9. ARCHIVE STAGE

9.1. Overview. The Archive stage is the end of the system life cycle. The activities of this stage ensure the orderly termination of the system, and preserve vital information about the system so that some or all of it may be reactivated in the future if necessary. Particular emphasis is given to proper preservation of the data processed by the system, so that the data is effectively migrated to another system or archived for potential future access. The most significant activities of this stage include:

- Preparing a Disposition Plan addressing how the various components of the system (software, data, hardware, communications, and documentation) are to be archived or transferred to other systems.

- Establishing permanent archival storage of the data (and/or transferring the data to another system), and of software essential to access the data in the future.

- Preparing a System Disposition Report, noting the actual disposition of all system components so that they may be easily found in the future, if needed.

The Archive stage preserves information not only about the current production system, but also about the evolution of the system through its life cycle. In conducting the Archive stage, several items are of particular note:

- All known users should be informed of the decision to terminate operation of the system before the actual termination date.

- Although the current system may be terminated, in many cases the data will continue to be used through other systems. The specific processing logic used to transfer the data to another system is developed as part of the data conversion planning for that system.

- In some instances, software may be transferred to a replacement system. For example, a component of the current system may become a component of the replacement system without significant rewriting of programs.

- Effective reactivation of the system in the future will depend heavily on having complete documentation. It is generally advisable to archive all documentation, including the life cycle products generated during the earliest stages of the life cycle (e.g., System Concept), as well as the documentation for users and for operation and maintenance personnel.

9.2 Detailed Description. A detailed description of the Archive stage is presented in the following exhibits:

Exhibit 9-1	Archive Stage Overview
Exhibit 9-2	Archive Stage Objectives
Exhibit 9-3	Archive Stage Decisions
Exhibit 9-4	Archive Stage Activities
Exhibit 9-5	Archive Stage Roles and Responsibilities
Exhibit 9-6	Product: System Disposition Report
Exhibit 9-7	Product: Project Management Plan
Exhibit 9-8	Product: Data Management Plan

Outlines of all products are presented in Appendix B.

Several products of the Archive stage are listed in Exhibit 9-1, but are not described in detail. They are:

Product	Contents
Archived/Incorporated Data	A copy of the final version of the Production Data Base (see Exhibit 6-7)
Archived/Incorporated Software	A copy of the software portions of the final version of the Production System (see Exhibit 6-6)
Archived/Incorporated Life Cycle Products	Copies of the final versions of all other life cycle products.

EXHIBIT 9-1: ARCHIVE STAGE SUMMARY

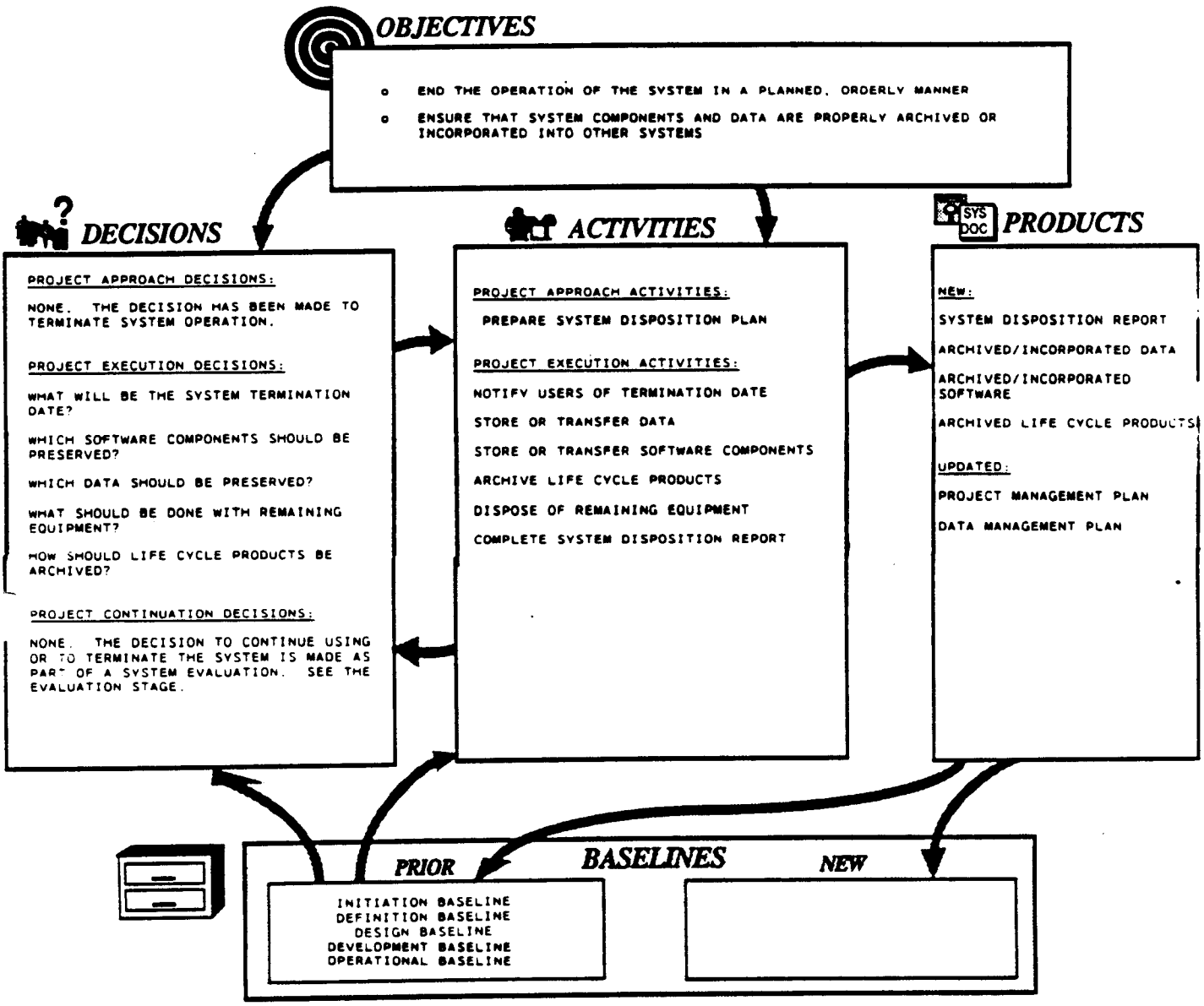

EXHIBIT 9-2: ARCHIVE STAGE OBJECTIVES

OBJECTIVE NAME	OBJECTIVE DESCRIPTION
End the operation of the system in a planned, orderly manner	At the end of this stage, the system will no longer exist as an independent entity. The completion of the system life cycle is carefully planned and documented to avoid disruption of the OSWER programs that use the system, or of other systems that will use the data and/or software of the present system.
Ensure that system components and data are properly archived or incorporated into other systems	The software, hardware, and data of the current system are disposed of in accordance with program needs. Software or data of the current system may be transferred to other existing systems, migrated to an entirely new system implemented to solve the information management problem for which the old system was developed, or archived for future use. Hardware is made available for use by other systems or is disposed of as excess equipment. Even if the program functions supported by the system are being terminated, and the data is not needed at present, archiving is performed to enable use of the software and/or data for unforeseen future needs, and to ensure effective disposition of hardware resources.

EXHIBIT 9-3: ARCHIVE STAGE DECISIONS

DECISION NAME	DECISION DESCRIPTION
	Project Execution Decisions:
What will be the system termination date?	Determines the date after which the system will no longer be available to the users.
Which software components should be preserved?	Identifies processing performed by the system which is essential to system operation and is not duplicated by other systems, and which should be archived for potential future use. Software to be archived may include communications and systems software as well as application software. This identification includes a consideration of any statutory or regulatory requirements for preserving the system, particularly for systems that support the development of program policy, guidance, and or regulations.
Which data should be preserved?	Identifies unique data which were essential to the operation of the system and must be archived to support potential future reactivation of the system. Includes consideration of any statutory or regulatory requirements for preserving the data processed by the system, particularly for systems that process data used to develop program policy, guidance, or regulations, or which contain financial data.
What should be done with remaining equipment?	Identifies equipment used exclusively by this system, and determines whether each item should be provided to another system, stored for future use, added to surplus, or discarded.
How should life cycle products be archived?	Identifies the life cycle products which are to be preserved, access requirements, period for retention, and the media and locations in which they are to be stored. Includes consideration of retention schedules for OSWER records.

EXHIBIT 9-4: ARCHIVE STAGE ACTIVITIES

ACTIVITY NAME	ACTIVITY DESCRIPTION	RESULTS CONTAINED IN:
	Project Approach Activities:	
Prepare system disposition plan	Determine how the various components of the system should handled at the completion of operations, including software, data and hardware. Note requirements for future access to the system, if any.	Project Management Plan Data Management Plan System Disposition Report
	Project Execution Activities:	
Notify users of termination date	Notify all known users of the system date of the planned date after which the system will no longer be available.	System Disposition Report (and Memoranda)
Store or transfer data	Copy data to be archived onto permanent storage media, and store media in location designated by disposition plan. Work with the project teams for other systems to effect a smooth transfer of data from current system to these systems.	Archived/Incorporated Data
Store or transfer software components	Copy software onto permanent storage media, and store media in location designated by disposition plan. (Software to be stored may include communications and systems software as well as application software.) Work with the project teams for other systems to ensure effective migration of current system software to be used by these systems.	Archived/Incorporated Software

EXHIBIT 9-4: ARCHIVE STAGE ACTIVITIES (Continued)

ACTIVITY NAME	ACTIVITY DESCRIPTION	RESULTS CONTAINED IN:
	Project Execution Activities (Continued):	
Archive life cycle products	Store other life cycle products, including system documentation, in archive locations designated by disposition plan.	Archived Life Cycle Products
Dispose of remaining equipment	Dispose of equipment used exclusively by this system in accordance with disposition plan.	--
Complete System Disposition Report	Update system disposition report to reflect actual disposition of data, software and hardware.	System Disposition Report

EXHIBIT 9-5: ARCHIVE STAGE ROLES AND RESPONSIBILITIES

	ROLES AND RESPONSIBILITIES					
ACTIVITIES	OSWER PROGRAM MANAGEMENT	OSWER PROGRAM STAFF	PROJECT MANAGEMENT	PROJECT STAFF	QUALITY ASSURANCE	PROCUREMENT
PREPARE SYSTEM DISPOSITION PLAN		SUPPORT	LEAD/ PERFORM	SUPPORT	REVIEW	
NOTIFY USERS OF TERMINATION DATE		SUPPORT	LEAD	PERFORM		
STORE OR TRANSFER DATA		SUPPORT	LEAD	PERFORM		
STORE OR TRANSFER SOFTWARE COMPONENTS		SUPPORT	LEAD	PERFORM		
ARCHIVE LIFE CYCLE PRODUCTS		SUPPORT	LEAD	PERFORM		
DISPOSE OF REMAINING EQUIPMENT	REVIEW	SUPPORT	LEAD	PERFORM		
COMPLETE SYSTEM DISPOSITION REPORT			LEAD/ PERFORM	SUPPORT	REVIEW	

EXHIBIT 9-6: SYSTEM DISPOSITION REPORT

SUMMARY DESCRIPTION

The System Disposition Report describes the rationale for ceasing system operations, documents the plan for ceasing operations and effectively archiving the various components of the system, and provides information about the location of archived materials. This report is vital to ensure that information about the system can be accessed to support reactivation of the system, or future reuse of portions of the current system by other systems.

TOPICS

- o Introduction
  - -- Purpose of this document
  - -- References to related documents
- o Description of system
  - -- System objectives
  - -- System users
  - -- Overview of system structure
- o Rationale for ceasing operation
  - -- Events leading to cessation of operations
  - -- Effective date of cessation
  - -- Identification of successor systems
- o Requirements for future access
  - -- Access to software
  - -- Access to data
  - -- Access to life cycle documentation
- o Disposition plan
  - -- Data disposition
    - - Media
    - - Storage location (including names of directories, files, etc.)

EXHIBIT 9-6: SYSTEM DISPOSITION REPORT (Continued)

-- Software disposition

- Media
- Storage location (including names of directories, files, etc.)

-- Documentation disposition

- Media (e.g., hardcopy, word processing diskette)
- Storage location

-- Hardware

o Archive results

-- Data
-- Software
-- Hardware

EXHIBIT 9-7: PROJECT MANAGEMENT PLAN

SUMMARY DESCRIPTION

The Project Management Plan is updated and refined at the start of the Archive stage to direct project activities until the system ceases operation. The Project Management Plan is largely complete prior to this stage, with new materials relating to the disposition of system components and data. Some topics (e.g., security approach, maintenance approach) are summarized in the Project Management Plan, and presented in greater detail in other life cycle products. Underlined items are added to the Project Management Plan for the first time during this stage; other material was initially developed during earlier stages, and is refined as appropriate during Archive.

TOPICS

- o Project charter/objectives
  - -- Project identification (incorporate Initiation Decision Paper by reference)
  - -- Mission and objectives
  - -- Scope of information management problem/project
- o Life cycle adjustment
  - -- Consolidation of phases and stages, if any
  - -- Partitioning of project/system into major work packages, modules, etc. with different timing through the life cycle
- o Project team organization
  - -- Project management structure
    - Manager assigned: individual, current organization, authority
    - Boards, committees, or other project management participants
    - Changes or additions for Operation phase
  - -- Project team organization
    - Structure and roles
    - Participating organizations
    - Staffing plan (including internal staff and use of contractors)
    - Changes or additions for Operation phase

EXHIBIT 9-7: PROJECT MANAGEMENT PLAN (Continued)

- -- Other organizations to be notified of major project events (non-participants in project team)

- o Project budget (broken out by stage)
  - -- EPA staff
  - -- Contractor services
  - -- Equipment acquisition
  - -- Hardware maintenance
  - -- Site preparation
  - -- Packaged software acquisition
  - -- Supplies
  - -- Timeshare
  - -- Other
  - -- Cost-accounting methodology

- o Project reviews/quality assurance
  - -- Applicable project review level
  - -- Reviews to be conducted (by stage)
  - -- Organization/individuals for each review
  - -- Review schedule

- o Applicable project approvals
  - -- Project approval level
  - -- Specific approvals to be obtained (by stage)
  - -- Approval organization and individuals
  - -- Approval schedule

- o Benefit-cost analysis (summary, transferred from other life cycle products)
  - -- Methodology and assumptions
  - -- Benefits
    - - Programmatic
    - - Annual monetary
    - - System life
  - -- Costs
    - - Nonrecurring
    - - Recurring
    - - Annual
    - - System life
  - -- Payback period
  - -- Sensitivity analysis

- o Methodologies and tools
  - -- Methodologies (non-automated)
    - - For Concept phase
    - - For Definition stage
    - - For Design stage
    - - For Development stage
    - - For Implementation stage
    - - For Production stage
    - - For Evaluation stage
    - - For Archive stage

EXHIBIT 9-7: PROJECT MANAGEMENT PLAN (Continued)

-- Automated tools/software packages

- For Concept phase
- For Definition stage
- For Development stage
- For Implementation stage
- For Production stage
- For Evaluation stage
- For Archive stage
- Support required (if any) for use of tools

o Workplan

-- Concept Phase
-- Definition Stage
-- Development stage
-- Implementation stage
-- Production stage
-- Evaluation stage
-- Archive stage
- Activities and related tasks
- Products
- Schedule by task and product
- Staff and contractor assignments
- Level of resources for each task and/or product
- Task relationships/dependencies
- Schedule of reviews and approval
- Performance/progress reporting
- Notification

o Procurement approach

-- Resources to be acquired through existing contracts

- OSWER contracts
- Other agency contracts

-- Resources to be acquired through new procurements

- OSWER vehicles
- Other Agency vehicles
- Schedule for each procurement
- Workplan for each OSWER procurement
- Procurement assistance individuals for each procurement

o Configuration Management Plan

-- Configuration manager (organization and individual)

-- Change Control Board

- Participants (organizations and individuals)
- Modification request/approval process

-- Procedures/methods for configuration identification and accounting, software control, audits

-- Configuration management documentation: identification and location of existing CM logs, and official existing baseline contents

EXHIBIT 9-7: PROJECT MANAGEMENT PLAN (Continued)

- o Documentation standards: Standards to be used for each life cycle product
- o Security approach
  - -- Summary of security requirements (reference other life cycle products)
  - -- Security organization (if applicable)
  - -- Hardware and facilities measures
  - -- Software and communications measures
  - -- Data base security
  - -- Procedural measures
- o Conversion approach
  - -- Overview
    - - Data identification
    - - Current data location
    - - Organizations to accomplish conversion
  - -- Manual data to be converted
    - - Sources
    - - Procedures
    - - Error conditions to be corrected
  - -- Automated data to be converted
    - - Sources
    - - Procedures
    - - Error conditions to be corrected
- o Installation approach: Schedule for installing each separately-installed system module
  - -- Dates and times, by module and location
  - -- Special conditions
  - -- Personnel to accomplish installation, and/or on call
- o User support approach
  - -- Training activities
    - - Materials to be prepared
    - - Sessions, schedules, and participants
  - -- Ongoing user support (hotline, etc.)
- o Maintenance approach
  - -- Maintenance support organization
  - -- Release management procedures
  - -- Planned maintenance releases
- o Operation approach
  - -- Organization of operation support activities
  - -- Reference to Operation Manual

EXHIBIT 9-8: DATA MANAGEMENT PLAN

OSWER System Document

SUMMARY DESCRIPTION

The Data Management Plan reflects the project's data management approach. As the project progresses through the life cycle, additional information is added to this plan, and existing information is modified to reflect the current approach. Some topics (e.g., entity definitions, logical data model) are summarized in the Data Management Plan, and presented in greater detail in other life cycle products. Underlined items are added to the Data Management Plan for the first time during this stage; other material was initially developed during earlier stages, and is refined as appropriate during Archive.

TOPICS

- o Information need
  - -- Document the information need
  - -- Missions supported
  - -- Scope of the need
- o Data steward organizations
  - -- Lead organization responsibilities
  - -- Other organizations' roles
  - -- Data definers for the project
- o Concept phase
  - -- Entity list
  - -- Entity definitions
  - -- Entity identifiers
  - -- Conceptual data model
  - -- Likely sources of data
  - -- Information flow/data model validation
  - -- Data distribution plan
  - -- Information collection burden
- o Definition stage
  - -- Interview plans
  - -- Data analysis by process
  - -- Entity normalization
  - -- Conceptual data model revision
  - -- High-level data requirements revision
  - -- Logical data model
  - -- Requirements Data Dictionary
  - -- Data flow/logical model validation

EXHIBIT 9-8: DATA MANAGEMENT PLAN (Continued)

- Design stage
  - -- Logical data model revision
  - -- Physical data base design
  - -- Design Data Dictionary
- Development stage
  - -- Data structures for programming support
  - -- Data (structure) revision approach
  - -- Data backup, logging, and recovery plans
- Implementation stage
  - -- Testing support (see Testing Support Plan)
  - -- Cutover plans
  - -- Production Data Dictionary
- Production stage
  - -- Data base and metadata management
  - -- Support of configuration management
  - -- Backup, recovery, and restart
  - -- Role of the custodian
- Evaluation stage
  - -- Audit and evaluation support plan
  - -- Response to evaluation report
- Archive stage
  - -- Data base data definition language and metadata disposition
  - -- Data disposition
  - -- Cutover procedures
- Data documentation responsibilities
  - -- Creating data documentation
  - -- Maintaining existing data documentation
- Data quality assurance plan
  - -- Responsible organization
  - -- Milestones and staffing
  - -- Data quality objective monitoring plan
- Data security requirements and strategy
  - -- Sensitive data
- Data life cycle methodologies and tools
  - -- Metadata management approach
  - -- Development & Installation phase
  - -- Data management software
  - -- Operation phase
- Data conversion strategy
- Data conversion plan
  - -- Sources
  - -- Media
  - -- Load programs required
  - -- Schedule and staffing
  - -- Validation

EXHIBIT 9-8:
DATA MANAGEMENT PLAN (Continued)

- o Plan for physical flow of data
- o Data testing strategy
- o Testing support

  - -- Kinds of test data bases required
  - -- Test data provision
  - -- Performance validation plan
  - -- Responsible organization
  - -- Projected testing support needed