IRM-5231-06

U.S. Marine Corps

DETAILED DESIGN SPECIFICATION

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DEPARTMENT OF THE NAVY
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23 APR 1987

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Subj: INFORMATION RESOURCES MANAGEMENT (IRM) DETAILED DESIGN SPECIFICATION

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1. PURPOSE. To provide guidance and instructions on the development of Detailed Design Specifications as required by references (a) and (b).

2. AUTHORITY. This publication is published under the auspices of reference (c).

3. APPLICABILITY. The guidance contained in this publication is applicable to all contractors and Marine Corps personnel responsible for the preparation of a Detailed Design Specification. This standard is applicable to the Marine Corps Reserve.

4. DISTRIBUTION. This technical publication will be distributed as indicated. Appropriate activities will receive updated individual activity Table of Allowances for Publications. Requests for changes in allowance should be submitted in accordance with reference (d).

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Chapter 1

GENERAL

1.1. INTRODUCTION. The objective of the Detailed Design Specification Standard is to provide the documentational requirements and evaluation criteria necessary to ensure the production of a well-defined Detailed Design Specification of the user's software requirements. Based on a General Design Specification of the user's requirements for automated functions, and information regarding the software implementation environment, unambiguous specification of the proposed system's Detailed Design is required prior to programming. The Detailed Design Specification will explain the user's software requirements for new, changed, or enhanced applications, and define the software environment necessary to meet the proposed system's objective.

1.1.1. Objectives. The specific objectives of this standard are:

a. Define all the required documentation produced in modeling the Detailed Design.

b. Define the format for the identified documentation.

c. Provide guidelines for the production of the documentation.

d. Provide the criteria through which the completeness, internal consistency, and acceptability of the documentation will be evaluated.

1.2. SCOPE. These standards will govern the documentation produced during modeling of the detailed design process shown in Figure 1-01, "Structured System Development Activities."

1.2.1. Detailed Design Model. The documentation governed by this standard will be the products of structured systems design; specifically, a detailed design model. This model defines the specification of the automated portion of the General Design Specification and is the vehicle through which system software requirements will be communicated to the programmers. This model equates to a structured design specification composed of:

a. General information regarding system objective, scope of development activities, responsibilities of development team, and recommendations.

b. Structure chart hierarchically depicting the dividing, or partitioning of the system into small, functionally complete modules.

c. Module specifications for all modules declared on the structure chart.

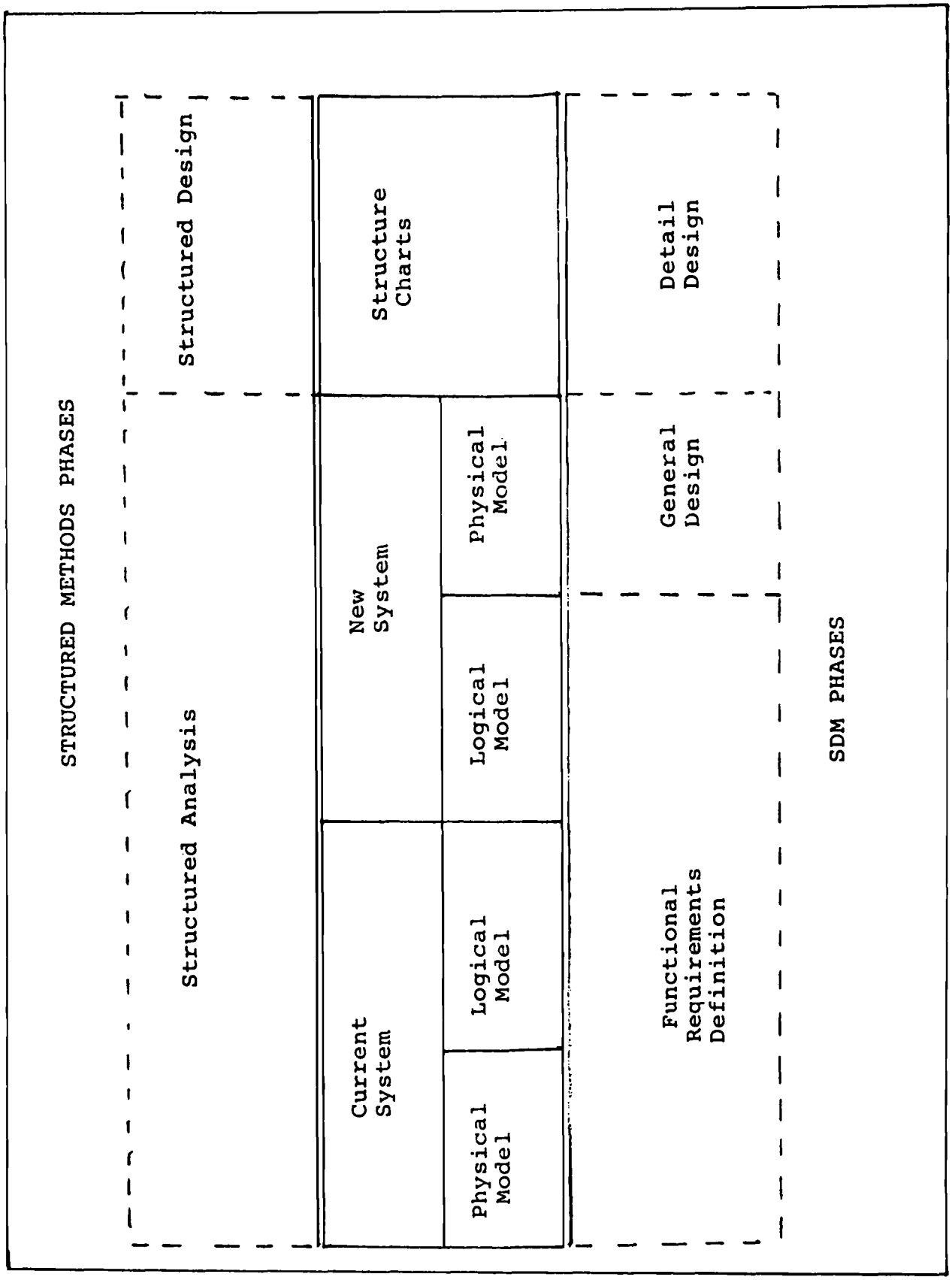

FIGURE 1-01
Structured Systems Development Activities

d. Data dictionary for all data declared on the structure chart.

e. State transition diagrams for all human/machine dialogues.

1.3. APPROACH. Modeling of detailed design is the third step in structured systems development. This step requires the automated portions of the General Design Specification and knowledge of implementation constraints as input, and results in a structured design specification (Detailed Design Specification) of the proposed software as output.

1.3.1. Definition. Detailed Design Specification includes those functions, data flows, and data stores documented in the structured specification as being within the bounds of automation. These functions are organized, or packaged, into jobs and job steps during detailed design. All key man-machine interfaces were declared at the top level of the General Design data flow diagrams and all related jobs, job steps, and program specifications are developed in the Detailed Design. The automated portions of the General Design Specification are composed of data flow diagrams, mini-specifications, and a data dictionary.

1.3.2. Implementation Constraints. The implementation constraints relate to the software environment profile. This profile defines the environment in which the actual software will be developed. It identifies the programming languages, data base management system (DBMS), operating system, and other implementation constraints in developing the software such as inter-processor or telecommunication protocols, and commercial software packages.

1.4. PROCEDURES.

1.4.1. First Cut Structure Chart. The first activity in detailed design is to derive the first cut structure chart.

a. Steps. For each process declared in the general design model, the designer will perform one of the following steps. Different techniques may be used on different processes.

(1) Transform Analysis. A design strategy by which the structure of the system is derived from a study of the flow of data through the system and the transformations of that data.

(2) Transaction Analysis. A design strategy by which the structure of a system is derived from a study of the transactions that the system must process.

(3) Top-Down Factoring. A design strategy by which a process, or module is successively divided or partitioned into functionally primitive modules.

b. Procedures. These steps are all accomplished by the following:

(1) Determine the primary controlling process within the data flow diagram. If one cannot be identified as primary, create one to act as a controlling mechanism.

(2) Convert the diagram into a structure chart using the primary process as the top level of the hierarchy.

(3) Refine the structure chart to produce a balanced structure. This is accomplished when:

(a) Modules perform a single, functionally complete process.

(b) Modules at the middle levels of the hierarchy should call no more than nine subordinate modules.

(c) Data passed from one module to another, or interconnectivity, is reduced to a minimum.

(4) Verify that the structure chart meets the requirements of the original data flow diagram, including the inclusion of internal controls which are to be in accordance with current directives.

1.4.2. Refined Structure Chart. The second activity in detailed design is packaging the refined structure chart into jobs, job steps, program and load modules to permit the actual development of software. The steps required by these activities to produce a Detailed Design Specification are discussed in Appendix B of this document. These include:

a. Package the processes into jobs.

b. Decompose the jobs into job steps.

c. Decompose the job steps into functional primitives as programs and load modules.

1.4.3. Structured Design Specification. Detailed design is considered to be complete with the production of the structured design specification consisting of:

a. A refined structured hierarchy chart packaged into jobs, job steps, programs, and load units.

b. Module specifications for all modules declared on the hierarchy chart.

c. Data dictionary definitions for all data couples declared on the hierarchy chart.

d. State transition diagrams for all man/machine dialogs.

e. Complete supporting documentation consisting of data entry screens, data display screens, report formats, and formats for all external transactions.

f. Provisions for adequate safeguarding of data in accordance with current directives.

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Chapter 2

CONTENT AND FORMAT

2.1. DOCUMENTATION STANDARDS. The Detailed Design Specification should be documented in accordance with the standards described in Appendix B. If deviations from this standard are felt by the developer to be necessary or desirable, a waiver must be requested from the Project Manager. Attached to the waiver request must be the rationale for the deviation.

2.1.1. Table of Contents. The Detailed Design Specification will be formatted as shown in Appendix C.

2.1.2. Description of Contents. In order to provide the user a clear, unambiguous specification of the Detailed Design, the numbering of the text headings should correspond to the table of contents shown in Appendix C and description in Appendix D.

2.1.3. Evaluation Criteria. The criteria through which to evaluate the acceptability of the Detailed Design Specification will be as follows:

a. All sections and paragraphs detailed in Appendix C and D will be included in the document. Any sections or paragraphs deemed not applicable to the model by the developing organization will appear with a justification for its exclusion under the section, or paragraph text headings.

b. All couples declared on the structure chart are defined in the design data dictionary. Couples are the data elements that are passed between modules.

c. All modules declared on the structure chart are defined with module specifications.

d. All data referenced in the module specification is defined in the design data dictionary.

e. All data declared on the structure chart is referenced in the module specification.

f. All data referenced in the module specification must be either data declared on the structure chart or data that is used only by the module such as a local variable.

g. All modules on the structure chart must perform the same function each time they are called.

h. Coupling between modules should be minimized.

i. All states on the state transition diagrams must correspond in a one-to-one fashion to a single module or module sub-hierarchy.

j. Each structure chart corresponds to a job or job-step declared.

k. Modules on the structure chart should not have more than nine immediate subordinates. (Note: A transaction center is counted as one subordinate regardless of the number of modules in the transaction center).

2.2. DOCUMENTATION DEPENDENCIES. The documentation governed by this standard may also rely on the content of other project deliverables and/or standards. Figure 2-01, "Precedence Relationship," shows those project deliverables and standards which impact the Detailed Design Specification deliverables.

2.2.1. Preceding Documents. The boxes that precede the Detailed Design Specification as shown by a connected line with an arrow, are those Project deliverables that must be completed before the Detailed Design Specification. The preceding documents for any one development effort are General Design Specification Deliverables.

2.2.2. Consultation Documents. The boxes and bars that are in line vertically with the Detailed Design Specification show the concurrent documents that may be consulted at that time. The boxes are other project deliverables governed by standards, and the bars are particular conventions described by standards. The deliverables and standards used for consultation are:

a. Project Deliverable Style Manual (IRM-5230-02)
b. Inspection and Acceptance (IRM-5231-17)
c. Data Dictionary (IRM-5235-01)
d. Library Management System (IRM-5233-06)
e. Man-Machine Dialogue (IRM-5234-02)
f. Programming Standard (IRM-5234-01)
g. Prototyping Standard (IRM-5231-18)
h. Data Base Plan (IRM-5231-11)

2.2.3. Change Requirements. Since the SDM is an integrated methodology, issues may arise during development of the detailed design specification that will require changes to preceding documents. These changes must be documented and approved in accordance with the quality assurance and configuration management procedures. Externally imposed milestones that are unrealistic to accomplish should not be used as an excuse to defer or eliminate the documentation requirements.

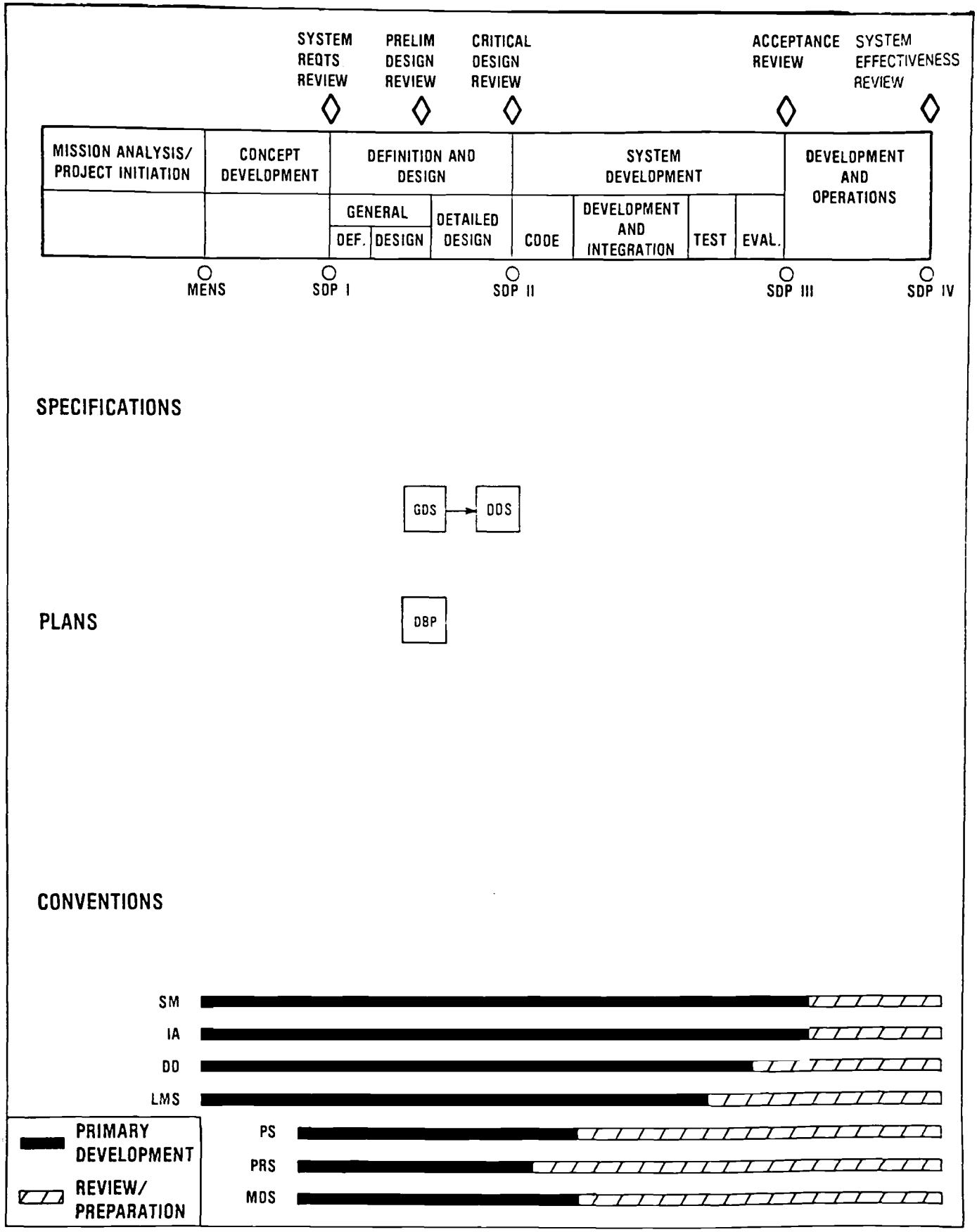

FIGURE 2-01
Precedence Relationship

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Appendix A

GLOSSARY

DBP: DBP is an acronym for "Data Base Plan"

DD: DD is an acronym for "Data Dictionary"

DDS: DDS is an acronym for "Detailed Design Specification"

GDS: GDS is an acronym for "General Design Specification"

IA: IA is an acronym for "Inspection and Acceptance Standard"

LMS: LMS is an acronym for "Library Management System"

MDS: MDS is an acronym for "Man-Machine Dialogue Standard"

MENS: MENS is an acronym for "Mission Element Need Statement"

PRS: PRS is an acronym for "Prototyping Standard"

PS: PS is an acronym for "Programming Standard"

SDP: SDP is an acronym for "System Decision Paper"

SM: SM is an acronym for "Style Manual"

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Appendix B

STRUCTURED DESIGN SPECIFICATION PROCEDURES

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SECTION 1 INTRODUCTION

The detailed design specification (DDS) is the product of structured systems design. The structured design specification is both a model of the automated portion of system under investigation and the documentation of that system. For the developer as well as the user, the structured design specification/model/documentation is the vehicle through which the automated system requirements are communicated.

This guide will describe the structured design specification (or model), its organization, major components, supporting tools, and the criteria to ensure its internal consistency and completeness. This guide is not meant to be a substitute tutorial for existing books, papers, and seminars relating to structured systems design.

SECTION 2 CONCEPTUAL MODEL ORGANIZATION

The model is composed of three major components. One of these components, the structure chart, is a graphic tool. The other two components, the module specifications and data dictionary, are primarily narrative tools. In the model, these tools are organized in such a way as to eliminate redundancy in the specification of software requirements. Underlying the model and its organization is the concept of controlling the complexity of the specification through dividing, or factoring, the model into small conceptually complete functions.

The major components of the model are defined as follows:

a. Structure Chart - A graphic tool for depicting modules, the hierarchy and organization of those modules, and the data that interfaces those modules.

b. Data Dictionary - A set of definitions of the data declared on the structure chart (data couples).

c. Module Specification - Statement of the rules governing the processing of the data couples.

To eliminate redundancy in the specification of software requirements, each component of the model has a very limited charter. Specifically:

a. The structure chart declares the organization of modules and the interfacing data couples. Structure charts do not show:

(1) data couple composition

(2) rules governing transformations

(3) sequence of module execution

b. The data dictionary defines the composition of data flows and data couples. Data dictionaries do not show:

(1) How data was derived

(2) Source of data

(3) Destination of data

c. Model specifications state the rules governing the transformation of data. Module specifications do not show:

(1) Data couple composition

(2) Source of data

(3) Destination of data

Given the components of the model and their limited charter, the model, or structured specification is conceptually organized as described in Figure B-01, "Conceptual Model Organization."

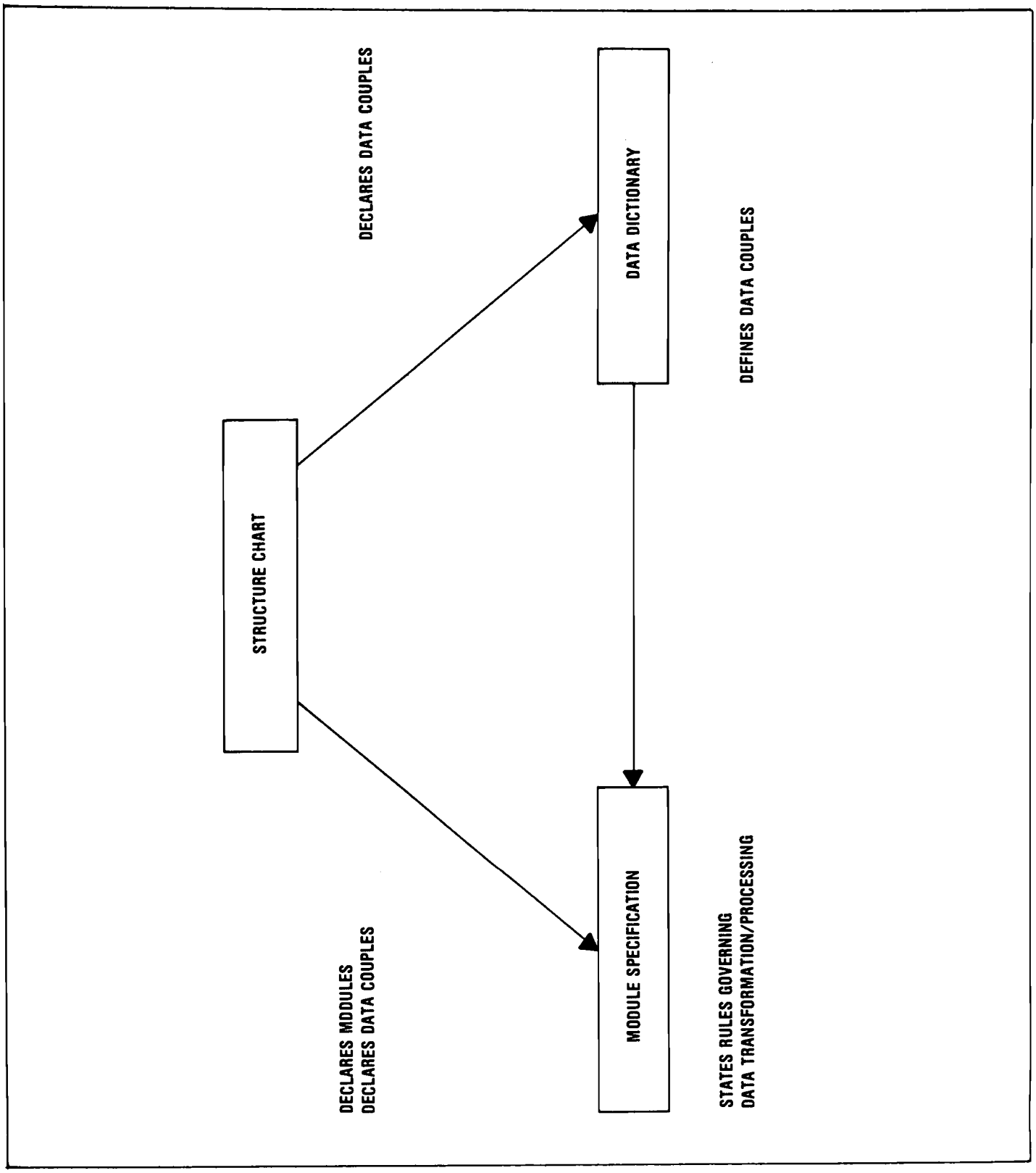


FIGURE B-01
Conceptual Model Organization

SECTION 3 STRUCTURE CHART

This section describes and define the components of a structure chart, conventions used in developing them, and the criteria used to ensure the completeness and internal consistency of them.

Each chart described and defined below will be produced on margined paper with title/heading information located in the lower right hand corner containing:

a. System Name - The name of the system or subsystem defined as the context of the study

b. Job Name - The name of the job

c. Job Number - The number of the job

d. Job step Name - The name of the job step

e. Job step Number - The number of the job step

f. Load Unit (if applicable) - The name of the packaged load unit

g. Program (if applicable) - The name of the packaged program

h. Responsible Organization - The name of the organization or person charged with producing the chart

i. Date - The date the figure was produced

j. Page - Page number

See Figure B-02, "Standard Design Chart Format," for an example.

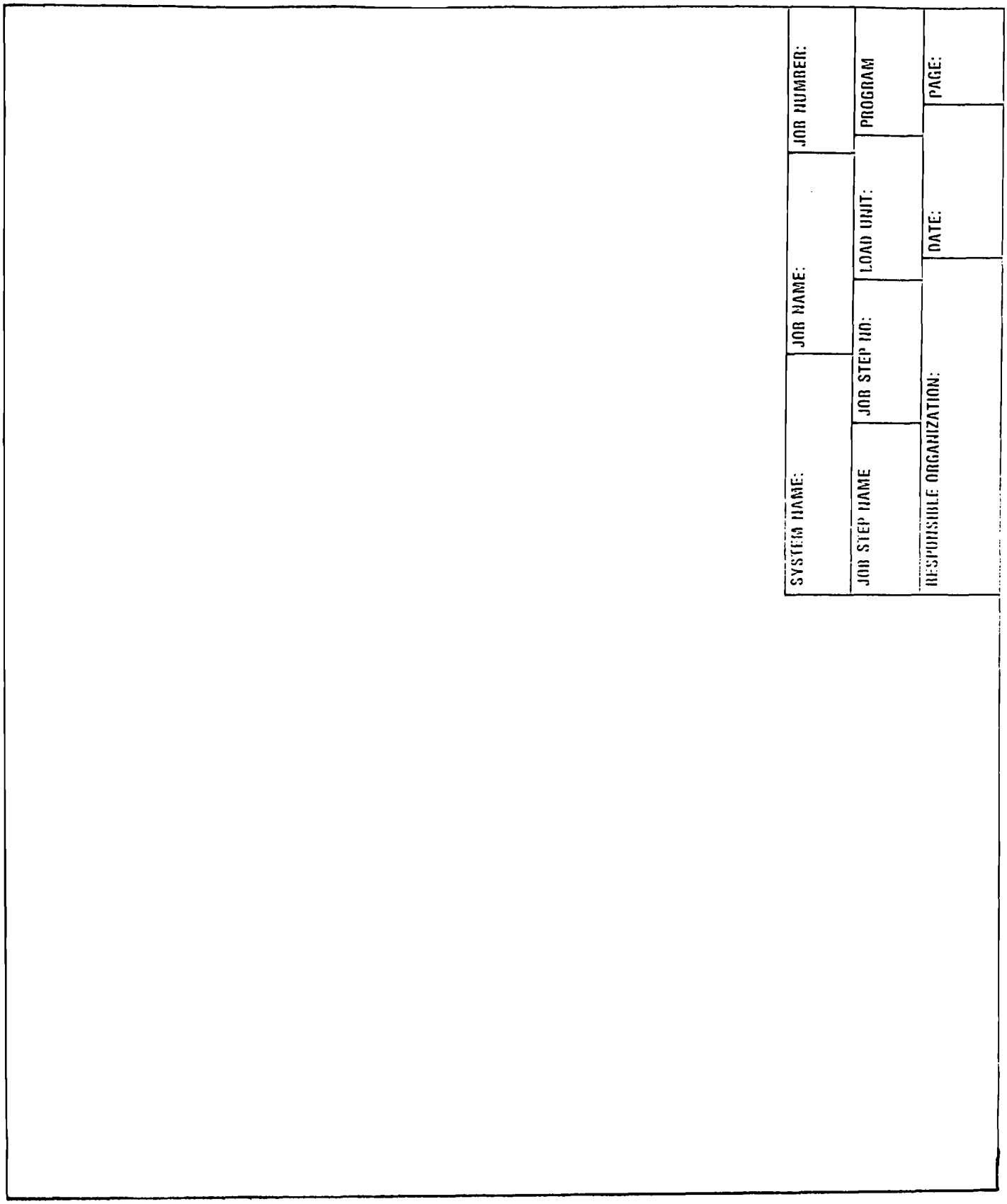


FIGURE B-02
Standard Design Chart Format

Structure Chart Components

A structure chart is a graphic tool depicting modules, the hierarchy and organization of those modules, and the data couples that interface those modules. The components of a structure chart are defined as follows:

a. Module - A box that represents a set of instructions that will cause the transformation of data in a planned way. The name of the module is written within the box and will describe the function the module is to perform each time it is called.

b. Subordination - An unnamed arrow connecting two modules indicating the control of one module over another the direction of the arrow indicates subordination.

c. Data Couple - An arrow with a ring or small circle on one end representing data. The arrow indicates the direction of the data flow. A couple with an open ring represents data, a couple with a closed or darkened ring indicates a control flag. The name of the couple is written next to it.

See Figure B-03, "Structure Chart Components," for an example. Additional uses, or conventions used in the symbology are contained in Figure B-04, "Additional Structure Chart Conventions."

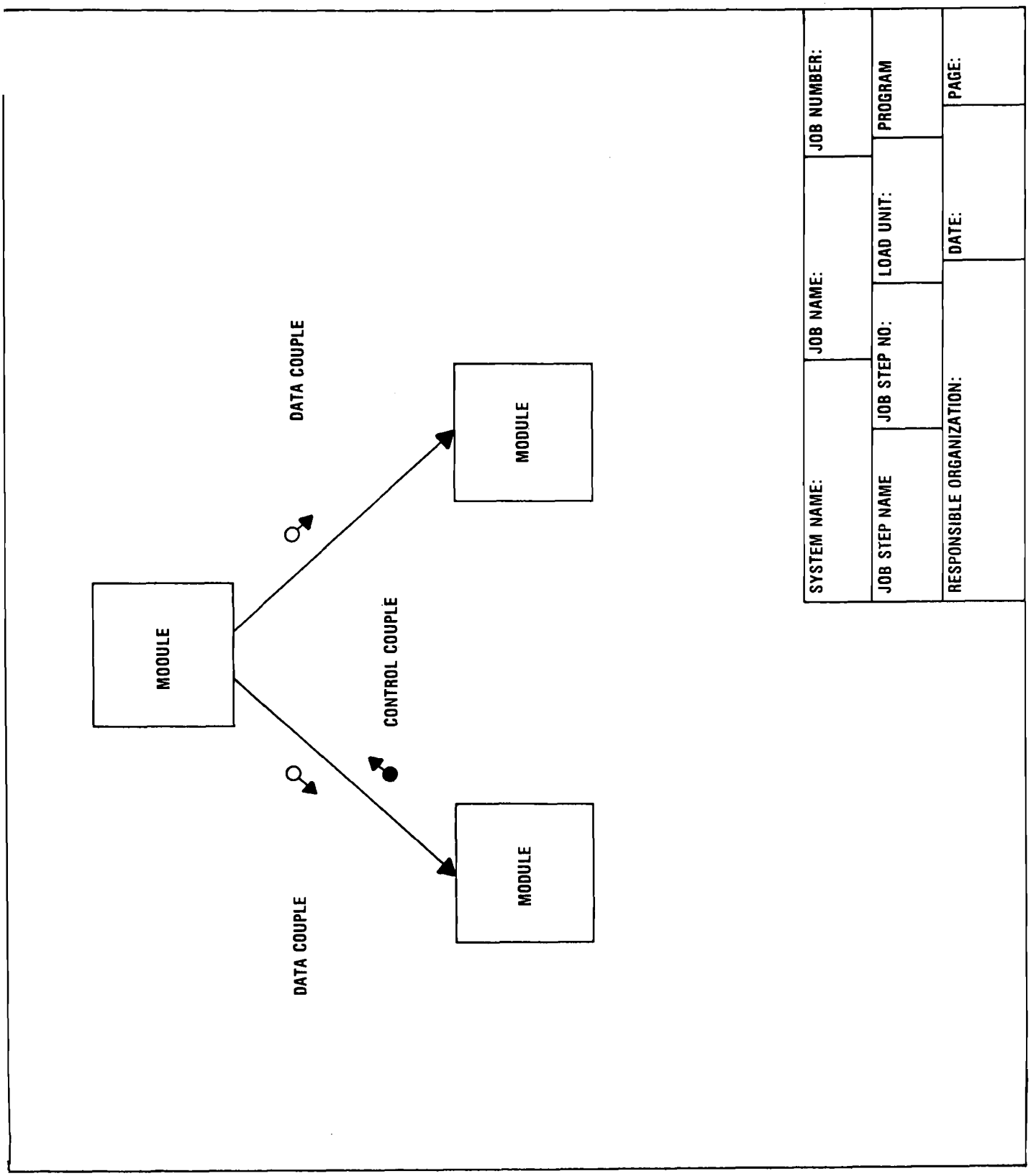


FIGURE B-03
Structure Chart Components

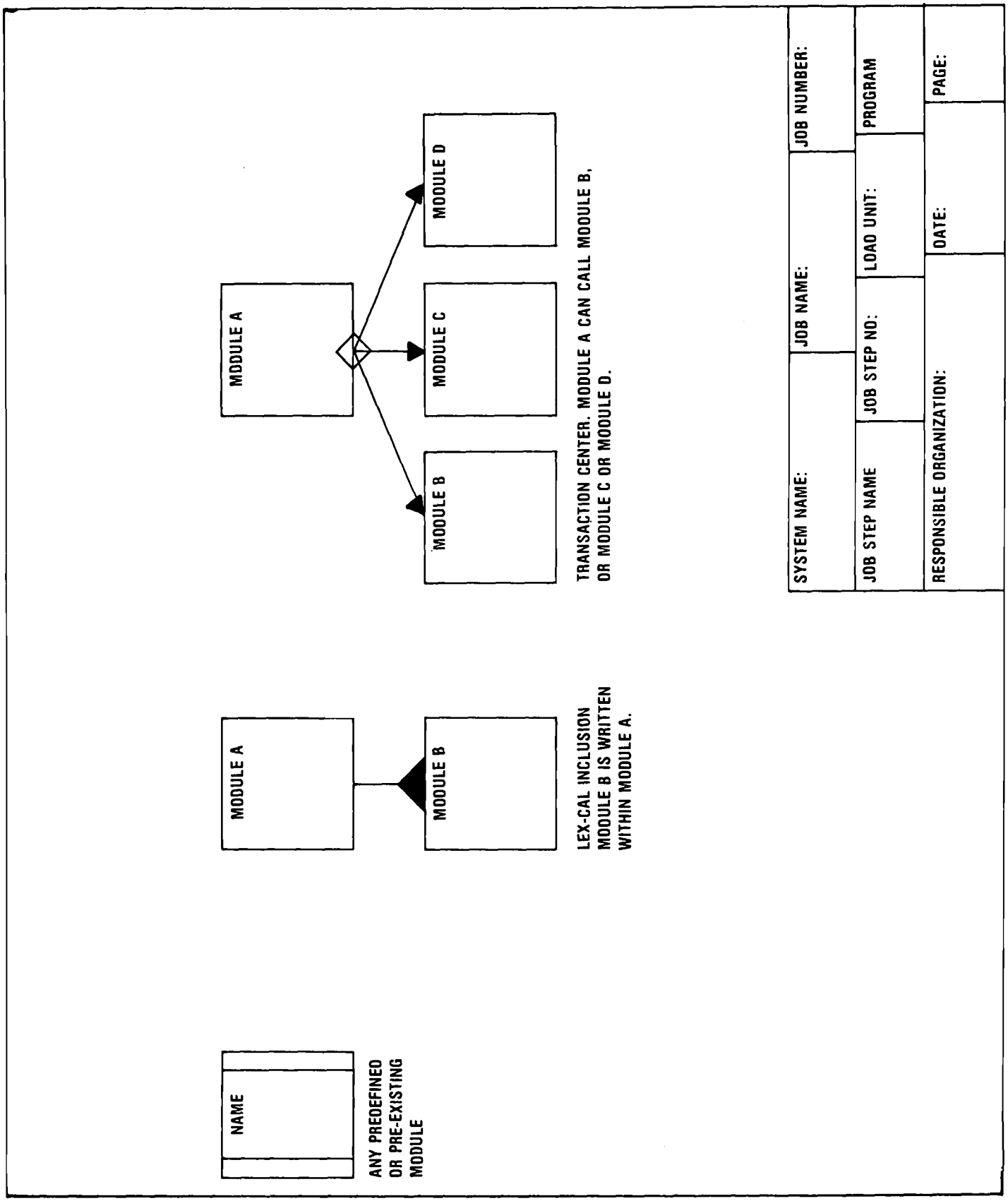


FIGURE B-04
Additional Structure Chart Conventions (Page 1 of 3)

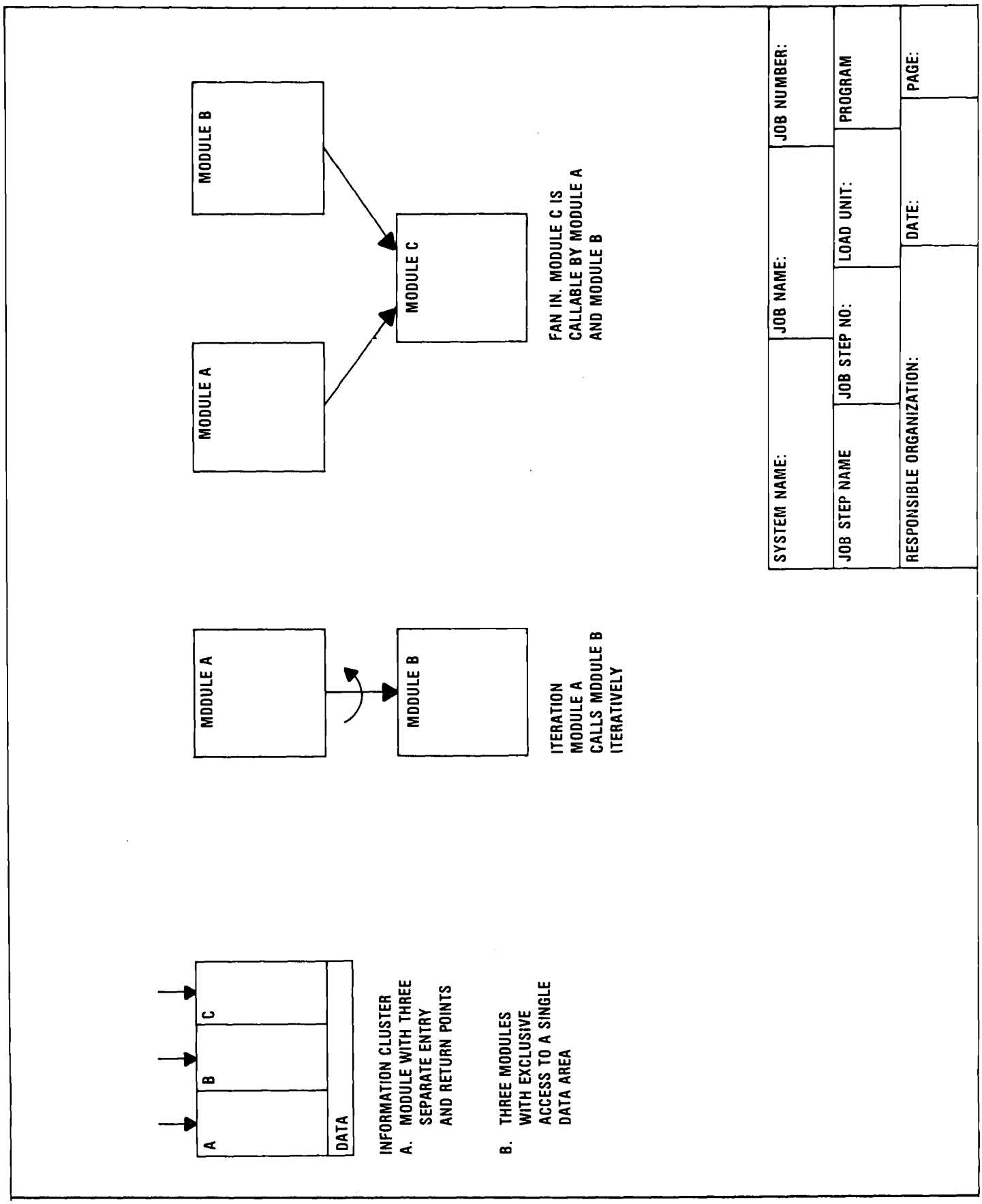


FIGURE B-04
Additional Structure Chart Conventions (Page 2 of 3)

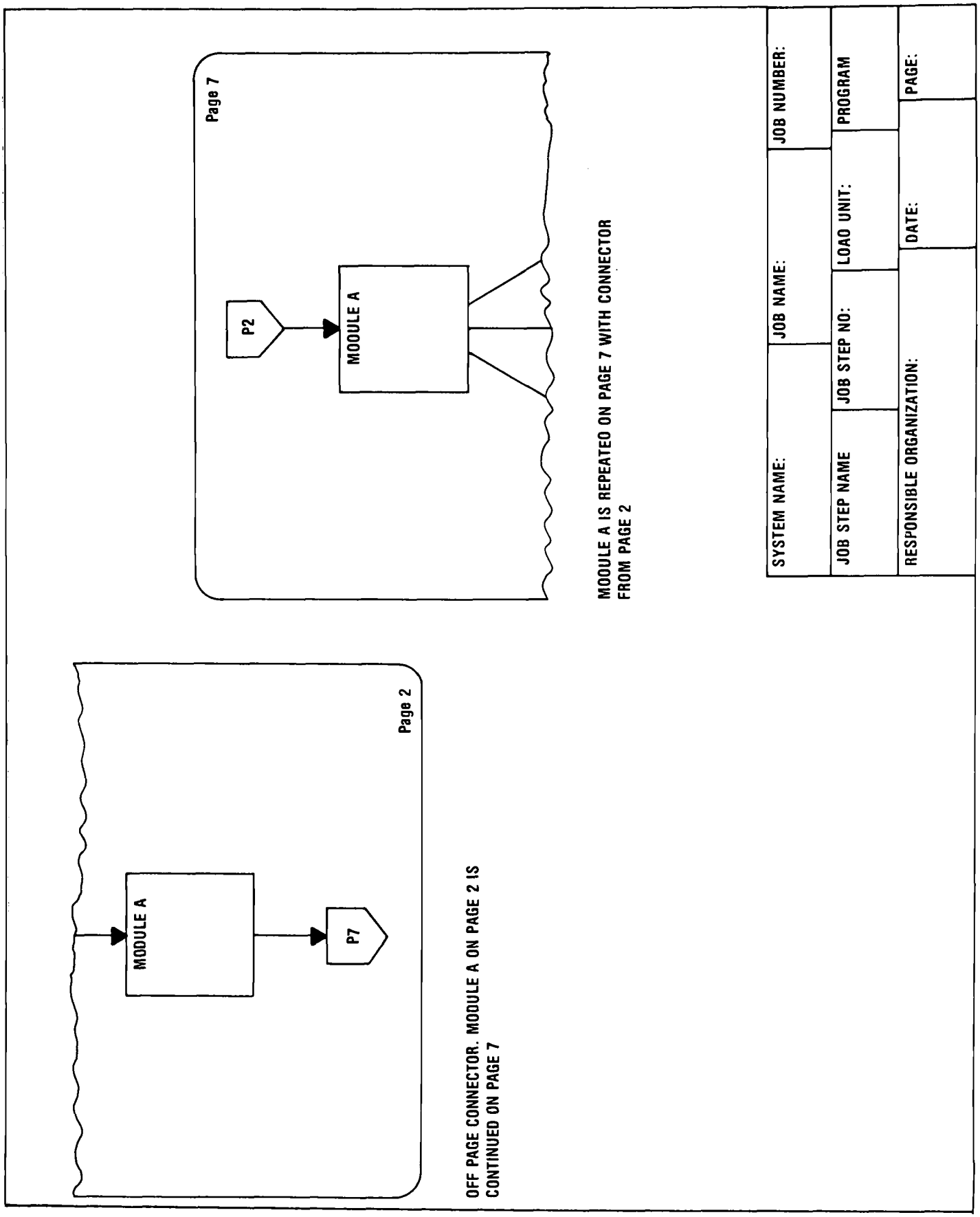


FIGURE B-04
Additional Structure Chart Conventions (Page 3 of 3)

Each module declared on the structure chart will be numbered. The numbering scheme should follow the scheme provided in the General Design Specification. Each task and/or job step declared in the General Design Specification data flow diagram has a unique identifying number. Each task and/or task step declared in the General Design data flow diagram will have a corresponding hierarchy or sub-hierarchy on the structure chart. Therefore, the number of the job or job step from the general design will correspond to the number of the top level module in the hierarchy or sub-hierarchy in the structure chart. Each module declared in the structure chart will be numbered with the job or job step number followed by a period and a local number beginning with 1. This local number will be incremented by 1 working left to right across, and down the structure chart.

See Figure B-05, "Structure Chart Numbering," for an example.

To ensure the completeness and internal consistency of the structure chart the following criteria must be met:

a. All title/heading information completed

b. All data couples named

c. All modules named

d. Modules declared on the structure chart should not have more than nine immediate subordinates. (Note: A transaction center is counted as one subordinate.)

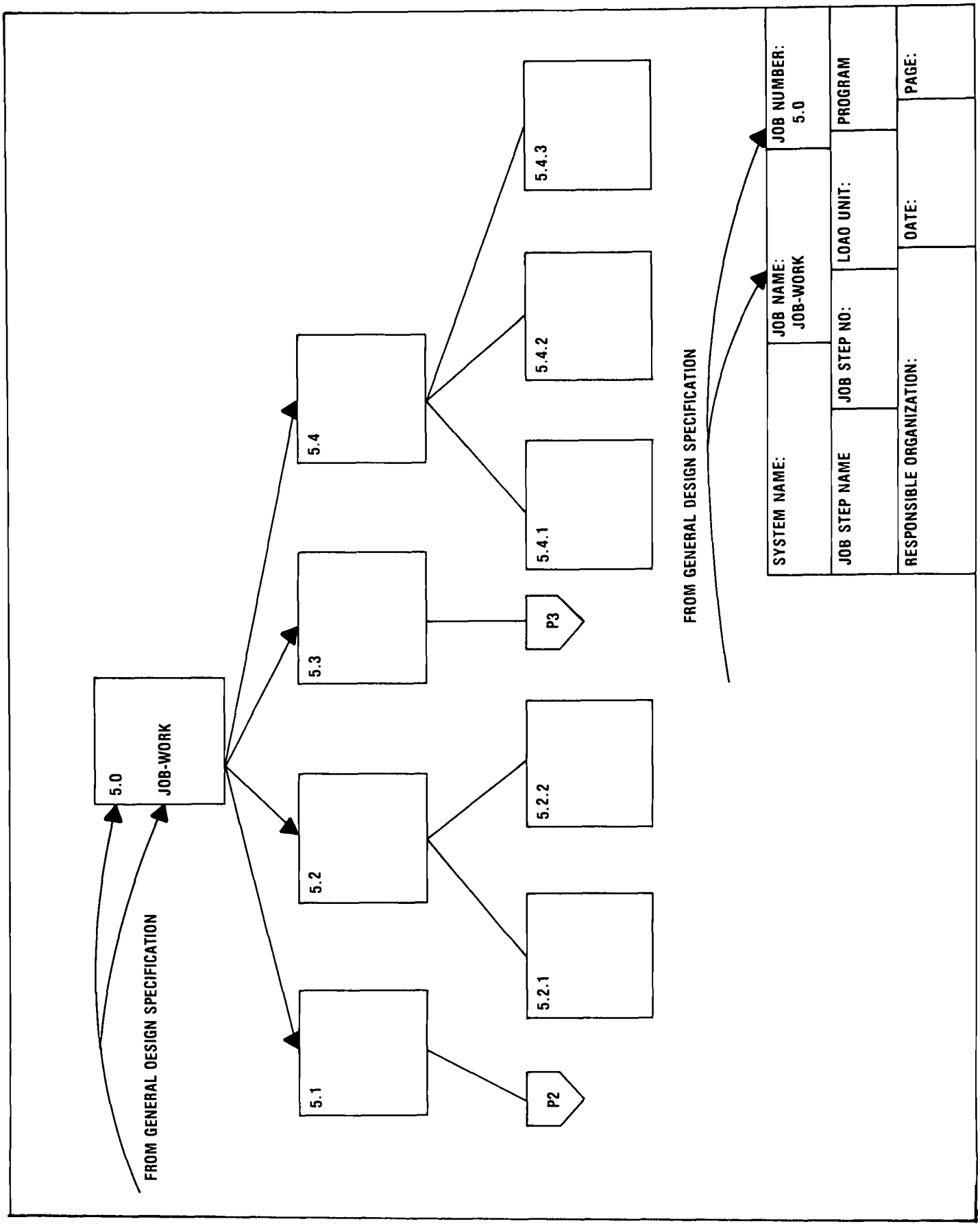


FIGURE B-05
Structure Chart Numbering

SECTION 4 THE DATA DICTIONARY

The data dictionary is a set of definitions for every data couple declared on the structure chart. The composition of each data couple will be defined as well as the definition of the components of the data to the lowest element level. Formatting of data dictionary entries for a mechanized tool will be governed by the Data Dictionary Standard.

Data types can be either groups or elements. Groups may be composed of groups, groups and elements, and/or elements. Elements are the lowest level data item. Each data couple must show its composition as either:

a. groups

b. groups and elements

c. elements

Each group must be defined in turn with regard to composition of groups and definition of elements.

Each data dictionary entry will contain:

a. Data couple name as declared on the structure chart

b. Composition

c. Bounds of multiple occurrences, or iteration of data components (where applicable)

d. Optional data components (where applicable)

e. Choice of one occurrence from a set of occurrences (where applicable)

f. Physical attributes of the data couple such as format, range, alphabetic, numeric, or alphanumeric

To ensure the completeness and internal consistency of a data dictionary the following criteria must be met:

a. All data couples declared on the structure chart must be defined.

b. All control couples declared on the structure chart must be named to indicate the informational content of that couple (informative flag).

c. No redundant data component names will remain.

d. No redundant data component definitions will remain.

SECTION 5 MODULE SPECIFICATION

The module specification is a statement of the rules governing the transformation of input data couples into output data couples. Module specifications also define the control logic for system execution. Module specifications will be written for all modules declared on the structured chart. Formatting of module specification entries for a mechanized tool will be governed by the Data Dictionary Standard.

Each module specification will contain the following items and formats:

1.0 Module Number.

The number of the module or process as declared on the structure chart.

2.0 Module Name.

The name of the module as declared on the structure chart.

3.0 Literal Name.

The name of the module with abbreviations and acronyms spelled out in full.

4.0 Logic.

The rules governing the transformation of input data couples into output data couples or control logic. These rules may be documented using structured english, decision tables, decision trees, or pseudo-code. Suggested Structured English constructs are documented in the Style Manual Standard. Generally, this should not be more than a few pages in length.

Structured English is a subset of the English language with limited syntax and grammar. The syntax of structured English is limited to:

a. Sequence of simple declarative statements

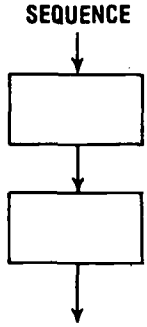
b. Closed-end decision construction

c. Closed-end repetition construction

See Figure B-06, "Structured English Constructs," for an example.

Decision tables and/or decision trees are used in the specification of a module if the nesting of conditionals exceeds two levels. See Figure B-07, "Decision Tables and Decision Trees," for an example.

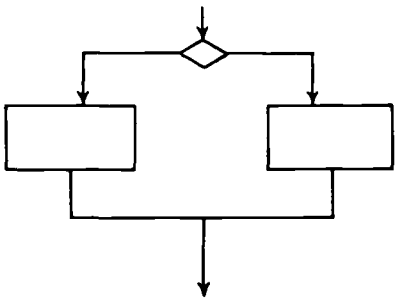
SEQUENCE



Sequence:

```
Reg-Pay = Reg-Hrs x Reg-Wage
OT-Pay = OT-Hrs x OT-Wage
Gross-Pay = Reg-Pay + OT-Pay
Issue Gross-Pay
```

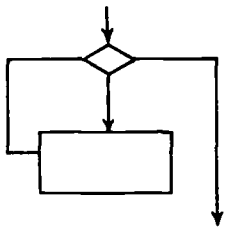
DECISION



Decision:

```
If Employee-Type = ''Exempt''
  OT-Wage = Reg-Wage
Else
  OT-Wage = Reg-Wage x 1.5
```

REPETITION



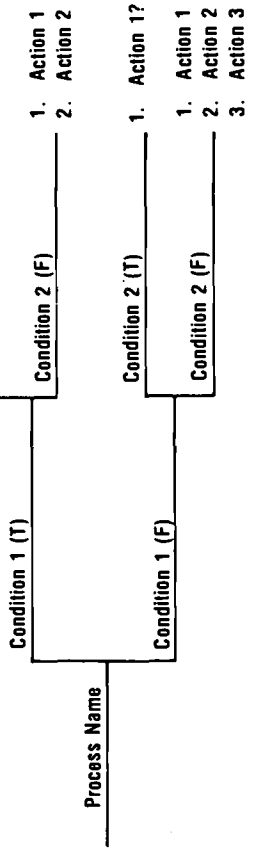
Repetition:

```
For each Payroll-Trans:
  Issue Pay-Stub and Pay-Check
  Issue PR-Audit-Record
```

FIGURE B-06
Structured English Constructs

Process Example of a Decision Table

Process Name				
Condition 1	T	T	F	F
Condition 2	T	F	T	F
Action 1		X	?	X
Action 2	X	X		X
Action 3				X



Abstract example of a decision tree.

FIGURE B-07
Decision Tables and Decision Trees

5.0 Responsible Designer.

The analyst, or organization responsible for the production of the module specification.

6.0 Date Produced.

The date the module specification was produced.

7.0 Date of Last Change.

The date of the most recent change to the module specification.

The completeness of a module specification will be ensured if the following criteria are met:

a. Items 1 through 7 must be completed

b. All data referenced must be contained in the data dictionary entries

c. Statements must be clear, imperative, and have only one meaning

d. Algebraic equations follow mathematical, not programming, notation

e. Decision tables or decision trees

(1) identify all relevant conditions governing the actions

(2) identify all possible values the conditions could have

(3) identify all possible combinations of the values the conditions could have

(4) identify the action for each combination of the values

SECTION 6 STATE TRANSITION DIAGRAMS

Although technically not part of a structured design specification, state transition diagrams are used to model and specify all human/machine dialogs. State transition diagrams have two components defined as follows:

a. A figure that represents a CRT display screen or menu

b. Vectors, or lines, connecting the figures that represent an input from the user or command that causes a change in the state of a program or causes a new screen/menu to appear.

See Figure B-08, for an example.

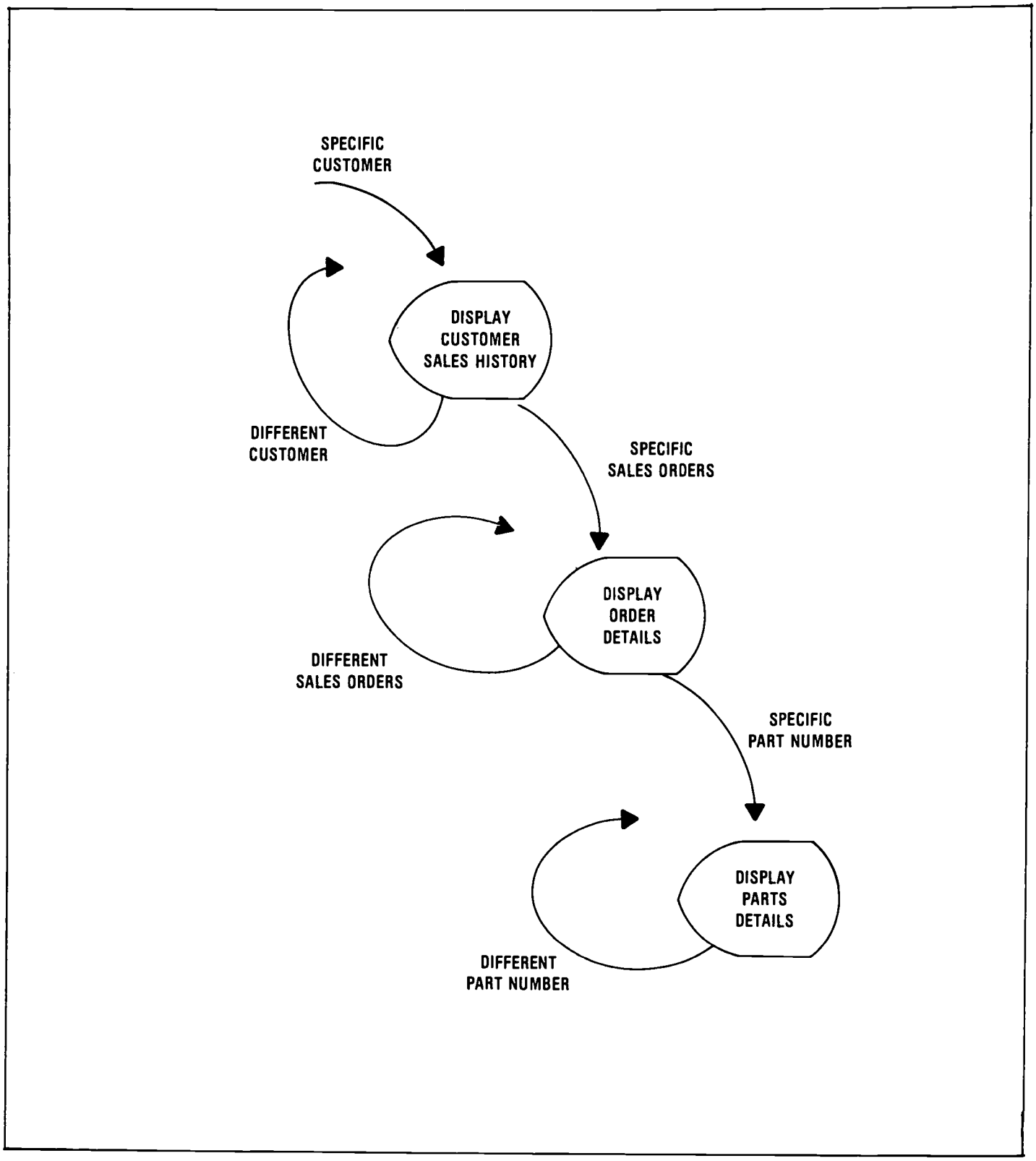


FIGURE B-08
Example State Transition Diagram

To ensure the completeness of the state transition diagram the following criteria must be met:

a. All figures contain the name of the screen/menu they represent as documented in the data dictionary

b. All vectors are named to reflect the input from the user or command they represent

c. There is a module or module sub-hierarchy that displays a screen/menu based on an input from the user or a command

d. The screen/menu format will be depicted in the data dictionary by way of comment entry

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Appendix C

DETAILED DESIGN SPECIFICATION TABLE OF CONTENTS

Detail Design

Section 1. General
1.1 Objective
1.2 Scope
1.3 Author
1.4 Detailed Design Action Plan

Section 2. Structured Design Specification

Section 3. Supporting Documentation
3.1 New Performance Characteristics
3.2 ADPE Environment
3.3 Program Requirements
3.4 Data Entry Requirements
3.5 Reporting Requirements
3.6 Data Base Userviews and Requests

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Appendix D

DETAILED DESIGN SPECIFICATION CONTENT DESCRIPTION

SECTION 1 GENERAL

This section should document the objective, scope, and other general information required in the Detailed Design Specification.

1.1 OBJECTIVE

This paragraph will reference the system objectives in the functional requirements definition. It will include a general statement of the purpose of the current system, identify the major deficiencies of the current system to meet the user's software requirements, and state the specific objectives of the proposed system to rectify the deficiencies and meet those requirements. Any changes to the objectives of the General Design Specification will be included.

1.2 SCOPE

This paragraph should document the scope, or context, of the new system. It should describe the existing software environment affected by the deficiencies identified in Paragraph 1.1, "Objective," above, with particular regard to software development environment, site specific information, and the identification of the specific applications under study. This will be in concert with the scope as reported in the General Design Specification.

1.3 AUTHOR

This paragraph will identify the organization charged with producing the Detailed Design Specification.

1.4 DETAILED DESIGN ACTION PLAN

This paragraph should document the findings of the organization charged with producing the Detailed Design Specification based upon a review of that specification. This review should determine if the specification as presented reflects a sound physical portrayal of the processes and products defined in previous analytical documentation.

It should further determine if the specification as presented is adequate to permit software development activity to proceed based on technical grounds or should be suspended pending the refinement of that specification. Based on these findings, a recommended course of action should be presented.

SECTION 2 STRUCTURED DESIGN SPECIFICATION

This section should document the Detailed Design Specification. This section will be organized and formatted as shown in

Appendix B, and must include the following:

- Structure Charts
- Data Dictionary
- Module Specifications
- State Transition Diagrams

SECTION 3 SUPPORTING DOCUMENTATION

This section should document information pertinent to the new system and proposed environment not covered in the structured specification and will contain, at a minimum, the following paragraphs.

3.1 NEW PERFORMANCE CHARACTERISTICS

This paragraph should document the required performance characteristics of the new system. It will include all information pertinent to anticipated performance such as periodicity, or cyclic processing requirements, response times, and throughput volume.

3.2 ADPE ENVIRONMENT

This paragraph should describe the ADPE environment in which the system software will be implemented. It should include existing system architecture diagrams and information pertinent to the hardware/software configuration in which the system will operate.

3.3 PROGRAM REQUIREMENTS

This paragraph should provide any information required relative to program operation beyond that contained in process descriptions of the structured specification. Refer to the Programming Standard. Specifically, it should address:

a. Program naming and requirements of the Library Management System Standard

b. Interfaces and calls to the DBMS, macros, and standardized error handling routines

c. Error handling and messages not contained in process descriptions

3.4 DATA ENTRY REQUIREMENTS

This paragraph will present data entry screens and external transactions in terms of specific format and content. Included should be information relative to screen handling and menu processing using railroad diagrams or other methods of presenting screen flows.

3.5 REPORTING REQUIREMENTS

This paragraph will present requirements for output reports and screen displays in terms of specific format and content. Report and screen layouts will be presented. Specific report information will also include:

a. Standardized headings and formats

b. Pagination and sectioning

c. Control breaks and totals

d. Frequency and usage

e. Distribution

3.6 DATA BASE USERVIEWS AND REQUESTS

This paragraph will present specific userviews required by programs. If userviews do not currently exist, userview requests should be included in the document and forwarded to the Data Base Administration (DBA) office. Requests for adding new elements to the data base must be coordinated with the Data Base Manager (DBM).

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Appendix E

BIBLIOGRAPHY

Page-Jones, Meiler, The Practical Guide to Structured Systems Design, New York, NY: Yourdon Press, 1980.

Yourdon, Ed and Constantine, Larry, Structured Design. New York, NY, Yourdon Press, 1978.

Boar, Bernard, Application Prototyping, New York, NY: John Wiley & Sons Inc., 1984.

Martin, James, An Information System Manifesto. Englewood Cliffs, NJ, Prentice Hall, 1984.

King, David, Correct Practices In Software Development, New York, NY, Yourdon Press, 1984.

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COMMENTS/REVISIONS

Technical publications under the Information Resources Management (IRM) Standards and Guidelines Program (MCO 5271.1) are reviewed annually. Your comments and/or recommendations are strongly encouraged.

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