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2. ECN Category (mark one) Supplemental ☐ Direct Revision ☒ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	3. Originator's Name, Organization, MSIN, and Telephone No. AK MCKAY / CADS / L4-86 / 372-1815		4. Date 04/30/94
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1. ECN (use no. from pg. 1)
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15. Design	16. Cost Impact		17. Schedule Impact (days)
Verification Required	ENGINEERING	CONSTRUCTION	
☐ Yes	Additiona ☐ \$	Additiona ☐ \$	Improvement ☐
☒ No	Savings ☐ \$	Savings ☐ \$	Delay ☐

18. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 12. Enter the affected document number in Block 19.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☐
Equipment Spec	☐	Maintenance Procedure	☐	ASME Coded Item	☐
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec	☐	Operating Instruction	☐	Computer Software	☐
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OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
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Environmental Report	☐	Inspection Plan	☐		☐
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19. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below

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Document Number/Revision

Document Number Revision

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20. Approvals

Signature	Date	Signature	Date
OPERATIONS AND ENGINEERING		ARCHITECT-ENGINEER	
Cog Engineer AK MCKAY	11/10/94	PE	
Cog. Mgr. SA VEGA	11/14/94	QA	
QA		Safety	
Safety		Design	
Security		Environ.	
Environ.		Other	
Projects/Programs			
Tank Waste Remediation System			
Facilities Operations		DEPARTMENT OF ENERGY	
Restoration & Remediation		Signature or Letter No.	
Operations & Support Services			
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RELEASE AUTHORIZATION

Document Number: WHC-SD-GN-CSRS-30008, Rev. 1

Document Title: Search Hanford Accessible Reports Electronically
System Requirements Specification

Release Date: 11/18/94

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

APPROVED FOR PUBLIC RELEASE

WHC Information Release Administration Specialist:

Chris Willingham

C. Willingham

11/18/94

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11-18-94*

WESTINGHOUSE HANFORD COMPANY

CORRECTIVE ACTION DATA SYSTEMS

Manual WHC-SD-GN-CSRS-30008

Revision 1

Effective Date February 28, 1994

TITLE: SEARCH HANFORD ACCESSIBLE REPORTS ELECTRONICALLY
SYSTEM REQUIREMENTS SPECIFICATION

Approved by
S. A. VEGA, Manager Date

WESTINGHOUSE HANFORD COMPANY

SHARE

Search Hanford Accessible Reports Electronically

System Requirements Specification

(SRS)

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1.0 INTRODUCTION

The Emergency, Safety, & Quality (ESQ) Services organization of Westinghouse Hanford Company (WHC) is experiencing changes related to new programs. The programs include Corrective Actions Management Systems, Self-Assessment, Trend Analysis, and Lessons Learned analysis. The programs are pushing up organizational costs while funding and manpower levels are projected to be dropping. A large cost involved in implementing the new programs is the cost for people to locate **unstructured** information required to make decisions or write documentation. But, most resources for retrieving information are found in structured database systems. This means that unstructured information that must be located has to be found by one of these methods:

- searching manually through documents,
 - searching individual documents one at a time with word processing programs,
 - searching through text fields with query systems primarily designed for structured database information,
- or ● develop a text search and retrieval system designed for unstructured information.

One example of this is using Occurrence Reporting Processing System (ORPS) and Quality, Environmental, and Safety Tracking (QUEST) documents. An explanation of this is in the following textual box.

The Department of Energy (DOE) has issued Order 5000.3B "Occurrence Reporting and Processing of Operations Information". This order makes each facility manager responsible for reviewing all occurrence documents maintained in ORPS. This is to identify Lessons Learned issues that can be applied to their facility. Currently, because of the limited available staff and funding, facility managers are finding it difficult to dedicate resources to review ORPS independently. The reviews that are done are inconsistent in methodology and informally documented because of this. No documentation exists to verify what was looked at nor what was done because of the review.

A growing concern exists throughout WHC for the potential benefits not being realized because a system is not in place to extract and distribute Lessons Learned issues from ORPS adequately. Under the current system method, many Lessons Learned issues of interest to support organizations (Quality Assurance, Safety, Critically, etc.) are not reviewed by those organizations. Facility managers are also concerned because of the increase in liability and consequences for non-compliance to DOE Order 5000.3B. With a backlog of over 12,000 occurrence documents currently in ORPS, and somewhere between 400 and 650 new documents (DOE wide) being added each month, each facility manager would have to assign several individuals to review documents, initiate Lessons Learned reviews and analysis, distribute information, and document results of the reviews. This is difficult with the current staffing constraints and labor-intensive technology.

The proposed solution is to centralize the effort by assigning ESQ as the focal point for the facility managers for complying with the Lessons Learned review requirements of DOE Order 5000.3B. As the focal point, ESQ will establish a group of analysts that will review the ORPS and QUEST documents, extract pertinent Lessons Learned issues, distribute the information to WHC organizations, and maintain the required documentation for this activity.

This solution would use existing computer technology to automate the record distribution process by using electronic mail to distribute requests for Lessons Learned evaluation, and by establishing a central document repository on the Hanford Local Area Network (HLAN). This repository would eventually be accessible to all facility managers.

1.1 PURPOSE

The Search Hanford Accessible Reports Electronically (SHARE) system is being built to alleviate the administrative bottleneck of locating needed textual information. The initial focus will be on ORPS, As Low As Reasonable Achievable (ALARA) and QUEST documents. The Corrective Action Data Systems (CADS) group will be controlling the system development effort from the customer perspective, in support of ESQ needs.

1.2 SCOPE

SHARE is a system used to do concept textual searches on selected sets of documents. The initial document sets will originate from ORPS, ALARA and QUEST. The results of the searches are lists of documents containing the search criteria. The system should enable the user to view the retrieved documents, and to locate the relevant words, phrases, or ideas within the documents.

After the initial implementation of SHARE, future implementations may support other needs of ESQ, and possible future inclusion of non-ESQ needs, documents, and users.

1.3 OVERVIEW

The initial implementation of SHARE is based on requirements in DOE Order 5000.3B. The SHARE system will respond to problems identified in recent WHC Award Fee Goal evaluations. The evaluations stressed the need for WHC to carry out an effective site-wide Lessons Learned program.

Requirements have been gathered by using individual interviews and team brainstorming techniques. Additional requirements were developed by using the ESQ Text Evaluation and eXchange Tool (ETEXT) prototype. Requirements were verified and validated using peer reviews, including review with Pacific Northwest Laboratories (PNL) and Boeing Computer Services Seattle (BCS) groups doing similar developments.

The document is organized in a manner that describes the core SHARE system. Each user organization will have an appendix with specific information and requirements that are above the core system. The document is structured for ease of adding additional SHARE user organizations.

1.4 CONFIGURATION MANAGEMENT

This document will be placed under configuration management and control. Configuration management is a discipline that applies technical and administrative direction and surveillance to:

- identify and document the functional and physical characteristics of a configuration item,
- control changes to those characteristics,
- record and report changes to those characteristics,
- record and report change processing and implementation status, and
- verify compliance with existing practices.

1.5 DEFINITIONS

This document will refer to many terms and acronyms. The definitions for these are in Appendix A.

2.0 GENERAL DESCRIPTION

This section describes the general factors that affect the requirements specification for SHARE.

2.1 PRODUCT PERSPECTIVE

An infobase consists of a text search and retrieval software engine designed to work on unstructured textual data, the associated data (usually documents), and the word indexes. The SHARE system will be an infobase. It must provide a centralized document repository for large sets of documents, even though the actual documents may be in a distributed environment. The documents will initially consist of ORPS, ALARA and QUEST data. The infobase should be accessible on the HLAN. The use of this system may eliminate the need for paper distribution of information, and will provide the users a tool to do concept searches and retrieve information needed to do reviews and evaluations.

2.2 PRODUCT FUNCTIONS

The primary function of SHARE is to provide a centralized document repository. The system will allow users to view the documents to locate pertinent information they need (via concept searches), and to download or print targeted information.

2.3 USER CHARACTERISTICS

All users will require basic computer skills, and training in using this system. All users will receive basic SHARE training before being provided access to any portion of the system. See appropriate appendix for specific user characteristics.

The DBA will be responsible for the technical design, system upkeep, support, and adding/updating information.

2.4 GENERAL CONSTRAINTS

The information contained in the system will not affect decisions and work connected with safety, quality, and the environment. The project will be treated as an Impact Level 4 system.

2.5 ASSUMPTIONS AND DEPENDENCIES

The selection of a reliable text search and retrieval software product is imperative to the success of the SHARE system. The assumptions and requirements listed under this section were developed to allow an alternatives analysis of software products to occur independently of this requirements specification. The requirements listed in the "4.0 SPECIFIC REQUIREMENTS" section assume that a software product was selected.

2.5.1 Primary Assumptions for Software Product Selection

The following assumptions apply to all potential system solutions. These assumptions are to be treated as the highest level requirements in selecting a text search and retrieval software product.

1. Software must be PC oriented. Mainframe computer software is not desirable because of the current saturation of the existing mainframes. The accessibility by users, the programming support, the link to the Large Scale Information System (LSIS), ORPS, and word processing centers for the documents, cost factors, and the "user friendliness" of the system are all strong reasons to support a decision to have an HLAN application. Therefore, mainframe based software applications should be eliminated from consideration.
2. Software must be compatible with the operating system. Wang, VAX VMS, and UNIX based software applications should be eliminated. (DOS is the operating systems presently in use on the HLAN and PC work stations.)
3. Software must be HLAN compatible. Because of the memory limitations of the PC's, memory resident software will not work properly. Software like the HLAN Phone Directory is difficult to enhance within the memory constraints of many PC configurations. Memory resident software applications should be eliminated. Also, software applications requiring special hardware or terminals not associated with the typical HLAN user should be eliminated.
4. Software must handle the searching of large quantities and sizes of documents. The purpose of SHARE is to allow fast and simple retrieval of the documents. These documents comprise over 50,000 individual documents.
5. Software must be able to view the documents and manuals with little labor-intensive data conversion. The documents are currently stored in ASCII and WordPerfect. The WordPerfect documents contain special control characters for such things as tab, bold, underline, subscript, and headings.

2.5.2 Text Search and Retrieval Characteristics

Fifty anticipated user characteristic requirements have been identified. These requirements relate to features expected of any text search and retrieval software product, and to the manufacturer's support of the product. Many of these requirements are subjective. To maximize the objectivity of the alternatives analysis, each requirement was weighted by ESQ as either 5 (must have), 3 (strongly desired), or 1 (would be nice). The software packages that meet the assumptions will be evaluated against the requirements. The results will be tabulated and summarized to allow for a final recommendation.

Appendix B contains a list of these fifty requirements for the software product. It is understood that the product selected will be a "best fit" and may not necessarily fulfill all requirements.

3.0 ALTERNATIVES ANALYSIS

Based on the assumptions and dependencies identified in section 2.5, a software product alternatives analysis was conducted. The analysis selected the TOPIC text search and retrieval product as the recommended choice for the SHARE system. The details of the alternatives analysis are in the SHARE Alternatives Analysis document WHC-SD-GN-CSWD-30056.

4.0 SPECIFIC REQUIREMENTS

This section defines the specific requirements that must be satisfied by the SHARE text search and retrieval software. The objective is to provide details so that the software developer can create the system. Each requirement will be stated so that it can be objectively verified.

4.1 FUNCTIONAL REQUIREMENTS

The SHARE system processes include the:

- collection of information,
- indexing of the information,
- searching of information,
- examination and evaluation of information,
- creation of evaluation reports, and
- distribution of evaluation reports and the associated information.

4.2 EXTERNAL INTERFACE REQUIREMENTS

4.2.1 User Interfaces

The SHARE system will use the TOPIC software. This software uses standard user interfaces, such as Windows 3.1. Customizing the screens and software will not be necessary for the core system.

User interfaces consist of inputs, outputs, and displays of data on a PC that is used or seen by the SHARE user. User interfaces will be menu driven down to the function to be done by the qualified user. Primary screens will have a fast access (hot key) capability, which allows direct access to screens, skipping intermediate menus and screens. Function keys will be available to aid the user in performing specific processes. Error messages, with suggested resolution options, will be displayed on the screen when the system detects an error. Help screens will support the system.

4.2.2 Hardware Interfaces

The SHARE host hardware selected must meet basic capacity and performance requirements. Interfaces with the hardware will be transparent to most users. They will access the host hardware using PC's on the HLAN network.

4.2.3 Software Interfaces

The user must be able to target specific documents, and provide hard copies or download (into ASCII or WordPerfect files) these documents. The SHARE system must be accessible from the HLAN. The HLAN network connection is for providing access to other network software, such as WordPerfect, cc:Mail, and the Phone Directory. SHARE must be able to display ASCII, WordPerfect, and the future Standard Generalized Markup Language (SGML) formatted documents in their native formats.

The search results must be exportable into ASCII files, to allow use with structured databases (i.e., Structured Query Language, SQL). SHARE must be able to use the Windows "Clipboard" cut-and-paste feature to allow quick transfer of information. Additionally, ASCII files must be importable into a user's query screen. This will allow searching of both SQL database systems and SHARE, in either order, with the results transferred to the other system for refining searches. Ideally, the system should be able to export specific text areas of documents into ASCII files to replicate the information into SQL database systems.

4.2.4 Communication Interfaces

The only communications interface, besides to the SHARE system itself, is to the HLAN.

4.3 PERFORMANCE REQUIREMENTS

This section specifies both the static and dynamic requirements placed on the human interaction with the SHARE system. The SHARE system will be a multi-user system.

4.3.1 System Sizing

The disk storage should have the capacity to contain the operating system, operating software, infobase system, application code, and up to 5 years of user data (eventually reaching approximately 100,000 documents and approximately 2,500 megabytes of storage). The future growth of SHARE, in terms of numbers of documents and users, is unknown. There have been many inquiries into the SHARE project, which suggest a strong potential for "exponential" growth. The TOPIC software is designed to accommodate this growth, but hardware and operating system software platforms may have to be revised. See appendices for specific user sizing requirements.

4.3.2 Response Times

Response times for performing single word searches should be between 5 and 10 seconds for 10 mb of documents, using a PC-486 with 12 mb RAM in a standalone, non-network mode. Document retrieval and display times for average size documents (5 pages) should be between 2 and 5 seconds. The actual SHARE system will be on the HLAN network, with multiple user access using a variety of PC's at various times throughout the workday, and the system will contain over 1,000 mb of documents. It is expected that the actual response times will be significantly slower than this.

4.4 DESIGN CONSTRAINTS

4.4.1 Standards Compliance

SHARE is committed to conforming to the Hanford Information Management and Control Strategy (HIMACS) and its requirements. It is assumed that by being HIMACS compliant, SHARE will meet any higher level strategies.

4.4.2 Resource Limitations

To ensure a smooth implementation for the initial users of SHARE, all users must have, at a minimum, a "core workstation". A core workstation is defined as:

- Minimum 386 SX
- DOS 6.0
- Microsoft Windows 3.1
- QEMM 7.X
- LANMAN 2.1

The saturation of the HLAN for network traffic will prevent using the image hyperlink feature of the TOPIC product. At this time, this is acceptable because there are no images in ALARA, ORPS, or QUEST documents.

4.5 ATTRIBUTES

4.5.1 Availability

The SHARE system will be available 24 hours a day, seven days a week. It is understood that downtime for infobase revision, maintenance, backups, and support will be necessary. This downtime should be kept to a minimum (preferably less than 10%).

4.5.2 Maintenance

The DBA will have the capability to add, revise, or delete documents weekly.

DBA support will be provided during the complete life cycle of the project, including maintenance and operational phases. Support will include technical design, system upkeep and maintenance, and recovery from system failure.

4.5.3 Compatibility, Modularity, and Portability

The system must have the capability of:

- searching over 50,000 documents residing in a variety of HLAN accessible locations in their native formats, which may include ASCII and WordPerfect,
- processing with a variety of personal computers through DOS/Windows,
- allowing multiple users to access the documents concurrently, and
- in the future being portable and scalable (for right-sizing) to a variety of hardware choices (standard OS/2 file server, Sun, Sequent, VAX, or Pentium-type),

The initial implementation of SHARE may be on a dedicated application server, which would function as the document repository and the index location. The system should be designed to allow for future solutions needed to improve and tune the performance (as the system grows). These solutions may include replication of the system indexes, distribution of the document repository, porting onto a more powerful server, or using client/server technology.

4.5.4 Data Integrity

The indexes and documents will be maintained by the DBA. The documents will be kept in duplicate server areas. One area will be for read-only access, and the other area will allow updates. This will provide a means for document revision, while keeping the indexes in sync with the documents.

4.5.5 Operator Skill Level

The day-to-day user will need a knowledge of basic computer skills. This is necessary to access the system, utilize the menus, set up queries, and produce outputs. The user must be able to use the concept search feature to target specific viewing needs. The system must provide for the capability to save the search criteria and search results, and sort the results by date or alphabetically.

The ESQ analysts will have the additional skill of creating complex topic queries for the system. The DBA will provide the technical skill to maintain and improve the system.

4.5.6 Ease of Use

The SHARE system will provide functions to allow easy access and utilization of the system. The following capabilities will be provided to allow the system to be more intuitive (user friendly):

- **Menu Driven** Menus will be provided for user interface with the system
- **Function Keys** Preprogrammed function keys will be provided to enable the user (at a minimum), to access, display, and scroll through the data
- **Print Options** An option to print documents either locally or on a network printer. Also, capability to download results, screen images, and documents into ASCII files.
- **Queries** There will be speedy results for queries
- **Help Messages** Informational messages will be provided to define or describe the purpose of each screen, and each field on those screens
- **Status Messages** Messages will be provided to show that a successful entry has been accepted
- **Error Messages** Error messages will be provided that will be unique and meaningful to each specific error. They will aid the user in recovering from error situations that might occur while entering or reporting data

4.6 OTHER REQUIREMENTS

This section outlines other general requirements that do not fit any of the categories previously addressed. Because of their unique nature, these requirements will be addressed in separate categories.

4.6.1 Data

The QUEST System data will be included in the core system. These documents contains information about conditions, issues, commitments, and lessons learned to be viewed from a common structural perspective, thus simplifying retrieval of this information for purposes of tracking and performance evaluation. This information will be downloaded every week in a consistent format.

4.6.2 Operations

The SHARE server(s) will be maintained in a manner similar to all HLAN servers. A complete backup will be done weekly, supplemented by nightly backups of the changed data. The documents and indexes will be revised on a development server, and then ported over to the production system during off-hours. If special maintenance activities are necessary, the users will be notified before the downtime occurs.

4.6.3 Site Adaptation

If adaptation is necessary, it will be described in the Software Design Description (SDD). Adaptation that may be necessary includes the development of programs to supplement the TOPIC software. These programs would help prepare the documents by formatting and splitting download files into separate document files.

4.6.4 Options

The Verity Corporation has an additional product that may compliment the TOPIC text search and retrieval software. The product is called "TOPIC Batch Profiler." It allows the DBA to establish individual profiles (saved search criteria) for a group of people, and process these profiles in a batch (not on-line) mode to search for related documents. This product has the potential to reduce the need for user access to SHARE by performing the searches off-hours in batch mode and electronically notifying the users of the results (via cc:Mail). This product is not intended to be included in the initial implementation of SHARE, but may be considered for future use.

4.6.5 Reliability and Recovery

If the system fails, the users should only lose the current entry or modification data that was being entered at the time of the failure. This data will typically be either a query or a hyperlink. If there is an extreme system crash, which may include damage to the data storage device, it may be necessary to fall back to the SHARE or HLAN server backup. This would cause a loss of any updating that had occurred since the last backup. The SHARE system will be equipped with complete and comprehensive data and recovery capabilities for all other failures. Backup and recovery procedures will be addressed in detail in the SDD.

4.6.6 Audit

The user interaction with SHARE will involve queries against read-only documents. Although the queries can be saved, the important components of SHARE are protected from change. Any control mechanisms necessary (for tracing and logging usage) will be defined during system design. It is anticipated that a logging feature may be used occasionally to monitor the type of usage experienced by SHARE.

4.6.7 Priorities

The SHARE system will be a new software tool for use in retrieving documents. It is not dependent upon coordination with other system development efforts. Yet, the CADS group would like the system operational as soon as possible. This would allow for the reduction of the inaccurate and time-consuming reading of documents currently being done in support of the Lessons Learned and ALARA efforts.

4.6.8 Transferability

This system has the potential to be used at all DOE sites. The "Saving through Sharing" program and the establishment of a DOE-wide user group should be considered in parallel to the SHARE development project. Also, coordination with PNL should occur to reduce the likelihood of duplication of services.

4.6.9 Conversion

The system will be required to accept and index information from systems such as ORPS, QUEST, WordPerfect, and cc:Mail (via ASCII export). For the QUEST data the download consists of a single file. This file will need to be broken down into multiple documents. The documents are delimited by the text "<-Subject ID->". Double brackets (i.e. <<,>>) will be converted to single brackets (i.e. <,>) for easy of reading. The following is the list of core fields that will be taken from the documents and description of the data that will be contained in them.

Document_Number - Contains the number (may contain letters)
immediately following the '<Subject ID>' phrase
in the document.

Facility - Contains the facility name immediately
following the '<Facility>' phrase in the document.

Author - Contains the name immediately following
the '<Originating Person>' phrase in the document.

Date - Contains the date immediately following
the '<Date Initiated>' phrase in the document.

Title - Contains the title immediately following the "<Subject>" phrase in the document.

Source - Automatically populated with 'QUEST'.

SHARE should have the capability to do file conversions to simplify this operation. The TOPIC software provides a WordPerfect conversion filter for indexing and viewing. For WordPerfect documents, recommendations should be made to the authors on format styles and techniques, to enable SHARE to take full advantage of the TOPIC filter feature. For additional information on conversions of data, see specific organizations requirements.

4.6.10 Testing and Acceptance Criteria

The SHARE system is an implementation of the TOPIC off-the-shelf commercial software package. The testing necessary to accept the implementation of SHARE will be minimal. SHARE assumes that the TOPIC software performs as documented in the TOPIC documentation. Some of the items tested by SHARE will be:

- Access the SHARE System
- Verification of the download of a complete set of QUEST documents
- Successful retrieval of a document

The System Test Plan will describe all of the acceptance criteria.

4.6.11 Documentation

The SHARE system is expected to conform to the WHC CM-3-10 procedures for documentation for an Impact Level 4 system. The documentation will describe the IRM created modules of the SHARE System.

4.6.12 Training

All users will be given training on the SHARE system. The degree of training for individuals will depend upon their specific functions. The casual user will require training on the SHARE system query word search functions, and printing and downloading capabilities of the system. The day-to-day user will require additional training for creating complex queries. Training will be the responsibility of the CADS organization.

4.6.13 Security and Privacy

Host access control shall be used to protect the system from unauthorized access. There is also a need to control access to certain functions, such as input and updating capability, within the SHARE system. These safeguards are required to prevent tampering with information stored in this system. In addition, the Quest data is classified as sensitive, and thus must be treated accordingly.

5.0 REFERENCES

WHC CM-1-3 - Management Requirements and Procedures

MRP-5.1 Corrective Action Management System

WHC CM-3-10 - Software Practices

SP-1.1 Manual Introduction

SP-3.1 Development Management

WHC CM-4-2 - Quality Assurance

QR-19.0 Software Quality Assurance Requirements

WHC/Management Standards Requirements Study (September 26, 1989)

No formal document was issued, but an evaluation of 41 text search and retrieval products was done. See SHARE development team for a copy.

Hanford Strategy and Recommendation letter (July 26, 1991)

No formal document was issued, but a joint effort by IRM/ISS, IRM/PNT, and PNL resulted in a strategy for text search and retrieval technology at Hanford that would fit into the HIMACS plan. See SHARE development team for a copy.

WHC-SD-GN-PMP-30007 - SHARE System Project Management Plan

See SHARE development team for a copy.

WHC-SD-GN-CSWD-30058 - SHARE System Verification and Validation Plan

See SHARE development team for a copy.

WHC-SD-GN-CSWD-30054 - SHARE System Concept Document

See SHARE development team for a copy.

WHC-SD-GN-CSRS-30008 - SHARE System Requirements Specification

See SHARE development team for a copy.

WHC-SD-GN-CSWD-30056 - SHARE Alternatives Analysis

See SHARE development team for a copy.

WHC-SD-GN-CSDD-30006 - SHARE System Design Description

See SHARE development team for a copy.

WHC-SD-GN-CSWD-30057 - SHARE System Test Plan

See SHARE development team for a copy.

WHC-SD-GN-CSUD-30005 - SHARE System User Document

See SHARE development team for a copy.

APPENDIX A: ACRONYMS AND DEFINITIONS

This document may have used some of the following acronyms and definitions.

ALARA	As Low As Reasonably Achievable
anomaly	Anything observed in the documentation or operation of a system that deviates from expectations based on previously verified system product or reference documents. A critical anomaly is one that must be resolved before the V&V effort proceeds to the next phase.
ANSI	American National Standards Institute
ASCII	American Standard Code for Information Interchange. The code corresponding to computer byte information.
BCS	Boeing Computer Services
BIS	Business and Information Services department of IRM
CADS	Corrective Actions Data Systems
CAMS	Corrective Action Management System documents. These documents are defined as containing descriptions of programmatic or other types of deficiencies in WHC's Hanford operations.
CASE	Computer Aided Software Engineering
CM	Controlled Manual
CORE	Not an acronym. Refers to Hanford's new standard for PC work station software, which includes DOS 5.0, QEMM 6.02, and LANMan 2.0 Enhanced.
corrective	
action	Action taken to preclude or reduce the probability or recurrence of a deficiency. This is done by drawing on past experience and applying that insight toward problem resolution.
CPU	The Central Processing Unit of a computer (the core part).
critical	
software	Software whose failure could have an impact on safety, or could cause large financial or social loss.
CYE	Calendar Year End
DAC	Data Administration Council department of WHC
database	A software engine designed to work on structured data, and the associated data.
DBA	Database/Infobase Administrator. Refers to the IRM person responsible for the SHARE infobase maintenance and support.
DEC	Digital Equipment Corporation (a computer company)
DOE	Department of Energy
DOE-RL	Department of Energy at Richland, Washington. Often referred to as DOE or RL.
DOS	Disk Operating System. The prevalent base computer operating system for Intel-based computers.
ESQ	Emergency, Safety, and Quality Services
ESQ	
analyst	An analyst from the WHC/ESQ organization that is responsible for assessing occurrence documents, and coordinating and supporting the WHC Lessons Learned program function.
ETEXT	The ESQ Text Evaluation and eXchange Tool standalone prototype system. This system used state-of-the-art capabilities to demonstrate the potential of a text search and retrieval system.
EUC	End User Computing. The IRM computer user service department.
EUSS	End User Support Services department of IRM
FIPS	Federal Information Publishing Standards
GUI	Graphical User Interface
HAN	Hanford Area Network. This is the HANTAG description for the Hanford-wide computer network.
HANTAG	Hanford Area Network Technical Advisory Group
HEP	HANTAG Evaluation Plan
HIMACS	The Hanford Information Management And Control Strategy plan for the nineties. The plan involves the integration of network and work station operating systems, and application software into a controlled, unified system.
HLAN	Hanford Local Area Network. This is the term commonly referred to by PC users at Hanford. Technically speaking, it is not a local area network, therefore HAN is a more appropriate term. It is a Wide Area Network (WAN) to provide PC communications across the Hanford site.

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HPFS	High Performance File System, a 32 bit file structure used by OS/2.
HyTime	SGML extended with hyperlinking and time-based multimedia
IBM	International Business Machines company. The largest maker of computers. IBM may also refer to the PC produced by this company, or a clone similar to the IBM PC.
INEL	Idaho National Engineering Laboratory, Idaho Falls, ID. A DOE site.
infobase	A text search and retrieval software engine designed to work on unstructured textual data, the associated data (usually documents), and the word indexes.
IRM	Information Resource Management data processing department for WHC. This is also known as Boeing Computer Services of Richland (BCSR).
ISO	International Standards Organization. An international organization that defines international standards, including the Open Systems Interconnection (OSI) 7-layer reference model for computer communications.
ISR	Inspection/Surveillance Report (a QUEST document type).
ISS	Information and Scientific Systems department of IRM
issue	Something for which a concern has been raised.
kb	Kilobytes. One thousand bytes of computer storage. Each byte typically stores one ASCII character.
LAN	Local Area Network. A localized communications network to provide computers with the capability to share and transfer data with other computers connected to the LAN.
LANSD	IRM's LAN Systems Development department.
Life Cycle Phase	Any period of time during the system development or operation that may be characterized by a primary type of activity that is being conducted. These phases may overlap one another during the development cycle.
LSIS	Large Scale Information System. The IBM-9080 mainframe computer at Hanford.
mb	Megabytes. One million bytes, or one thousand kb of computer storage. Each byte typically stores one ASCII character.
MRP	Management Requirements and Procedures
NCR	Nonconformance Report (a QUEST document type).
NDIS	Network Driver Interface Specification
NOMAD2	Not an acronym. It is a relational database software product widely used on the LSIS computer at Hanford.
NRC	United States Nuclear Regulatory Commission
OCR	Optical Character Recognition. Computer technology that reads and converts images into ASCII characters.
ODA	Office Document Architecture
ORPS	Occurrence Reporting Processing System, one of the QUEST interface systems, using a Hewlett Packard minicomputer at INEL. It is capable of creating ASCII files of ORPS documents.
OS/2	IBM's second generation Operating System.
PC	Personal Computer. Typically an Intel-based computer.
PNL	Pacific Northwest Laboratories company, a DOE-RL contractor involved in implementing TOPIC text search and retrieval systems.
PNT	Planning and New Technology department of IRM
QA	Quality Assurance. The process of assuring to management a degree of confidence that the end product conforms to established technical requirements and all the applicable standards in effect during the software development effort.
QBE	Query by Example (a search method)
QEMM	Quarterdeck Expanded Memory Manager. A product designed to manage all types of RAM on the Intel-based PC platform.
QUEST	Quality, Environmental, and Safety Tracking system. The system is written in NOMAD2 on the LSIS (an IBM mainframe computer.)
RAM	Random Access Memory. Programmable memory of a PC. Typically 640 kb plus additional memory totalling 8 mb for a WHC work station to be certified to run TOPIC text search and retrieval software.
RFS	Request For Service, a process used by IRM/ISS to control system development efforts.
RL	Department of Energy at Richland, Washington. Often referred to as DOE or DOE-RL.
root cause analysis	The single condition which will, if corrected, prevent recurrence of the problem This is determined, in part, by reviewing related instances of the problem.
SCD	System Concept Document. The document outlining the proposed system, and the purposes behind it.

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SCMP	System Configuration Management Plan
SDD	System Design Description document. The system detail design which contains descriptions of the processing logic, data structures, and data definitions, in sufficient detail that the development team can begin software code construction.
self-assessment	Self-identification of weaknesses and strengths by the affected organizational entity prior to them being revealed through reviews from external agencies or the occurrence of a preventable event.
SGML	Standard Generalized Markup Language
SHARE	Search Hanford Accessible Reports Electronically, the production-implemented text search and retrieval system for CADS.
SPMP	System Project Management Plan. The controlling document for managing a software project. Defines the technical and managerial project functions, activities, and tasks necessary to satisfy the requirements of a software project.
SQL	Structured Query Language. This refers to the industry-standard relational database design, with standard database commands that can be commonly accessed by a variety of software products.
SRS	System Requirements Specification document. The document which defines the requirements for a software product, including the functional, performance, interfaces, and design requirements.
SUD	System User Documentation. The document explaining the use of the SHARE system for a user.
SVVP	Software Verification and Validation Plan. The plan which all the Verification/Validation activities will follow. Defines tasks, standards, and establishes the completion criteria of each phase of the project.
TOPIC trend	Not an acronym. It is the text search and retrieval product manufactured by the Verity Corporation.
analysis	Identifies precursors to significant events, from examination of related conditions, assessments, and issues.
UNIX	Not an acronym. It is the operating system typically found on DEC and Sun computers, featuring multiprocessing capabilities.
V&V	Verification and Validation. Refers to all Verification and Validation activities related to the system being described.
WAN	Wide Area Network. A network of LAN's.
WHC	Westinghouse Hanford Company, a DOE contractor.

APPENDIX B: TEXT SEARCH AND RETRIEVAL SOFTWARE CHARACTERISTICS

Weight	Requirement
Usability:	Search:
5	Search a group of documents for the criteria.
3	Select specific document and search for criteria.
5	Full text indexing and searching.
5	Keyword search capability.
5	Generate a keyword index with locations.
3	Text retrieval doesn't work well with misspelled words. Capability of "typographical error" searching would be ideal.
1	Search headers/footers.
3	Search rolldown/revision bars.
5	Search results should include: number of occurrences, location of occurrence and/or other pointers to the text, with capability to view the text and return to the result list.
5	Detailed search parameters (Boolean, proximity, within, phrase).
5	Save search results so that the search can be refined or expanded.
5	Create and store user-defined search macros/pattern. Artificial Intelligence search (concepts, ideas, topics). This feature is good because many documents have different terminology for the same concepts, and user-defined topics or keywords are desired.
1	Responsive (5 to 10 seconds for search of 1 word in 10 mb of data)
3	Search should return choice of sentences, paragraphs, or documents.
1	Allow search on multiple directories and/or disk drives/servers at the same time.
1	Popup of contents/index of document.
5	Easy access and intuitive use (similar to cc:Mail and "cash machines").
5	Forward/Backward text scrolling.
1	Thesaurus module to determine relationships with other words. This will help retrieve a higher percentage of documents.
1	Paper-clip capability (mark and save sections for later reference or printing)
3	Print of search strategy and search results.
5	Print of sections of document.
3	Print of entire document, preferably in production quality.
1	Not case sensitive
Help/Support:	
5	Online help.
5	Corporate technical support (responsive, knowledgeable)
5	Stable, reliable product.
5	Stable, reliable company.
3	Well written reference manual/user's guide.
Security:	
5	Update protection so that documentation can be read-only for users. The ability to update for a few select users is a desire, although it is understood that allowing updating would require that both WordPerfect and the selected software package be loaded and active and able to communicate between each other.
1	Printing restriction/disabling feature.
1	View restriction of sensitive documents.
Programmability:	
5	Stable, error free software package
5	Ease of menu creation - potentially menus for help file, ORPS groupings, and references.
3	Must be self-contained so that little or no programming is necessary to implement applications.
5	Must accept ASCII and WordPerfect 5.1 file formats (and possibly others such as SGML) in native format ("Y" rating) or with minimal conversion effort ("P" rating).
5	The software must be able to handle all ORPS and QUEST documents. In addition, possibly handle NRC Notices and Lessons Learned.
1	Accept graphics, forms, pictures, tables, charts, and line draw.
1	Indexing tool (for full text indexing, auto-indexing, index cleanup, creation of keyword index table, elimination of "noise" words).
3	Include a batch mode processing capability.
1	Allow for non-DOS file naming
HLAN Configuration:	
5	Must fit the HLAN configuration: Ungermann Bass, Ethernet, DOS, eventually OS/2, and optionally Transmission Control Protocol / Internet Protocol (TCP/IP).
5	Reasonable storage costs (indexes must be less than 150% of file, and any indexes that are created must be able to fit onto the HLAN servers).
5	Usable by PC's with minimal memory requirements (not memory residents).
3	Software can be installed at the Server level.
3	Individual registration of network users should not be necessary except for those with special access (sensitive documents, update authority).
3	Impact on performance of servers must be minimal.
5	Documentation must be adequate for the End User Computing (EUC) centers.
1	Allow migration to a mainframe computer.
1	Allow retrieval from optical disk storage.

Weight: 5 (must have), 3 (strongly desired), 1 (would be nice)

APPENDIX C: ALARA REQUIREMENTS

1.0 Introduction

1.1 Purpose

To facilitate the dissemination of completed ALARA documentation to the ALARA representatives. The SHARE System will allow them easily to look for similarities and applicability to the Hanford Site.

1.2 Scope

The SHARE System will be used to perform textual searches on completed ALARA documents. It will allow the user to locate relevant words, phrases, or ideas within the documents. The SHARE System will not perform the completion of any ALARA documentation.

1.3 Assumptions and Dependencies

It is assumed that all ALARA documentation is available in a consistent electronic format and available in the data transfer area on the file server.

2.0 User Characteristics

The user characteristics for an ALARA documentation SHARE System user are:

- Basic computer skills
- Familiar with Microsoft Windows
- Knowledgeable of the Lessons Learned Process

The ALARA documentation user community will consist of approximately 20 initial users.

3.0 User Specific Requirements

These are requirements that are over and above the SHARE "core" system requirements identified in the body of this document.

3.1 Software

No additional requirements above the SHARE "core" system requirements have been identified.

3.2 Hardware

Each ALARA documentation SHARE user must have a "core" workstation. Any additional hardware requirements (i.e. file servers, additional disk storage) for ALARA documentation will be provided by the CADS organization.

3.2.1 Size

The initial number of ALARA documents is approximately 200. Each document is 1 or 2 pages and approximately 10 Kb for a total initial load of 2 Mb. The projected annual growth is 100 documents or 1 Mb.

3.3 Data

ALARA documentation documents is the only required data. These documents contain information on reviews that are performed after an ALARA documented job is completed. The information includes; changes to work plans, exposure controls implemented, lessons learned, and corrective actions taken.

4.0 Configuration Management

Configuration management is managing change for the system, procedures, data, and people. Reference the configuration management plan for detail of how changes in these areas will be managed.

5.0 Conversion

ALARA documentation documents will be in a Wordperfect format. The following fields will need to be identified and extracted:

Document_Number - Contains the number (may contain letters) immediately following the '<DOCUMENT>' phrase in the document.

Facility - Contains the facility name immediately following the '<<Facility>>' phrase in the document.

Author - Contains the name immediately following the '<<Cog Engineer>>' phrase in the document.

Date - Contains the data immediately following the '<<Date of Origin>>' phrase in the document.

Title - Contains the title immediately following the '<<Job Title>>' phrase in the document.

Source - Automatically populated with 'ALARA'.

6.0 Security

The ability to access HLAN and the SHARE System are the only points of control. The documents in this system are read only with no ability to make modifications.

7.0 Testing and Acceptance

Testing of the ALARA documentation SHARE System will include:

- Access to the SHARE System
- Selection and retrieval of ALARA documentation data

The ALARA documentation SHARE user will perform the acceptance testing and system sign-off on the system in accordance to the SHARE System Test Plan.

O.D. Berglund Date
Administrator ALARA Program Office