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Page 1 of 1

1. EDT

142981

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) Engineering Technology	4. Related EDT No.:
5. Proj./Prog./Dept./Div.: LABCORE/LABCORE/Engineering Technology/Information Systems	6. Cog. Engr.: N/A	7. Purchase Order No.: N/A
8. Originator Remarks: N/A	9. Equip./Component No.: N/A	
		10. System/Bldg./Facility: LABCORE/EDRTS
11. Receiver Remarks: N/A	12. Major Assm. Dwg. No.: N/A	
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 08/31/94

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Desig- nator	Reason for Trans- mittal	Orig- inator Dispo- sition	Receiv- er Dispo- sition
1	WHC-SD-WM-CM-002		0	Configuration Management Plan for LABCORE Program	Q	1		

16. KEY			
Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)	
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

(G)	(H)	17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)								(G)	(H)
Reason	Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	Reason	Disp.
1	1	Cog.Eng. H. S. Rich		8/17/94	5333	IS Manager T. G. Ibsen		8/22/94		1	1
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		Safety									
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18. Signature of EDT Originator Date 8/17/94	19. T. G. Ibsen Authorized Representative Date 9/22/94	20. W. D. Leggett III Cognizant Manager Date 9/22/94	21. DOE APPROVAL (if required) Ctrl. No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
--	--	--	---

RELEASE AUTHORIZATION

Document Number: WHC-SD-WM-CM-002, REV 0

Document Title: Configuration Management Plan for LABCORE Program

Release Date: 1/4/94

**This document was reviewed following the
procedures described in WHC-CM-3-4 and is:**

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

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SUPPORTING DOCUMENT		1. Total Pages ²² 21
2. Title Configuration Management Plan for LABCORE Program	3. Number WHC-SD-WM-CM-002	4. Rev No. 0
5. Key Words Configuration, LABCORE, Software	6. Author Name: H. S. Rich <i>[Signature]</i> Signature Organization/Charge Code 8E700	
<p><i>KMB 1/4/95</i></p> <p>APPROVED FOR PUBLIC RELEASE</p> <p><i>J8E07 LAB</i></p>		
7. Abstract A hardware/software configuration management plan for LABCORE. LABCORE is a laboratory information management system used by Analytical Services.		
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9. Impact Level Q		

**CONFIGURATION MANAGEMENT PLAN FOR
LABCORE PROGRAM
WHC-SD-WM-CM-002**

Prepared by:

H. S. Rich

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DEFINITIONS and MNEMONICS

DEFINITIONS

Baseline a document or set of documents formally designated and fixed at a specific time during the life cycle of a configuration item. This is an administrative concept.

Boeing Computer Services Richland (BCSR) is a subcontractor to the Westinghouse Hanford Company. BCSR performs the Information Resource Management tasks.

Computer Software Listings (CSWL) are source code listings containing the software programs in standard program language (e.g., C, scripts, FORTRAN). The Project will use "CSWL" to refer to the source code listings and as part of the document number listed by Document Control. Also called "Software/Code Listings."

Configuration Item (CI) CI is the basic unit of software configuration management. A CI is defined as a collection of software elements treated as a unit for the purposes of configuration management.

Extension Programs and Scripts are executable programs not written by the vendor that enhance MULTI LIMS functionality.

Hanford Local Area Network (HLAN) is a local area network on the Hanford Site.

Information Resource Management (IRM) is a division of Westinghouse Hanford Company that is run by Boeing Computer Services Richland (BCSR), Inc.

Information and Scientific Systems (ISS) is an organization of BCSR that provides support and personnel for development and maintenance of information and scientific computer systems.

Quality Affecting Record or Quality Assurance Record is "information contained on any media, including, but not limited to, hard copy, sample material, photo copy, and electronic systems that is complete in terms of appropriate content and furnishes evidence of the quality of items and/or activities affecting quality." (Document Control and Records Management Manual, Quality Assurance Records (WHC-CM-3-5, Section 9))

Quality Affecting Software is software that has been confirmed to comply with specified requirements (WHC-CM-4-2, Section QR 19.0) in an operation or production environment.

Quality Assurance (QA) is the systematic actions necessary to provide adequate confidence that a material, component, system, process, or facility performs satisfactorily, or as planned in service.

Quality Assurance Record see Quality Affecting Record.

Release the issuance of all software configuration items inclusive of all changes to this point. All documentation and code is re-baselined at this point.

Software Configuration Status Accounting The process of recording and reporting the information needed to manage a configuration effectively. This information typically includes a listing of the approved configuration identification, the status of proposed changes to the configuration, and the implementation status of approved changes. One of the four defined components of Software Configuration Management.

Software Life Cycle The period of time that starts when a software product is conceived and ends when the product is no longer available for use. The software life cycle typically includes a requirements phase, implementation phase, test phase, installation and checkout phase, operation and maintenance phase, and sometimes, retirement phase. The documentation items that accompany these phases are referred to as "Life Cycle Documents".

AIX is the operating system for the project.

Update an emergency change made to a configuration item (source code module) and other identified documentation.

Version an initial release or re-release of a computer software configuration item or items having identified changes effected and tested.

Westinghouse Hanford Company (WHC) is the current site operations contractor for the Hanford site.

TERMS

ACL	Analytical Chemistry Laboratories operated by PNL (also called 325)
AS	Analytical Services
CR	Change Request
CR/PR	Change Request/Problem Report
LAB	Laboratory Advisory Board
LABCORE	Name of the AS laboratory automation project
LCB	LIMS Change Board
LIMS	Laboratory Information Management System
POC	Point of contact
PNL	Pacific Northwest Laboratory
WHC	Westinghouse Hanford Company

1.0 INTRODUCTION

1.1 PURPOSE

This document, the Software Configuration Management Plan (SCMP), describes the configuration management activities for the LABCORE, which has an "Approval Designator" of Q. The LABCORE project supports Westinghouse Hanford Company (WHC) Analytical Services (AS) and Pacific Northwest Laboratory (PNL) Analytical Chemistry Laboratories (ACL) in the management, sample analysis, and reporting of analytical data.

The purpose of this document is to provide a basis for Software Configuration Management to the LABCORE project by:

- Minimizing failures due to conflicting system configuration
- Minimizing the expenditure of resources on non-priority projects.

1.2 SCOPE

1.2.1 SOFTWARE

The scope begins with the data source (either the digital output of a supporting electronic system or manual data entry) and ends when the data is archived or otherwise stored. This plan covers the management of LABCORE data from its inception to its final disposition. Specifically, this configuration management plan will concern itself with the identification and control of the databases, software life cycle items, source code, libraries and all other pertinent configuration items (CI's) within the system.

The configuration control process applies to all staff associated with development, design, and operational support of the system. This includes WHC/AS, BCS Richland Inc. (BCSR)/Information Resource Management (IRM), PNL/ACL and all vendors or support organizations under WHC/AS, BCSR/IRM, PNL/ACL management.

The LABCORE server(s) supporting PNL/ACL (hardware and software) is included within the scope of this configuration control plan. Control of workstations and development of their software extensions will be addressed under their internal procedures.

The LABCORE software is based on MULTI LIMS Laboratory Information Management Software from Advance System(s) Management Incorporated. This plan governs the configuration control of application software programs, MULTI LIMS base tables, database, and supporting documentation. Software includes extension programs and scripts to MULTI LIMS. The extension software source code will be kept under configuration control per this plan.

1.2.2 HARDWARE

The LABCORE hardware consists of a server configuration. Each laboratory has a server(s) and software. The servers are connected via a Fiber Distributed Data Interface (FDDI) Ring. Multiple workstations are connected

to each server. Configuration control is only maintained on each workstation for LABCORE files.

1.3 OVERVIEW

The LABCORE system provides data collection, quality assurance checking, analysis results reports, analysis results archival, and management status reports for the laboratories. The system is directed through AS Engineering and Technology Services.

The LABCORE system is composed of the following functional hardware and database systems. These elements work together in a distributed computing environment.

- 222S Laboratory Production System
- Waste Sampling and Characterization Facility Production System
- ACL Production System
- Data Repository system
- Development system
- Testing system
- User training system(s)
- A program management system (future)
- Dedicated HLAN sub-network

Several FDDI rings include

- Internal dual FDDI rings between LABCORE servers
- Laboratory Information Management System (LIMS) 200 West Area dual ring

Ring to ring routers.

Ring to Ethernet¹ routers.

- Approximately 180 workstations which consist primarily of IBM²-PC compatible 486-33, and AST /33 Premmia running DOS³ and Windows⁴.

¹Ethernet is a trademark of Xerox Corporation.

²IBM is a trademark of International Business Machines Corporation.

³DOS is a trademark of Microsoft Corporation.

⁴Windows is a trademark of Microsoft Corporation.

A copy of the operating and LIMS software is located on each server. The specific laboratory LABCORE server's base tables are configured independently to meet each laboratory's needs. The development software is configured with each laboratory's base table information. There is a test environment setup on the testing server for system testing. The laboratory users will only utilize the software on the laboratory production servers.

Changes to the software or hardware on all servers are made by approving a "Problem Report/Change Request" (PR/CR), as required by the appropriate procedure or instruction.

The software environment that exists for most LIMS applications is illustrated below.

Laboratories have multiple servers working in a distributed environment.

** Note that between each software component shown above, one or more operating systems and LAN segments (including routers) may exist.

⁵INGRES is a trademark of Computer Associates.

2.0 MANAGEMENT

2.1 ORGANIZATION

There are many types of organizations relative to this SCMP: customer, and performing organizations. Supporting organizations are part of the performing organization. No distinctions will be made by company, only by job function.

The customer organization base will grow as new sample types are incorporated into the project. This means there will be a variety of customers interfacing with LABCORE; the complete customer user base is unknown.

These customer organizations fall into the following categories:

- Users who originate the data (e.g., automatically from another computer system or manually entered)
- Users who check the data for inconsistencies
- Users who analyze the data
- Users who retrieve the stored or archived data.

As new customers are identified, they will be allowed representation through the Laboratory Advisory Board (LAB).

2.2 RESPONSIBILITIES

2.2.1 ORGANIZATIONAL RESPONSIBILITIES

The LAB is chaired by the AS Manager of Engineering and Technology Services or delegate. The other members will consist of managers or senior staff from the customer organizations. The members are responsible for:

- Prioritizing major change activities dependent upon
 - business needs
 - budget restraints
 - resource allocation
- Resolving laboratory computer issues regarding LABCORE development.

The LCB is chaired by the Systems Operations Manager. The other members consist of personnel representing the laboratories and LABCORE development activities. The LCB is organized to perform two objectives:

- Provide a controlling mechanism that furnishes timely response to customer's immediate needs
- Provide a mechanism for technical review of changes that may affect more than one system, cause a disruption to system operations,

disrupt LIMS administration, or impact LABCORE development activities.

The LCB consists of a point of contact (POC) from the following disciplines:

Technical Discipline

POC

Development

Development Project Engineer

Vendor/System Test

Hardware/Operating System/Utilities

Systems Operations Mgr.

Workstations
- Printers

Systems Operations Mgr.

Host Machines
- Backups

Systems Operations Mgr.

Production

Laboratory Operations Manager

Training

Laboratory Operations Manager

User Acceptance

Laboratory Operations Manager

Telecommunications/Network

Systems Operations Mgr.

Facilities

Systems Operations Mgr.

Physical/Information Security

Systems Operations Mgr.

Applications

LIMS Administrator

The roles and responsibilities of the POCs are (Organizational chart in Appendix A):

- Discuss all aspects of proposed changes for technical feasibility and impact
- Ensure proposed changes have minimal disruption to the users
- Ensure changes are consistent with the priorities established by the LAB
- Provide input to the chair of the LCB to approve, defer, or reject the proposed changes.

Information Systems functional organization is governed by the Information System Manager. The Development Project Engineer and the System

Operations Manager report to the Information System manager. Development personnel consisting of WHC, BCSR and contract personnel report to the Development Project Engineer. Development activities requested from the vendor are coordinated through the Development Project Engineer.

It is the Information System managers function to oversee development, laboratory operation activities, and is responsible for approval, budget, personnel, schedule, and resource utilization.

The Development Project Engineer directs the development team in work assignments, is responsible for the design, coding implementation, testing, overall quality of the applicable software, and serves as the primary point of contact between the customer and the performing organization. The software engineer(s) reporting to the Development Project Engineer is responsible for the design, coding and unit testing of the software, and revision of documentation.

The Laboratory Operations Manager is responsible for directing daily database operations. A LIMS administrator from each system reports to the Laboratory Operations Manager. The LIMS administrator is responsible for the base table configuration for the system.

The System Operations Manager is responsible for oversight of the following activities:

- Overall operation of the computer systems and the associated network
- Point of contact for the LCB
- Buyers technical representative for the LABCORE contract
- Point of contact for sustaining daily system operation support (hardware, operating system, backups)
- Facility operations and maintenance.

The database administrator(s), and system administrator(s) report to the System Operations Manager.

2.2.2 Configuration Identification Responsibilities

The Configuration Items (CI's) that make up LABCORE must be identified and enumerated in order to be controlled. The identification of the CI's is the responsibility of the Development Project Engineer, and the Systems Operations Manager. Such identification is agreed upon by the performing organization. If specific versions of the software are to be preserved all CI's belonging to the version must be uniquely associated with that version for later recall.

If software is vendor supplied the vendor must supply a current listing of the CI's which make up the system. Initially this list will constitute the production baseline. Subsequent changes and/or release activity will then be to a given baseline.

2.2.2.1 BASELINE

The baseline for the LABCORE software is made up of the programs (source code modules, subroutines, etc.), procedures and life cycle documentation.

Baselines will be established by administrative proclamation. This will occur with the agreement of the LABCORE staff. Once agreed upon the Development Project Engineer (and any designated personnel) will ensure the activity (baselining) takes place. In a mixed environment where both vendor supplied software and in-house software must co-exist, an inclusive baseline will exist. The baseline from the vendor may be merged with the baseline of the locally produced software to produce the latest software version. In this case both environments must be controlled from one baseline to the next.

2.2.2.2 RELEASE

At strategic times during the life cycle of the system new releases will be issued. The LCB must agree on the issuance of the release. A new release will require the software and all applicable documentation to be re-baselined. The Development Project Engineer will be responsible for ensuring the implementation of the release.

The following signatures will be required for the various levels of changes to Configuration Items:

<u>Type</u>	<u>Level</u>	<u>Signature(s)</u>
Emergency fix	Update	LIMS administrator (Customer interface) Development Project Engineer System Operations Manager
Minor release	Version	LIMS administrator(s) Development Project Engineer System Operations Manager
Major release	Release	Customer(s) Development Project Engineer System Operations Manager LIMS Administrator(s)

2.2.2.3 DOCUMENTATION

The Development Project Engineer and the Systems Operations Manager, or other designate(s) will be responsible for identifying the CI's which make up the system. Such identification will lead to the unique naming of each CI for subsequent retrieval and disposition. The identification of the CI's extends to any vendor software which is being utilized.

2.2.3 CONFIGURATION CONTROL

The Development Project Engineer (or designate) has the responsibility and the authority to ensure all CI's are kept in controlled environments such as a designated library or set of libraries. If the vendor software is involved the designated authority is commissioned to interface with the vendor in the control of software (and changes to such software). The vendor has the responsibility of configuration management of the Vendor supplied software. This is premised on the fact that an agreed upon baseline (from the vendor) is in place and changes to this baseline are the responsibility of the vendor.

This, of course, does not absolve the customer (or the vendor) of the responsibility of controlling what CI's enter into the customers configuration domain.

2.2.3.1 SYSTEM PROBLEM REPORT/REQUEST FOR CHANGE/REQUEST FOR ASSISTANCE

The PR/RFS is the formal medium by which anomalies will be dispositioned and requests for required functionality will be solicited. The PR/RFS (if warranted) must be approved in accordance with the signature authority documented in Section 2.2.2.2. Any person, including the laboratory customers associated with LABCORE may initiate one of these forms. If change request are to vendor software the parties (vendor and customer) must agree on change(s) to be made. That is, an agreement must be reached that the change request is due to an inherent software problem, or constitutes an enhancement to the system.

2.2.4 STATUS ACCOUNTING

At any point in time the status of LABCORE configuration must be discernible. All change activity from a known baseline reflects such status. It is the responsibility of the Operations Manager to know and be able to verify the status of the CI. Various reports will be generated to facilitate timely status accounting. A problem reporting/tracking database exists to provide such status in a timely manner. For vendor supplied software placed in production, the responsibility for status accounting is the Operations Manager.

2.2.5 AUDITS

An audit of the software configuration can occur anytime. It shall be the responsibility of the Operations Manager from a known baseline and status accounting to be prepared for such an audit. When the audit occurs the Operations Manager (or designated individual) shall participate as required.

2.3 INTERFACE CONTROL

2.3.1 COMPUTER SYSTEM INTERFACE

The LCB is the controlling board for interface between LABCORE and the other customer systems. The customer organizations will need to follow the *WHC-CM-3-10* and to provide the following for the development of an addition and/or modification to the system:

- Requirements
- Acceptance criteria.

Without the LAB or the LCB authorization to support the development and maintenance of the project, no work will be performed.

If the customer organization develops software to be placed in LABCORE, that organization must have the following:

- The proper documentation as required by QA (*WHC-CM-4-2, Section QR 19.0, Paragraph 4.6.1*), which is reviewed and approved by the performing organization before it will be incorporated into the system
- The Laboratory Control Board Authorization
- Compliance with this Configuration Control Plan.

The System Operations Manager is responsible for notifying the customer organizations of any project interface changes that affect their operations. For interfaces controlled by other organizations, the project's System Operations Manager and the LCB need to be notified. If there is a change in the interface to LABCORE, these organizations will need to follow LABCORE's change control procedures specified in Section 3.2, Configuration Control.

Any system which LABCORE will interface requires interface control. Should the need occur to interface with other systems the designee's of the involved LCB's will meet to work out the particulars of such an interface.

2.3.2 NETWORK OPERATIONS INTERFACE

Changes to the LABCORE specific portions of HLAN or PC Software Site Standards will be communicated to the project by information notices from the Hanford Technical Review Board (HANTRB) or the Hanford Technical Advisory Board (HANTAG). These requested actions are documented in the Change Request/Problem Report process to evaluate required actions and maintain configuration control in the project.

2.3.3 ADMINISTRATIVE PROCESSES INTERFACE

The project needs to interface with the Cost Account Change Control Board for changes in scope of work to be performed or financial changes. This is the process used to inform and get approval from WHC and DOE-RL to change approved scopes of work or approved funding. The point of contact for the Cost Account is the Cost Account Manager (CAM).

2.4 IMPLEMENTATION

The LABCORE SCMP will be implemented upon the concurrence of all parties involved as to what will constitute the baselined documentation. This agreement will provide hard copy evidence of the baselined LABCORE configuration which provides the basis for implementation. The Vendor Supplied Software CI's are included in the software baseline.

2.5 POLICIES AND PROCEDURES

The project complies with the *Quality Assurance (WHC-CM-4-2, QR 19.0)*, *Software Practices (WHC-CM-3-10)*, *Standard Engineering Practices (WHC-CM-6-1)*, and *Data Administration Standards (WHC-CM-2-6)*.

The *Data Administration Standards, WHC-CM-2-6, Section 4.0, "Data Administration System Review Process"*, will be followed for compliance in data standards during development and before integration into the project. The Operations System Manager will be responsible for reporting to the Data Administration Council. This standard will be followed by the performing organization and customer organizations who develop additions and/or modifications to the system.

Appropriate documentation will be released using the WHC Engineering Data Transmittal (EDT) or Engineering Change Notice (ECN) system and procedures outlined in *Standard Engineering Practices, WHC-CM-6-1, Section EP-1.7, "Engineering Document Approval and Release Requirements"*. In addition, LABCORE documentation will follow any other release requirements for supporting documentation.

A software library(s) will be maintain in accordance with laboratory procedure LC-708-002, *LABCORE Coding Standards*.

3.0 SOFTWARE CONFIGURATION MANAGEMENT ACTIVITIES

3.1 CONFIGURATION IDENTIFICATION

Before CI's can be captured and controlled they must be uniquely identified. The name given the CI and the method of storage/retrieval will depend on the native mode of storage. Source code modules are ASCII text files which can be stored, retrieved and updated by manual and/or automated means, whereas Life Cycle documentation will be created and maintained in a Word Processing environment. Every CI will have a responsible person(s) assigned to place such item under configuration management. The Development Project Engineer will implement a method to relate the identification of files, tables, etc. to the formal, or document based identification scheme.

The LABCORE configuration management approach will allow for the ability to store and retrieve all the Configuration Item's (CI's) in the system. Historical releases, previous baselines and/or archived CI's will be identified, stored and easily retrieved as required. The configuration items will be controlled but allow sharing among authorized user's. Manual or automated systems will be formulated and put in place which will accomplish the objectives.

The Operations Manager will be designated as the Software Configuration Management authority. The configuration identification for this system is made up of all designated and controlled configuration items in LABCORE. This is an itemized list of the code, documents, procedures, etc. which comprise the system and is subject to change, confirmation and audit. This will include an itemized list of all vendor supplied software and documentation.

The configuration for the project is made up of the following:

(a) Software Life cycle documentation.

- 1) Concept Document
- 2) Requirements Scoping Specification (RSS).
- 3) Software Project Management Plan (SPMP).
- 4) Software Configuration Management Plan (SCMP).
- 5) Software Design Description (SDD)
- 6) Software User's Guide(s) (SUG).
- 7) Software test documentation.
 - I. Planning
 - II. Design.
 - III. Procedures.
 - IV. Cases.
 - V. Reporting.

(b) Source code modules - The system application uses a combination of 4GL procedures, SQL and standard development languages.

c) Compilers, libraries, linkers, interpreters and all related system software.

- d) Definitions of user defined fields, database tables, and permission tables within the Ingres environment.

The file organization and file naming conventions will be addressed in a working procedure (LC-708-002, LABCORE CODING STANDARDS) for the laboratory. PNL file organization and file naming conventions will be addressed by their software QA organization.

3.1.2 BASELINES

From a given baseline, changes to various Configuration Items (CI's) must be recorded and controlled. This record will be kept either manually and/or electronically.

Documents such as Life Cycle documentation (requirements, design, etc.) will be maintained by the LABCORE librarian and kept in their proper environment under the control as word processing, graphics, and other commercial products.

At strategic times during the life cycle of the system the LCB will authorize the issuance of a new system baseline. All CI's under the heading of the current baseline will be formally updated, synchronized, and will constitute the new baseline. As stated in Section 3.1.2.2, a major release is coincident with a new system baseline.

At any given time in the life cycle of a software system several baselines will exist. For LABCORE the minimal baselines will be known as the "developmental" and the "production(s)" baselines. The developmental baseline will be the staging/testing area for the changes destined for the production baseline.

At this time in the development of LABCORE a "product baseline" exists. The customer has an agreed upon production environment. All applicable life cycle documentation will be updated to reflect the status of this baseline.

Once all baselined CI's made up of documentation and source code have been synchronized they will be kept in concert. A change to a functional requirement or an additional functional requirement will require changes to be made to the appropriate documentation.

3.1.2.1 DOCUMENTATION

Each software item will be uniquely identified. Such unique identification will facilitate the retrieval of appropriate configuration items. The following list includes such software configuration items:

- Process related documentation (e.g. plans standard or procedures)
- Software Requirements
- Software Design
- Software Test documentation

3.1.2.2 RELEASES

At any given time LABCORE will be in one of three phases:

- (a) Development (Unit Testing) - Software Requirements changes are being incorporated by the developer(s) and the software modules are in unit test mode. Changes are made and tested in the developmental baseline.
- (b) System (System testing) - Changes have been incorporated and are ready for integration testing. Changes are made and tested in the developmental baseline.
- (c) Final release (Formal release to production - User acceptance testing) - formal user acceptance has been completed on the system and the system is ready to be placed into production. After appropriate archiving, the production baseline is replaced by the tested and accepted developmental baseline. For a major release, all documentation is brought up to date and re-issued at this time.

It is the responsibility of the Operations Manager to establish the release version, and update number identifiers. The scheme that is used for LABCORE is discussed in the following paragraphs.

The numeric format of the numbering scheme for tracking the status of configuration items is:

RR.VV.UU

Where:

- RR** - (Release) represents a major release of the software (re-baseline). This is an administrative concept. The LCB and/or key personnel make the decision on baselining.
- VV** - (Version) represents a minor release of the software (group of changes). This is a software engineering decision which, of course, must be approved by the LCB or equivalent authority.
- UU** - (Update) represents emergency fixes to the software.

The major release number "RR" represents an activity that will result in the re-baselining of all appropriate configuration items. All documentation and source code will be brought into synchronization and will be placed into their controlled environments. This activity will have the full authority of the LCB and will constitute the new baseline. The minor release number "VV" represents an activity which brings together a logical group of changes which are tracked, tested and implemented. The update number "UU" represents emergency changes to the software.

The frequency of change(s) is a function of both the number of changes and their criticality to the system. If problem(s) occur which preclude the

successful operation of the system, the problems must be dealt with in emergency mode.

As mentioned in Section 3.1.2, there are two baselines production and developmental. All changes made to the system will be implemented and tested in the developmental baseline. When such changes are complete and ready to be placed into production appropriate backup(s) must be made of the production baseline. From the emergency fix(s), to new release(s) (re-baseline) archival backup will be performed. This is necessary so that the configuration of the system at any time in the life cycle can be re-created.

The backup approach can vary from the automated storage and retrieval to manual backup. The System Operations Manager maintains desk instructions to cover the spectrum of backup possibilities.

3.2 CONFIGURATION CONTROL

A two level configuration management organization will be used to maintain the LIMS configuration. The top level consists of the LAB. Its function is to manage changes from a business and resource priority and to provide strategic direction for LABCORE. The second level organization, the LCB is responsible for the technical configuration management of the system. It is the responsibility of INFORMATION SYSTEMS functional organization to implement the changes.

Software changes will be made by the following individuals or committees:

- The System Operations Manager and Development Project Engineer will determine the initial priority of the PR/FSR.
- The LAB will evaluate major development activities, and prioritize authorized the activities.
- The LCB is will evaluate and approve changes from a technical standpoint.
- Developers will update the version number of the files they produce or modify, and following the procedure for software and documentation as detailed in this plan, or applicable internal procedures or instructions.
- The system database administrator will enforce configuration controls for LABCORE, and updating the version number, and system libraries when changes are installed on the production servers.

During software development for any LABCORE enhancements, changes on the development system will not require a PR/RFS. Configuration control becomes effective when a development activity is complete and ready to move to the testing environment. Problems encountered during testing will be submitted as a Problem Report and Request for Service (PR/RFS) as shown in the Appendix. Software source code module changes will be identified by comments and with

version number updates. All development changes require testing in the test environment prior to installation into the production environments.

After a development task is completed and accepted, it is in the maintenance phase. Changes and fixes to software in production will be handled by PR/RFS.

See Configuration Flow Chart, Figure 1, for further information.

Figure 1. Configuration Flow Chart.

3.3 CONFIGURATION STATUS ACCOUNTING

The status of configuration items/units is recorded according to a documented procedure. Standard report(s) documenting the status accounting activities and the contents of the software baseline will be developed and distributed appropriately. Some examples of such reports are:

- CI listing and definitions
- Change request summary and status.

The problem reporting system provides a listing of historical and pending changes to configuration items.

LABCORE keeps accountability for system creation through the use of logs of file extraction and execution. These logs point to specific files and revisions. When the production system is created, the system configuration report will be produced showing the hardware and software of the target system.

A library directory contains the current source and executable code for the software developed for the project. The Database Administrator controls the addition and modification of the files in this area. All production programs will be traced back to files in this directory. This will provide traceability for what is currently running.

Internal configuration status accounting will be established to monitor changes to the LABCORE system. Changes to approved software will be initiated by PR/RFS. All PR/RFS activity is logged in a hard copy file system and a database to assist with tracking and reporting status. As part of the formal project status reports, open PR/RFSs will be listed.

3.4 AUDITS AND REVIEWS

To assure that changes to documentation as well as the software are documented, Walkthru's and/or Reviews will be performed as documented in the Process Guide (WHC-IP-0941).

3.5 ACCESS CONTROL

3.5.1 Physical Security

Physical access to the LIMS hosts, telecommunications, and network components are controlled. Cipher or key locks are installed where appropriate to limit traffic to those with a demonstrated need for access. Changes to the access methods will be approved through the change control process and implemented by the systems operation manager.

PNL will maintain access and security control of their components and other requirements dictated in their procedures.

3.5.2 Information Security

Information security is the procedural and technical methods utilized to control access to LIMS data. Access to the data will be granted by user access instructions. The following software within LABCORE provides information security:

- AIX provides password protection for logon, and controls the access to files, directories, and devices
- INGRES provides tables and database access control
- MULTI LIMS software will provide access control for allowable users.

WHC/BSCR controls access to the Hanford Local Area Network (HLAN).

3.6 BACKUP AND RECOVERY

Backup and recoveries are performed per LC-718-001, Laboratory ADP System Operations (Kerns 1994). PNL will perform their backup within PNL guidelines.

4.0 TOOLS, TECHNIQUES, AND METHODOLOGIES

No automated tools will be used at this time.

5.0 SUPPLIER CONTROL

Advance Interactive Executive (AIX⁶) and MULTI LIMS software will be controlled as described in 2.2.1 Software Changes. All upgrades of the software will be supplied as electronic tapes, installed and tested in the same manner as newly developed software. ASMI controls the source code copy rights to MULTI LIMS. WHC is responsible for testing upgrades against in-house generated programs for system compatibility prior to installation on the production system.

In the event that ASMI goes out of business, a copy of the source code will be held in escrow, allowing WHC access to the code. All WHC contracted modifications made by ASMI to the source code becomes commercially available to the public.

6.0 RECORDS COLLECTION AND RETENTION

Upon completion of the LABCORE project, records handling will be performed by WHC AS in accordance with standard laboratory procedures. Prior

⁶AIX is a trademark of International Business Machines Corporation.

to project completion, records will be kept in the LABCORE library file. Controlled documents will be handled per Section 3.1, Configuration Identification.

7.0 REFERENCES

Brannan, J. E., 1994, *Process Guide*, WHC-IP-0941, Westinghouse Hanford Company, Richland, Washington.

Kerns, R. E., 1994, *Laboratory ADP System Operations*, LC-718-001, Westinghouse Hanford Company, Richland, Washington.

Newman, B. D., 1994, *LABCORE System Program Management Plan*, WHC-SD-WM-PMP-010, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

Rich, H. S., 1994, *LABCORE Coding Standards*, LC-708-002, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-2-6, *Data Administration Standards*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-3-10, *Software Practices*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-4-2, *Quality Assurance*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-6-1, *Standard Engineering Practices*, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A

LABCORE FUNCTIONAL ORGANIZATION AND FORMS

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LABCORE - FUNCTIONAL ORGANIZATION

LABCORE PROBLEM REPORT AND REQUEST FOR SERVICE

Title:		PR/RFS No.:
Functional Area Reference Information		
Reference #:	Reference Title:	
Author:	Phone:	Date:
Software/Document Identification:		Rev:
Description (Please detail exactly how the problem occurred by giving the exact keystroke sequence used to invoke the problem [if possible]):		
Perceived Priority		
☐ 1 - Emergency ☐ 2 - High Priority ☐ 3 - Medium Priority ☐ 4 - Low Priority		
Fix under warranty ☐ A Fix Not Under Warranty ☐ B Implementation Issue ☐ C		

Assigned Technical Lead:		Date:
Assigned Testing Lead:		Date:
Impact/Risk:		
Disposition:		
Assigned Priority:	Estimated Hours to Resolve:	Date Reported to Vendor:
ACCEPTANCE OF RESOLUTION		
Technical Lead:		Date:
Test Approval		
Informal	System	User Acceptance
Signature	Signature	Signature
Date	Date	Date
Testing Evidence Attachments	Reference Test Procedures	Reference Test Procedures
Project Manager:		Date:
Program Manager:		Date:
LABCORE LCCB Approval:		Date:
		Date PR/RFS Closed:

Laboratory Information Management System CHANGE REQUEST (sheet 1 of 2)

Change Control #:	Date:
Originator/Primary Contact:	Phone:
Change/Problem Description (Use attachment if necessary):	Requested Priority:
List of attachments to Change Control Request:	
Related Problem Reports (numbers):	
AFFECTED COMPONENTS OF THE Laboratory Information Management System: 1) Site/Lab: 2) Host Machines: 3) Lab Service Point: 4) Telecom/Network: 5) Software a) Applications: b) Multi LIMS: c) Operating System: d) Other: 6) Other:	
Assessment of Request:	
DISPOSITION ASSESSMENT Accept a Request (Y/N): Consultation With Subject Expert: New Description\Comments:	
Type:	Assigned Priority:
Target Implementation Date:	Deferred:
Assessment Approval/Disapproval:	
Reason:	
SOFTWARE CHANGE/DEVELOPMENT (Completed by Software Developers, if applicable) Propagation of Production Data Required (Y/N/NA): Other Impacts:	
Revised Description/Comments:	
Software moved to System Test Environment:	Date:

Laboratory Information Management System CHANGE REQUEST (sheet 2 of 2)

TESTING			
System Testing completed successfully.	Initials:	Date:	
Software moved to User Test Environment:	Initials:	Date:	
User Testing completed successfully	Initials:	Date:	
DOCUMENTATION (Completed by Technical Editor, where applicable)			
User's Manual Set revised (Y/N/NA):	Initials:	Date:	
Software documentation revised and approved	Initials:	Date:	
Documentation submitted to system librarian	Initials:	Date:	
CR CLOSURE			
Software moved to production (Y/NA):	Initials:	Date:	
Production data propagated (Y/NA):	Initials:	Date:	
Affected users notified (Y/N/NA):	Initials:	Date:	
Other impacted areas notified (Y/N/NA):	Initials:	Date:	
LIMS Administrator _____		System Operations _____	
Date _____		Date _____	
Conclusions and Recommendations (use attachment if necessary):			
Schema Changes (drawing must be attached)			
Existing Schema:			
Proposed Schema:			
Support required for implement (vendor, analyst, etc.):			
Assignee for the Action:			
SCHEDULE INFORMATION			
Implementation Date:			
Implementation Time:			
Implementation Location:			
User Communication required (Y/N):			
Who will coordinate:			
APPROVED BY			
System Administrator:		Date:	
Laboratory Configuration Control:		Date:	

APPLICATION DEVELOPMENT

APPLICATION TITLE _____ VERSION _____

Date Submitted: _____

APPLICATION TYPE (check one)	COPY FILE	EXECUTABLE NAME	INGRES NAME
☐ INGRES App.	_____	_____	_____
☐ Report Writer	_____	_____	_____
☐ 3GL	_____	_____	_____
☐ AIX Script	_____	_____	_____
☐ Form Change	_____	_____	_____

INTENDED SYSTEM(S): ☐ Argon ☐ Benzene ☐ Boron ☐ Carbon ☐ Cesium
☐ Cobalt ☐ Neon ☐ Radium ☐ Sodium ☐ Tin

SOURCE FILE(S) _____

LOADING INSTRUCTIONS _____

EXECUTION INSTRUCTIONS _____

DEVELOPER _____ (signature)
 LIBRARIAN _____ (signature)