top-left of the page. Button names are in bold and are described at the bottom of the page. AUS windows appear before steps. Steps are indented and listed by numbers. Lists are further indented and marked with bullets (+).

User Manual Page Model
AUS Window Model

Below is a model of an AUS window. Section titles, subsection titles, and frame titles are usually located in certain locations in the window. Section titles are in the top-center of the window. Frame titles are on the left and label each frame. A window can be made up of one or more frames. Buttons are located along the bottom or the bottom-right side of the window. Boxes or Fields are located almost anywhere in the window. Fields appear white or gray. Gray fields are read-only fields. White fields allow you to type in new information or correct information.

What Kinds of Information Do I Enter into AUS?

This subsection explains the kinds of loan information you type into the AUS database. This loan processing information is used to perform calculations about the loan and to produce reports for the underwriters. These fields (boxes) display words, numbers, or codes. Different kinds of boxes and buttons are described below.

Radio buttons
Radio buttons offer you a choice of options. Only one choice can be active. Two examples follow:

1. Click either the "Yes" or "No" buttons (or words) in response to questions or situations. (See example from Details of Loan section)
2. Click the button to activate the choice represented by that button from a group of choices. A blackened button means that it is selected and that option is active. (See example from List All Loans section.)

Check-boxes
Check-boxes also offer you a choice of options from a group or a choice between Yes or No.

1. Click the check-box or the word next to the check-box to activate that option. An X in the box means that option is active. (See example from List All Loans section.)
2. Other check-boxes require that you click the check-box or the letter to change the letter to "Y" (Yes) or "N" (No). If you select "Y" an x displays in the box. (See example from Schedule of Real Estate Owned section.)

Drop-down list boxes
Drop-down list boxes contain a list of options available to you and are shown in the user manual as a bulleted list. For example: Clicking the arrow in the Documentation Type field displays these options:
- Full
- Substitute

Click the arrow once and a list of choices appears. The drop-down list box stays open until you select an item or click the arrow to close the box. To make a choice, click that item. This action causes your selection to display in the field next to the arrow.
Numbers
Whole numbers (10, 112) are entered for years and months. Do not enter the comma (,) for numbers equal to or greater than 1000, the dollar sign ($), or the percent sign (%). The computer inserts the comma and the dollar sign when you TAB to another field or click OK.

Decimal numbers are entered in dollar amounts and percents. Enter the decimal point for the dollar amounts that contain cents ($ .01-.99) or the computer will automatically insert two zeros after the decimal point. For example: 12345 becomes $12,345.00 after you press the TAB key or click OK. The number 12345.67 (with the decimal) becomes $12,345.67 after you press the TAB key or click OK.

NOTE: If you do not enter the decimal point, the computer automatically inserts zeros resulting in the wrong number placed in the field.

Percent are carried out to three decimal places. For example: 8 percent becomes 8.000. If you type in 8 (without the decimal) and TAB to the next field or click OK, the computer automatically inserts the decimal point and the zeros. For example: Enter 8.1 (with the decimal) and TAB to the next field or click OK, the computer automatically inserts the zeros to three decimal places. Example: 8.100.

Dates
Type in dates using two digits for the month, day, and year in the form (month/day/year) without slash marks or dashes. For example: 011494 represents January 14, 1994. The marks are already present in the fields that require dates.

Codes
The codes you need to select are available from a drop-down list of choices. Primary, Secondary/Vacat., Rent, and Own are examples of such codes.

What Are Menus?
Menus are located at the top-left of the screen. Menu titles open and provide a list of choices. To select an option from a menu, press the same letter on the keyboard that is underlined in the menu or click on that word with the mouse. This action opens the option you select.

How are these Fields Filled?
Information is entered into the fields by the three methods listed below.

Downloaded fields
These fields contain information that is downloaded (transmitted or sent) from the mainframe to the AUS database. These fields may contain data that is unavailable, data that has changed, or data that is incorrect.

Locate the incorrect information in the paper files you receive. Type in the new information or the correct information into AUS.

NOTE: These fields are white. You can go into the white fields and change the information but not the information in the read-only gray fields.

Input fields
These fields require you to type in the appropriate information that is found in the paper files.

NOTE: These fields are white.

Calculated fields
These fields contain values that are calculated by the computer from the information that you enter into the AUS database. You can change calculated information by changing the information in other input fields. Calculations update when you click OK, Update, or Previous (Prev.).

NOTE: These fields are gray read-only fields.

What are Required Fields
Some fields require you to enter a variable (word, number, or code) and are called Required fields. These fields must be filled with text, numbers, percents, or Y/N before the loan is processed.
What are the Conventions Used in this Manual?

ALL CAPS Terms shown in all capital letters refer to keys on the keyboard. For example: ALT and PAGE DOWN.

OR Term shown when you have a choice between two options. For example: click Yes or No.

NOTES: Term shown in capital and bold. The text that follows informs you to pay special attention to the contents in the note.

Field Names Field names appear in bold and italics with the first letter capitalized.

"Radio Button" Radio Button selections are surrounded by quotation marks, usually "Yes" or "No."

Function Buttons These buttons are located at the bottom of the window. In this manual, they appear at the bottom of the page. For example: OK, Search, and Cancel.

Function Buttons One button is shown in bold and italics at the bottom of the page in the manual. This button is emphasized in the window with a bold outline around the button and this action results when you press ENTER (usually the OK or Next buttons).

Terms Used in this Manual

The following is a list of terms used in this manual.

activate This action causes input fields or buttons to appear that were not present or were faded in the window.

box (field) A field that contains information that is downloaded (transmitted or sent) from the mainframe, entered manually, or calculated by the computer.

click A rapid touch and release action that allows you to move the cursor to a desired location in the window or to select an item from a list of choices.

data A collection of loan information stored in fields and files in the database.

download This is a process in which information is transmitted or sent from the mainframe to the AUS database.

drop-down list box A box that opens and contains a list of options. Click the arrow to open the box. To select an option, click that option. To close this box, click the arrow and the selection displays in the field.

field (box) A box that requires information in the form of words, numbers, or codes. Our system has three types of fields: downloaded, input, and calculated fields. These fields are described below.

downloaded fields require information to be sent from the mainframe computer to the fields in the AUS database. These fields are white or gray.

input fields require information to be entered manually. These fields are white.

calculated fields contain information that is calculated from the information in the current section or other sections. These fields are gray read-only fields.

frame A section of a window is divided into one or more titled subsections.
function buttons
Rectangular gray boxes that you point to and click with your mouse to select. These buttons allow you to begin action and they are usually located at the bottom of the window. They are described below and at the end of each section.

Next
updates the database with any changes and takes you to the next section.

OK
saves any changes and takes you back to the previous level window.

Cancel
takes you back to the previous level window without saving any changes.

Search
allows you to search for a loan by the Borrower's last name, loan number, or import date.

highlight
This action is used two ways when you want to make a choice. Click an item from a list or highlight the text in a field. The next action you select is performed on that field.

inactivate
This action causes field and text to fade, gray, or disappear becoming nonfunctional.

option
A selection that you make from a list of available choices. Options appear when you click the arrow key in drop-down list boxes.

radio button
This is a button you click to select an affirmative (yes) or negative (no) response to questions or situations or use these buttons to select a choice from a group and to begin a function.

select
A choice you make from a list of options. Click the highlighted item to select it and perform an action on it.

window
An image on the computer screen that allows you to interact with the computer system. To open another window, click on the button or menu that is displayed in the window.

Norwest Mortgage, Inc.
04/11/94
How Do I Begin?

1. Begin in the Program Manager. Find and click the AUS Project icon. The following window appears.

![Program Manager Window](image)

2. Click AUS Front End to open the AUS application. This action takes you to the Underwriting Main Menu. Go to the next page to begin your search using the Underwriting Main Menu.

![AUS Project Window](image)

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**Underwriting Main Menu**

- Loan Search
  - Loan Search - List All Loans
  - Sort List By
  - Status Code Selection
  - List Box
- Loan Search - Search by Loan Number
- Loan Search - Search by Borrower Name
- Add New Loan

Norwest Mortgage, Inc.
04/11/94
Underwriting Main Menu

Loan Search

From the Automated Underwriting Main Menu, press ALT F or click File to open the File menu. You will most often use Loan Search. To open Loan Search, press S or click Loan Search. You can search for a loan by the loan number or the borrower's last name.

If you want to search for a loan that is already in the database, there are three ways through the Loan Search menu: List All Loans, Search By Loan Number, or Search By Borrower Name. See page 2-13 for more information about Loan Search.

Add New Loan

You will use Add New Loan to begin the data entry process for a new loan. Press ALT F or click File to open the File menu. Press A or click Add New Loan to add a new loan. You can also add a new loan from the List All Loans window. Click File to open the file menu. Press A or click Add New Loan for this window to appear.

See page 2-18 for more information about Add New Loan.

Loan Search - List All Loans

Another way to access a loan for data entry is to access the List All Loans option. This option allows you to search for a loan by borrower name, loan number, or import date. This window also displays the loan status. The status of a loan informs you if a loan is active, imported, complete, deleted, or if an error has been found. All of the information in this window is defined in the next three pages.

The List All Loans window is shown below.
Sort List By:

You can sort the list by borrower last name, loan number, or import date.

1. Click the radio button next to the method of sorting. This action causes the list of loans to be sorted alphabetically by last name, from lowest to highest loan number, or by import date starting from the most recent date.

Last Name

If you sort the loans by last name, the last name column moves and becomes the left column in the window. You can select a specific loan three different ways from this window:

1. Click a loan to highlight it. Double-click that selection, and the Underwriting Sections Summary window for that borrower appears.
2. Press the first letter of the last name on the keyboard. Press that key again to scroll to the second, third, etc., last name beginning with that letter. TAB to OK or click OK and the Underwriting Sections Summary for that borrower appears.
3. Use the arrow keys to scroll through and then select a loan. Press ENTER or click OK and the Underwriting Sections Summary for that borrower appears.

Loan Number

If you sort by loan number, the loan number column moves and becomes the left column in the window. Loan numbers are sorted in ascending order. Example: 1, 2, 3, 4.

Import Date

If you sort by import date, the import date column moves and becomes the left column in the window. Import dates are sorted in ascending order beginning with the older dates. Example: 10/5/93, 11/5/93, 1/5/94, 2/5/94.

Status Code Selection:

This section displays the status of a loan in the loan production process. If you click the "Off" radio button, the status options remain inactive and cannot be selected.

If you click the "On" radio button, the status buttons become active. Five Status boxes are shown in the List All Loans window and are defined at the bottom of this page (A, I, C, D, and E). Usually, you want to view all the loans, so select all the status codes.

1. To sort the loan list, click one of the Sort List By radio buttons. The list will sort by the Last Name, LPO Number, or the Import Date.
2. Click the Status Code Selection radio button "On" (active) or "Off" (inactive). If you click Yes, the status codes activate. Click the status code check boxes that you want to display. An X in a check box means that status is active.
3. Click Refresh, or TAB to Refresh and press ENTER. These actions display the list of loans with the status options that you select.

List of Status Code Definitions

A (active) The loan is added to or updated in the loan list.
I (imported) The loan is downloaded from the mainframe to the AUS database but has not yet been edited.
C (complete) The loan is complete, all buttons in the sections summary are X'd, and the Applicant Data Complete? radio button clicked Y (Yes).
D (delete) The loan record is finished and the status code is changed to D (marked for deletion) but is still in the AUS database.
E (error) This code is generated by the system when a major error is found. (This function is currently unavailable.)
List Box

This list box displays information about the applicant's loan. This scrollable list box has seven columns: Last Name, First Name/MI, Loan No., Import Dt., Status, Rules (Rls), and Export (Exp.). This information is discussed below.

List Box Columns

<table>
<thead>
<tr>
<th>Column</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Name</td>
<td>Displays the borrower's last name.</td>
</tr>
<tr>
<td>First Name/MI</td>
<td>Displays the borrower's first name and middle name initial.</td>
</tr>
<tr>
<td>Loan No.</td>
<td>Displays the loan identification number.</td>
</tr>
<tr>
<td>Import Dt.</td>
<td>Displays the date the loan was downloaded to the AUS database (see Import section).</td>
</tr>
<tr>
<td>Status</td>
<td>Displays the status of the loan (see the previous page for definitions).</td>
</tr>
<tr>
<td>Rules</td>
<td>Displays the status of the loan regarding the Rules processing (see below and the Rules section).</td>
</tr>
<tr>
<td>Export</td>
<td>Displays the status of the loan regarding the judgment processor (see below and the Export section).</td>
</tr>
<tr>
<td>UserID</td>
<td>Displays the name of the last user to update that loan.</td>
</tr>
</tbody>
</table>

List of Rule Codes

This column displays rule codes that define the status of where the loan is located in the rules processing procedure.

- N (no): The loan is not ready for processing.
- R (ready): The loan is ready for the rules processing.
- Y (yes): The rules processing procedure is complete for this loan.

List of Export Codes

This column displays export codes that define the status of where the loan is located in the procedure for exporting the loan information to the judgment processor.

- N (no): The loan is not ready for export to the judgment processor.
- R (ready): The loan is ready for export to the judgment processor.
- Y (yes): The loan is complete and has been exported to the judgment processor.

Loan Search - Search by Loan Number

One way to retrieve a loan for data entry is to search the AUS system by loan number. This procedure is listed below and the Search By Loan Number window is also shown below.

1. Press ALT F or click File to open the File menu.
2. Press S or click Loan Search to open Loan Search.
3. Press ALT L or click Search by Loan Number to open the Search By Loan Number window.
4. Type in the loan number for Loan Number. Example: 1234567.
5. TAB to OK and Press ENTER or click OK. This action causes the List All Loans window to appear. Be sure to check the first and last name and the LPO number for that loan to appear.
6. Highlight and click Select or double-click the loan.

OK updates the database and displays the Underwriting Sections closest the current window and takes you to the Underwriting Main Menu without saving any changes.

Cancel
Loan Search - Search by Borrower Last Name

Another way to access a loan for data entry is to search the AUS database by borrower name. This procedure is listed below and the Search by Borrower Name window is also shown below.

1. Press ALT F or click File to open the File menu.
2. Press S or click Loan Search.
3. Press B or click Search By Borrower Name.
4. Type in the borrower's last name for Enter Last Name.
5. Press TAB to OK and press ENTER or click OK. This action causes the List All Loans window. Select your borrower form this list. Be sure to check the first and last name and the LPO number for that loan to appear.
6. Highlight and click Select or double-click the loan.

Add New Loan

This window allows you to enter data for a new loan. The procedures to add a new loan are listed below and the Add New Loans window is shown below.

1. Press ALT F or click File to open the File menu.
2. Press N or click Add New Loans to open Add New Loans.

New Loan Number Entry Form

3. Type in the Loan Number. Example: 1234567.
4. Press TAB to get to LPO or click LPO. Type in the four-digit Loan Production Office (LPO) number. Example: 7890. TAB to OK and press ENTER or click OK. This causes a pop-up window to appear telling you the loan number and the LPO number. This window is shown on the next page.
New Loan number has been selected!
You will be adding the following record:

Loan Number: 7744722
LPO Number: 4532

Add New Loan Message Window.

5. Double-check your numbers and click OK. This action adds the new loan to the database and causes the Underwriting Sections Summary window for that loan to appear.

OK searches for and displays the Underwriting Sections Summary window.

Cancel takes you to the Underwriting Main Menu without saving any changes.

Underwriting Sections Summary

- Borrower Information
- Details of Loan
- Residence Information
- Housing Expense
- Employment Information
- Income Summary
- Base Income
- Social Security/Retirement Income
- Military Income
- Asset Summary
- Credit Report
- Credit Report 1
- Legal Records
- Legal...
- Rev/Install Late Pays
- Past Due Accounts
- Collections/Charge Off Accounts
- Mortgages/Rental Payment History
- Liability Accts...
- Real Estate Owned Schedule
- Details of Transaction
- Declarations
- Ratios
- Funds to Close

Norwest Mortgage, Inc.
04/11/94
Underwriting Sections Summary

The Underwriting Sections Summary window contains thirteen information sections that must be complete with downloaded, input, or calculated information before AUS will send the loan application to judgment processor for processing. Usually some of the downloaded information is missing or has changed; therefore, all of the fields must be checked for accuracy or entered with new information. The fourteenth button, "Not Currently Used," is inactive at this time. The Underwriting Sections Summary window is shown below.

1. The Name, Loan Number, and LPO number appear at the top of the screen for the borrower you select or enter.

2. The thirteen major section buttons are listed below.
   - Borrower Info (Information)...  
   - Details of Loan...  
   - Residence Information...  
   - Housing Expense...  
   - Employment...  
   - Income Summary...  
   - Asset Summary...  
   - Credit Reports...  
   - Real Estate Owned...  
   - Details of Transaction...  
   - Declarations...  
   - Ratios...  
   - Funds to Close...

3. The fourteenth button "Not Currently Used" is not in use at this time.

4. A radio box called Applicant Data Complete? activates after you enter and save all of the required applicant information. If all the thirteen section boxes contain an X the radio box defaults to No. If the data is ready to be sent to the rules base, click the "Yes" button.

5. Click any one of these thirteen buttons to go to that particular window.

6. For a new loan, begin entering information by selecting the first button, Borrower Information.

OK updates the database and displays the List All Loans window.
Next... updates the database and takes you to the Borrower Information window.
Cancel takes you to the List All Loans window without saving any changes.
Borrower Information

The Borrower Information section includes the borrower's name (Last, First Middle), social security number, loan number, and LPO number at the top of the page. Four borrowers are allowed and they are identified as Borrower 1 through Borrower 4. Borrower 2 through Borrower 4 are inactive until you select Add New Borrower. If you select Add New Borrower, this action activates the Borrower 2 frame. Type in the name and social security number for Borrower 2. If you change your mind about adding a borrower, click Delete. This action causes the Borrower 2 frame to disable (you can delete after you clicked OK). The Borrower Information window is shown below.

Borrower 1

1. The loan and LPO number appear at the top of the screen. The name appears after you type it into this section and click OK, Next, or Prev.
2. Type in the borrower's first name for the First Name.
3. Type in the borrower's middle name for the Middle Name if you are given one.
4. Type in the borrower's last name for the Last Name.
5. Type in the borrower's social security number for the Social Security No. without the dashes. Example: 123456789 represents 123-45-6789.

Norwest Mortgage, Inc.
04/11/94

Automated Underwriting System User Manual  
Section 3-4

Borrower 2

1. If more than one borrower exists, click the Add New button. This action activates the Borrower 2 frame. You can add up to a total of four borrowers.
The window with the active borrower 2 frame is shown below.
2. Type in the First Name, Middle name (optional), Last Name and Social Security Number for Borrower 2.
3. Click either "Yes" or "No" in response to Related to Borrower One? (This radio button appears after you select Add New)

Add New allows you to add another borrower up to a total of four borrowers.
Delete allows you to delete a borrower that you mistakenly added.
Prev... updates the database and takes you to the Underwriting Section Summary window.
Next... updates the database with any changes you make and takes you to the Details of Loan window.
OK updates the database with any changes you make and takes you to the Underwriting Sections Summary window.
Cancel takes you to the Underwriting Sections Summary window without saving any changes.

Norwest Mortgage, Inc.
04/11/94
Details of Loan

This section includes loan information such as the address of the property and the financial loan details. The loan details include the loan type, grade, interest rate, term, loan amount, occupancy, financing amount, sales price, appraised value, and so on. These fields display information that you type in or codes that you select from a drop-down list box.

Boxes with arrows are drop-down list boxes. To open a drop-down list box, click the arrow once for the drop-down list to appear. Select an item from the list and this item displays in the field to the left of the arrow. This window is shown below.

Property

1. The borrowers name, loan and LPO numbers appear at the top of the window.
2. Type in the address, city, state, and zip code of the mortgage property for the Address, City, State, and Zip. Be sure to type in the state abbreviation in all capital letters.

Loan Details

1. Click the arrow to open the Loan Type drop-down list box. Select one of the following loan types:
   - FHA (currently unavailable)
   - VA (currently unavailable)
   - Conventional

   If you do not make a selection, the loan types default to conventional.

2. Click the arrow to open the Grade drop-down list box. Select one of the following loan grades:
   - H
   - L
   - N
   - T
   - S
   - W
   - O
   - U

3. Type in the interest rate (including the decimal point) to a maximum of three decimal points (i.e., 8.375) for Interest Rate %. Example: 8.375 represents 8.375 percent.

4. Type in the number of months from (0-360 months) for the Term (Months). NOTE: S loans must be less than or equal to 180 months or a messagebox appears informing you that this number must be less than 180. H loans must be less than or equal to 240 months or a messagebox appears informing you that this number must be less than 240.

5. The LTV % is a calculated value.

6. Type in the dollar amount (including the decimal point) for the Loan Amount. Example: 8000.00 represents $8,000.00.

7. Type in the dollar amount for the Secondary Financing Amount if you are given a figure. (This field may be left blank.) When you TAB to the next field, the CLTV% field activates and will contain a calculated value after step nine is completed.
8. Type in the dollar amount for the Sales Price if you are given a figure.
9. Type in the dollar amount for the Appraised Value.

10. Click the arrow to open the Occupancy drop-down list box.
    Select one of the following:
    • Primary
    • Secondary/Vacat.

11. Click the arrow to open the Loan Purpose drop-down list box.
    Select one of the following loan purposes:
    • Purchase
    • Cash-Out
    • Rate/Term
    • Streamline

    (If the Loan Purpose is Purchase, then the Sales Price must be greater than zero.)

12. Click the arrow to open the Buydown Type drop-down list box.
    Select one of the following buydown types:
    • None
    • Regular

    If you select Regular, the Initial Bought Down Rate field activates. Type in this rate to a maximum of three decimal points. Example: 4.875 represents 4.875 percent. If you select None, this field remains inactive.

13. Click the arrow to open the Documentation Type drop-down list box.
    Select one of the following:
    • Full Doc
    • Substitute Doc

14. The No. of Borrowers and the No. of Credit Reports fields contains values that are calculated from the Borrower Information window.

15. Click "Yes" or "No" for Credit Verified. If you do not make a selection, the Credit Verified box defaults to "Y."

16. Click "Yes" or "No" for Broker Loan. If you do not make a selection, the Broker Loan box defaults to "N."
Residence Information

The Residence Information section includes information about the applicant's present address and former address. This window is shown below.

Present Address

1. Type in the number of years the borrower has lived at his or her current address for the No. Years.
2. Click the arrow to open the Status drop-down list box. Select one of the following:
   - Own
   - Rent
   - Other
3. Type in the details of the present address including the city, state, and zip code in the appropriate boxes.

Former Address

Former Address 1

1. Type in the number of years the borrower lived at Former Address 1 for No. years.
2. Click the arrow to open the Status drop-down list box. Select one of the following:
   - Own
   - Rent
   - Other
3. Type in the address including the city, state, and zip.

Former Address 2

1. Type in the number of years the borrower lived at Former Address 2 for No. Years.
2. Click the arrow to open the Status drop-down list box. Select one of the following:
   - Own
   - Rent
   - Other
3. Type in the address including the city, state, and zip code.

Prev...  updates the database and takes you to the Details of Loan window.
Next... updates the database with any changes you make and takes you to the Housing Expense window.
OK       updates the database with any changes you make and takes you to the Underwriting Sections Summary window.
Cancel takes you to the Underwriting Sections Summary window without saving any changes.
Housing Expense

This section includes information about previous, present, and proposed housing expenses. The total amounts for the present and proposed housing expenses change as the variables in each field in each column change. This window is shown below.

Combined Monthly Housing Expense

The following fields contain downloaded, input, and calculated fields. The downloaded and input fields are white because you may have to enter information because some of these fields may be missing or not current. The calculated fields are grey read only fields.

1. In the Present column, type in the dollar amount for the following:
   Example: 451.50 represents $451.50.
   - Rent
   - First Mortgage (PI)
   - Other Financing (PI)
   - Hazard Insurance
   - Flood Insurance
   - Real Estate Taxes
   - Mortgage Insurance
   - Homeowners Assn. Dues
   - Other

2. The Present Total is a calculated value.

3. In the Proposed column, type in the dollar amount for the following:
   Example: 451.50 represents $451.50. (Disregard the Rent field for the Proposed column because it is not applicable.)
   - First Mortgage (PI)
   - Other Financing (PI)
   - Hazard Insurance
   - Flood Insurance
   - Real Estate Taxes
   - Mortgage Insurance
   - Homeowners Assn. Dues
   - Other

4. The Proposed Total is a calculated value.

5. Type in the dollar amount for the Previous Housing Expense.
Employment Information

This section includes summary information about the loan applicant's employment history. This information can be entered for up to four borrowers. This information includes the number of years in the current profession, the number of years in the current position, the current position starting date, and the name of the present employer. This window is shown below.

Employment Information Window

NOTE: Once you complete the Employment Information section for Borrower 1, be sure to complete this section for the next Borrower, if applicable. If you don't, a message box appears asking you if you would like to go the next borrower. Click Yes, No, or Cancel.

Employment Borrower 1

1. The borrower name appears in the Borrower Name field.
2. Click either "Yes" or "No" for Currently Employed?
   If you click No, click the Previous Employment button and go to that section in the manual located on page 3-15.
   If you click Yes, you must type in the number of years the borrower is in his or her current profession and current position for the Years in Current Profession and the Years in Current Position before you click the Previous Employment button or a message box appears telling you to enter data in the current section. Continue with step 3.
3. Type in the name of the present employer for Present Employer Name.
4. Type in the date the borrower started working for the present employer for Start Date if one is given. Type in the date in the following form: 01/14/94 for January 14, 1994.
5. The following fields contain calculated values:
   Number of Jobs in the Past two Years
   Number of Months Gaps in the Past Two Years
6. Click the Previous Employment button.

B1, B2, B3, B4 retrieves the Employment Information window for the borrower you select.
Previous Employ... takes you to the Previous Employment window for each borrower up to a total of four borrowers.
Prev... updates the database and takes you to the Housing Expense window.
Next... updates the database with any changes you make and takes you to the Income Summary window.
OK updates the database with any changes you make and takes you to the Underwriting Sections Summary window.
Cancel takes you to the Underwriting Sections Summary window without saving any changes.
Employment Borrower 2

If you want to add the Employment Information for Borrower 2, click the B2 button at the top-right of the window. This action causes the Employment Information for Borrower 2 to display. This window is shown below.

File Help

- File
- Help

Employment Information Window for Borrower 2.

B1, B2, B3, B4 retrieves the Employment Information window for the borrower you select.

Previous Employment takes you to the Previous Employment window for each borrower up to a total of four borrowers.

Prev... updates the database and takes you to the Housing Expense window.

Next... updates the database with any changes you make and takes you to the Income Summary window.

OK updates the database with any changes you make and takes you to the Underwriting Sections Summary window.

Cancel takes you to the Underwriting Sections Summary window without saving any changes.

Previous Employment

The previous Employment window includes information about the past four jobs, the start dates, and the end dates. The borrower's name should appear in the Borrower Name field. Previous Employment Information must be completed for up to four borrowers (B1, B2, B3, and B4) on the application. The Previous Employment window is shown below.

Previous Employer Borrower 1

1. Type in the name of the previous employer for Previous Employer Name for up to four jobs.

2. Type in the date that the borrower started his or her previous job in the Start Date field for up to four jobs. Example: Type 01/14/94 for January 14, 1994.

3. Type in the date that the borrower ended his or her previous job for the End Date field for up to four jobs. Example: Type 01/14/94 for January 14, 1994.

Previous Employment Window.

B1, B2, B3, B4 retrieves the Previous Employment window for the borrower you select for up to four borrowers.

OK updates the database with any changes you make and takes you to the Employment Information window.

Cancel takes you to the Employment Information window without saving any changes.
B1, B2, B3, B4 retrieves the Income Summary window for the borrower you select.
Click one of these buttons to select a column heading for borrower you want. The column head you select will be highlighted a Caribbean blue.

Base Income takes you to the Base Income window.
Social Security/Retirement (Social security/Retirement) takes you to the Social
Security/Retirement window.
Military takes you to the Military window.

Prev... takes you to the Employment Information window.
Next... updates the database with any changes you make and takes you to the Asset Summary window.
OK updates the database with any changes you make and takes you to the Underwriting Sections Summary window.
Cancel takes you to the Underwriting Sections Summary window without saving any changes.

NOTE: Once you complete the Income Summary section for Borrower 1, be sure to complete this section for the next Borrower, if applicable. If you don't, a message box appears asking you if you would like to go the next borrower. Click Yes, No, or Cancel.
Base Income

This section includes information about the Borrower's earnings and his or her earning history for up to four borrowers. (You must type in dollar amounts in the form 1223.45. Remember to type in the decimal point.) This window is shown below.

Type of Earnings for Borrower 1

1. Click the arrow to open the Pay Period drop-down list box. Select one of the following:
   - Hourly
   - Weekly
   - Biweekly
   - Monthly
   - Semi-Monthly
   - Annual
   - Commission Only

2. Type in the hours worked per week for the Hours Per Week if the borrower is paid by the hour.

3. Type in the dollar amount for the Gross Pay Amount. Example: 65000 represents $65,000.


5. Click "Yes" or "No" in response to Probability of Continued Employment?

6. Click "Yes" or "No" in response to Overtime or Bonus Continuance Likely?

Earnings History

1. The Qualifying Monthly Pay column contains calculated values derived from the information you enter in steps two through seven below.

2. Type in the number of months for the YTD No. of Months.

3. Type in the dollar amount in the YTD column for the following: Base Pay, Overtime, Commissions, and Bonus.

4. Type in the number of months for the Past Yr.1 No. of Months.

5. Type in the dollar amount in the Past Yr.1 column for the following: Base Pay, Overtime, Commissions, and Bonus.

6. Type in the number of months for the Past Yr.2 No. of Months column.

7. Type in the dollar amount in the Past Yr.2 column for the following: Base Pay, Overtime, Commissions, and Bonus.

8. The Qualifying Monthly Base Income row contains calculated values.

B1, B2, B3, B4 retrieves the Base Income window for the borrower you select.

OK updates the database with any changes and takes you to the Income Summary window.

Cancel takes you to the Income Summary window without saving any changes.
Social Security/Retirement Income

This window includes information about the borrower's (up to four borrowers) social security payments and retirement/pension payments. This window is shown below.

Social Security/Retirement Income Window.

Social Security for Borrower 1

1. Type in the dollar amount for the Monthly Amount of Social Security the borrower receives.

2. Type in the number of months for the YTD No. of Months.

3. Type in the social security dollar amount for YTD.

4. Type in the number of months for the Past Yr.1 No. of Months.

5. Type in the social security dollar amount for Past Yr.1.

6. Type in the number of months for the Past Yr.2 No. of Months.

7. Type in the social security dollar amount for Past Yr.2.

8. Click either "Yes" or "No" in response to Awards Letter in File?

9. Click either "Yes" or "No" in response to Will Income Continue for 3 Years? (If you select Yes, then be sure the Monthly Amount is greater than zero.)

10. The Social Security Qualifying Income is a calculated value.

Retirement /Pension

1. Type in the dollar amount for Monthly Amount of retirement/pension the borrower receives.

2. Type in the number of months for the YTD No. of Months.

3. Type in the retirement/pension dollar amount for the YTD.

4. Type in the number of months for the Past Yr.1 No. of Months.

5. Type in the retirement/pension dollar amount for the past Yr.1.

6. Type in the number of months for the Past Yr.2 No. of Months.

7. Type in the retirement/pension dollar amount for the past Yr.2.

8. Click either "Yes" or "No" in response to Will Income Continue for 3 Years?

9. The Retirement/Pension Qualifying Income is a calculated value.

B1, B2, B3, B4 retrieves the Social Security/Retirement Income window for the borrower you select.

OK updates the database with any changes you make and takes you to the Income Summary window.

Cancel takes you to the Income Summary window without making any changes.
Military Income

This window contains the borrower's military income. This income includes Military Base Pay, Rations, Flight, Clothing, Quarters, Pro Pay, Overseas Combat, Var. Housing Allowance. This window is shown below.

Military Income Window.

Military Income for Borrower 1

1. Type in the monthly dollar amount for each of the fields in the Monthly Amount column.

   Military Base Pay
   Rations
   Flight
   Clothing
   Quarters
   Pro Pay
   Overseas Combat
   Var. Housing Allowance

2. Type in the number of months for the YTD No. of Months.

3. Type in the monthly dollar amount for each of the fields in the YTD column.

   Rations
   Flight
   Clothing
   Quarters
   Pro Pay
   Overseas Combat
   Var. Housing Allowance

4. Type in the number of months for the Past Yr. 1 No. of Months.

5. Type in the monthly dollar amount for each of the fields in the Past Yr. 1 column.

   Rations
   Flight
   Clothing
   Quarters
   Pro Pay
   Overseas Combat
   Var. Housing Allowance

6. Type in the number of months for the Past Yr. 2 No. of Months.

7. Type in the monthly dollar amount for each of the fields in the Past Yr. 2 column.

   Rations
   Flight
   Clothing
   Quarters
   Pro Pay
   Overseas Combat
   Var. Housing Allowance

8. The Military Qualifying Income and the Total Monthly amount located at the bottom of each column are calculated values.

B1, B2, B3, B4 retrieves the Military Income window for the borrower you select.

OK updates the database with any changes you make and takes you to the Income Summary window.

Cancel takes you to the Income Summary window without making any changes.
Asset Summary

This window contains the summary information about the cash value of Verified Assets. These assets include the following: checking/savings/CD's, Net Proceeds-Home, Retirement/Pension, Stocks/Bonds, Life Insurance, Gift, Earnest Money, and Other Assets total. These fields are all calculated fields from the data you enter into Asset Accounts.

Verified Assets

The following fields contain calculated values:
- Checking/Savings/CD's
- Net Proceeds-Home
- Retirement/Pension
- Stocks/Bonds
- Life Insurance
- Gift
- Earnest Money
Asset Accts... (Account Information)

This section includes information about the borrower's accounts. This information includes the Account Name (the bank name), the Account Number, and the Current Balance or Cash Value of these assets. The Account Information window is shown below.

1. Type in the bank name for Account Name.
2. Click the arrow to open the Account Type drop-down list box. Select one of the following:
   - Checking
   - Savings
   - CD
   - Gift
   - Earnest Money
   - 401K
   - IRA
   - Retirement/Pension
   - Stocks/Bonds
   - Life Insurance
   - *Chattel-Net Proceeds
   - *Secured Loan-Net Proceeds
   - *Bridge Loan
   - *Relocation Bonus
   - *Trade
   - *Rent Credit
   - *Grant
3. Click the check box if the response to Used for Closing?
   If you click Yes, this action causes an N to change to a Y and an x to appear in the check-box. If the N is selected, the x will not appear in the box. If you do not click either for a "Y" or "N" the box will default to "Y."
4. Type in the dollar amount for the Current Balance or Cash Value.
5. Type in the dollar amount for the Average/Previous Balance.
6. Type in the date in the form 011494 for the Date Account Opened. Example: 011494 represents January 14, 1994. (Be sure to type the current or previous date. Future dates are not allowed.)
7. Click the arrow to open the Documentation Type drop-down list box. Select one of the following:
   - Full
   - Sub
   (Be aware that if you select SUB, the Documentation Type in the Details of Loan section will change to SUB.)

8. Click the Update button. The OK button activates after you update the list of accounts.

Credit Reports

This section contains information about the borrower's credit history. If you skip sections you will have to click the Add New Credit Report button to activate this section. If you are following the sections in order, this field will already be active. You can add up to four credit reports per borrower.

Four pop-up windows require you to enter information about Mortgage/Rental, RevInst Late Pays, Collection Charge Off, and Past Due Accounts. These pop-up windows are subsections and are located in the Credit Report 1 frame.

This window also contains information about the borrower's legal records. The Legal records frame has a Legals pop-up window that enable you to enter legal information about Bankruptcy, Foreclosures, Judgments, Wage Garnishments, Liens, and Repossessions. This Credit Report window is shown below.

NOTE: Once you complete the Credit Report section, a message box appears asking you if you would like to go the next Credit Report. Click Yes, No, or Cancel.
Credit Report 1

1. Click either "Yes" or "No" in response to the Installment/Revolving Credit Established?
2. Type in the age in years for Age of Oldest Account (Yrs.).
3. Type in the dollar amount in response to Total Revolving Credit Available?
4. The Total Revolving Credit in Use? is a calculated value.

5. Type in the number of account in the Number of Accounts column for the following account information:
   - Ever Opened (excluding mortgage and gas cards)
   - Opened Past Yr.
   - Open Now

   (Be aware that the Number of Accounts Ever Opened must be greater than or equal to the number of accounts listed in the Opened Past Yr. and the Open Now fields. For example: if the value in the first field is 3, then the value in each of the following fields must be three or more.)

6. The No. of Accounts With a Balance is a calculated value.

7. Type in the No. Install/Rev Accts. with Late Pays.
   (Details takes you to the No. Install/Rev Accts. window.)

8. The No. Install/Rev Accts. Currently Past Due is a calculated value from the information you enter into the No. Install/Rev past Due Accts. subsection through the Details button.

9. The No. Install/Rev Coll/Charge Off Accts. is a calculated value form the information you enter into the No. Install/Rev Coll/Charge Off Accts. subsection through the Details button.

10. Click either "Yes" or "No" in response to Mortgage/Rental History Established? If you click "Yes," the Details button to the right activates and you must enter data in this section. If you click "No," the Details buttons remain inactive.

NOTE: You must complete the Credit Report 1 frame and the Legal Records frame before you can access any Details buttons. If you do not follow the proper order, the computer displays a message box asking you to please complete these frames.

Legal Records

This frame requires that you click either "Yes" or "No" in response to the six questions shown below in the Legal Records frame. This window is shown below.

1. Click either the "Yes" or "No" button in response to the following questions:
   - Bankruptcy?
   - Foreclosure/Deed in Lieu?
   - Judgments?
   - Liens?
   - Wage Garnishments?
   - Vehicle Reproduction?

2. Click the Legals... button to go to the Legals Section.
C1, C2, C3, C4 retrieves the Asset Summary window for the borrower you select.

Legals... takes you to the Legal Pop-up window. Liability Accts... takes you to the Liabilities Information window.

Add New Report clears the fields and allows you to add a new credit report for up to four borrowers.

Prev... Next... takes you to the Asset Summary window.

OK updates the database with any changes you make and takes you to the Real Estate Owned Schedule window.

Cancel updates the database with any changes you make and takes you to the Underwriting Sections Summary window without saving any changes.

Legals... (Legals Section)
The Legals section pop-up includes the borrower's information. The Legals section includes answers to a variety of legal questions about bankruptcy, foreclosures/deed in lieu, judgments, liens, wage garnishment, and repossession. This pop-up window is shown below.

Bankruptcy
1. Type in the number of years in Yrs. Since Discharge?
2. Click either "Yes" or "No" in response to Credit Reestablished?
3. Click either "Yes" or "No" in response to Credit Satisfactory?
Foreclosure/Deed in Lieu
1. Click the arrow to open the Type of REO (Real Estate Owned) drop-down list box. Select one of the following:
   - Foreclosure
   - Deed in Lieu
2. Type in the number of years for Yrs. Since REO?
3. Click either "Yes" or "No" in response to Deficiency Paid?
4. Type in the dollar amount for Outstanding Balance.

Judgments
1. Type in the number for the No. of Judgments?
2. Click either "Yes" or "No" in response to All Paid At This Time?
3. Type in the number of years for Yrs. Since Paid?
4. Type in the dollar amount for Unpaid Judgment Balance.

Liens
1. Type in the number of liens for No. of Liens?
2. Click either "Yes" or "No" in response to All Paid At This Time?
3. Type in the number of years for Yrs. Since Lien Pd.?
4. Type in the dollar amount for Outstanding Balance.

Wage Garnishment
1. Click either "Yes" or "No" in response to All Garnishments Satisfied?

Vehicle Repossession
1. Type in the number of years for Yrs. Since Repossession.
2. Click either "Yes" or "No" in response to Repossession Deficiency Paid?
3. Type in the dollar amount for Unpaid Deficiency Amount.

Details - Installment/Revolving Late Pays
The No. Install/Rev Accts. with Late Pays is a calculated value. If you click Details, you go to the No. Install/Rev Accts. window. This window is shown below.

Installment/Revolving Late Pays Window.

Installment/Revolving Late Pays
1. In the Past Year (0-12 Mos.) Ago Revolving Acct. column, type in the number of late payments regarding revolving late payments for the following:
   - 30 Day Lates
   - 60 Day Lates
   - 90 Day Lates
   - 120 Day Lates

2. In the Past Year (0-12 Mos.) Ago Installment Acct. column, type in the number of late payments regarding installment late payments for the following:
   - 30 Day Lates
   - 60 Day Lates
   - 90 Day Lates
   - 120 Day Lates

C1, C2, C3, C4 retrieves the Legals Section window for the borrower you select.
OK updates the database with any changes you make and takes you to the Credit Report window.
Cancel takes you to the Credit Report window without saving any changes.
3. In the >1-2 Yrs. (13-24 Mos.) Ago Revolving Acct. column, type in the number of late payments regarding revolving late payments for the following:
   ♦ 30 Day Lates
   ♦ 60 Day Lates
   ♦ 90 Day Lates
   ♦ 120 Day Lates

4. In the >1-2 Yrs. (13-24 Mos.) Ago Installment Acct. column, type in the number of late payments regarding installment late payments for the following:
   ♦ 30 Day Lates
   ♦ 60 Day Lates
   ♦ 90 Day Lates
   ♦ 120 Day Lates

5. In the >2-4 Yrs. (25-48 Mos.) Ago Revolving Acct. column, type in the number of late payments regarding revolving late payments for the following:
   ♦ 30 Day Lates
   ♦ 60 Day Lates
   ♦ 90 Day Lates
   ♦ 120 Day Lates

6. In the >2-4 Yrs. (25-48 Mos.) Ago Installment Acct. column, type in the number of late payments regarding installment late payments for the following:
   ♦ 30 Day Lates
   ♦ 60 Day Lates
   ♦ 90 Day Lates
   ♦ 120 Day Lates

7. The Total Accts. w/Late Pays field is a calculated value.

OK updates the database with any changes and takes you to the Credit Report window.
Cancel takes you to the Credit Report window without saving any changes.

Norwest Mortgage, Inc.
04/11/94
Details - Collections/Charge Off Accounts

The No. Install/Rev Coll/Charge Off Accts. is a calculated value. If you click Details, you go to the No. Install/Rev Coll/Charge Off Accts. This window is shown below.

Collection Charge Off Accounts Window.

Coll/Charge Off Accounts

1. Type in the number of accounts for Total Number of Accounts.
2. Type in the number of years for Yrs. Since Paid Off?
3. Click either "Yes" or "No" in response to All Paid At This time?
4. Type in the dollar amount for Outstanding Collection/Charge Off/P&L Balance $.

NOTE: If you want to click OK, then the values you type into the three fields above must be greater than zero. Otherwise you must click Cancel or Clear All.

OK updates the database and takes you to the Credit Report window.
Cancel takes you to the Credit Report window without saving any changes.
Clear All clears the fields and allows you to enter new information, even after you click OK.

Details - Mortgage/Rental Payment History

Click either "Yes" or "No" in response to Mortgage/Rental History Established? If you click "No," the Details button remains inactive. If you click "Yes," the Details button to the right activates and you must select the Type of Payment. Click the Details button to go to this window. This window is shown below.

Mortgage/Rental Payment History Window.

Mortgage/Rental Payment History-Credit Report I

1. Click the arrow to open the Type of Payment drop-down list box. Select one of the following:
   - Mortgage
   - Rent
   - Combination

Norwest Mortgage, Inc.
04/11/94
2. In the Past Year (0-12 Mos.) column, type in the number of months for the following late payments:
   - 30 Day Lates
   - 60 Day Lates
   - 90 Day Lates

3. In the >1-2 Years (13-24 Mos.) column, type in the number of months for the following late payments:
   - 30 Day Lates
   - 60 Day Lates
   - 90 Day Lates

4. In the >2 Years (25+ Mos.) column, type in the number of months for the following late payments:
   - 30 Day Lates
   - 60 Day Lates
   - 90 Day Lates

C1, C2, C3, C4  These buttons retrieve the Mortgage/Rental Payment History for the Credit Report you select.

OK  updates the database with any changes you make and takes you to the Credit Summary window.

Cancel  takes you to the Credit Summary window without any changes.

Liability Accts...
This section contains information about the borrower's Account Name, Outstanding Balance, and Monthly Payment. Check the fields for accuracy and then proceed to the fields requiring the information addressed below. The Liability Accounts (Liabilities Information) window is shown below.

Liability Account Information
1. Type in the bank name for Account Name.
2. Respond to the next two questions using the check-boxes to the right. Click "Yes" or "No." If you click "Yes," a Y appears to the right of the check-box and an x appears in the box. If you click "No," a N appears to the right of the check-box and the box remains empty. If you do not make a choice, these two check-boxes default to No.

Paid At Closing?
Exclude from Ratios?
3. Click the arrow to open the Account Type drop-down list box. Select one of the following:
   - Revolving
   - Installment
   - Open
   - Ready-Reserve
   - LOC (Line Of Credit)
   - Auto Lease
   - 401K
   - Child Support
   - Maintenance

4. Type in the date the account was opened for Date Account Opened. Example: 011494 represents January 14, 1994.
5. Type in the dollar amount for Outstanding Balance.
6. Type in the dollar amount for Monthly Payment.
7. The following fields contain calculated values:
   - Months Remaining
   - Total All Monthly Liability Payments Used to Quality

8. Click the Update button. If you want to enter another account, click New. This button clears the fields and allows you to enter new accounts. This action updates the information to the account list and the OK button to activate.

C1, C2, C3, C4 retrieves the Liability Account Information window for the Credit Report you select.
New clears the input fields and allows you to add additional account records to the account list.
Update adds the account to the account list and update the database with any changes you make.
Del (Delete) deletes any account that you select from the list of accounts. A box appears asking “Do you want to Delete This record?” Click Yes or No.
OK updates the database with any changes you make and takes you to the Credit Report window.
Cancel takes you to the Credit Report window without saving any changes.

Real Estate Owned Schedule

This section includes information about the real estate the borrower owns including up to four borrowers. Check the information for accuracy and type in any missing or incorrect information. This screen is shown below.

NOTE: Once you complete the Schedule of Real Estate Owned section for Borrower 1, be sure to complete this section for the next Borrower, if applicable. If you don’t, a message box appears asking you if you would like to go the next borrower. Click Yes, No, or Cancel.
Schedule of Real Estate Owned

1. Type in the properties' street for **Property Address**.
2. Click the arrow to open the **Status** drop-down list box. Select one of the following:
   - Sold
   - Pending Sale
   - Owned/Retained
3. Click the arrow to open the **Use/Occupancy** drop-down list box. Select one of the following:
   - Primary Residence
   - 2nd/Vacation
   - Rental
   - Other
4. Click "Yes" Or "No" in response to **Subject Property**?
5. Click "Yes" Or "No" in response to **Any Mortgages on Property**?
   If you click No, go to step six below.
   If you click Yes, the **Mortgages**... button activates. Before you click **Mortgages**..., you must highlight a mortgage property from the list of properties in the window. When you want to go to the Mortgages of Real Estate Owned window, click **Mortgages**.
6. Type in the dollar amount for the **Market Value**.
7. The **Outstanding Mortgage Balance** is a calculated value.
8. Type in the dollar amount for the **Monthly Gross Rental Income**.
9. The **Monthly Mortg. Payments** is a calculated value.
10. Type in the dollar amount for the **Monthly Insur. Maint. & Taxes** (Insurance, Maintenance, and Taxes).
11. The **Monthly Net Rental Income** is a calculated value.
12. The **Totals** row at the bottom of the window contains calculated values.
13. The **No. of Financed Properties Excluding Subject Property** is a calculated value.
14. Click the **Update** button. This action updates the information in the mortgage list and causes the Prev., Next, and OK button to activate.

**New** allows you to add a new address to the mortgage list.
**Update** adds the mortgage information to the list of mortgages below.
**Del (Delete)** allows you to delete a highlighted mortgage from the list of mortgages.
A message appears asking if you really want to delete this mortgage. This note is shown below.
**Prev...** takes you to the Credit Report window.
**Next...** updates the database with any changes you make and takes you to the Details of Transaction window.
**OK** updates the database with any changes you make and takes you to the Underwriting Sections Summary window.
**Cancel** takes you to the Underwriting Sections Summary window without saving any changes.
**Mortgages...**

Click "Yes" or "No" in response to Any Mortgages on Property? If you click Yes, the Mortgages... button activates. Select a Mortgage from the list. Click Mortgages... to go to the Mortgages of Real Estate Owned window. This window is shown below.

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Type</th>
<th>Address</th>
<th>Opened</th>
<th>Balance</th>
<th>Payment</th>
<th>LOC Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/11/94</td>
<td>Norwest Mortgage, Inc.</td>
<td>Primary</td>
<td>123 Main St</td>
<td>04/11/94</td>
<td>$100,000</td>
<td>$1,000</td>
<td>$50,000</td>
</tr>
</tbody>
</table>

**Schedule of Real Estate Mortgages**

1. The selected properties' address appears in Property Address.

2. Type in the name of the bank for the Account Name/ID.

3. Click the following two check-boxes "Y" or "N" in response to the following questions. If you click "Y" an x is displayed in the box. If you click "N" the box is blank.

   Paid at Closing?
   Exclude form ratios?

**New** allows you to add a new address to the mortgage list.

**Update** adds the mortgage information to the list of mortgages below.

**Del** (Delete) allows you to delete a highlighted mortgage from the list of mortgages. A note appears asking if you really want to delete this mortgage.

**OK** updates the database with any changes you make and takes you to the Underwriting Sections Summary window.

**Cancel** takes you to the Underwriting Sections Summary window without saving any changes.

Norwest Mortgage, Inc.
04/11/94
Details of Transaction

This section contains information about the details of the transaction. Check these fields for accuracy and replace any missing or incorrect information. This window is shown below.

1. The following field contains a value derived by the computer from the Details of Loan section.
   a. Purchase price

2. Type in the dollar amount for the following fields.
   b. Alterations, improvements, and repairs
   c. Land (if it is acquired separately)
   d. Refinance (including the debts to be paid off)
   e. Estimated prepaid items
   f. Estimated Closing Costs
   g. PMI, MIP, and Funding Fee paid in cash
   h. Discount (if borrower will pay)

3. The following fields contain calculated or retrieved values.
   i. Total Costs is the sum of a-h and is a calculated value.
   j. Subordinate Financing is retrieved from the Details of Loan section.

4. Type in the dollar amount for the following fields.
   k. Borrower's Closing Cost Paid by Seller (including lender paid).
   l. Other Credits and an explanation of these credits.

5. The following field contains a value retrieved by the computer from the Details of Loan section.
   m. Loan Amount

6. Type in the dollar amount for the following fields.
   n. PMI, MIP, Funding Fee financed.

7. The following fields contain calculated values.
   o. Loan Amount is calculated for m and n.
   p. Cash from/to Borrower is a calculated value:\[l-(j+k+l+o)].

Prev... Next... OK Cancel

Prev... takes you to the Real Estate Owned Schedule window.
Next... updates the database with any changes and takes you to the Declarations window.
OK updates the database with any changes and takes you to the Underwriting Sections Summary window.
Cancel takes you to the Underwriting Sections Summary window without saving any changes.

Norwest Mortgage, Inc.
04/11/94
Declarations

This section contains the declarations made by the borrowers for up to four borrowers.

Declaration per Application Borrower 1

1. Click either "Yes" Or "No" in response to questions a thorough 1.

NOTE: Once you complete the Declarations section for Borrower 1, be sure to complete this section for the next Borrower, if applicable. If you don't, a message box appears asking you if you would like to go the next borrower. Click Yes, No, or Cancel.

B1, B2, B3, B4 retrieves the Declarations window for the borrower you select.

Prev... takes you to the ratios window.

Next... updates the database with any changes and takes you to the ratios window.

OK updates the database with any changes and takes you to the Underwriting Sections Summary window.

Cancel takes you to the Underwriting Sections Summary window without saving any changes.

Ratios

Ratios are used to calculate the proposed housing expenses and the debt expenses as a percentages of the monthly income. This section contain calculated financial information.

Ratios Information Window.

Ratios

All the fields in this sections contain calculated information and these fields are listed below.

- Total Primary Housing Expense
- PITI Subject Prop (If a second home)
- All Other Monthly Payments (Including Net Rental Loss)
- Total All Monthly Payments
- Total Qualifying Income
- Housing Ratio
- Housing and Debt Ratio
If you do not enter data into the Housing Expense section, a message box appears and is shown below. You will not be allowed to access this section until the Housing Expense section is complete.

![AUS Message Box]

Calculations will not run because of missing information on Housing Expense window

**AUS Message Box**

If you do not enter data into the Housing Expense section, a message box appears and is shown below. You will not be allowed to access this section until the Housing Expense section is complete.

**Funds to Close**

This section contains calculated financial information about the funds used to close the loan. All of these fields contain calculated values.

**Funds to Close Window.**

**Funds to Close**

All the fields in this sections contains information that is derived form other sections or contains calculated values. These fields are listed below.

- **Total Assets Verified**
- **Cash from/to Borrower**
- **Payoffs $**
- **Cash Req'd to Close $**
- **Sufficient Funds to Close?**
- **Reserves $**
- **No. of Mos. Reserves**

**Prev...** updates the database with any changes and takes you to the Ratios Information window.

**Next...** updates the database with any changes and takes you to the Underwriting Sections Summary window.

**OK** updates the database with any changes and takes you to the Underwriting Sections Summary Funds window.

**Cancel** takes you to the Underwriting Sections Summary window without saving any changes.

Norwest Mortgage, Inc.
04/11/94
AUS Import

The AUS Download Program is the import process. The import process allows the transfer of loan information from the mainframe computer to the AUS database. The AUS database reads and pulls loan information by the file date. The import window is shown below.

To Access the Import Window
1. From the Program Manager, open AUS Project.
2. Click the AUS Import or Download to Mainframe icon.

To Start the Import Process
3. Type the Date of the loan or loans in the form MMDDYY. The dashes are already present in the field. For example: 010494 represents January 4, 1994.
5. The Percent Complete scale displays the percent completion of the import process. A rectangular box moves across the scale as the import progresses.
6. After the import is complete, a report prints stating the loans that are imported to the AUS database. An example report is on the next page.

Start Process starts the import process.
Exit exits the window and takes you to the Program Manager.

Norwest Mortgage, Inc.
04/11/94
Rules

The rules process allows the loan information to be transferred through the Business Rules Logic for processing. The status of a loan in the rules processing procedure is identified in the List All Loans section in the list box. Rules are abbreviated Rls in the list box. A loan has one of three codes that identify its status in the rules processing procedure.

- **N (no)**: The loan is not ready for the rules processing.
- **R (ready)**: The loan has not been sent but is ready to be sent to the rules for processing.
- **Y (yes)**: The rules processing procedure is complete for this loan.

Initially, the Rls status code for a loan is N (No). N means that the loan is not complete and is not yet ready for the rules processing procedure. The loan is complete when the Section Summary boxes are X'd and you can click the Applicant Data Complete radio button to "Yes." This action causes both the Rules (Rls) and Export (Exp) status codes to change from N to R (Ready).

The R means that the loan has not yet been sent but is ready to be sent to the rules for processing. After the loan is sent through the rules processing, the Rls status code changes from R to Y (Yes) and a rules report prints.

The report that prints states any rule violations and notes for the underwriter to review. The underwriter must review both violations and rules. The borrower is not allowed any rule violations but he/she is allowed notes. After the loan is processed through the rules base, the loan is ready for the export process. (See the next section for the Export process.)

The Sort List By and the Status Code Selection frames are explained in the Underwriting Main Menu section of the manual (2-3 to 2-5). In the Sort List By frame, you can click one of the three methods to sort the loan list. In the Status Code Selection frame, you can use the Refresh button to display only the loans with the status codes you select.

Norwest Mortgage, Inc.
04/11/94
Manual Rules Processing
1. Highlight a loan or a group of loans that you want to send to the rules for processing then click Select or you can double-click the loan. These two actions cause the selected loan to display in the list box in the lower-half of the window.

NOTE: If you change your mind, double-click the loan in the lower list box. This action removes the loan from the list of selected loans.

2. Click Manual and the loans that are marked Ready (R) for rules and Complete (C) for status in the lower list box are sent to the rules for processing.

3. After the manual rules processing is completed for a loan, the rules code changes to Y and the export code changes to R.

Automatic and Manual
4. The Percent Complete scale displays the percent completion of the rules processing. A rectangular box moves across the scale as the rules processing progresses.

5. The No. Of Rec field displays the number of records that are sent to the rules for processing.

6. Once the loans are processed through the rules, a report prints for each loan that lists all of the rule violations (if any) and notes. These reports must be reviewed by the underwriters. An example report is on the next page.

Select
allows you to choose loans for rules processing.

Refresh
sorts the list by the status code you select.

Manual
allows you to manually select loans for rules processing.

Automatic
automatically selects the loans for rules processing.

Help
accesses the Help message window.

Exit
exits the window and takes you to the Program Manager.
Export

The export process sends the completed loan information to the judgment processor. The loans that are selected for export are those that have the status code of R. The status of a loan in the export process is identified in the List All Loans section in the list box. Export is abbreviated as Exp. in List All Loans. The Exp. status has three codes:

- N (no) The loan is not ready for export to the judgment processor.
- R (ready) The loan is ready for export to the judgment processor.
- Y (yes) The loan is complete and has been exported to the judgment processor.

Initially, the Export status code for a loan is N (No). N means that the loan is not ready and has not been sent to the judgment processor. The loan is complete when the Section Summary boxes are X'd and you can click the Applicant Data Complete radio button to "Yes." This action causes both the Rules (RJs) and the Export (Exp) status codes to change from N to R for ready.

The R means the loan is ready to be sent to the judgment processor. After the loan is sent to the judgment processor, the loan's export status code changes from R to Y. Loans can be sent to the judgment processor more than once.

When the export process is complete, a message displays on the screen stating "the export function is complete."
Export Window.

1. From the Program Manager, open AUS Project.
2. Click the AUS Export icon.

Export Process

3. Click Begin Export.
4. The Percent Complete scale displays the percent completion of the export process. Messages display above the percent complete scale if applicable.

Begin Export begins the export process.
Exit exits the window and takes you to the Program Manager.

Delete Loan

The Delete Loan section performs two tasks in the process of deleting loans from the AUS database. This window allows you to (1) manually or automatically mark a loan to delete from the AUS database and (2) physically delete the loan from the AUS database.

You can manually mark any loan with any status codes to be deleted. You can automatically mark loans with only the following status codes for deletion: Status C, Rules Y, and Export Y. (These loans must meet other criteria for these status codes to appear. Changing status codes is described in the Rules, Import, Export, and Delete sections.)

The Sort List By and the Status Code Selection are explained in the Underwriting Main Menu section of the manual (2-2 to 2-5). In the Sort List By frame, you can click one of the three methods to sort the loan list. In the Status Code Selection frame, you can use the Refresh button to display only the loans with the status codes you select.

How do I mark a Loan for Delete?

1. From the Program Manager, open AUS Project.
2. Click the icon labeled AUS Delete.
The purpose of the delete function is to automatically mark loans that have been inactive for at least two weeks. These loans are ready to be marked for deletion from the AUS database. The two week period of time is measured from the last activity date (the last date the loan was accessed).

You can also mark for delete loans with any status code.

3. Highlight a loan or a group of loans that you want to mark for deletion.
4. Click Select or double-click the loan. These two actions cause the selected loan to display in the list box in the lower-half of the window.

NOTE: If you change your mind, double-click the loan in the lower list box. This action removes the loan from the list of selected loans.

5. Click Mark Del.
6. A report prints that list the loans that are automatically and manually marked for delete. An example report is on the next page. Give this report to the underwriter for review.

How do I Actually Delete a Loan?

Another purpose of the delete function is to remove the loan from the AUS database. A loan is ready to be deleted from the AUS database two months after the loan has been manually or automatically marked for delete. These loans must be greater than or equal to two months from the last activity date.

7. Click Delete to remove any loans from the AUS database.
8. The Percent Complete that displays the completion process of the deletion.
9. Once the deletion process is complete, a report prints that lists the loans that are deleted from the AUS database. An example report is on the next page.

<table>
<thead>
<tr>
<th>Name</th>
<th>Loan#</th>
<th>LPO#</th>
<th>Stat</th>
<th>Rls</th>
<th>Exp</th>
<th>Create Date</th>
<th>UserIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALBERS, JAMES W.</td>
<td>1549127</td>
<td>1361</td>
<td>D</td>
<td></td>
<td></td>
<td>030894</td>
<td>PSADAS1</td>
</tr>
<tr>
<td>BRENDEN, MELVIN O.</td>
<td>1553801</td>
<td>1312</td>
<td>D</td>
<td></td>
<td></td>
<td>030894</td>
<td>PSADAS1</td>
</tr>
<tr>
<td>HARRIS, CONSTANCE C.</td>
<td>1528820</td>
<td>1223</td>
<td>D</td>
<td></td>
<td></td>
<td>030894</td>
<td>PSADAS1</td>
</tr>
</tbody>
</table>

Total Records Deleted: 3
Automated Underwriting System User Manual

Abbreviations

accl. account
amt. amount
Assn. Association
B's Borrowers
bal. balance
Coll Collection
Cmb. Combine
CmbD. Combined
Del Delete
Incl. Include
Info. Information
Init. Initiate
Install. Installment
LOC Line Of Credit
Maint. Maintenance
Mortg. Mortgage
Mos. Months
Mthly Monthly
No. Number
Pd. Paid
Pmt. Payment
Prev. Previous
req'd required
REO Real Estate Owned
Repo. Repossession
Rev. Revolving
Soc Sec Nbr Social security number
USS Underwriting Screen Summary
Var. Variable
w/ with
Yr. Year

Norwest Mortgage, Inc.
04/11/94

Index

AA

Abbreviations, 1
Account Name, 28
Account Type, 28
activate, definition of, 9
Add New Borrower, 3
Add New Credit Report, 30
Add New Credit Report button, 30
Add New Loan, 1, 8
Add New Report, 33
Address, Former, 10
Address, Present, 9
ALL CAPS, 8
Applicant Data Complete?, 2
Appraised Value, 7
Asset Account Information, 28
Asset Accts., 26, 27
Asset Accts... (Account Information), 27
Asset Summary, 25
AUS, 1
database, 2
definition, 2
AUS Window Model, 4

BB

B1, B2, B3, B4, 14, 16, 18, 20, 22,
24, 51
Bankruptcy, 34
Base Income, 18, 19
Borrower 1, 3
Borrower 2, 4
Borrower Information, 3
box (field), 9
Broker Loan, 7
Buydown Type, 7

CC

C1, C2, C3, C4, 33, 41, 43
Calculated fields, 7
Check-boxes, 5
click, 9
clicking, 11
Codes, 6
Coll/Charge Off Accounts, 39
Combined Monthly Housing Expense, 11
commas, 6
conventions, 2
Credit Report 1, 31
Credit Reports, 30
cursor, 11

data, 9
Dates, 6
Declaration per Application Borrower 1,
51
Declarations, 51
Del (Delete), 43, 46, 48
Details - Collections/Charge Off
Accounts, 39
Details - Installment/Revolving Late
Pays, 36
Details - Mortgage/Rental Payment
History, 40
dollar sign, 6
double-click, 11
download, 9
downloaded, 7
drop-down list box, 9
Drop-down list boxes, 5

Norwest Mortgage, Inc.
04/11/94
Automated Underwriting System User Manual

Index

EE
Earnings History, 20
Employment Borrower 1, 14
Employment Borrower 2, 15
Employment Information, 13
Export (Exp.), 5
Export Codes, List of, 5

FF
field (box), 9
Field Names, 8
field types, 2
Fields, calculated, 7, 9
Fields, downloaded, 7, 9
Fields, input, 7, 9
Fields, required, 7
Foreclosure/Deed in Lieu, 35
Former Address, 10
Former Address 1, 10
Former Address 2, 10
frame, 9
Function Buttons, 8
Function buttons, 8
function buttons, 10
Funds to Close, 54

GG
Grade, 6

HH
highlight, 10
Housing Expense, 11
Housing Expense, Combined Monthly, 11

II
Import date, 4
Import Dt. (date), 5
inactivate, 10
Income Summary, 17
Income, 17
Military, 17
Net Rental, 17
Other Income, 17
Social Security/Retirement, 17
Initial Bought Down Rate, 7
Input fields, 7
Installment/Revolving Late Pays, 36
Interest Rate, 6
Introduction, 1

JJ
judgment processor, 1
Judgments, 35

KK
Keyboard, 11
Keyboard Helpers, 11

LL
Legal information, 30
Legal Records, 32
Legals button, 32
Legals Section, 32
Legals..., 33, 34
Bankruptcy, 34
Foreclosure/Deed in Lieu, 35
Judgments, 35
Liens, 35
Vehicle Repossession, 35
Wage Garnishment, 35

MM
Manual Page Model, 3
Menus, 6
Message window, 9
Military, 18
Military Income, 23
Military Income for Borrower 1, 23
Mortgage/Rental History Established?, 40
Mortgage/Rental Payment History-
Credit Report 1, 40
Mortgages, Schedule of Real Estate, 47
Mortgages..., 45
Mortgages... button, 45
mouse, 2, 11

Norwest Mortgage, Inc.
04/11/94

mouse pointer, 11

NN
New, 43, 46, 48
NOTES: 8
Numbers, 6
decimals, 6
whole, 6

OO
Occupancy, 7
option, 10
Or, 8

PF
Past Due Accounts, 38
percent sign, 6
pointing, 11
Present Address, 9
Previous Employer Borrower 1, 16
Previous Employment, 14, 16
Property, 5

RR
Radio Button, 8
radio button, 10
Radio buttons, 5
Ratios, 52
Real Estate Owned Schedule, 44
Required fields, 7
Residence Information, 9
Retirement /Pension, 22
Rule Codes, List of, 5
Rules (Rls.), 5
Automated Underwriting System User Manual

Index

SS
Sales Price, 7
Schedule of Real Estate Mortgages, 47
Schedule of Real Estate Owned, 44
Secondary Financing Amount, 6
select, 10
Soc Sec Retire, 18
Social Security for Borrower 1, 21
Social Security/Retirement Income, 21
Sort List By, 3
Import Date, 3
Last Name, 3
Loan Number, 3
Status, 5
Status Code Definition, 4
A (active), 4
C (complete), 4
E (error), 4
I (imported), 4
Status Code Definitions
D (delete), 4
Status Code Selection, 4
Status Codes
A, J, C, D, E, 4

TT
Term (Months, 6
terms, 2
Type of Earnings for Borrower 1, 19

UIU
Underwriting Main Menu, 1
Underwriting Sections Summary, 1
Update, 43, 46, 48

VV

Norwest Mortgage, Inc.
04/11/94