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DATA SYSTEMS AND ANALYSIS DIRECTORATE
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WORK MANAGEMENT PLAN

FOR

DATA SYSTEMS AND ANALYSIS DIRECTORATE

COMPUTER SCIENCES CORPORATION

CONTRACT NAS9-15700

MAY 1, 1979

Prepared by:

Lee R. Nichols

Lee R. Nichols *5-1-79*
Manager, Program Control

Approved by:

Carl R. Huss 5/1/79

Carl R. Huss
Technical Manager

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APPENDIX A

1.0 INTRODUCTION AND SUMMARY

The Computer Sciences Corporation Contract with the Data Systems and Analysis Directorate contains a specified level of resources related to a specific set of work in support of three divisions within the Data Systems and Analysis Directorate. The divisions are Institutional Data Systems Division, Ground Data Systems Division, and Mission Planning and Analysis Division. The Statement of Work defines at a functional requirements level the type of support to be provided to the three divisions. The Contract provides for further technical direction to the contractor through issuance of Job Orders approved by the Contracting Officer or his designated Technical Manager. The Job Order is the prime method of further defining the work to be done, allocating a portion of the total resources in the Contract to the defined tasks, and further delegating technical responsibility. The Contract further specifies that an Implementation Plan will be developed after the Job Order is issued to allow the contractor to define how the assigned work will be accomplished. For the purposes of this Work Management Plan we shall refer to the Implementation Plan (hereafter) as a Work Control Plan. Since it is not always possible to define all work to the necessary level of detail in the Job Order or its related Work Control Plan, we shall also provide a mechanism for further work breakdown as the need arises. This lowest level of work assignment will be called the Task Order. As is the case with the Job Order, the Task Order will specify response by the contractor in the form of a Work Control Plan.

In all cases a Task Order and its associated Work Control Plan are written to further define and divide work that has been agreed to through a Job Order and its associated resources.

The contractor accepts the work order assignment made by the Job Order and as may be defined by Task Orders, and implements the work. He responds with a Work Control Plan at such time as sufficient insight into the work has been gained to allow him to complete the work definition. It is anticipated that required Work Control Plans will be completed and approved by the Data Systems and Analysis Directorate and Computer Sciences Corporation within ten workdays after the Computer Sciences Corporation Program Manager receives the Job Order.

To distinguish between Job Order and Task Order Work Control Plans, we shall use the following reference system as needed:

- o Job Order Work Control Plan (JOCP)
- o Task Order Work Control Plan (TOCP)

The term "WCP" will refer to either the JOCP or the TOCP, whichever is applicable.

1.1 Purpose

The basic purpose of this Work Management Plan is to provide a formal and uniform work management system. The major elements of the work management system defined in this plan and to be discussed in further detail include the following:

- o Job Order
- o Work Control Plan - Job Order
- o Task Order
- o Work Control Plan - Task Order

The secondary purpose of the Work Management Plan is to:

- o Define contract/cost reporting methods used for Job Order manpower and cost status.
- o Define some of the terms and processes to be uniformly applied with regard to level-of-effort or development project activity.

Within the initial framework of a Job Order, the development of a Work Control Plan will be authorized. This method of assigning work to the contractor will define all elements of the work to the level of detail necessary to satisfy Data Systems and Analysis Directorate and Computer Sciences Corporation understanding of the deliverable items. The work assignment will consist of appropriate Job Order, Task Order, and related Work Control Plans. The assignment will also define the expected purpose or quality of the deliverables. In our level-of-effort type work, "services" can be considered a deliverable. The Job Order, Work Control Plan, and Task Order process is shown in Figure 1-1, "Work Management Process."

1.2 Scope

This document is limited to defining the process by which contractor resources are assigned, managed, controlled, and changed. It defines the documentation system and authorizations used by Data Systems and Analysis Directorate and Computer Sciences Corporation to allocate resources, direct the work, transmit data, request information, and document systems development project activity.

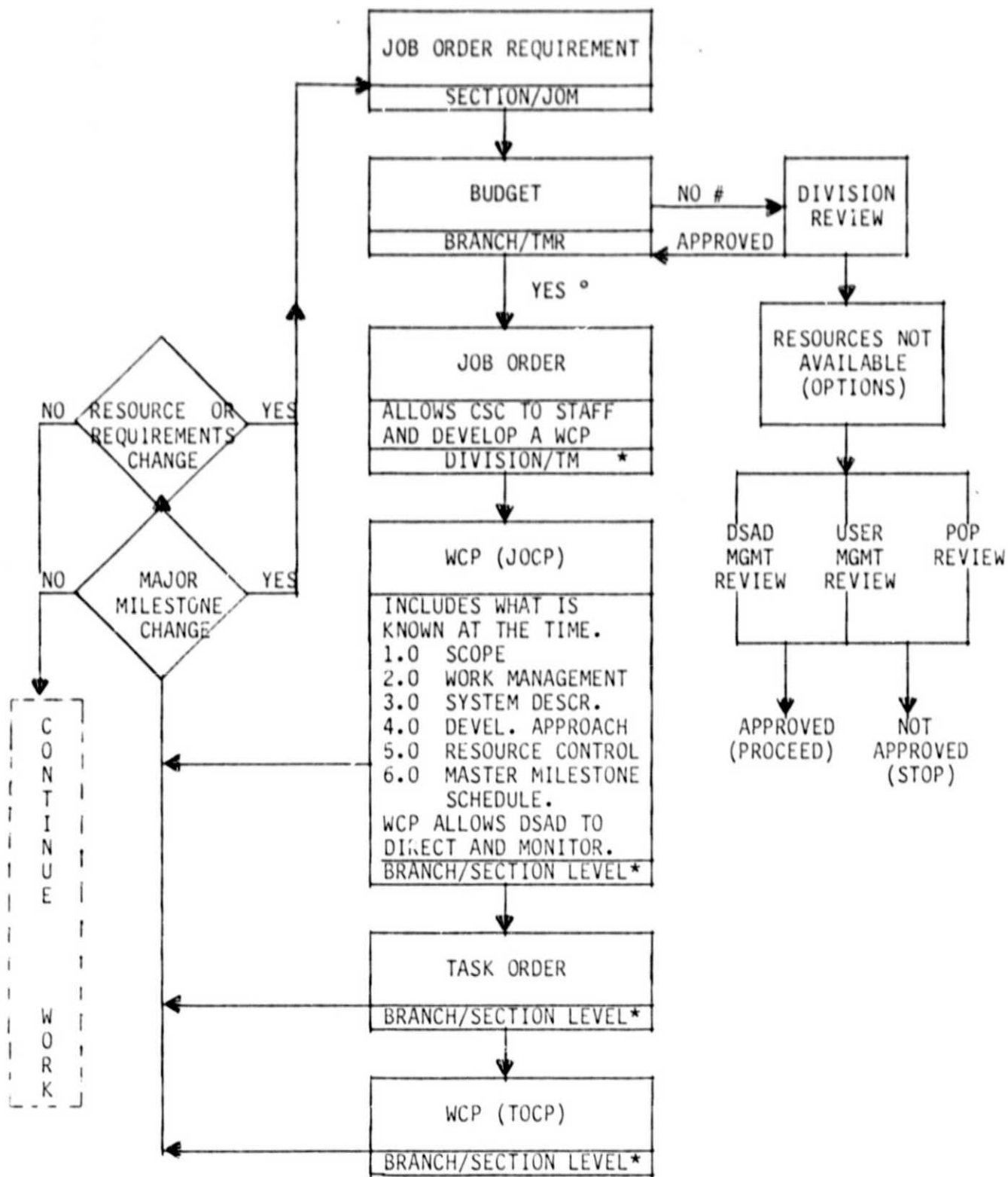
The instruments that authorize work and the types of document deliverables they can generate are outlined in Figure 1-2, "Work Authorization and Documentation." Further discussion of document terms is provided in subsequent sections of this plan.

This plan does not cover the Performance Evaluation Process. Refer to the Award Fee Evaluation Plan and Process document, dated September 1, 1978, for specific details related to that subject.

This document will not address details related to quality assurance or development activities, but will merely establish the baseline against which those details will be developed for uniform application across-the-board. A separate part of the Program Management Plan will describe the process associated with development and quality assurance activity.

This Work Management Plan will be reviewed on a yearly basis to determine if changes in the work management process indicate a need for revision.

FIGURE 1-1 -- WORK MANAGEMENT PROCESS



*APPROVAL LEVEL
 #INSUFFICIENT RESOURCES
 °SUFFICIENT RESOURCES

FIGURE 1-2 -- WORK AUTHORIZATION AND DOCUMENTATION

Work descriptions and resource authorizations are initiated by the following documents:
<ol style="list-style-type: none">1. Job Order2. Task Order (as sub-part of a Job Order)
The above documents may generate one or more of Item 3.
<ol style="list-style-type: none">3. Work Control Plan
The following would be a function of what is specified and/or milestone in the Work Control Plan:
<ol style="list-style-type: none">4. Pre-Project Implementation Plan5. System Definition Document6. Detailed Requirements Document7. Functional Design Specifications8. Detailed Design Specifications9. Standards10. Procedures--operative software and/or hardware systems11. Configuration Documents (Baseline) for software and/or hardware systems12. Maintenance Documents/Procedures for software and/or hardware systems13. Test Documents--Plans, Specifications, Reports or System Deliverable14. User Documentation/Procedures15. Preliminary Design Review16. Critical Design Review17. Configuration Management Board18. Configuration Change Request19. Program Change Request20. Review Item Discrepancy <p>(May be combined)</p>
Any project person or facility user can generate the following:
<ol style="list-style-type: none">21. Discrepancy Report
Information requests or transmittal are handled by:
<ol style="list-style-type: none">22. Transmittal Information Request Form (Does not authorize work or documentation)

2.0 EXPLANATION OF TERMS AND DOCUMENT PROCESSES

2.1 Contract and Work Management Plan

The Contract Statement of Work and the Work Management Plan relationship were described in Section 1.0.

2.2 Work Management Titles

Technical management begins with the development and implementation of a work management plan, and subsequent control in accordance with the established plan and contract resource limitations. There are two separate levels of technical management control: (1) the division/contract technical management level of control that approves the Job Order, work description, and resource levels, and (2) the Technical Manager's Representative level that provides technical direction, insures division policy and resource compatibility, and tracks status at the Job Order and Task Order level. The Technical Manager's Representative/Job Order Manager level directs resource usage in task or project performance and insures accomplishment of task objective. This Technical Manager's Representative/Job Order Manager control serves primarily to facilitate day-to-day technical interface and related decision making and direction. Both levels of management require certain documentation necessary to provide insight and effective control at each level, as defined in Figure 1-2 and in Section 2.3.

2.2.1 Contract Technical Manager

The responsibilities of the Data Systems and Analysis Directorate Contract Technical Manager, appointed by the NASA Contracting Officer (in accordance with JSCI 5151.1, dated April 3, 1967), include the approval of Job Orders, Work Control Plans, and related resources within the scope of the Contract Statement of Work and resource limitations. The Contracting Officer reserves the authority to change the Contract terms and conditions and any Contract limits established.

2.2.2 Technical Manager's Representative

The Technical Manager can appoint Technical Manager Representatives(s) with responsibility to serve as his alternate in performing day-to-day functions of specified work areas and to direct Job Order Managers assigned under the Technical Manager's Representative in his area of responsibility. The Technical Manager's Representative has the additional responsibility of evaluating contractor performance. The Technical Manager's Representative will normally approve Work Control Plans unless the Technical Manager specifically reserves that authority when the Job Order is approved.

2.2.3 Job Order Manager

Appointed by the Contract Technical Manager, the NASA Job Order Managers provide the daily interface and technical coordination with the contractor. The Job Order Manager insures contractor adherence to the scope and work quality defined in the Job Orders and Task Orders to accomplish desired objectives. Job Order Managers give technical guidance as required, review Work Control Plans and work quality required in achieving the task objectives, and keep the Contract Technical Manager and Technical Manager's Representative informed of potential technical impacts. The Work Control Plan serves as the baseline for control and status of contractor work on the Job Order and/or Task Order.

2.3 Documentation and Information Transmittal

In order to direct, evaluate, and control Computer Sciences Corporation development work, Data Systems and Analysis Directorate has devised a documentation system which is specifically designed for development-type work within the support services environment. A formal review and control process is also defined for development projects. Documentation in the Data Systems and Analysis Directorate system may be viewed as administrative or technical.

2.3.1 Documentation

2.3.1.1 Administrative

The administrative group of documentation includes Job Order and Work Control Plan, and Task Order and Work Control Plan.

The administrative group is designed to authorize specific items of work under the Contract, to provide an estimate of schedules and resources for each task or system development project, and to provide a basis for formal and informal reviews. Job Orders, Work Control Plans, and Task Orders may be used on all level-of-effort or system development project work. The administrative documents may generate any one or all of the technical documents listed in Figure 1-2. The administrative documents also define status and control reporting systems to be used for periodic task or project review by the Technical Manager, Technical Manager's Representative, and Job Order Manager.

2.3.1.2 Technical

Technical Manager's Representatives will establish technical information requirements for their area of responsibility. The technical documentation is associated with the milestones given in the Work Control Plan and includes documentation necessary to define, develop, status, or deliver end products related to software, hardware, or support (service) functions. Items 4 through 21 in Figure 2-1 are typical of the technical documentation that is associated with Job Orders and Task Orders, especially development projects. Special studies or standard deliverables unique to a level-of-effort Job Order will be defined in the Work Control Plan for that specific area of work.

2.3.2 Information Transmittal and Contract File

Technical information flowing between NASA and the contractor in performance of Job Order, Work Control Plan, or Task Order should be documented; i.e., accomplished by memoranda, Transmittal/Information Request Forms, or minutes of meetings.

A copy of all documentation related to technical direction that flows between NASA and the contractor is maintained in the contract files by the respective Technical Manager's Representatives for everything except the Job Order and its related Work Control Plan, which the Technical Manager will maintain. All official Job Order, Work Control Plan, and Task Order files are subject to transfer to the Contracting Officer at his request. The Transmittal/Information Request Form will be used only to transmit or request already developed information, not as a tasking document. The format of the Transmittal/Information Request Form is shown in Figure 2-1.

FIGURE 2-1 -- TRANSMITTAL/INFORMATION REQUEST FORM

1. TO: (Org/Code/Attn)		2. FROM: (Org/Code/Originator/Ext)	
3. FORM USAGE: (Check one only) <input type="checkbox"/> TRANSMITTAL <input type="checkbox"/> INFORMATION REQUEST		4. PURPOSE:	
5. REFERENCE:			
6. CONTRACT NUMBER:	7. WORK ORDER NUMBER:	8. DATE:	
9. TRANSMITTAL REQUEST: (Identify request priority, etc.)			
10. REPLY: (Response, approval, etc.) <input type="checkbox"/> DATA AVAILABLE <input type="checkbox"/> ATTACHED <input type="checkbox"/> OTHER			DATE:
<input type="checkbox"/> DATA NOT AVAILABLE		<input type="checkbox"/> TASK ORDER ATTACHED	
<input type="checkbox"/> RESOURCE ESTIMATE TO PREPARE		<input type="checkbox"/> ESTIMATED TIME TO COMPLETE	
NOTE: This is not a tasking form. It is used for sending or receiving data already developed. A Job Order and Task Order Form 329 is used for resource allocation work assignment.			

3.0 JOB ORDER

3.1 Purpose

Job Orders are usually initiated by a Data Systems and Analysis Directorate individual for tasks approved by the Division Chief in accordance with fund availability; however, the contractor may also initiate Job Orders.

The Job Order, by definition, includes JSC Form 329 (Figure 3-1) and the scope of work (see Figure 4.1, "Work Definition Elements," Section 1.0). A Job Order is the instrument by which NASA authorizes the contractor to accomplish the work delineated in the scope of work. The Job Order allows Computer Sciences Corporation to staff and develop the Work Control Plan. Job Orders are issued by Data Systems and Analysis Directorate to the contractor and outline the general tasks to be accomplished based on the level of information known at the time. The Job Order specifies other information pertinent to task performance, resource allocation, requirements sources, documentation and reporting, identifies major milestones to be achieved, and other data needed by the contractor to develop a Work Control Plan.

Good communications should be cultivated with the contractor to insure interchange of ideas prior to initiation of Job Orders and/or contractor response to Job Orders or Task Orders. A Job Order may be written for the term of the project or for the life of the Contract, as may be appropriate.

3.2 Approval and Processing

Each Job Order is signed by the Data Systems and Analysis Directorate Job Order Manager and Technical Manager's Representative, approved by the Contract Technical Manager and forwarded to the Computer Sciences Corporation Program Manager for implementation. The signature of the Technical Manager on the Job Order is authorization for the contractor to initiate staffing and prepare appropriate detail Work Control Plans within the resources and work description contained in the Job Order. The Technical Manager's signature on the Job Order says: (1) we need to do it, (2) maximum (estimated) resources are available to do the work, (3) delivery dates are to be met, and (4) requirements are to be met as specified. When accepted by the Computer Sciences Corporation Program Manager, the Job Order plus work description and major milestones are Technical Manager and Program Manager commitments. The linkage between the Work Control Plan and the Technical Manager approved Job Order is the major milestones, resources, and requirements.

In the event the Technical Manager does not feel the Job Order provides sufficient detail, he may specify in Block 13a of the Job Order that the Work Control Plan shall also be approved by the Technical Manager (Work Control Plan is normally a Technical Manager's Representative/Department Manager level approval). The response from the contractor in the Work Control Plan reflects the contractor understanding and adds detail to what the Job Order defined to be accomplished.

For a development effort a Pre-Project Implementation Plan might be defined in the Job Order to develop cost, schedule, and design data for a "go-no-go" development decision. The Computer Sciences Corporation Department Manager accepts the work for implementation once the Program Manager approves and distributes the Job Order, and directs his staff to open the appropriate accounting system codes to collect authorized charges as defined in Section 1.7 of Figure 4-1.

Any modification to an existing Job Order requires a Job Order Amendment with the same approvals as the original Job Order. Figure 1-1 reflects the modification process that occurs at Work Control Plan level or Task Order level when Job Order limits are exceeded for (1) requirements, (2) resources, and (3) major milestones.

The Data Systems and Analysis Directorate and Computer Sciences Corporation Job Order and Job Order Control Plan development and approval cycle is shown in Figure 3-2, "Work Order Development-Approval."

3.3 Relationship of Job Order, Work Control Plan, Task Order

The data elements required for the Job Order, Work Control Plan, and Task Order are in Figure 4-1, "Work Definition Elements." It should be noted at this point that work may be sufficiently defined to satisfy Data Systems and Analysis Directorate and Computer Sciences Corporation management at any level that is mutually acceptable and definitive. Work will be defined to the contractor in a Job Order that contains a work description. The contractor will respond to the Job Order with a Work Control Plan. Further work assignment and work definition may be handled through a Task Order and its associated Work Control Plan. The details of the Work Control Plan and the Task Order are covered in Sections 4.0 and 5.0. The documentation associated with the Job Order, Task Order, and the associated Work Control Plans are illustrated here to clarify the options available. No repetitive documentation is required or desired; i.e., Items 1 and 1a below may be sufficient. Item 2 plus 2a could be required, but is not mandatory.

- 1. Job Order and work description
- 1a. plus Work Control Plan
- 2. Task Order and work description
- 2a. plus Work Control Plan.

A given Job Order may also have more than one Work Control Plan, based on the work definition as defined in the Job Order (Figure 4-1, Section 1.3). The Job Order may also elect to completely define certain portions of the work in the initial Work Control Plan response and designate certain other projects or tasks as being assigned by the Task Order approach. For example:

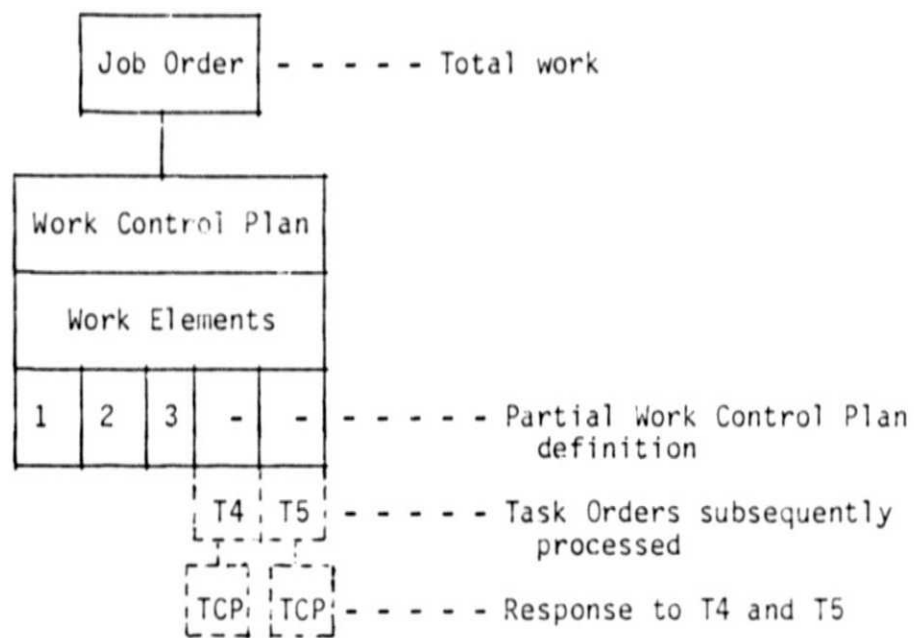


FIGURE 3-1

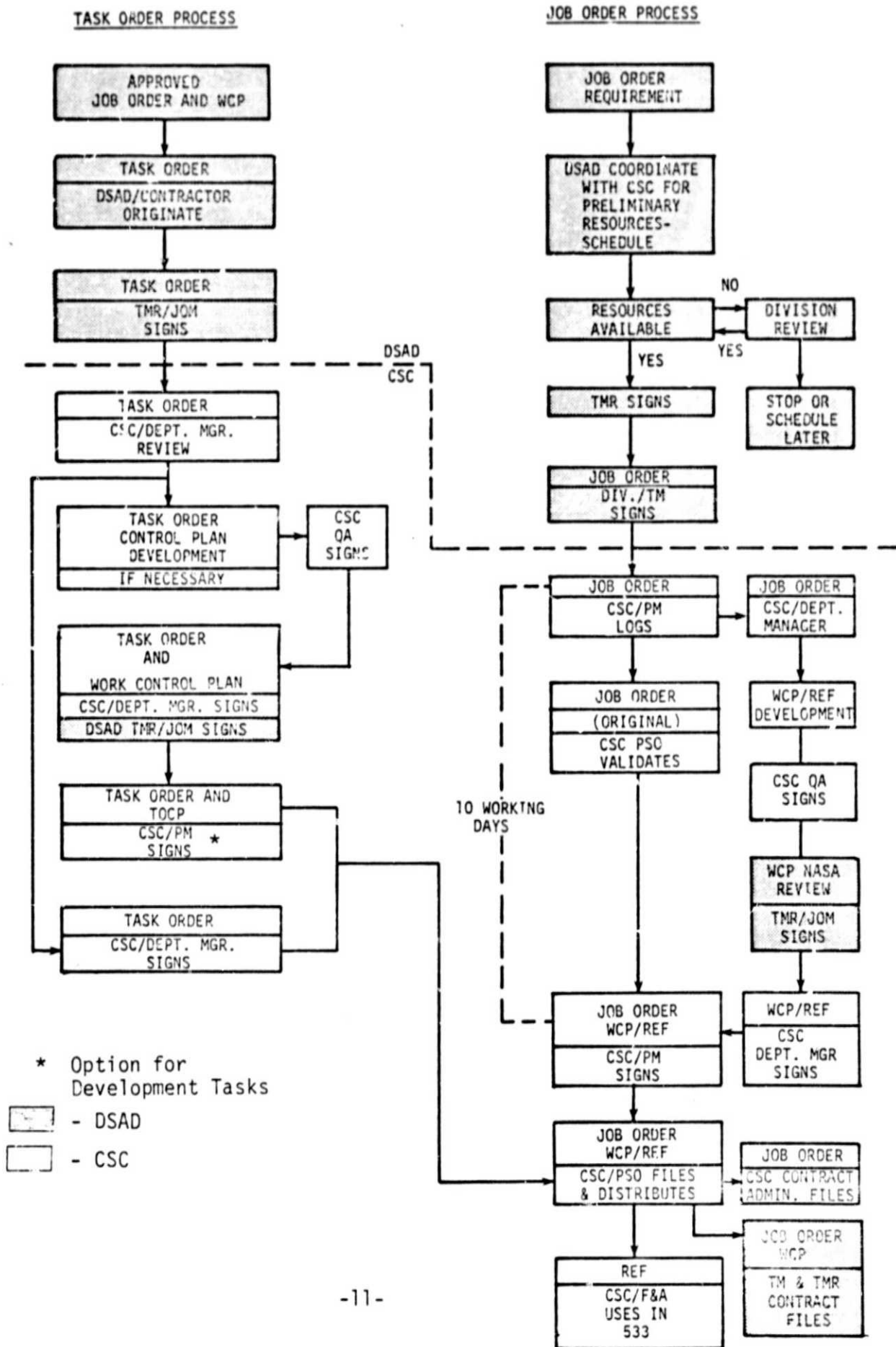
SUPPORT CONTRACTOR JOB ORDER

1. Contractor		2. NASA contract no.		3. Date		4. CSC JOM/Ext.						
5A. JSC Job Order Manager/Signature			5B. Extension		5C. Organization code							
6A. Job order no.		6B. Amend. no.		6C. Title								
DESCRIPTION	6D. Purpose of amendment:											
	7. Work Description (objective, guidelines, constraints, critical dates, etc.)											
(Continue on separate page if necessary)												
8A. Estimated beginning date			8B. Estimated completion date			8C. Actual completion date						
RESOURCES	9. QUARTERLY AUTHORIZATIONS		UNITS	FY-79				FY-80				
				QTR 1	QTR 2	QTR 3	QTR 4	QTR 1	QTR 2	QTR 3	QTR 4	
	9A. Manpower		MQE									
	10. YEARLY AUTHORIZATIONS		UNITS	FY-79		FY-80		FY-81		FY-82		FY-83
	10A. Manpower		MYE									
	10B. Subcontracts		SK									
	10C. Travel (trips) requirements		NO./YR									
10D. Materials		SK										
11. Computer usage required												
<input type="checkbox"/> EXEC 2 <input type="checkbox"/> EXEC 8 <input type="checkbox"/> CYBER <input type="checkbox"/> Word/Proc <input type="checkbox"/> Other: _____ <input type="checkbox"/> Terminals required												
APPROVALS	12. CONTRACTOR COORDINATION			Date		13. NASA APPROVAL			Date			
	Department Manager					Technical Manager's Representative						
	Program Manager					Technical Manager						
13A. Additional information or notes (initials required)												
14A. <input type="checkbox"/> DISAPPROVED (state reason)								14B. Signature and date				

JSC FORM 329 (Rev. May 79)

FIGURE 3-2

WORK ORDER DEVELOPMENT-APPROVAL



4.0 WORK CONTROL PLAN

4.1 Purpose

Submitted to Data Systems and Analysis Directorate, the Work Control Plan provides the contractor's reply to the Job Order. Work Control Plans are intended to be functional working documents to indicate to NASA the planned approach and schedule for accomplishment of the work and are to be used as a status reporting baseline as work progresses.

4.2 Contents of Work Control Plan

The Work Control Plan is updated as necessary by the contractor and approved by the Data Systems and Analysis Directorate Technical Manager's Representative, unless this approval authority was specifically reserved by the Technical Manager in Block 13a when the Job Order was approved. The baseline (original) Work Control Plan is maintained as the basic reference document until a formal amendment is processed. Certain sections of status data will be added to the Technical Manager's Representative copy of the baseline Work Control Plan, such as Work Control Plan Section 5.2 (Figure 4-1) "resource expenditures actual" and Section 6.3 "change history log." The Technical Manager's Representative may define the status and control approach to be used as part of the Work Management Techniques, Control Approach Section 2.1.3 (see Figure 4-1) of the Work Control Plan. The Work Control Plan document numbering system will be the same as the related Job Order and Task Order. A system development type Work Control Plan identifies and describes development specifications and levels, the design approach, design reviews, test levels, system deliverable items, configuration management techniques, and system documentation required. A level-of-effort type Work Control Plan concentrates on kinds of tasks, priorities, and deliverables but may include elements normally described for the development type work as appropriate (e.g., resources, methodology, configuration management techniques, performance measures, interface, etc.). The Work Control Plan should address the elements in Figure 4-1 appropriate to the work to be undertaken, regardless of whether it is development or level-of-effort work, and at a more detailed level than could be defined in the initial Job Order from Data Systems and Analysis Directorate.

4.3 Approval and Processing

The Computer Sciences Corporation Program Manager assigns the Job Order to the appropriate Department Manager for preparation of the Work Control Plan. Within a 10-workday time frame (as a goal) the Department Manager will prepare and coordinate the Work Control Plan with the Data Systems and Analysis Directorate Technical Manager's Representative and Computer Sciences Corporation Quality Assurance. After Technical Manager's Representative, Quality Assurance, and Department Manager approval, the Work Control Plan is sent back to the Computer Sciences Corporation Program Manager. If the Data Systems and Analysis Directorate Technical Manager has not reserved the right to approve the Work Control Plan, the Program Manager signs and releases the Job Order with Work Control Plan to the Computer Sciences Corporation Program Support Office for distribution and implementation.

The development and approval of the Work Control Plan associated with Job Orders or Task Orders is illustrated in Figure 3-2, "Work Order Development-Approval."

FIGURE 4-1 -- WORK DEFINITION ELEMENTS

(For Job Order, Work Control Plans, and Task Order)

- 1.0 SCOPE OF WORK
- 1.1 WORK OVERVIEW
- 1.2 TASK DESCRIPTION
- 1.3 WORK ASSIGNMENT APPROACH (WCP/TO)
- 1.4 BACKGROUND/REQUIREMENTS SOURCES
 - 1.4.1 Customer Organization
 - 1.4.2 User Interface
 - 1.4.3 Major Assumptions and Constraints
- 1.5 DELIVERABLE ITEMS
 - 1.5.1 Documentation
 - 1.5.2 System Deliverables
 - 1.5.3 Services/Other Products
 - 1.5.4 Reporting Requirements
 - 1.5.4.1 Data Systems & Analysis Directorate Input Requirements
 - 1.5.4.2 Other Organizations' Inputs
- 1.6 MAJOR MILESTONE SUMMARY
- 1.7 RESOURCE ACCOUNTING STRUCTURE
- 2.0 WORK MANAGEMENT TECHNIQUES
- 2.1 MANAGEMENT APPROACH
 - 2.1.1 Organizational Responsibility
 - 2.1.2 Interface with Monitor/User
 - 2.1.3 Control Approach
- 2.2 WORK BREAKDOWN STRUCTURE/TECHNICAL APPROACH
- 2.3 QUALITY ASSURANCE PLAN

FIGURE 4-1 -- WORK DEFINITION ELEMENTS (Cont'd)

- 2.4 CONFIGURATION MANAGEMENT PLAN
 - 2.4.1 System Baseline
 - 2.4.2 Baseline Description
 - 2.4.3 Change Control
- 3.0 SYSTEM DESCRIPTION
- 3.1 SYSTEM OVERVIEW
- 3.2 HARDWARE SUBSYSTEMS
- 3.3 SOFTWARE SUBSYSTEMS
- 3.4 OPERATIONAL/PRODUCTION CONCEPT
- 4.0 DEVELOPMENT APPROACH
- 4.1 DEVELOPMENT METHODOLOGY
- 4.2 DEVELOPMENT REVIEW PLAN
- 5.0 RESOURCE CONTROL
- 5.1 RESOURCE EXPENDITURE PLANNED
- 5.2 RESOURCE EXPENDITURES ACTUAL
- 5.3 ESTIMATING METHODOLOGY
- 6.0 MASTER MILESTONE SCHEDULE
- 6.1 INTEGRATED SCHEDULE
- 6.2 SUBSYSTEM/WORK ELEMENT SCHEDULES
- 6.3 CHANGE HISTORY LOG

NOTE: An expanded outline, with narrative discussion, is in Appendix A.

5.0 TASK ORDER

5.1 Purpose

A Task Order defines specific work to be performed by the contractor within the scope of a Job Order. It includes, by definition, JSC Form 329C (Figure 5-1) and any additional work description. The Task Order should include appropriate elements selected from Figure 4-1. Completion of the Work Control Plan will normally occur within 10 work days after receipt of the Task Order by the Computer Sciences Corporation Department Manager.

5.2 Approval and Processing

The Task Order may be developed by the Data Systems and Analysis Directorate Job Order Manager with the Computer Sciences Corporation Job Order Manager and may be initiated by either Data Systems and Analysis Directorate or the Computer Sciences Corporation. Approval is required by the appropriate Technical Manager's Representative and the respective Computer Sciences Corporation Department Manager unless specifically delegated in writing to the Job Order Manager level. The Task Order consists of the Task Order Form 329C and the Task Order Work Control Plan. Distribution is the same as the original Job Order and includes copies to the Data Systems and Analysis Directorate Technical Manager, Computer Sciences Corporation Department Manager, and any specifically designated data manager for Data Systems and Analysis Directorate or Computer Sciences Corporation.

The Data Systems and Analysis Directorate and Computer Sciences Corporation Task Order and Task Order Work Control Plan development and approval cycle is shown in Figure 3-2, "Work Order Development-Approval."

5.2.1 Responsibility

Task Order responsibility, i.e., the technical meetings and daily interfaces necessary for proper performance, is delegated to the Technical Manager's Representative/Job Order Manager for performance of the work and status surveillance.

FIGURE 5-1 -- SUPPORT CONTRACTOR TASK ORDER

DESCRIPTION	CONTRACTOR:		DATE:	JO/TO NO.:
	JOM/TOM:		EXT.:	ORG. CODE:
	TITLE:		AMENDMENT:	
	PURPOSE OF AMENDMENT:			
	WORK DESCRIPTION:			
(Continue on separate page)				
CONTROLS	RESOURCES:			
	MAJOR MILESTONES:			
	DELIVERABLES:			
APPROVALS	CONTRACTOR	DATE	DSAD	DATE
	DEPARTMENT MANAGER:		TECHNICAL MANAGER'S REP:	

JSC FORM 329C (May 79)

6.0 RESOURCE CHANGE CONTROL

Manpower and other resources can be adjusted by mutual Data Systems and Analysis Directorate/Computer Sciences Corporation agreement from one Task Order to another under the same Job Order; however, the total Job Order manpower cannot be increased without approval of the Technical Manager. Any foreseen underrun or overrun to the approved Job Order will be immediately identified to the Technical Manager and Program Manager for new approval or corrective action. A +5% allowance is provided as a guideline, within which resources may be allowed to fluctuate on a Job Order before the underrun or overrun condition is to be highlighted. The +5% will be applied to total Job Order man-year equivalent levels or total Job Order cost. The Computer Sciences Corporation Job Order Status Report and the Computer Sciences Corporation Financial Form 533 will be used as the baseline reference documents for tracking and control on Job Order resources. Several Task Orders may be issued under a Job Order, depending on the tasks and the Technical Manager's Representative/Job Order Manager's determination of the levels of review and technical direction needed. The only reservation is that a Task Order be issued only after the Job Order Work Control Plan has been approved and the work appropriately defined and partitioned. The partitioning of work should give due consideration to the desirability and economics of generating the additional Task Order and Work Control Plan paperwork. Similarly, more than one Work Control Plan may be required for a Job Order. The requirement for Work Control Plans will be defined in the original Job Order or in subsequent Task Orders as may be appropriate.

6.1 Financial Form 533

The contractor submits a monthly report (i.e., a Form 533) of the man-hours and cost expended on each Job Order. This report is generated on the basis of the contractor's accounting month with the report structure defined by Contracting Officer and Technical Manager written direction. The Form 533 report basically provides cost for the following areas:

- o All contract periods to date
- o Current contract year (month and quarter)
- o Current fiscal year (month and quarter)
- o Projected/authorized work for one year

Cost elements on the Form 533 include direct labor hours and other direct cost (e.g., travel, relocation, facilities, subcontracts, other direct elements), as well as general and administrative, overhead, fee, and man equivalents). The Form 533 report is the basis for Contracting Officer payment for services rendered and invoiced by the contractor.

6.2 Job Order Status Report

The contractor extracts weekly labor data from timecard information on each employee and combines with other resource data to develop and submit a monthly report. The data is submitted in the form of a Job Order Status Report. The Job Order Status Report basically provides resource authorization and actuals on a monthly or quarterly basis for the following elements:

- o Manpower
- o Machine time
- o Travel
- o Procurements
- o Overtime-paid
- o Uncompensated time

The resource projections reflected on the financial Form 533 or the Job Order Status Report originate from the in-house Computer Sciences Corporation Resource Expenditure Forecast. Each Computer Sciences Corporation department maintains the Resource Expenditure Forecast as a working reference for weekly or biweekly status tracking.

7.0 TERMS USED IN WORK MANAGEMENT

Some of the terms and paperwork processes often mentioned in Job Order resource reviews or work management activity are defined here for convenience.

7.1 Baseline Document--A reference document that becomes the foundation for additional development or work effort. Includes the Detailed Requirements Document and related Program Change Requests amended by Configuration Management Board meeting minutes. The Detailed Requirements Document may incorporate, by specific reference, certain computer system or software documents which also become a part of the "baseline." The Work Control Plan is also considered to be a baseline document for the work area covered in the document.

7.2 Configuration Management Board--A review board designated by Data Systems and Analysis Directorate management for the purpose of reviewing selected projects or activities. The Configuration Management Board controls the activity or software and hardware system configuration through control of the baseline documents that define the system.

7.3 Deliverable Items--Specific items required by a Job Order to be delivered to the Data Systems and Analysis Directorate; e.g., studies, planning documents, technical reports, specifications, manuals, computer software, hardware, equipment operation, maintenance, services, etc.

7.4 Functional Design Specification--The document that defines how a proposed software and/or hardware system will satisfy requirements from an overall system design standpoint.

7.5 Detailed Requirements Document--The document that defines specific user needs of a proposed hardware or software system; the requirements document specifies what the proposed system must do.

7.6 Detailed Design Specification--The document that defines the design of a proposed software and/or hardware system to the lowest program component level.

7.7 Documentation Types--Documentation required for completion of a task will be specified either by the Contract, Job Order, or Task Order that generates the requirement and is classified according to the following three types:

- a. Type 1 shall be submitted to the Data Systems and Analysis Directorate for written approval and will not be distributed until approved. Type 1 documentation shall be prepared in close coordination with Data Systems and Analysis Directorate. Preliminary draft information will be provided as developed and available.
- b. Type 2 shall not require Data Systems and Analysis Directorate approval, but shall be submitted for coordination, surveillance, and information.
- c. Type 3 shall be retained by the contractor and made available to Data Systems and Analysis Directorate upon request.

7.8 Program Change Request--The document through which NASA directs or authorizes a change to the system.

7.9 Work Control Plan--A document developed for either level-of-effort or development type Job Orders, and defines the work, management, resources, deliverables, and controls to be used in the defined set of work elements. The Work Control Plan is the baseline document(s) for Job Order status review.

7.10 Resource Request/Control Forms

- a. Form 362 defines a user requirement for Institutional Data Systems Division computer or manpower related resources.
- b. A Form 12 is an Institutional Data Systems Division record used to specify required funds in the Program Operating Plan budget process by unique fund source.

Both forms submit requirements at a Branch Task Number level.

- c. Project Number--The lowest level at which resources are recorded.

7.11 Work Order--A general term related to work assignment within the scope of an approved contract, either a Job Order or a Task Order.

7.12 Job Order--A document that defines a specific work assignment within the scope of an approved contract.

7.13 Task Order--A document that defines a specific work assignment within the scope of an approved Job Order.

7.14 Test Specification--The document that defines how a software and/or hardware system in development will be tested prior to implementation; the test specification generally consists of a test plan and a test script.

7.15 Test Report--The document that describes the results of testing a software and/or hardware system prior to implementation.

7.16 User Documentation--Documents that orient the user to system capabilities and instruct user personnel in correct preparation and submittal of data and interpretation of results.

7.17 Development Project--For purposes of defining work structure and management control techniques, is defined as that systems engineering effort (hardware or software) of a cost magnitude that one elects to employ stringent configuration management and review processes and formal documentation schemes with the attendant cost and schedule implications.

7.18 Level-of-Effort--Defined as that work of an ongoing nature in support of product modification or operations of the computer facility where resources are usually at a fixed level and a priority system is used to define near term work. This work is characterized by less formal configuration reviews and documentation review processes than is experienced in development projects.

APPENDIX A

WORK CONTROL PLAN

(Expanded Outline)

1.0 SCOPE OF WORK

1.1 Work Overview

This section describes briefly the nature and type of work to be performed, e.g., maintenance, production/operations support, software/systems development, provision of only a specified level of effort, etc.; specify whether the work is predominately level-of-effort or end item oriented.

1.2 Task Description

For non-development efforts, specify in this schedule the detailed common understanding of the work to be performed.

1.3 Work Assignment Approach (WCP/TO)

Specify the role of Job Order, Task Order, and Work Control Plan in the assignment of work.

1.4 Background/Requirements Sources

This section describes factors that led to the basic need to initiate the Job Order, i.e., state why the work is being performed, requirements, etc.

1.4.1 Customer Organization

Identifies the organizational element, i.e., the branch and section, within the Institutional Data Systems Division, Ground Data Systems Division, or Mission Planning and Analysis Division that monitors the Job Order. Specifies individual who originates work requests, system requirements, and/or establishes priorities.

1.4.2 User Interface

Identify the ultimate users of the system/services to be provided.

1.4.3 Major Assumptions and Constraints

Identify the assumptions and rationale used in planning the work, e.g., dependency on products of other activities, driving schedules, required inputs, etc., and any constraints placed on resources, approaches, information, etc., that are key to Job Order performance.

1.5 Deliverable Items

1.5.1 Documentation

1.5.2 System Deliverables

1.5.3 Services/Other Products

1.5.4 Reporting Requirements

1.5.4.1 Data Systems and Analysis Directorate Input Requirements

1.5.4.2 Other Organizations' Inputs

This section is a summary identification of everything that is to be delivered in the course of the work effort--system design documents, progress reports, tapes, hardware components, etc.--and everything required from Data Systems and Analysis Directorate or other organizations to accomplish the work.

1.6 Major Milestone Summary

Define end item delivery dates, major reviews (Critical Design Reviews), or critical decision points that tie the Job Order resources and requirements to the Work Control Plan. Branch Task Number and Project Number correlation tables and assignment of numbers are through Institutional Data Services Branch and the Computer Sciences Corporation Program Support Office.

1.7 Resource Accounting Structure

Define the Branch Task Number and Project Number coding structure to be used to report and track resource utilization. Titles are required for Branch Task Numbers, but not for Project Numbers.

2.0 WORK MANAGEMENT TECHNIQUES

This section describes how Computer Sciences Corporation will manage the total effort.

2.1 Management Approach

2.1.1 Organizational Responsibility

Define where work responsibilities are assigned within Computer Sciences Corporation; what line organizations are responsible for performance, identify key people.

2.1.2 Interface with Monitor/User/Other

Define the working interfaces with the various Data Systems and Analysis Directorate organizational elements from whom Computer Sciences Corporation accepts requirements and takes direction (redirection), and to whom Computer Sciences Corporation reports progress/status/problems, etc. Define other contractor or Government interface, such as MITRE or Univac. Define internal Computer Sciences Corporation interface, especially between departments.

2.1.3 Control Approach

Define the means by which Computer Sciences Corporation and Data Systems and Analysis Directorate will monitor and control the work effort, e.g., periodic

status meetings, written reports, design reviews, internal Computer Sciences Corporation Job Order reviews, etc. Define the tools to be used, i.e., milestone charts, pert diagrams, etc. Define the approach to maintaining the Work Control Plan itself, or the separate control mechanisms/techniques to be used to status the work.

2.2 Work Breakdown Structure/Technical Approach

Identify how work has been subdivided into subprojects, subsystems, contracts, tasks; include description of any subdivision of work required either for management control or cost accounting. [This section is not required if Section 4.0 is prepared for a development oriented Work Control Plan.]

2.3 Quality Assurance Plan

Describe the approach used to assure quality and integrity of all delivered products and/or services under the Job Order; specify utilization of the Quality Assurance organization as appropriate. Specify relevant procedures and standards. This section may reference the Quality Assurance Plan.

Where possible this section should include how the Computer Sciences Corporation Department and/or Quality Assurance will measure or determine the quality of the delivered product in an objective or subjective manner. The frequency of product quality measurement should be related to the milestone chart. Define what constitutes customer acceptance for each deliverable, or specify at which milestone event such a determination can be made.

2.4 Configuration Management Plan

Either by reference or by inclusion this section should describe how system configuration control is accomplished.

2.4.1 System Baseline

2.4.2 Baseline Description

2.4.3 Change Control

3.0 SYSTEM DESCRIPTION

This section is intended to have one of two possible orientations: describe briefly (and within the limits of knowledge at the time written) the system to be developed; or describe the existing system to be maintained, operated, or modified.

3.1 System Overview

In general terms describe the total system including hardware, software elements as well as any people or procedural elements integral to the "system"; include a simplified block diagram of the system.

3.2 Hardware Subsystems

3.3 Software Subsystems

3.4 Operational/Production Concept

State how system will be used to perform its intended role for the ultimate user.

4.0 DEVELOPMENT APPROACH

4.1 Development Methodology

Primary purpose here is to layout the development process that will be utilized with Part IV, Program Management Plan, serving as the guideline--phases required, Pre-Project Implementation Plan; requirement definition, etc., special tool and/or testing developments required as ancillary support to system development, make or buy decision points, etc.--it is envisioned that a minimal of verbiage plus a good chart that time phases all activities, reviews and deliverables will describe the "methodology"--do not discuss detailed technical approaches and tradeoffs which are reserved for the various design documents.

4.2 Development Review Activity

A summary description of all review activities--these are basically the discrete events that punctuate the end of the phases of development, e.g., Preliminary Design Reviews, Critical Design Reviews, etc.--these will be shown on the "development cycle" chart in above section and tracked by the Master Milestone Schedule (Section 6.0). This section additionally describes who attends, who chairs the reviews, and the procedures and concurring authority for handling discrepancies (Review Item Dispositions) to the reviews.

5.0 RESOURCE CONTROL

5.1 Resource Expenditure Planned

Labor, travel, and materials as budgeted and planned by the Resource Expenditure Forecast and authorized by the Job Order--the actual Resource Expenditure Forecast form(s) should be maintained in this section for each appropriate work breakdown element identified in Sections 2.2 or 4.0.

5.2 Resource Expenditures Actual

Summary of actual manpower and materials expenditures; utilize the Job Order Status Reports and/or the NASA Form 533s--actual reports should be maintained in this section along with a graph showing planned versus actual expenditures. The Technical Manager's Representative and Department Manager will specify status control techniques to be used.

5.3 Estimating Methodology

Explain the methods or techniques used to estimate required resources.

6.0 MASTER MILESTONE SCHEDULE

6.1 Integrated Schedule

6.2 Subsystem/Work Element Schedules

6.3 Change History Log

Change history should be represented on a set of charts that reflect all initial and revised dates for the deliverables identified in Sections 1.0 and 4.0 above, with appropriate coding to show a distinction between planned and actual dates; additionally, this section should document reasons and authority for any major deliverable schedule revisions requiring Data Systems and Analysis Directorate concurrence.

NOTE: Based on Technical Manager's Representative agreement, Sections 5.2 and 6.3 may be reported by control and status techniques separate from the Work Control Plan. The method selected will be defined in the Work Control Plan.