

IMPLEMENTATION NOTICE

(ROUTE A COPY OF THE IMPLEMENTATION NOTICE TO ALL USERS OF THIS COPY OF THE MANUAL)

Table of Contents The Table of Contents has been updated to include the following changes.

Section 1.1 "Safety Priority and Procedure Compliance Policy"

This section has been updated to reflect current organization and policy.

Section 3.11 "Format and Content Guide for Analytical Services Technical Procedures"

This new section describes guidelines for format and content of technical procedures written by Analytical Services staff.

Section 3.13 "Unreviewed Safety Question (USQ) Program"

This section was revised to reflect changes in the 222-S USQ program to comply with company-wide program changes. Subsequent to this revision, minor changes were made affecting pages 4 and 6; therefore the revision number jumped from 2 to 4.

Section 4.3 "Training Administration"

This section has been rewritten and describes the training policies and administrative activities of Analytical Services organizations.

Section 8.6 "Laboratory Computer Configuration Control"

This new section describes the general operations automated data processing (ADP) configuration management plan for Analytical Services.

Section 8.7 "222-S Laboratory Management Assessments"

This new section describes 222-S Laboratory Management Assessments, including the process, scope, responsibilities, and procedure for conducting an assessment.

Section 9.1 "Material Control"

This section was revised to update format and responsibilities.

Section 9.1-A "Material Control - Procedure"

This section was canceled; information contained in this section was incorporated into Section 9.1.

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1.0	POLICIES		
1.1	Safety Priority and Procedure Compliance Policy	2	11/03/95
2.0	ORGANIZATION		
NOTE:	The charter for Analytical Services may be found in WHC-CM-1, <i>Company Policies and Charters</i> .		
2.1	Charters — Section Title (no text)		
2.1.1	222-S Analytical Operations Charter	3	04/13/95
2.1.2	222-S Facility Operations Charter (incorporated into 2.1.1)	<i>Canceled</i>	10/22/93
2.1.3	Program Management and Integration Charter	2	04/05/95
2.1.4	Work Control and Data Management Charter	<i>Canceled</i>	04/26/95
2.1.5	Office of Sample Management	<i>Canceled</i>	04/26/95
2.1.6	Plutonium Finishing Plant Engineering Laboratory	<i>Canceled</i>	07/06/95
2.1.7	Process Laboratories and Technology Charter	<i>Canceled</i>	07/11/95
2.1.8	PUREX Analytical Laboratories Charter	<i>Canceled</i>	07/20/95
2.1.9	Engineering and Technology Services Charter	1	03/31/95
2.2	Committees, Boards, and Task Teams	<i>Canceled</i>	08/17/95
2.2.1	Laboratory Instrument Control Board Charter	2	05/17/94
2.2.2	Chemical Hygiene Committee Charter	1	05/31/95
2.2.5	Laboratories ALARA Committee Charter	<i>Canceled</i>	09/14/95
2.2.6	Laboratories Pollution Prevention Team Charter	1	05/01/95
2.2.8	Laboratory Facility Plant Review Committee Charter	2	09/15/95
2.3.1	Waste Sampling and Characterization Facility — Startup Charter	<i>Canceled</i>	04/12/95
2.3.2	Waste Sampling and Characterization Facility — Analytical Operations Charter	1	03/29/95
2.3.3	Office of Quality Assessment Charter	0	03/14/95
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3.1	Manual Administration	5	03/29/95

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3.1-A	Manual Administration — Procedure (incorporated into Section 3.1, Rev. 5)	<i>Canceled</i>	04/05/95
3.2	Out-of-Tolerance Report System	<i>Canceled</i>	01/15/93
3.3	Corrective Action Requirements, Occurrence Categorization, Notification, and Reporting (moved to 6.7)	<i>Canceled</i>	09/13/93
3.4	Data Package Preparation	1	08/15/94
3.5	Administration for Nuclear Materials	2	10/16/95
3.6	Laboratories Entry Requirements	0	03/07/95
3.7	222-S Complex Radiological Postings	<i>Canceled</i>	07/25/95
3.8	Shift Turnover at 222-S Laboratories Complex	<i>Canceled</i>	07/06/95
3.9	Laboratory Procedures	4	04/28/95
3.10	Procedure Changes and Procedure Change Authorizations (incorporated into 3.9, Rev. 3)	<i>Canceled</i>	03/23/95
3.11	Format and Content Guide for Analytical Services Technical Procedures	0	11/03/95
3.12	Internal Audit Program (moved to 8.5)	<i>Canceled</i>	08/15/94
3.13	Unreviewed Safety Questions (USQ) Program	4	12/11/95
3.14	Laboratory Sample Tracking	0	08/15/94
3.14-A	Laboratory Sample Tracking — Procedure	0	08/15/94
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3.16	Data Package Control Requirements and Procedure	1	03/01/95
3.16-A	Data Package Control — Procedure (incorporated into 3.16, Rev. 1)	<i>Canceled</i>	03/01/95
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5.2	Supporting Documents	<i>Canceled</i>	09/15/92
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6.7	Corrective Action Requirements, Occurrence Categorization, Notification, and Reporting (Conduct of Operations Chapter 7)	5	06/06/95
6.7-A	Corrective Action Requirements, Occurrence Categorization, Notification, and Reporting — Procedure (incorporated into 6.7, Rev. 5)	<i>Canceled</i>	06/06/95
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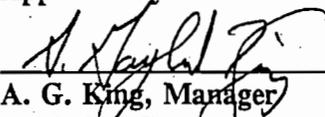
<u>Section</u>	<u>Title</u>	<u>Revision</u>	<u>Effective Date</u>
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9.2	Restricted Access Area Signage	0	04/18/94
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November 3, 1995

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Safety Priority and
Procedure Compliance Policy

Approved by


A. G. King, Manager
Analytical Services

11/1/95

1.0 PURPOSE

This manual shall be used by all Analytical Services personnel. This includes, for the duration of their assignment, those individuals matrixed or contracted to the organization.

The following policies shall be known to all Analytical Services personnel:

1.1 Procedure compliance is mandatory.

Procedures (i.e., procedures developed in accordance with Section 3.9, "Laboratory Procedures") shall be adhered to at all times.

Procedures are prepared for all anticipated conditions, events, and tasks, in accordance with Section 3.11, "Format and Content Guide for Analytical Services Technical Procedures". In the event of a situation not covered by an approved procedure, personnel shall be directed to take action so as to:

- Maintain the laboratory in a safe condition
- Minimize personnel injury and radiation exposure
- Minimize radioactive release to the atmosphere
- Protect laboratory equipment.

The procedures shall be open and in use if:

- A trainee is performing the evolution
- The activity being conducted is nonroutine, complicated, or infrequent
- There is evidence, in the form of incidents or observations, that show a general weakness in procedural knowledge.

Laboratory personnel will not be required to have the procedures open and in step-by-step usage if:

- The activity is being conducted by qualified personnel, is performed frequently, and is of a nature that performance is relatively easy
- The procedures are readily available and the activity is being conducted exactly as stated in the procedures. For example, determination of pH.

Safety Priority and Procedure Compliance Policy

Laboratory personnel shall be capable of performing the immediate action steps of emergency procedures without reference to the procedure.

Activities shall be conducted in a deliberate, methodical manner. In addition to strict adherence to procedures, the individual shall continuously evaluate the activity based on their own logical approach. Before performing any procedure, personnel must think about what could go wrong, what should occur as various steps are performed, and what they should do if expected events do not occur. There are very few problems where the personnel do not have a few moments to plan their actions, consult procedures, and then act.

The requirements for personnel to follow procedures do not relieve them of their responsibility to think and to ensure that their actions maintain the laboratory in a safe condition. If doubt exists in a person's mind about what will happen if they do a certain step of a procedure, the person shall not perform that step. Instead, the person shall stop and notify appropriate management and obtain clarification. Similarly, if a person believes a procedure to be incorrect, that person shall stop and notify management of the discrepancy. The person shall not proceed with the evolution until the procedure is changed and correct in accordance with Section 3.9, "Laboratory Procedures."

- 1.2 Safety will be the first priority in all areas of activity.
- 1.3 Safety is a condition of employment.
- 1.4 Personnel will observe all Master Safety Rules.

2.0 RECORDS

Any records generated as a result of activities described in this section will be managed in accordance with applicable Records Inventory and Disposition Schedules.

3.0 DESIGNATED REVIEWERS

Designated Reviewing Organizations

222-S Analytical Operations (Champion)

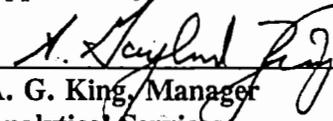
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November 3, 1995

Format and Content Guide for
Analytical Services Technical Procedures

Approved by


A. G. King, Manager
Analytical Services

1.0 SUMMARY

This document provides guidance for technical authorities, preparers and editors when authoring or editing technical procedures (Operational and Maintenance) for the Analytical Services (AS) Laboratories. Procedures are placed on macro FMT005 and Styles are incorporated into the headings. Macro FMT005 is available from the Procedures Administration function of AS Documentation Administration.

Provided in the appendix is a recommended language list, as well as a list of words that are frequently confused, misused, or abused.

2.0 PROCEDURE CONTENT

2.1 Operational Procedures

The following elements and sections are mandatory:

Approval Designator	The approval designator is identified for each procedure in accordance with WHC-CM-3-5, Section 12.7 and appears on page one of the procedure. The approval designator appears flush right below the title and is assigned by the technical authority (see WHC-CM-3-5, Section 12.7). An approval designator is assigned to the Procedure Review and Approval Form (PRAF) based on the impact of the change being incorporated. Required reviews are guided by this approval designation on the PRAF.
Summary	This section contains a short description or abstract of the procedure containing enough information to distinguish it from other procedures.
Applications	This section defines the specific scope and purpose of the procedure and can be combined with the following element under the title "Applications/Limitations."
Limitations	This section briefly describes areas in which the procedure is not applicable. A statement of accuracy and precision is given, as appropriate.
Safety	This section identifies relevant safety hazards. Technical authorities must review safety requirements and include relevant safety warnings that pertain to the actions directed by the procedure. This section also identifies applicable radiological work permits. Hold points for health-physics technician approval are designated by an (HP) in the left margin next to the appropriate step.

This section also includes any "special" Personal Protective Equipment (PPE) above and beyond what is normally required for that type of activity. For example, when the PPE should be donned and removed, special glove materials, aprons, sleeve covers, chemical goggles, and Category A or B requirements. If unsure of PPE or hazard associated with the procedure, contact the Safety Engineer or Industrial Hygienist. It should be noted if skin is a primary route of entry for systemic toxic effects for any of the chemicals used.

The following statement should appear in all procedures that have chemicals identified by Material Safety Data Sheets (MSDSs).

"The Occupational Safety and Health Administration (OSHA) requires Material Safety Data Sheets (MSDSs) be provided to customers by any manufacturer of chemicals. The MSDSs are a good source of information for safety, handling, and spill cleanup. Before chemicals are used, the person handling them should be familiar with the information provided by the particular vendor in the MSDS."

Safety requirements are identified in the following documents:

- HSRCM-1, *Hanford Site Radiological Control Manual*
- WHC-CM-1-10, *Safety Manual*
- WHC-CM-4-3, *Industrial Safety Manual*
- WHC-CM-4-29, *Nuclear Criticality Safety Manual*
- WHC-SD-CP-HSP-001, *Westinghouse Hanford Company Chemical Hygiene Plan*
- WHC-CM-4-40, *Industrial Hygiene Manual*
- WHC-CM-4-46, *Nonreactor Facility Safety Analysis Manual*.

Procedure Steps

This section includes a step-by-step description of activities necessary to perform the task presented in a logical and sequentially numbered order or an assignment of responsibilities. Each step contains only one action; however, combining multiple verbs with the same object in a single action statement may be considered. Explanatory "notes" are included for clarification of the process and precede the step to which the note refers. "Cautions" (potential for facility, equipment, data loss, or process damage) and "Warnings" (potential for personnel hazards) are included for relevant safety hazards before the action is described. Steps with potential for criticality specification violation are identified as "Criticality" prior to the step. Hold Points are identified.

The following sections are mandatory in some procedures, as applicable:

Quality Control Protocol

Some procedures, such as environmental analysis, are used to support specific projects with specific quality control requirements. For these procedures, the source of the quality control requirements is identified. The following information is typical of quality control requirements: preparative blank, laboratory control sample, sample duplicate, matrix spike/or

matrix spike duplicate. Frequency and acceptance criteria should be discussed, when applicable. This section is required if a Q appears in the approval designator.

- Reagents** If the procedure requires analytical reagents, a list of reagents is provided. Reagent makeup, storage container requirements, unique storage needs, shelf-life requirements, special labeling, and special preparation steps are included, as applicable.
- Special notation for any known or suspected carcinogens is made on the reagents list.
- Equipment** Special equipment requirements are listed in this section. Standard hood or glovebox equipment is assumed to be available at the work station and does not need to be listed, unless the technical authority prefers to include the equipment for clarity. The fabrication of off-standard equipment is referenced or described. Any special procedures or forms required are also listed.
- List any special equipment needed to provide an increased level of safety protection not already established by the supporting documents (i.e., arm shields, aprons, face shield, increased ventilation).
- References** A reference list of published information contained within the procedure that provides a documented basis for performance of the procedure, including that which is required in-hand for actual procedure performance.
- The following are frequently included in AS procedures for information:
- Calculations** Calculations required to complete the work are described. Examples with sample values are included. All combined factors are fully described and units noted in metric. Calculations do not have to appear in the order in which they are called out in the Procedure Steps (refer to WHC-CM-5-4, Section 3.9).
- Calibrations** When calibrations are required, a description of how to carry out required calibrations is given. Calibration is driven by each method.
- Discussion** This section should be brief (only a few paragraphs in length). This section should contain a discussion with supporting data from references of the theoretical aspects of the procedure. Brief identification of unique characteristics and interfaces to aid in troubleshooting are included.
- Bibliography** A list of published information that may or may not be directly referred to in the procedure, but may be included as interest to the procedure user or reader.

2.2 Maintenance Procedures

NOTE: All headings must be included, and if not applicable, "None" will be entered under the heading.

Approval Designator	The approval designator is identified by the Technical Authority for each procedure in accordance with WHC-CM-3-5, Section 12.7. It appears on page one, flush right, below the title. This designates the mandatory reviews required on it's original development. An approval designator is also assigned to each PRAF. A new procedure's PRAF will contain the same approval designator as appears on it's front page. A separate approval designator can be assigned to the PRAF of a Revision or Administrative Change, based on the impact of the procedure change being incorporated.
Purpose and Scope	This statement should describe what the procedure is going to do, the equipment involved and, if applicable, the equipment location and performance frequency.
References	This section identifies only reference material that is required, hands-on, for the user to perform the task.
Personnel Requirements	This section identifies all required personnel responsible for performance of the task. If the requirement is not known for certain, list personnel "as required".
Precautions and Limitations	This section presents the precautions that must be observed, and the limits that must be applied while performing the procedure, as well as identify any hazardous conditions that may be encountered during performance. Any Caution and/or Warning statements appearing in the Instructions section should also be reflected within this section.
Special Tools, Equipment and Materials	This section includes only items routinely <u>un</u> available to the procedure user.
Prerequisites	This section identifies plant, equipment or system conditions (including plant mode), alignments, and pre-task steps that must be satisfied prior to performing the Instructions section of the procedure.
Instructions	This sections always begins at the top of a new page, and includes a step-by-step description of activities necessary to perform the task presented in a logical and sequentially numbered order or an assignment of responsibilities. Each step contains only one action; however, combining multiple verbs with the same object in a single action statement may be considered. Explanatory "notes" are included for clarification of the process and precede the step to which the note refers. "Cautions" (potential for data loss, or facility, equipment, or process damage) and "Warnings" (potential for personnel hazards) are included for relevant safety hazards before the action is described.

Restoration	This section includes all steps necessary to ensure physical equipment has been restored to normal or as-found configuration.
Testing and Acceptance	This section is normally listed as "None", unless proof or post-maintenance testing from an equipment standpoint is required.
Disposition	This section directs a procedure user to perform final closeout actions.
Bibliography	If used, this section should contain listings of developmental and implementing documents used for procedure development when not contained in the procedure history file.
Attachments	If applicable, Attachments refers to back matter such as graphic figures, data sheets, signoff sheets, appendices, etc.

3.0 PROCEDURE FORMAT

NOTE: WHC-CM-5-4 is the governing manual for formatting AS technical procedures.

3.1 General Requirements for all Technical Procedures

U.S. Department of Energy Standard DOE-STD-1029-92, "Writer's Guide for Technical Procedures" is the basis of the format and content of AS laboratory technical procedures. INPO 85-026, "Writing Guideline for Maintenance and Calibration Procedures," is considered the basis of the format and content of AS laboratory maintenance and preventative maintenance procedures. These formats are also consistent with the guidelines for publications standards found in WHC-CM-3-6, *Uniform Publications System*. These guidelines include the site standards for abbreviations, acronyms, chemical notation, scientific notations, equations, units of measurements, and other editorial preferences. Any other necessary nomenclature will be clearly defined at the point of first use. A WordPerfect¹ macro is available from Procedures Administration that can be used to electronically guide the technical authority or procedure writer through these formats during procedure development.

The following lists some of the requirements of laboratory maintenance and technical procedures.

- Format and content of laboratory technical procedures are uniform and consistent with this section and meet the requirements identified above.
- All instructions are clear and precise.
- Each step contains only one action; however, combining multiple verbs with the same object in a single action statement may be considered.

¹WordPerfect is a trademark of WordPerfect Corporation.

- The nomenclature used within the procedure to identify equipment is identical to the nomenclature (if available) on the equipment actually installed.
- The procedure is written to minimize risk to personnel and equipment. Human factors are considered during procedure preparation. Where potential hazards exist, adequate warning or caution statements are provided.
- Warnings, notes, cautions, and criticality statements are easily identifiable and do not contain action statements. The probability of missing an action step increases when it is included in a warning, note, or caution.
- Warnings, notes, cautions, and criticality statements precede the step to which they apply.
- Warnings, notes, cautions, and criticality statements appear on the same page as the step to which they apply to ensure personnel are alerted to necessary information before performing a procedural step.
- The procedure is written to the degree of detail necessary for performing the required activity.
- The procedure, when appropriate, informs persons performing the procedure what responses to expect from their actions or the desired result of their actions.
- Sign-off blanks are provided for steps requiring sign off.
- Independent verification signoff is provided for applicable steps or sections of a procedure when required.
- When assistance from another group is required, instructions for notification of the responsible group is provided by the procedure.
- Acceptance criteria and/or other requirements within the procedure are clearly stated so the user can easily determine if the results are within the acceptable range.
- Vendor information is reviewed to ensure all necessary technical requirements are included in the procedure.
- As Low As Reasonably Achievable principles are considered when writing or revising the procedure. Applicable radiological hold and survey points are identified in accordance with the *Hanford Site Radiological Control Manual* (HSRCM-1, Rev. 2). As Low As Reasonably Achievable principles applying to hazardous material, hazardous waste, chemicals, and radiological contamination are considered.
- Technical Specification, Operational Safety Requirements, and all other applicable requirements or limits are identified.

3.2 Operational Procedures Format

- NOTES:
- The following lists formats for both mandatory and frequently used sections in the order they should appear within an operational procedure.
 - Refer to Sections 2.1 through 2.3 for specifics on the contents of these sections.

Approval Designator

The designator always appears on page one, flush right, below the title.

Summary Section

Paragraph(s) indented so the beginning of the sentence is aligned with the first letter of the "Summary" heading.

Applications/Limitations Section(s)

In paragraph form, or in numbered statements.

Quality Control Protocol Section

In paragraph form, or in numbered statements.

Safety Section

In paragraph form, or in numbered statements.

Reagents Section

1. Use the following format:

Reagent Name (Chemical Formula²) Concentration

2. Include the shelf life of all reagents that are taken out of the original container.
3. Replace any reference to "Q water" with "reagent water". Water must be listed as a reagent.
4. No Material Safety Data Sheets (MSDSs) are included. The use of MSDSs is covered by the following statement placed in the Safety Section.

The Occupational Health and Safety Administration requires Material Safety Data Sheets (MSDSs) be provided to customers by any manufacturer of

²Chemical formulas are given for inorganic compounds only.

chemicals. The MSDSs are a good source of information for safety, handling, and spill cleanup. Before chemicals are used, the person handling them should be familiar with the information provided by the particular vendor in the MSDS.

Equipment Section

1. Use the following format:

List, in alphabetical order, the generic item first, followed by descriptive adjectives. (For example, vial, 40 mL disposable, precleaned).
2. List any special equipment needed to provide an increased level of safety and health protection not already established by supporting documents.

Procedure Steps Section

1. Each step has an active verb and only one action; however, combining multiple verbs with the same object in a single action statement may be considered. Explanatory material must be put in a note, bullet, caution, warning, or criticality. The procedure steps cannot contain calculations. These must appear in the Calculation Section.
2. Steps are normally broken down into the following format:

1.0 FIRST ORDER HEADING - All caps and bold.

1.1 Second-Order Headings - Initial caps and bold.

1.1.1 Third-Order Headings - Initial cap first word and proper nouns and bold entire heading, unless text. Text is not bolded. Heading is placed two spaces in from left margin.

- **Lower order detail - When further detail is needed, indent and number items as shown below:**

1. Now is the time....
 - a. Now is the time...
 - b. Now is the time...
 - (1) Now is the...
 - (2) Now is the...

2. Now is the time...

- Bullets can be used at any level for lists that do not require a specific order and do not need to be referred to by number.

3. Notes, Cautions, Warnings, and Criticalities

- a. Notes contain additional information for clarification. They are printed flush left, and in bold. Notes should be placed in front of the procedure step they contain information about. They should not contain procedure steps. For example:

NOTE: Small quantities of sealed reference materials (such as NIST plutonium metal) cannot be verified. This is because destructive methods would destroy them and nondestructive assay is not sensitive enough.

- b. Cautions warn about equipment damage. They are centered on the page and printed in bold, and should not contain action steps. For example:

CAUTION

Do not add chemicals out of order; otherwise a precipitate may form and the standard may have to be discarded.

- c. Warnings warn about a personnel hazard or possible catastrophic damage to equipment. They are bolded, and the word "WARNING" should be centered on the page in a text box. The Warning statement should also be bolded, in all caps and centered below text box. For example:

WARNING

HF LIQUID AND VAPOR CAUSES SEVERE BURNS. WEAR PROPER PROTECTIVE CLOTHING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING. WORK IN A HOOD, AS FAR AS POSSIBLE FROM THE GLASS HOOD SASH. WEAR NITRILE GLOVES WHEN HANDLING.

- d. A criticality warning involves plutonium or uranium. It is centered on the page (in bold and all caps). For example:

CRITICALITY

CRITICALITY PREVENTION SPECIFICATIONS REQUIRE THAT HNO₃ CONCENTRATION IN PROCESS VESSELS EXCEED 1.3M.

Calculations Section

Use Equation Editor (preferably) to create equations, and provide examples with sample values. All combined values should be fully described and all units noted in metric.

Calibration Section

This section can appear before and after the Procedure Steps section, and generally appears as descriptive paragraphs.

Discussion Section

This section generally appears as descriptive paragraphs which include supporting data from references of the theoretical aspects of the procedure.

References Section

1. References should contain the following information in the order given:

- Names of all authors
- Year published
- Complete title
- Document number
- Publisher or company
- City and state of publication.

2. The following are a list of commonly used references:

EPA, 1992, *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, 3rd Edition, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, D.C.

EPA, 1990, *USEPA Contract Laboratory Program, Statement of Work for Inorganics Analysis*, ILMO1.0, U.S. Environmental Protection Agency, Washington, D.C.

EPA, 1990, *USEPA Contract Laboratory Program, Statement of Work for Organics Analysis*, OLM01.0, U.S. Environmental Protection Agency, Washington, D.C.

Hewlett-Packard, *HP-97 Owners Handbook and Programming Guide*, Corvallis, Oregon.

Sant, W. H., 1995, *Westinghouse Hanford Company Chemical Hygiene Plan*, WHC-SD-CP-HSP-001, Westinghouse Hanford Company, Richland, Washington.

Dale, T. F., 1995, *Building Emergency Plan for 222-S Laboratory Complex*, WHC-IP-0263-222S, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-1-10, *Safety Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-1-11, *Industrial Hygiene Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-4-3, *Industrial Safety Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-4-40, *Industrial Hygiene Manual*, Westinghouse Hanford Company, Richland, Washington.

Bibliography Section

Use the same format as the Reference Section.

3.3 Maintenance Procedures Format

- NOTES:
- Refer to WHC-IP-1140, *Technical Procedures Development and Control*, Rev. 0, Section 3.0, "Standard Statements and Recommended Verbiage".
 - Most sections are organized as numbered statements, lists, or steps, or appear as paragraphs.
 - Refer to Section 2.4 for specifics on the contents of these sections.

Approval Designator

The designator always appears on page one, flush right, below the title.

Purpose and Scope Section

Paragraph(s) indented so the beginning of the sentence is aligned with the first letter of the "Summary" heading.

References Section

Maintenance procedures follow the same format as Operational procedures, though the reference entries are usually numbered.

Personnel Requirements

Numbered list; if involvement is possible, list personnel "as required".

Precautions and Limitations

Numbered statements/paragraphs outlining precautions and limitations, as well as the inclusion of any Cautions or Warnings found in the Instructions Section.

Special Tools, Equipment and Materials Section

1. List numerically by alphabetical order, using the following format:
 - a. The generic item first, followed by descriptive adjectives. [(For example, cleaning solution (1 lb soda/1 gal water))].
 - b. List any special equipment needed for Safety and Health consideration.

Prerequisites Section

In paragraph form, or in numbered statements.

Instructions Section

Please refer to Section 2.2.

Restoration Section

1. Use numbered steps/statements to describe how to restore equipment to normal configuration, if required.
2. DO NOT reference reverse performance of Instructions Section steps.

Testing and Acceptance Section

Use numbered statements/paragraphs in this section. System operability testing shall be referenced within this section, if applicable. *Only Operations shall determine operability.* System configuration is seldom constrained enough to allow for clear and applicable instructions for testing or acceptance. List applicable operation procedures in this section, if any exist.

Disposition Section

This section includes steps for final closeout (i.e., attach data sheets, inform management upon completion of task).

Bibliography Section

Use the same format as the Reference Section.

Attachments Section

Each attachment page has the same header and footer as the body of the procedure.

3.4 Miscellaneous Formatting Notes

Any additions or changes made to an existing procedure must be marked with the printer control redline feature and deletions with the strikeout feature.

Always use scientist in place of chemist.

Do not put a space between an element and its valance number, e.g., plutonium(III).

Table of Contents are not used except with Emergency procedures, or when specifically requested by author.

4.0 ACRONYMS AND ABBREVIATIONS

An abbreviation is a shortened form of a word or term. An acronym is an abbreviation that uses the initials of the words or term being shortened.

Define the abbreviation or acronym the first time it is used in a document and follow it by the abbreviation or acronym in parentheses. Use only the abbreviation or acronym in the rest of the document except in titles and captions. The number of different acronyms or abbreviations used should be kept to a minimum. Words or terms should not be converted to acronyms unless they appear frequently (i.e., more than 10 times).

The terms second(s), minute(s), hour(s), day(s), week(s), month(s), and year(s) shouldn't be abbreviated even when used with a number except when using compound measurements such as km/h. Such abbreviations may be used in tables or figures when space is a consideration.

Use an apostrophe to form the plural of letters (A's) and numbers (1930's) but not abbreviations or acronyms. When using the abbreviation or acronym in the plural form alone in text, add a lowercase "s" without an apostrophe (e.g., the SARs will be completed by June.) Units of measure are always singular in abbreviation.

The acronym "WHC" may be used in both external and internal documents and correspondence. The term "Westinghouse," when it stands alone, refers to the Westinghouse Electric Corporation.

5.0 RECORDS

Any records generated as a result of activities described in this procedure will be managed in accordance with applicable Records Inventory and Disposition Schedules.

6.0 DESIGNATED REVIEWERS

<u>Designated Reviewing Organizations</u>	<u>CMPOC</u>
AS Documentation Administration (Champion)	T6-03
HASQAP Compliance	T6-16
Characterization Project ESQ	T6-04
Analytical/Environmental Quality Assurance	T6-03
222-S Analytical Operations	T6-16

7.0 REFERENCES

WHC-CM-1-3, *Management Requirements and Procedures*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-1-10, *Safety Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-1-11, *Industrial Hygiene Manual*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-3-6, *Uniform Publications Systems*, Westinghouse Hanford Company, Richland, Washington.

WHC-CM-5-4, *Laboratories Administration*, Westinghouse Hanford Company, Richland, Washington.

WHC-IP-1140, *Technical Procedure Development and Control*, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A

Recommended Language List

NOTE: Words appearing in all caps are the preferred use.

Accomplish	See PERFORM.
ACTUATE	To put into operation; to move to action. "ACTUATE Train-A HVAC."
ADAPT	To make fit a new situation or use, often by modifying.
ADD	To put more in. "ADD oil to the reservoir."
ADJUST	A. To move to a desired position. "ADJUST span to 100%." B. To bring to a more satisfactory state; to manipulate levers, controls, etc. "ADJUST damper position at damper motor turnbuckle."
Advise	See NOTIFY.
ADVANCE	To move forward, to move ahead. "ADVANCE throttle."
Agitate	See SHAKE.
Aid	See ASSIST.
ALERT	To warn, to call attention to, to notify workers of an impending action. "ALERT personnel alarm test is beginning."
ALIGN	To bring into line, to line up, to bring into precise adjustment or position. "ALIGN keyways before assembling gear shaft".
Allocate	See DISTRIBUTE.
ALLOW	A. To let. To permit. To give opportunity to. "ALLOW sediment to settle out". B. To leave. To allot or provide for. "ALLOW a 2-inch slack in the rope".
ALTERNATE	To perform or cause to occur by turns or in succession. "ALTERNATE between test instrument channels".

APPENDIX A (Continued)

ANALYZE	To examine and interpret test or inspection results to determine system or equipment condition or capabilities. "ANALYZE generator inspection findings to determine need for repairs".
AND	Establishes each of a series of actions must be performed with no alternatives available. Connects items and actions.
APPLY	To put; to lay or spread on. "APPLY sealant to gap between access cover and equipment structure".
ARRANGE	To order. To group according to quality, value or other characteristics. To put in proper order. To organize. "ARRANGE components by size from smallest to largest."
Ascertain	See VERIFY.
ASSEMBLE	To construct. To fit and secure together the several parts of. To make or form by combining parts. "ASSEMBLE valve components in accordance with specified procedures".
Assess	See EVALUATE.
ASSIST	To give support or help. To aid. "ASSIST man B to lift load."
ATTACH	To join or fasten. "ATTACH side plate of assembly using 1/2 inch machine screws".
AVOID	To keep away from. To prevent the occurrence of. "AVOID use of excessive force in seating pressure valve".
BACK OFF	To cause to go in reverse or backward. "BACK OFF nut 1/4 turn".
BALANCE	To equalize in weight, height, number or proportion. "BALANCE electrical loads on buses".
Be sure	See VERIFY.
BEND	To turn by force from straight or even, to curved or angular, or to force back to an original straight or even position. "BEND wire until it lies flat against turnbuckle wall".
BLEED	To extract or let out some or all of a contained substance. "BLEED off tank air pressure".

APPENDIX A (Continued)

BLOW	To drive a current of air on, in or through. "BLOW out the supply tubing, <u>THEN</u> CONNECT to regulator".
Break	See DISCONNECT. See REMOVE.
CALCULATE	To figure. To compute. To determine by arithmetic processes. "CALCULATE head differential <u>AND</u> APPLY to span".
CALIBRATE	To determine accuracy, deviation or variation by special measurement or by comparison with a standard. "CALIBRATE torque wrench before assembling valve flange".
CAN	Refers to a possible response.
CAP	To install caps. To provide with a covering. To install or provide with a device for closing off the end of a tube which has a male fitting. "CAP lines having exposed male fittings".
Categorize	See IDENTIFY. See SEPARATE.
CENTER	A. To adjust so axis coincide. "CENTER bushing in opening". B. To place in the middle of. "CENTER pointer on dial".
Change	See REPLACE.
CHANNEL	A. To form, cut or wear a groove in. "CHANNEL rods to allow easy insertion". B. To direct fluid through a passage. "CHANNEL flow into holding tank".
CHARGE	To restore the active materials in a storage battery by the passage of a direct current in the opposite direction to the discharge. To cycle. "CHARGE battery for short time before making specific battery check".
CHECK	To observe an expected condition or characteristic. To determine. To ascertain. "CHECK termination criteria are being met".
Check out	See TEST.

APPENDIX A (Continued)

CHOKE	To enrich the fuel mixture of a motor by partially shutting off the air intake of the carburetor. "CHOKE engine as required to start".
CLAMP	To fasten or press two or more parts together to hold them firmly in place. "CLAMP tensiometer to cable by releasing handle (slowly)".
Classify	See IDENTIFY. See SEPARATE.
CLEAN	To wash, scrub or apply solvents to. To remove dirt, corrosion or grease. "CLEAN parts using nonabrasive cleaner".
CLEAR	To move people or objects away. "CLEAR immediate area".
CLOSE	A. To block against entry or passage. To turn, push or pull in the direction in which flow or access is impeded. "CLOSE access panel". B. To stop flow (valves) "CLOSE valve". C. To make an electrical connection to supply power (for electrical devices). "CLOSE circuit breaker".
COAT	To cover or spread with a finishing or protecting layer. "COAT battery cables with grease".
CODE	To put into the form or symbols of a system used to represent words. To mark with identifying symbols. "COLOR CODE equipment parts".
COIL	To make into the form or shape of a loop. To roll or twist into the shape of a circle or spiral. "COIL wire".
COLLECT	To bring together into one body or place. To accumulate. "COLLECT samples each morning".
COMPARE	To examine the character or quality of two or more items to discover resemblances or differences. "COMPARE readings from both instruments".

APPENDIX A (Continued)

COMPLETE	To bring to an end. To finish. To accomplish specified procedural requirements. "COMPLETE all requirements on data sheet before continuing".
Comply	See FOLLOW.
COMPRESS	To press or squeeze together. "COMPRESS spring-loaded assembly until latch engages".
Compute	See CALCULATE.
CONDUCT	To lead, manage or direct. "CONDUCT prework meeting".
CONFER	To consult. To exchange views. "CONFER with maintenance supervisor if necessary".
CONNECT	A. To bring or fit together so as to form a unit. To couple keyed or matched equipment items. To attach, <u>mate</u> or join. "CONNECT antenna cable to radio transmitter". B. To attach or mate an electrical wiring connection. To plug in. "CONNECT DMM leads to test jacks".
Construct	See ASSEMBLE.
Contact	See NOTIFY. See SIGNAL.
CONTROL	To fix or adjust the time, amount or rate of. To regulate or restrict. "CONTROL electrical current generation and distribution".
COOL	To make or become lower in temperature. "ALLOW motor to cool before disassembling".
COPY	To make an imitation, transcript or reproduction of. "COPY procedure for filing".
CORRECT	To make or set right. To alter or adjust so as to bring to some standard or required condition. "CORRECT errors before proceeding with activity".
COVER	To protect or shelter by placing something over or around. "COVER valve internals when operator is removed".

APPENDIX A (Continued)

CRIMP	To compress or deform a connection barrel around a cable to make an electrical connection. "CRIMP connector on yellow wire".
CUT	To divide into parts using a sharp instrument such as a scissors or knife. " <u>IF</u> prongs of cotter pin are too long, <u>THEN</u> CUT to proper length".
CYCLE	To perform a process where the beginning and ending events or actions are the same. "CYCLE pump".
DATE	To affix a date to. "SIGN <u>AND</u> DATE enclosure".
Decrease	See LOWER.
DE-ENERGIZE	To remove power. "DE-ENERGIZE circuit"
DEFLATE	To release air or gas from. "DEFLATE shock strut to check fluid level".
Deliver	See TAKE. See SUBMIT. See DISTRIBUTE.
DEPRESS	To press or push down. "DEPRESS pushbutton switch, <u>THEN</u> RELEASE".
DEPRESSURIZE	To release gas or fluid pressure from. "DEPRESSURIZE hydraulic system".
Destroy	See DISPOSE.
DETERMINE	To find. To investigate and decide. To discover by test, study or experiment (implies technical knowledge). "DETERMINE amount of tension on cable by following specified procedures".
DEVELOP	To set forth or make clear by degrees or in detail. "DEVELOP procedures fully".
DIAGNOSE	To recognize and identify the cause or nature of a condition, situation or problem by examination or analysis. "DIAGNOSE malfunction".

APPENDIX A (Continued)

DISASSEMBLE	To dismantle. To take to pieces. To take apart to the level of the smallest unit or down to all removable parts. "DISASSEMBLE valve bonnet".
DISCONNECT	A. To sever the connection between. To separate keyed or matched equipment parts. To break. "DISCONNECT antenna cable from transmitter". B. To detach or separate an electrical connection. To unplug. "DISCONNECT leads to power circuit".
DISENGAGE	To release or detach interlocking parts. To unfasten. "DISENGAGE turning gear".
Dismantle	See DISASSEMBLE.
DISPOSE	To get rid of. To destroy. "DISPOSE of unused remaining hydraulic fluid."
DISSOLVE	To cause to pass into solution. "DISSOLVE mixture in 2 gallons of water".
DISTRIBUTE	To divide among several or many. To divide or separate into kinds. To deliver. "DISTRIBUTE procedure copies for review".
DRAIN	To draw off gradually or completely. "DRAIN servicing hose after removal from filter valve".
DRAW IN	To pull up into a container through suction. "FILL hydrometer by drawing in electrolyte".
DRIVE	To move a component either in or out. "DRIVE bearing into position".
DROP	Describes a decrease in a parameter as the result of an operator or equipment action. "VERIFY drop in pressurizer pressure".
DRY	To cause to be free from water or liquid. "DRY bearing with low-pressure air".
Effect	See PERFORM.
ELIMINATE	To expel. To ignore or set aside as unimportant. "ELIMINATE unnecessary movement".

APPENDIX A (Continued)

Employ	See USE.
EMPTY	To discharge contents. To transfer by removing. "EMPTY sludge tank into transfer tank".
ENERGIZE	To supply power. "ENERGIZE circuit".
ENGAGE	To cause to interlock or mesh. "ENGAGE threads of turnbuckle with threads of cable terminal".
ENSURE	A. To make sure by taking necessary or appropriate actions. "ENSURE discharge pressure is stable". B. To establish the truth or accuracy of. "ENSURE readings are accurate before recording".
ENTER	To go or come in. "ENTER contaminated area through control point".
ERECT	To put up by fitting together. "ERECT temporary platform".
ESTABLISH	A. To set on a firm basis. "ESTABLISH safety rules". B. To perform actions necessary to meet stated conditions. "ESTABLISH communications with Control Room".
ESTIMATE	To judge or determine roughly the size, extent or nature of. "ESTIMATE necessary amount of cleaning solvent".
EVALUATE	To assess. To determine the importance of. To appraise a situation. "EVALUATE current plant status".
Examine	See INSPECT.
EXCEED	To go beyond a limit. "DO NOT exceed 400 psi pressure".
EXIT	To go out or away. "EXIT building through security doors".
EXTEND	To cause to be drawn out to greater length. "EXTEND adjustable leg to full length".

APPENDIX A (Continued)

EXTINGUISH	A. To cause to cease burning. "EXTINGUISH fire using proper extinguisher".
	B. To cause to cease being illuminated. "EXTINGUISH lights when exiting room".
Extract	See REMOVE.
Fasten	See ATTACH. See SECURE.
FABRICATE	To construct from standardized parts. "FABRICATE rig pins from 0.25 inch rod".
Figure	See CALCULATE.
FILE	To rub smooth or cut away with a file. "FILE one end of rod to point".
FILL	To put into as much as can be held or conveniently contained or to a specified level. To flood. To replenish. "FILL tank with pure water".
Find	See LOCATE. See DETERMINE.
Flood	See FILL.
FLUSH	To pour liquid over or through. To wash out with a rush of liquid. "DRAIN <u>AND</u> FLUSH hydraulic system".
FOLD	To lay one part over another part. To reduce the length or bulk by doubling over. "FOLD sides of curtain on creases".
FOLLOW	To comply. To accept as authority. To obey. To conform with directions or rules. "FOLLOW directions specified in Figure 1".
FORCE	To exert strength or power to overcome resistance. "FORCE pin into slot as far as possible".
FORM	To give a particular shape to. To shape or mold into a certain state. To make up. "FORM compound to fill hole completely".
Furnish	See PROVIDE.

APPENDIX A (Continued)

GIVE	To put into the possession of another. "GIVE keys to Operations Supervisor".
GO TO	To proceed to. To transport oneself to a given destination. "GO to local panel <u>AND</u> REPORT switch positions".
GRIND	To pulverize, polish, wear down, sharpen or smooth by use of a machine or other device. "GRIND weld flush with surface".
GROUND	To connect a current, wire or piece of electrical equipment to a land, bus or other specified surface. "GROUND load center test box".
GUIDE	To manage or direct the movement of. "GUIDE wedge through valve body opening (carefully)".
HANDLE	To manipulate objects and equipment manually or with specially designated equipment. "HANDLE valve stem carefully".
HANG	To fasten to an elevated point without base support. To suspend. "HANG wiring from temporary overhead hooks".
HEAT	To cause to increase in temperature. "HEAT solvent before use".
Help	See ASSIST.
IDENTIFY	A. To establish the identity of. "IDENTIFY components by name and function". B. To classify a supply item. To note. "IDENTIFY component to be ordered from supply".
IF	Establishes a prerequisite which must be met before performing a step. Identifies conditions for operational actions.
Illuminate	See LIGHT.
IMMERSE	To plunge into something surrounding or covering. "IMMERSE component in solvent".
IMPLEMENT	To start a required program or series of procedures. "IMPLEMENT Emergency Plan".

APPENDIX A (Continued)

IMPROVE	To make greater in amount or degree. To make better. "IMPROVE procedures whenever feasible".
INCLUDE	To take in or comprise as a part of. To add to. "INCLUDE the following positions of off-gas system in hydrostatic test".
Increase	See RAISE.
INFLATE	To fill with a given amount of gas or air. "INFLATE bladder to desired pressure".
Inform	See NOTIFY.
INITIAL	To affix one's initials. "INITIAL data sheet when completed".
Initiate	See START.
INSERT	To put or thrust in, into or through. "INSERT wire through hole in panel".
INSPECT	To examine or review present condition. "INSPECT (visually) components for wear, deterioration or defects".
INSTALL	A. To perform operations necessary to properly fit an equipment unit into the next larger assembly or system. "INSTALL rocker assembly". B. To place and attach. "INSTALL nuts on bolts".
INTERCHANGE	To put each in the place of the other. "INTERCHANGE printed circuit cards DF2 and ES3".
ISOLATE	A. To remove from service. "ISOLATE main purge flow". B. To shut off or separate segments of piping systems. "ISOLATE bypass flow by closing valves WX02 and WX03".
Join	See CONNECT.
Keep	See MAINTAIN. See AVOID.
LATCH	To catch with a device which holds a door when closed. "CLOSE <u>AND</u> LATCH cell access hatch".

APPENDIX A (Continued)

Let	See ALLOW.
LIFT	To exert effort to overcome resistance of weight. "LIFT test pump to position on platform".
LIGHT	To cause to illuminate. "LIGHT test area using temporary lights".
LINE UP	To bring to proper condition for use. "LINE UP system to run Train A".
LISTEN	To pay attention to audible signals. "LISTEN to pump while operating".
LOAD	To place in or on a means of conveyance. To place supplies or components on a vehicle. "LOAD <u>AND</u> SECURE components on specified truck".
LOCATE	To find, determine or indicate the place, site or limits of. "LOCATE thrust bearing primary temperature element".
LOCK	A. To hold fast or inactive. To fix in place. "LOCK throttle after it has been set". B. To fasten the lock of. "LOCK electrical panel".
LOCKOUT	To place a control switch or device in a position/condition to be out of service. "LOCKOUT switches A and B".
LOOSEN	To release from restraint. To cause to become less tight fitting. "LOOSEN relief valve lock nut".
LOWER	To cause to move down. An action to decrease a parameter. "LOWER plug into valve body".
LUBRICATE	To put lubricant on/in specified locations.
MAINTAIN	A. To hold or keep in any particular state or condition. "MAINTAIN lost supplies record". B. To take appropriate actions to prevent fluctuation or change. "MAINTAIN test pressure for 15 minutes".
MARK	To label. To provide with an identifying or indicating symbol. "MARK each component before removing it".

APPENDIX A (Continued)

Mate	See CONNECT.
MAY	Indicates acceptable or suggested methods. Denotes permission.
MEASURE	To determine the dimensions, capacity or amount by use of standard instruments or utensils. "MEASURE voltage drop across each heater element".
MIX	To combine or blend into one mass. "MIX resin slurry".
MODULATE	To adjust a valve using a controller to establish a required parameter. "MODULATE steam supply valve controller to maintain cooldown rate".
MONITOR	To continually or periodically attend to displays to determine equipment condition or operating status. To observe current trend. "MONITOR indicator for pressure change".
MOUNT	To attach to a support or specified location. "MOUNT pressure gauge in housing".
MOVE	To change the location or position of. "MOVE valve to clean area for disassembly".
NEUTRALIZE	To destroy the effectiveness of. To nullify. To make chemically neutral or electrically inert. "NEUTRALIZE solution before applying to equipment surface".
Note	See OBSERVE.
NOTIFY	To make known to. To give notice or report the occurrence of. To inform specified personnel. To advise. To communicate. To contact. To relay. "NOTIFY operations manager before performing test".
NUMBER	To affix numbers on the pages of the procedure or enclosures. "NUMBER enclosure pages".
OBSERVE	A. To conform one's actions or practice to. "OBSERVE precautions". B. To watch or monitor. To visually take note of. To pay attention to. "OBSERVE indicator when pressure reaches test pressure".
OBTAIN	To gain or attain. "OBTAIN necessary supplies before starting maintenance".

APPENDIX A (Continued)

OPEN	<p>A. To move from closed position. To move to the unobstructed position by turning in an appropriate direction to permit access or flow. "OPEN relief valve".</p> <p>B. To break an electrical connection which removes a power supply from an electrical device. "OPEN circuit breakers".</p> <p>C. To make available for entry or passage by turning back, removing or clearing away. "OPEN overhead maintenance access hatch".</p>
OPERATE	<p>A. To control equipment in order to accomplish a specific purpose. "OPERATE fire extinguisher".</p> <p>B. To open and close valves as necessary to perform the intended function. "OPERATE vent valve to release non-condensable gases".</p> <p>C. To place pumps or breakers in the state necessary for them to perform their intended function. "OPERATE standby pump for three minutes".</p>
OR	Establishes each of a series of action is equally preferable. Indicates alternatives.
Order	See ARRANGE.
Organize	See ARRANGE.
Orient	See POSITION.
OVERHAUL	The act of disassembling equipment units down to all removable parts. Cleaning, critically inspecting, repairing, restoring and replacing where necessary. Assembling, adjusting, aligning, recalibrating and verifying operational readiness by test or checkout. "OVERHAUL exhaust fan No. 2".
PACK	To fill completely. "PACK bearings".
PAINT	To apply color, coating or pigment (mixed in vehicle) to a surface. "PAINT exposed surfaces".
PATCH	To mend, cover or fill up a hole, crack or other deformity. "PATCH tubes where necessary".

APPENDIX A (Continued)

PERFORM	To do, carry out or bring about. To accomplish. To effect. To reach an objective. "PERFORM steam generator hydrostatic test".
PLACE	To put or set in a desired location or position. To locate. "PLACE test equipment next to electrical cabinet but away from traffic areas".
PLUG	To provide with a device for closing off the end of a tube which has a female fitting. To install plugs. "PLUG lines having exposed female fittings".
POSITION	To put or set in a specific configuration, place, or orientation. To locate. To reset. "POSITION test equipment to be seen by both technicians".
POUR	To cause to flow in a stream. "POUR drainage into a waste reservoir".
PREPARE	A. To make ready. To arrange things in readiness. To set up. "PREPARE surface for paint". B. To put together or make ready for a maintenance activity. "PREPARE additional data sheets as necessary".
Press	To act upon with steady force. "PRESS blower start button".
PRESSURIZE	To apply pressure within by filling with gas or liquid. "PRESSURIZE first-stage chamber".
PREVENT	To keep from happening or existing. "PREVENT oil from spilling over on components".
PROVIDE	To furnish. To supply what is needed. To equip. "PROVIDE flashlight for tank entry".
PULL	To exert force upon an object so as to cause motion toward the force. "PULL throttle knob out before starting".
PUMP	A. To raise or lower by operating a device which raises, transfers or compresses fluids by suction, pressure or both. "PUMP overflow from catch pan". B. To move up and down or in and out as if with a pump handle. "PUMP engine primer knob".

APPENDIX A (Continued)

PUNCTURE	To pierce with a pointed instrument or object. "Be careful not to puncture tube walls while inserting instrument".
PURGE	To free of sediment or trapped air by flushing or bleeding. "PURGE fuel lines".
PUSH	To move away or ahead by steady pressure. "PUSH access door until it latches in position".
PUT	To deposit or leave. "PUT tools on bench".
RAISE	A. To move or cause to be moved from a lower to a higher position. To elevate. "RAISE control lever to RELEASE position". B. To make greater in size, amount or intensity. "RAISE tank pressure to 400 psi".
READ	To interpret the meaning of by visual observation. "READ ammeter indication".
READJUST	A. To bring back to a specified position or state. "READJUST micrometer to given measurements". B. To bring back to a more satisfactory state. To manipulate controls, levers, linkages, etc. To return equipment from an out-of-tolerance condition to an in-tolerance condition. To reset. "READJUST cable tension using turnbuckles".
Ready	See PREPARE.
REASSEMBLE:	To reconstruct. To refit and secure together the several parts of. To remake or reform by combining parts. "REASSEMBLE valve components in accordance with specified procedures".
RECAP	To reinstall caps. To provide with a covering. To reinstall or provide with a device for closing off the end of a tube which has a male fitting. "RECAP lines having exposed male fittings".
Recapitulate	See REPEAT.
RECEIVE	To come into possession of. To get. "RECEIVE supplies as they arrive".

APPENDIX A (Continued)

RECOGNIZE	To perceive to be something previously known or diagnosed. "RECOGNIZE troubles through evaluation of engine operational checks".
RECOMMEND	To urge the acceptance or use of. "RECOMMEND procedure changes where appropriate".
RECONNECT	A. To bring back or refit together so as to form a unit. To recouple keyed or matched equipment items. To reattach, remate or rejoin. "RECONNECT antenna cable to radio transmitter". B. To reattach or remate an electrical wiring connection. To plug in. "RECONNECT DMM leads to test jacks".
RECORD	To document a specified condition or characteristic. "RECORD discharge pressure on data sheet".
Reduce	To cause to be diminished in strength, density or value. To decrease. "REDUCE pump flow".
REFER	A. To call or direct attention to a supplement. "REFER to Figure 1 for part numbers". B. To give direction to perform actions in another procedure and return to the originating procedure. "REFER to PSCP-X-000, Steps 7.2.3 through 7.5.4".
Regulate	See CONTROL.
REINFLATE	To refill with a given amount of gas or air. "REINFLATE bladder to desired pressure".
REJECT	To refuse to have, use or take for some purpose. "REJECT components showing excessive wear".
Relay	See NOTIFY.
REINSTALL	A. To perform operations necessary to properly refit an equipment unit into the next larger assembly or system. "REINSTALL rocker assembly". B. To replace and reattach. "REINSTALL nuts on bolts".

APPENDIX A (Continued)

RELEASE	<p>A. To set free from an inactive or fixed position. To unlock. "RELEASE "AUTO" hold bar to provide manual control".</p> <p>B. To let go of. "RELEASE tensiometer handle".</p> <p>C. To set free from restraint or confinement. "RELEASE pressure".</p>
REMOVE	<p>A. To perform operations necessary to take an equipment unit out of the next larger assembly or system. "REMOVE bleed air shutoff valves".</p> <p>B. To take off or eliminate. "REMOVE paint".</p> <p>C. To take or move away. To extract. "REMOVE covers".</p> <p>D. To take off devices for closing off the end of a tube. To uncap or unplug. To break. "REMOVE caps (plugs) from hydraulic lines".</p>
REPAIR	To restore equipment to operable condition by means other than total replacement of a part. "REPAIR connector by soldering leads".
REPEAT	To make, do or perform again. To recapitulate. " <u>IF</u> keys do not engage lugs, <u>THEN</u> REMOVE assembly <u>AND</u> REPEAT procedure".
REPLACE	To change or substitute serviceable equipment for malfunctioning, worn out or damaged equipment. "REPLACE switch contact points".
Replenish	See FILL.
REPORT	To describe as being in a specific state. "REPORT conditions of worn or frayed wires to maintenance supervisor".
REPRESSURIZE	To reapply pressure within by filling with gas or liquid. "REPRESSURIZE first-stage chamber".
REQUEST	To ask for. "REQUEST further information if necessary".

APPENDIX A (Continued)

RESET	To put back a switch, pointer or knob into a given position. To put equipment into a given adjustment, condition or mode. "RESET "POWER" Switch to ON".
RESTORE	To bring back or put back into a former or original state. "RESTORE hydraulic pressure".
RETRACT	To draw back or in. "RETRACT locking pins by turning lock screw counterclockwise".
RETURN	To bring, send or put back to a former or proper place. "RETURN throttle valves to preset positions after testing".
REVIEW	To examine again, to go over or examine critically or deliberately. "REVIEW test data and signature sheet to ensure all blanks have been filled in".
RINSE	To clean (as from soap used in washing) by clear water. "RINSE battery after cleaning it with soda water solution".
RISE	Describes an increase in a parameter as the result of an operator or automatic action. "OBSERVE rise in condensate tank level".
ROTATE	A. To cause to revolve about an axis or center. To turn. "ROTATE traveling screens 90 degrees". B. To hand-rotate a pump before energizing. "ROTATE pump".
ROUTE	To send by a selected course of travel. To divert in a specified direction. "ROUTE cable according to Figure 1".
Rub	See WIPE.
SCAN	To make a wide, sweeping search of. To look through or over quickly. "SCAN local panels for alarms before beginning maintenance activity".
SCRAPE	To remove from, smooth or clean a surface by repeated strokes of an edged Instrument or by other means. "SCRAPE surfaces of component to remove peeling or chipped paint".
SCREW	A. To attach, fasten or close by means of a screw. "SCREW safety lock into position". B. To attach by means of a twisting motion in the proper direction. "SCREW adapter onto tank fitting".

APPENDIX A (Continued)

SCRUB	To clean with hard rubbing. "SCRUB all metal parts with non-abrasive brush".
SEAL	To secure with a closure against access or leakage. "SEAL ends of pipe using plastic covers".
SECURE	To fasten or to make safe. "SECURE bolt with cotter pin".
SELECT	To take by preference of fitness from a number or group. To pick out. To choose. "SELECT battery cell and insert hydrometer nozzle in cell".
SEPARATE	To set or keep apart. To classify. To categorize. "SEPARATE cables by at least 6 inches".
SET	To put a switch, pointer or knob into a given position. To put equipment into a given adjustment, condition or mode. "SET "POWER" Switch to ON".
Set up	See PREPARE.
SHALL	Indicates requirement.
SHAKE	To move or cause to move to and from in a quick, jerky manner. To agitate. "SHAKE container to mix paint well".
SHIFT	Specifies changing mode of operation.
SHOULD	Indicates recommended or preferred method.
SHOW	To cause or permit to be seen. To exhibit. "CALCULATE pressure using formula <u>AND</u> SHOW calculations".
Shut	See CLOSE.
SHUT DOWN	To perform operations necessary to cause equipment to cease or suspend operation. To stop. "SHUT DOWN air conditioning".
SIGN	To affix a signature to. "SIGN data sheet when completed".
SIGNAL	To notify or communicate by signals (a prearranged sign, notice or symbol conveying a command, warning, direction or other message). To contact. "SIGNAL operator to start pump".

APPENDIX A (Continued)

SLIDE	To cause to move in a smooth manner over a surface. "SLIDE solid cylinder into cylindrical base".
SLIP	To move with a smooth, sliding motion. "ALLOW cylinder to slip into place".
SPARE	Equipment which may be lined up to multiple trains. "START spare pump".
SPECIFY	To name or state explicitly or in detail. "Specify manufacturer's number for multimeter".
SPILL	To cause or allow to fall, flow or run out. "Be careful not to spill battery acid on clothing or hands".
SPIN	To cause to revolve rapidly. "SPIN wheel by hand until a bearing drag is noticed".
SPRAY	To apply with a device which disperses a jet of finely divided liquid. "SPRAY surface with a coating of cleaning solvent".
SQUIRT	To eject liquid in a thin spurt. "SQUIRT solution around seal and check for leakage".
STANDBY	Idle equipment which is ready to start. "LINE UP "standby" pump".
START	To perform actions necessary to set into operation. To set going, to begin. To initiate. To originate. "START pump".
STIR	To disturb relative position of particles or parts of, especially by a continued circular motion. "STIR sample before performing conductivity test".
STOP	To perform actions necessary to cause equipment to cease or suspend operation. "STOP pump".
STORE	To deposit or leave in a specified place for future use. To stow. To put away. "STORE equipment covers after maintenance activity is completed".
Stow	See STORE.
SUBMIT	To make available, to offer. To deliver. "SUBMIT completed work package to maintenance supervisor".

APPENDIX A (Continued)

SUPPORT	To hold up or provide a foundation or props for. "SUPPORT assembly at both ends".
SURVEY	To examine comprehensively. "SURVEY entire equipment surface".
SUSPEND	To stop action. To leave system as it stands. " <u>IF</u> pressure rises above 400 psi, <u>THEN</u> SUSPEND activity until pressure drops below 380 psi".
SYNCHRONIZE:	To establish phase-to-phase alignment. "SYNCHRONIZE Bus A with Bus C".
Tabulate	See RECORD.
TAG	To provide an identifying or indicating symbol with or as if with a tag (i.e., a cardboard, plastic or metal marker used for identification of classification), to label. To attach or connect a tag to. To mark. "TAG each hydraulic line before removing it".
TAKE	A. To get into or carry in one's hands or one's possession. To deliver. "TAKE valve to a clean area for disassembly". B. To get or find out by observation or special procedures. To obtain. "TAKE a reading on outside circle of tensiometer".
TAP	To strike lightly. "TAP cotter pin eye to seal it".
TEST	To perform specified operations to verify operational readiness of a component, subcomponent, system or subsystem. To check out. "TEST indicator accuracy as follows:"
THEN	Indicates actions to be performed after stated conditions have been established.
THROTTLE	To operate a valve in an intermediate position to obtain a certain flow rate. "THROTTLE valve for three minutes".
TIE	To fasten, attach or close by means of a line or cord. "TIE support ropes to equipment".
TIGHTEN	To perform necessary operations to fix more firmly in place. "TIGHTEN screws".

APPENDIX A (Continued)

TORQUE	To apply a specified amount of force to produce a rotation or twisting motion to fix more firmly in place. To tighten. "TORQUE nut to 500 ft/lb".
TRACE	To follow or study in detail or step by step. "TRACE wiring from breaker to faulty component".
TRANSFER	To convey, transport, transmit or cause to pass from one place to another. "TRANSFER radioactive test source to test area".
TRIM	To free of excess or extraneous matter by cutting. "TRIM leads".
TRIP	To manually activate a semi-automatic feature. "TRIP breaker".
TROUBLESHOOT	To localize and isolate the source of a malfunction or breakdown. "TROUBLESHOOT pump control circuit".
Turn	See ROTATE.
Uncap	See REMOVE (cap).
UNLOCK	To unfasten the lock of. To open. "UNLOCK electrical panel".
Unplug	See DISCONNECT. See REMOVE (plug).
UNSCREW	To loosen or withdraw by turning in the proper direction. "UNSCREW adapter".
UNWIND	To cause to uncoil or unroll. "UNWIND hoses from hose rack".
USE	To put into action or service. To avail oneself of. To carry out a purpose or action by means of. To utilize. To employ. "USE only antimagnetic fasteners".
Utilize	See USE.
VENT	To permit gas or liquid under pressure to escape at a vent. "VENT non-condensable gases using tank primary vent valve".

APPENDIX A (Continued)

VERIFY	A. To make sure by taking necessary or appropriate actions. "VERIFY discharge pressure is stable".
	B. To establish the truth or accuracy of. "VERIFY readings before recording them".
WAIT	To suspend activity in a sequence of activities until a given condition occurs or a given time has elapsed. "WAIT five minutes before performing next task".
WASH	To cleanse by or as if by the action of liquid. To remove by rubbing, or by drenching with liquid. "WASH battery with cleaning solution and a stiff brush".
Watch	See OBSERVE.
WEIGH	To measure the heaviness of as by a scale. "WEIGH material <u>AND</u> RECORD weight on Data Sheet 1".
WHEN	Indicates certain condition must be established before the step can be performed.
WILL	Indicates requirement.
WIPE	To rub with something soft for cleaning or drying.
Wire	To provide with wire. To use wire on. To install wiring. "WIRE circuit".
WITHDRAW	To take back, away, or out. "WITHDRAW bar magnet from center of coil."
WRAP	To wind or coil as to encircle or cover something.

APPENDIX B

Words Frequently Abused, Confused, and Misused

The following list contains words that are frequently misused. It is intended to be practical and illustrative rather than comprehensive.

Activate Actuate	Both words mean "to make active," although <u>actuate</u> is usually applied only to mechanical processes. Example: The relay <u>actuates</u> the trip hammer. <u>Activate</u> has a wide range of applications to chemical processes, all of which apply to nuclear science: to make (something) radioactive, luminescent, photosensitive, photoconductive, more adsorptive, etc.
Affect Effect	<u>Affect</u> is a verb that means to influence. Example: The Commission's decision <u>affected</u> all licenses. <u>Effect</u> can function either as a verb that means to bring about or to cause, or as a noun that means a result. Example: The Chief <u>effected</u> several changes in the Branch that had a good <u>effect</u> on morale. Avoid using <u>effect</u> as a verb. A substitute, such as <u>make</u> , is preferable.
Alternate Alternative	To <u>alternate</u> (verb) is to occur in successive turns. An <u>alternative</u> (noun) is a choice among mutually exclusive objective or courses of action.
Analyze Determine Identify	To <u>analyze</u> is to separate into parts to <u>determine</u> the nature of the whole. To <u>determine</u> the nature of the whole. To <u>determine</u> is to ascertain definitely, as after an investigation or calculation. To <u>identify</u> is to name a thing, to ascertain its origin, nature, or characteristics.
And/Or	Avoid this expression. State your meaning exactly. Write: Submit X or Y or both with your application, as appropriate.
Assure Ensure Insure	<u>Assure</u> means to pledge or give confidence to people. (I assure you, although the car I am selling you has gone 200,000 miles, it will go another 50,000 miles without repairs.) <u>Ensure</u> means to guarantee or make certain. (Ensure that the door is closed before you leave.)

APPENDIX B (Continued)

Insure means to provide insurance or protect against loss. Use when referring to recovering costs. (The Titanic was insured.)

Because
Since

Because is used to express a reason. (Because the plant is scheduled for startup, the test will be completed in June.)

Since refers to time. (Since the 1980s, the engineers have been involved in waste cleanup at the Hanford Site.)

Conclude
Decide
Determine

To conclude is to decide or judge after careful consideration. To decide is to make up one's mind, as after doubt or debate. To determine is to establish or ascertain definitely.

Data

In procedures, data may be used as a singular or plural noun, depending on the intended meaning. Do not use data generically when a more specific term, such as compilation, list of values, physical, dimensions, experimental observations, or numerical results would be more precise. The singular form of data, datum, is seldom used except in surveyor's terms like datum line and datum plane.

Due to
Because

Due to in the sense of caused by is acceptable in phrases following a verb form of to be.

Example: Her fall was due to carelessness.

Due to is not acceptable when it follows other verbs and is used to mean because of.

Factor

Factor has a precise mathematical meaning. Do not use it unnecessarily even in mathematical contexts, however, the expression "to increase by a factor of 3" means simply to triple. Use the word triple.

Farther
Further

Farther refers to distance. Further indicates additional degree, time, or quantity.

Example: As you go farther away, your ability to hear is further decreased.

Fewer
Less

Fewer refers to units or individuals. Less refers to mass bulk.

Example: With the use of less powder, fewer particles result.

APPENDIX B (Continued)

- Only** Place only immediately before the work or phrase it modifies. Note the difference in meaning caused by the word's location in the following sentences.
- Only** I calculated the value of x in the equation.
 I **only** calculated the value of x in the equation.
 I calculated the **only** value of x in the equation.
 I calculated the value of **only** x in the equation.
 I calculated the value of x **only** in the equation.
 I calculated the value of x in the **only** equation.
- Principal Principle** As a noun, principal means head or chief; as an adjective, it means highest or best. Principle means basic truth, law, or assumption.
- Prior Before** Prior is an adjective meaning earlier in time or order. Before as an adverb means in advance; as a preposition it means in front of or preceding.
- Example: He was hired according to prior agreement, an agreement reached before his arrival.
- Property** A property is an explicit value or characteristic.
- Example: One of the most important properties of iodine is its low temperature of sublimation.
- Via** Via is Latin for "by way of". Restrict its use to routing instructions. Do not use via to mean through or as the result of outside of such contexts.
- Whether If** Whether implies a condition of doubt.
- Example: He was not sure whether security was breached.
- If implies no alternative.
- Example: If it does not rain, we will move the equipment.

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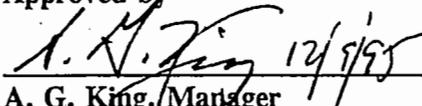
APPENDIX B (Continued)

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December 11, 1995

Unreviewed Safety Questions
(USQ) Program

Approved by


A. G. King, Manager
Analytical Services

1.0 PURPOSE

This program applies to Analytical Services nuclear facilities, as identified in WHC-CM-1-3, *Management Requirements and Procedures*, MRP 5.12, "Identifying and Resolving Unreviewed Safety Questions", DOE Order 5480.21, "Unreviewed Safety Questions", and the requirements in the Technical Safety Requirements Administrative Controls. Analytical Services activities in facilities with a USQ program will follow the requirements of the facility.

NOTE: For the purposes of this section, 222-S Facility will be referred to as a "facility".

2.0 SCOPE

This program applies to Analytical Services nuclear facilities, as defined above.

3.0 DEFINITIONS

Authorization Basis

The authorization basis is the aspect of the facility design basis and operational requirements considered to be important to the safety of the facility operations. This basis is the combination of design, engineering, and administrative controls to assure that a nuclear facility can operate safely within the limits established and authorized by the U.S. Department of Energy.

General Question of Nuclear Safety

Identification of any as-found state, whether or not resulting from an event, where operation may be outside the identified safety envelope or could cause going outside the safety envelope. General questions of nuclear safety may result from analyses/reanalyses, reviews, surveillances, technological advances, or other similar activities.

NOTE: General questions of nuclear safety require initial USQ screening within 24 hours.

Margin of Safety

The margin built into the safety analysis of the facility as set forth in the safety basis acceptable limits as defined in the Technical Safety Requirements.

Plant Review Committee

Group chaired by facility manager to implement and provide oversight for the USQ program at a facility.

Unreviewed Safety Questions (USQ) Program**Safety Basis**

The combination of design, engineering and administrative controls to assure that a nuclear facility can operate safely within the limits established and authorized by the U.S. Department of Energy. These basis are included in the Hazards Identification and Evaluation document, Safety Equipment Lists, Emergency Plans and administrative procedures.

Safety Envelope

The limits defined in the safety documentation which identify the controls required to operate the facility within acceptable limits.

Screenings

Evaluation process of determining if a procedural change, test, experiment, occurrence, general question of nuclear safety, or discovery is within the conditions described in the existing safety basis.

USQ Safety Evaluation

The record to document the review of a proposed change, test, experiment, occurrence, general question of nuclear safety, or discovery. This document records the scope of the evaluation and the logic for determining whether or not an unreviewed safety question exists.

USQ Discovery

An evaluated occurrence that indicates a potential inadequacy of a previous safety analysis or a possible reduction in the margin of safety as defined in the facility technical safety requirements.

4.0 RESPONSIBILITIES**4.1 Plant Review Committee**

The Plant Review Committee is responsible for overall control of the USQ process.

4.2 Facility Manager

The Facility Manager (Plant Review Committee Chair) is responsible for implementing and maintaining the USQ process at the facility. (See Section 2.2.8, "Laboratory Facility Plant Review Committee Charter," for responsibilities.)

The Plant Review Committee Chair will designate the Plant Review Committee members and maintain a list of membership on file.

Unreviewed Safety Questions (USQ) Program

5.0 PROCEDURE

- 5.1** Initiation and maintenance of the USQ program in the laboratory supplements MRP 5.12, "Identifying and Resolving Unreviewed Safety Questions," when utilizing Analytical Services facilities specific processes in the evaluation of plans/activities/events for unreviewed safety questions.
- 5.2** Publish the authorization basis for a facility as part of the Hazards Identification and Evaluation and Safety Analysis Report.
- 5.2.1 For information on 222-S laboratory authorization basis, see the Appendix.
- 5.3** Screen proposed changes, tests, experiments, general questions of nuclear safety, and occurrences for potential safety basis impact.
- 5.3.1 The USQ program requires screenings for plans/activities/events that have the potential to impact the safety basis of the facility and are not covered by a categorical exclusion. The originator of a change, test, experiment, general questions of nuclear safety, or the reporter of an occurrence will provide the information to a qualified USQ evaluator. All suggestions for change, tests, experiments, general questions of nuclear safety, and occurrences that are not covered by a categorical exclusion will be screened in accordance with MRP 5.12, "Identifying and Resolving Unreviewed Safety Questions".
- 5.4** Perform safety evaluations on proposed changes, tests, experiments, general questions of nuclear safety and occurrences in accordance with the provisions of MRP 5.12, "Identifying and Resolving Unreviewed Safety Questions" and DOE Order 5480.21, "Unreviewed Safety Questions". A safety evaluation is performed when:
- 5.4.1 The recommendation from the second, independent screening differs from the initial screening, or either screening recommends a safety evaluation.
- 5.4.2 Temporary or permanent changes to the facility as it is described in existing safety analyses is proposed unless categorically excluded.
- 5.4.3 General Questions of Nuclear Safety Review and Disposition Sequence
- 5.4.4 General questions concerning nuclear safety shall be documented on a J-2. The J-2 number shall be the reference item number.
- 5.4.5 The initial USQ screening shall be performed within 24 hours.
1. General questions concerning nuclear safety shall be reviewed as follows:
 - a. The person with the general question concerning nuclear safety shall discuss the question with their immediate manager.

Unreviewed Safety Questions (USQ) Program

- b. If the immediate manager cannot answer the question to the satisfaction of the person asking the question, the manager shall ensure that the question is documented on a J-2, a JCS tracking number promptly assigned, and the J-2 submitted to a PRC member.
 - c. The initial review shall be performed within 24 hours of the assignment of the J-2 number.
 2. If the initial USQ evaluation shows the general question to be a "Yes/Maybe", the Manager, Analytical Operations shall be immediately notified.
 3. Within 24 hours of notification of the Manager, Analytical Operations, the PRC Chairman shall notify a DOE-RL Site Representative.
 4. The PRC shall evaluate the general question.
 - a. Due to the varying complexity of USQ reviews, up to one calendar week from the initial notification of the Manager, Analytical Operations is allowed for the PRC to complete the USQ evaluation process.
- 5.4.6 If a USQ is being performed on a procedure implementing a change to the authorization basis, the USQ review can be performed on the revised authorization basis. In such cases the document receiving the USQ shall have an administrative "hold" implemented such that the procedure is not approved and promulgated before the authorization basis is changed.
- 5.5 Categorical exclusions for facilities are included in appendices.
 - 5.5.1 Categorical exclusions are a form of screening criteria that allow the facility to more efficiently determine if potential USQs exist. By predetermining which items are excluded, management may better focus on those items with a true potential for impact to the safety basis.
 - 5.5.2 For information on 222-S laboratory categorical exclusions, see the Appendix.
- 5.6 Identify the safety basis documentation for operation.
 - 5.6.1 222-S Laboratory — *222-S Laboratories Facilities Hazards Identification and Evaluation*, WHC-SD-CP-HIE-001.

6.0 DESIGNATED REVIEWING ORGANIZATIONS

Organizations designated to review changes to this document are listed below. The controlled manual point-of-contact listed for the designated reviewing organizations is responsible for coordinating the review and consolidating and submitting comments to the originating organization.

<u>Designated Reviewing Organizations</u>	<u>CMPOC</u>
Operations Assurance & Support (Champion)	T6-14
HASQAP Compliance	T6-14
222-S Analytical Operations	T6-16
Analytical/Environmental Quality Assurance	T6-03
Nuclear Safety	T6-04

Comments from other organizations are welcome; however, such courtesy comments are resolved at the option of the originating organization.

7.0 REFERENCES

WHC-CM-1-3, *Management Requirements and Procedures*, MRP 5.12, "Identifying and Resolving Unreviewed Safety Questions"

WHC-CM-4-2, *Quality Assurance Manual*

DOE 5480.21, "Unreviewed Safety Questions"

WHC-SD-CP-HIE-001, *222-S Laboratories Facilities Hazards Identification and Evaluation*

APPENDIX — 222-S Supporting Documentation

1. AUTHORIZATION BASIS

The authorization basis for the 222-S Facility is identified in the Hazards Identification and Evaluation document WHC-SD-CP-HIE-001. The purpose of the Hazards Identification & Evaluation is to identify and assess the hazards associated with operation of the 222-S Facility to demonstrate that the facility can be operated as a Low Hazard Nuclear Facility without undue risk to employees, the public, or environment.

Operational Safety Limits (OSLs) have been developed to assure continued safe operation of the 222-S Facility. The facility OSLs are maintained and controlled by administrative procedures and surveillances. The 222-S Facility does not have Safety Limits (SLs) or Limiting Control Settings (LCSs).

2. CATEGORICAL EXCLUSIONS

- a. Laboratory Operating (LO), Analytical (LA), Quality (LQ), Reference Materials (LR), Essential Materials (LE), Z Plant (LZ), Technology (LT), and Computer (LC) procedures have been screened against the facilities authorization basis document (Hazards Identification & Evaluation). In addition, laboratory preventative maintenance (PM) procedures have been screened.

Of the procedures screened, those listed contain OSLs and were determined to have the potential of affecting the 222-S facility's authorization document. Procedure modifications will be performed in accordance with the USQ process as defined in MRP 5.12.

These procedures are available in a separate directory named "LO-USQ" on the Lab Procedures "R" drive. In addition, the procedure number of these procedures will be modified so that "USQ" appears as the last three characters of the procedure number, for ease in identification.

LO-040-121	LAB-AP-024-USQ
LO-060-100	Section 3.5, WHC-CM-5-4
LO-090-101	3-PL-016
LO-100-160	PM 2S24007
LO-100-162	PM/S 2S-00131
LO-100-171	PM/S 2S-00192
LO-110-123	PM/S 2S-00286
LO-110-124	
LO-110-125	
LO-110-127	
LO-161-168	

APPENDIX — 222-S Supporting Documentation (Continued)

- b. Occurrence categories that have been categorically excluded in the Hanford site waiver will not be screened. Occurrences which have not been categorically excluded are called out in WHC-CM-1-5, section 7.1, Appendix B.
- c. Approval designator "Not Applicable" (N/A), on proposed changes, tests or experiments will not be required for screening or evaluations. By definition, approval designator "N/A" involves work with no impact to safety.
- d. Modifications to Safety Class 1 and 2 equipment will be conducted in accordance with the USQ process as defined in MRP 5.12.
- e. By definition (WHC-CM-4-46), Safety Class 3 equipment can result in an acute fatality to a facility worker or serious injury to a group of workers, except where the structures, systems, and components (SSCs) are controlled through an implemented institutional safety or radiation protection program. As a result, equipment modifications will be conducted in accordance with occupational safety and radiation protection programs and do not require USQ screening.

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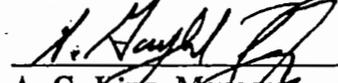
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November 15, 1995

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Training Administration

Approved by


A. G. King, Manager
Analytical Services

11/13/95

1.0 PURPOSE

This section describes the training policies and associated administrative activities of Analytical Services (AS) organizations.

2.0 SCOPE

This section applies to Analytical Services organizations.

3.0 DEFINITIONS

See Section 4.1, "Training Responsibilities and Definitions", for a list of the definitions that apply to training in the AS organization.

4.0 DESCRIPTION

4.1 Minimum Requirements

Minimum requirements will be met prior to position assignment. Table 1 lists the minimum education and experience requirements for AS positions. Alternatives to education and experience requirements are allowed in accordance with DOE Order 5480.20A, "Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities".

Any exceptions to the entry level requirements will be documented and approved in accordance with paragraph 4.7 of this document.

4.2 Initial Training

Personnel will receive initial training for each position. The amount of training required will be consistent with the hazards and risks associated with the position. Initial training programs will ensure that all personnel are qualified to carry out their assigned responsibilities. Training required by regulatory sources, if applicable to the position, will also be included in initial training.

*This revision is a total rewrite; therefore, no redlines are used to indicate changes.

Training Administration

Managers will use WHC-CM-5-4 Section 4.5, "Training Programs," as a guide to determine an individual's initial training. This information will be entered into the TMX Training Matrix database for course scheduling and tracking.

Initial training programs may consist of self-study, classroom, and/or on-the-job training (OJT). A training course may be evaluated by written examinations, performance evaluations, and/or operational evaluations.

4.3 Course Development and Revision

Training courses will be developed and revised, as necessary, in accordance with WHC-CM-5-4 Section 4.2, "Training Development and Maintenance."

4.4 Examinations and Evaluations

Examinations and evaluations will be controlled by Training. Operations Assurance and Support (OAS) training personnel are responsible for examination control.

4.4.1 Written Examinations

OAS training personnel will control and administer written examinations. Requests for testing will be submitted to Training five working days prior to testing.

4.4.2 Operational and Performance Evaluations

Operational and performance evaluations will be given by OJT evaluators. This will be accomplished in accordance with WHC-CM-5-4 Section 4.4, "On-The-Job Training," and the applicable OJT Checklist.

4.4.3 Minimum Grades

Written examinations require a minimum grade. The minimum grade is typically 80% for managers and technical support personnel and 70% for all other personnel per bargaining union agreement.

Examinations may be divided into different subject areas. This is determined during the development of the examination. For these examinations, the following additional guidelines apply:

1. If a person fails the overall examination, or more than one subject, the entire examination must be retaken.
2. If a person passes the examination overall but fails a single subject area, then only that one area must be re-examined.

NOTE: Examinations will be graded as a whole unless specifically designed to be graded by subject areas.

Training Administration**4.4.4 PASS/FAIL System**

Operational and performance evaluations will use a PASS/FAIL. At the completion of an evaluation, the OJT evaluator determines satisfactory performance compared to an evaluation standard. This judgement will be based on whether or not the trainee had the satisfactory knowledge and skills required to complete the task in a safe and efficient manner. The OJT evaluator will then assign a pass or fail grade for the evaluation.

4.4.5 Examination/Evaluation Failure

Failure of an examination or evaluation will require corrective action. Upon failure, the individual's immediate manager will conduct an oral interview with the individual to determine the areas of weakness. Following the completion of this interview, the immediate manager will determine the appropriate remedial training.

Once corrective action has been accomplished, the individual shall be re-examined or re-evaluated. In training courses, it is desirable that the student be retested prior to the next scheduled course examinations. In the case of a failed written qualification examination, a retake examination will be administered.

Failure of a re-examination or re-evaluation shall be reviewed by the individual's immediate manager and the Training Manager. The result of this review will determine the appropriate corrective action.

4.4.6 Remedial Training

Personnel with training deficiencies should receive remedial training. Written directions will outline those actions to be completed in the deficient areas. Remedial training should be assigned for the following:

- Failed training or self-study course examination
- Failed written qualification examination
- Failed operational evaluation
- Failed biennial requalification examination.

Remedial training must be approved by the Training Manager and the individual's immediate manager. It will be of sufficient depth to assure that the individual has the requisite knowledge in the weak area.

4.5 Qualification Records (Qual Cards)

Qualification Records (Qual Cards) shall be established for certain positions within Analytical Services. Qualification Records shall be established for the following positions: laboratory instructor, chemist/scientist, and cognizant engineer. Qualification records are currently required as part of the following AS training programs: Shift Manager, Building Operations Manager, power operator, some maintenance personnel, and Person In Charge (PIC) training course.

Training Administration

Qualification Records document that an individual has completed all essential job specific training for a position. Qualification Records typically identify any position specific courses, required reading and systems/equipment OJT that must be performed prior or in some cases subsequent to, assuming duties. When completed, the Qualification Record serves as verification of competency to perform activities associated with a specific job position. The Qualification Record format may vary for different positions. See Appendix A for an example of a Qualification Record format. OAS will provide Qualification Records and assist managers in the development and completion of Qualification Records upon request.

NOTE: Qualification Records shall be initiated as described above for employees hired subsequent to the effective date of this procedure. Individuals hired prior to the effective date November 15, 1995, are considered "grandfathered" based on their job experience, therefore qualification records need not be developed.

4.6 Position Qualification

The individual's manager assures position qualification. Position qualification is considered complete when the following conditions are met:

- a. All initial training program requirements are completed in compliance with Section 4.5, "Training Programs."
- b. Other specified requirements are completed (e.g. medical examinations), in accordance with WHC-CM-1-3, *Management Requirements and Procedures*, MRP 4.5, "Medical Examinations", and the facility's radiation work permits.
- c. Written examination, performance evaluation, and/or operational evaluation, as required for the position, are completed.
- d. If a Qualification Record is required for the position, all identified training must be completed and signed off. The qualification record will be placed in the individual's training field file and a copy sent to OAS training.

4.6.1 Provisional Qualifications

Provisional qualifications may be established. The Training Manager will develop a provisional training program upon request of line management. This program may be necessary when the performance level required by the OJT checklist or the training program for qualification cannot be satisfied. The provisional training program will be approved by the responsible manager. The training program will define the provisional qualification requirements, restrictions on duties, and the procedure for becoming fully qualified. The performance level for provisional OJT checklists will be established at the highest practical level. Provisional qualifications are normally valid for 6 months or a limited period of time until full qualification is achieved.

Training Administration**4.7 Exceptions or Extensions to Training Path**

Exceptions or extensions to the normal training path will be conducted in compliance with WHC-CM-2-15, *Training Administration Manual*, Section 9.1, "Training Exceptions and Extensions". This includes exception to the minimum education and experience requirements. Documentation will clearly state the specific variation(s) and time interval requested and provide sound justification. Additionally, no individual may be exempted from requisite examination requirements associated with qualification.

The responsible manager and the training manager will approve all exceptions and extensions for facility-specific training. Facility-specific training includes courses developed for AS personnel and courses required by AS management. Courses required by regulatory sources may not be excepted. Approved exceptions and extensions will be filed in the individual's training field file in accordance with paragraph 4.12.

4.8 Continuing Training

Continuing training may consist of a combination of classroom-type and on-the-job training as it applies to the position. Continuing training includes the retraining courses listed in WHC-CM-5-4 Section 4.5, "Training Programs." Continuing training will be structured to be commensurate with specific position needs. These courses will be developed and revised in accordance with WHC-CM-5-4 Section 4.2, "Training Development and Maintenance." Facility drills are considered part of the continuing training program for laboratory personnel. A drill coordinator plans, conducts, and critiques facility drills. Emergency Preparedness Drills will be scheduled and conducted for a facility in compliance with DOE/RL-94-02, *Hanford Emergency Response Plan*, WHC-CM-4-43, *Emergency Management Procedures*, and WHC-CM-4-44, *Emergency Preparedness Administration*.

In addition, continuing training programs will be developed for personnel who perform functions associated with safety class structures, systems, and components identified in the facility's safety basis document. Periodic examinations and/or evaluations, as allowed by contract, will be administered and documented throughout the cycle on material included in continuing training programs.

Laboratory personnel at nonreactor nuclear facilities are required to pass an annual Emergency Procedure/Abnormal Plant Conditions (EP/APC) examination. This would normally include laboratory managers, chemical technologists/technicians and scientists who perform work in the laboratory. Laboratory managers are also required to take a biennial Normal Operating Condition Exam.

4.9 Position Qualification

Position qualification is considered valid as long as the specified position requirements are maintained. Failure to complete a requalification item within the specified time limit will result in the loss of qualification to perform that task, unless an extension has been granted in accordance with paragraph 4.7.

Training Administration**4.10 Maintaining Position Proficiency**

Personnel should work in their position on a regular basis to maintain proficiency.

An individual will not be assigned to a position for which they are not proficient. In the event of an extended absence, selected retraining may be required to regain proficiency. The extent of retraining will depend on the duration of the absence or time away from the specific duty area. Managers will assess the depth of retraining needed per the following guidance:

- a. Less than three months — No retraining is required.
- b. Greater than three months — The individual's immediate manager will conduct an interview to determine any areas of weakness. Based on this interview, selected retraining will be provided prior to reassignment. The base date of initial qualification or requalification remains unchanged.

4.11 Supplemental Instructors

Supplemental instructors may present specific training material.

These individuals will be selected by facility and training management based upon technical and instructional abilities. When possible, attending an OJT instructor/evaluator course is desirable prior to presenting training material. Academic and professional experience of the individual will be considered when identifying requirements to be completed prior to presenting training material.

Supplemental instructors will be selected from the following:

- Managers
- Subject matter experts
- Equipment vendors.

4.12 Training Field Files

If required for the position, training field files will be kept in a readily auditable format.

These files will contain the following items.

- Copies of approved exceptions and extensions, if any, to training requirements.
- Position qualification records, if applicable for the position.
- Other training related material that may be pertinent, at the managers discretion.

Official training records are maintained in the Training Records and Information (TRI) and the Training Matrix System (TMX) systems on soft reporting available on the Hanford Local Area Network. The TMX serves as the individual and organizational training plan. Hard copies are not required to be kept in field files.

Training Administration**4.13 Procedure Training Binders (PTBs)**

Managers of chemical technologists will maintain procedure training binders (PTB).

Laboratory personnel must requalify on procedures every 24 months or whenever revisions are made. Upon completion of OJT on a laboratory analytical or operating procedure, the individual's immediate manager or designate will file the completed OJT checklist in the individual's PTB. The PTB is required to have the original OJT checklist for each procedure and the latest completed checklist for that procedure. This serves as the official procedure qualification record. This information is also entered into the LABCORE LTS (Laboratory Training System) for electronic tracking. Outdated OJT checklists will be forwarded to the Laboratory Technical Information Center (LTIC) for microfilming and information.

4.14 Scheduling Personnel for Training Activities

Managers are responsible for scheduling personnel for training activities.

Assistance may be provided by OAS. The TMX system will be used to determine when personnel require training. The training organization (OAS) will coordinate the planning and scheduling of laboratory specific training activities.

4.15 Periodic Evaluation of Training Activities

OAS Training will conduct periodic evaluations of training activities.

The OAS training manager or designate will conduct training evaluations which include reviewing course materials, examinations, the trainee's reactions to training, and other information from the development and use of the training program. The OAS training manager or designate will perform annual evaluations of OAS instructors by observing classroom or OJT instructional performance. Instructors will periodically solicit student evaluations of their courses which will be used for course modification and improvement. Appropriate training evaluation forms will be used to document these evaluations.

The objectives of training evaluations are:

- To determine if a class is accomplishing its objectives
- To identify the strengths and weaknesses of a particular training class or instructor
- To determine if a program was appropriate for the intended purpose and target audience.

5.0 RECORDS

Any records generated as a result of activities described in this section will be managed in accordance with applicable Records Inventory and Disposition Schedules.

6.0 DESIGNATED REVIEWERS

<u>Designated Reviewing Organizations</u>	<u>CMPOC</u>
Operations Assurance & Support (Champion)	T6-07
HASQAP Compliance	T6-16

7.0 REFERENCES

DOE Order 5480.20A, "Personnel Selection, Qualification, Training and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities"

DOE/RL-94-02, *Hanford Emergency Response Plan*

WHC-CM-1-3, *Management Requirements and Procedures*
MRP 4.2, "Employment and Personnel Placement"
MRP 4.5, "Medical Examinations"

WHC-CM-2-15, *Training Administration Manual*
Section 9.1, "Exceptions and Extensions"
Section 9.2, "Maintaining Training Records"

WHC-CM-4-43, *Emergency Management Procedures*

WHC-CM-4-44, *Emergency Preparedness Administration*

WHC-CM-5-4, *Laboratories Administration*,
Section 4.1, "Training Responsibilities and Definitions"
Section 4.2, "Training Development and Maintenance"
Section 4.4, "On-The-Job Training"
Section 4.5, "Training Programs"

Meznarich, H. K., 1995, *222-S Quality Assurance Plan*, WHC-SD-CP-QAPP-016, Westinghouse Hanford Company, Richland, Washington.

Table 1. Minimum Education and Experience Requirements

POSITION ^(a)	EDUCATION	JOB RELATED EXPERIENCE (YEARS)	LABORATORY AND/OR NUCLEAR FACILITY EXPERIENCE (YEARS)
Managers ^(b)	BS ^(h)		4
First Line Managers/Supervisors	HS		3 ^(c)
Technical Support Personnel ^(d) (Chemists, Engineers)	BS ^(h)	2	1
Chemical Technologist	HS	1 ^(e)	
Technician ^(f)	HS	1 ^(g)	
Operator (Power Operator)	HS		
Maintenance Personnel (Electrician, Millwright, Plumber/Pipefitter)	HS	1	

- (a) For positions not listed, education and experience requirements will be in compliance with WHC-CM-1-3, *Management Requirements and Procedures*, MRP 4.2, "Employment and Personnel Placement."
- (b) Education or experience that is job related may be substituted on a case-by-case basis. The degree may fulfill 3 of the 4 years of laboratory and/or nuclear experience required on a one-for-one time basis.
- (c) Full-time academic training may be substituted on a one-for-one basis for 2 of the 3 years of required laboratory and/or nuclear experience.
- (d) Education and experience requirements are intended to apply to supervisory positions or positions with authority to review and concur, and not to entry-level positions.
- (e) Chemical Technologist's high school education will include 1 year in chemistry and 1 year in algebra.
- (f) This includes scientific and engineering technicians.
- (g) Full-time academic training may be substituted on a one-for-one basis.
- (h) Baccalaureate in engineering or related science.

APPENDIX A. (Continued)**POSITION SPECIFIC COURSES**

Position specific courses are entered on the employee TMX report. The signature below indicates that the manager has reviewed the current TMX and all required training has been identified and completed. Managers are responsible for a monthly review of TMX records to ensure that the employee remains current on required training.

MANAGER SIGNATURE _____ DATE _____

INSTRUMENT/SYSTEM FAMILIARIZATION

The qualifying employee shall receive instruction on the specific instruments/systems as listed below. Instruction shall include:

- Review of applicable operating procedures
- Identification of components
- Theory of operation
- Limiting condition of operation
- Normal operating conditions and parameters
- Abnormal conditions/ emergency response.

EVALUATION OF INSTRUCTION

The employee should demonstrate a satisfactory understanding of the facility instrument/system through oral discussion and questions, posed by an appropriate subject matter expert.

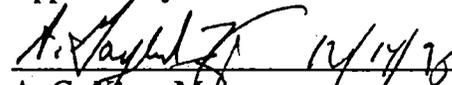
December 15, 1995

Rev. 0

Page 1 of 8

Laboratory Computer Configuration Control

Approved by


A. G. King, Manager
Analytical Services

1.0 PURPOSE

This section is the general operations automated data processing (ADP) configuration management plan for Analytical Services. It encompasses all areas of the Analytical Services (AS) laboratories, and applies to areas not specifically covered by another plan. It covers both hardware and software.

AS is responsible for the quality of its products (primarily chemical analysis of chemical process, waste management, and environmental samples). Part of the quality program is configuration control of the computer systems within the laboratories and the associated software. This procedure outlines the specific requirements concerning control of computer systems to meet these requirements. Configuration control failures have two impacts for the laboratory:

- (1) The impact of a "failure" on laboratory operations
- (2) The impact of a failure on the customer.

There are two main laboratories: 222-S Analytical Laboratory, and the Waste Sampling and Characterization Facility (WSCF). The analytical laboratories have 200 to 250 full time employees. Laboratory staff includes chemical technologists, scientists, facility engineers, as well as quality assurance, training, administrative, and measurement control personnel.

2.0 SCOPE

The purpose of this section is to provide a basis for ADP Configuration Management by:

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

This procedure applies to all computer systems (programmable calculators included) within AS laboratories.

This procedure applies to the AS laboratories as they are defined in WHC-CM-5-4.

Control of sensitive data and applications is covered by WHC-CM-4-7, *Management Control Process for Unclassified Computer Systems*.

Identification of quality affecting software is defined in WHC-CM-5-4, Section 8.3, "Laboratory Quality Affecting Software Control."

Laboratory Computer Configuration Control

Specifically, this configuration management plan will concern itself with the identification and control of the computers, databases, software life cycle items, source code, libraries and all other pertinent configuration items (CIs). This procedure does not include those items/projects specifically covered by another procedure or plan.

The configuration control process applies to all staff associated with development, design, and operational support of the laboratory systems. This includes WHC/AS, BCS Richland Inc. (BCSR)/Information Resource Management (IRM), and ICF Kaiser Hanford Company.

3.0 DEFINITIONS**ADP**

Automated Data Processing

AS

Analytical Services, department of TWRS Characterization Project, WHC

CI

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

CPPM

Westinghouse Hanford designated Computer Protection Program Manager (CPPM). The CPPM administers the computer protection plan for WHC, BCSR, KEH.

CSG

Computer Steering Group. CSG approval is required for ADP procurements.

IS

Information Systems, Engineering and Technology Services, AS

LABCORE

Operation of and automation associated with the commercial off-the-shelf Laboratory Information Management System (MULTI LIMS).

Off-the-shelf Software

Software that is generally available from commercial vendors that is sold in large numbers and has not been modified for any specific local use. Examples are WordPerfect¹, Lotus 1-2-3², Paradox, MS-DOS³.

¹WordPerfect is a trademark of WordPerfect Corporation.

²Lotus 1-2-3 is a trademark of Lotus Development Corporation.

³MS-DOS is a trademark of Microsoft Corporation.

Laboratory Computer Configuration Control**Quality Affecting Software**

Software that has been confirmed to comply with specified requirements (WHC-CM-4-2, Section QR 19.0) in an operation or production environment. Laboratory identification of quality affecting software is defined in WHC-CM-5-4, Section 8.3, "Laboratory Quality Affecting Software Control."

RIDS

Records Inventory and Disposition Schedule managed by Records Management/Planning Services, BCSR

Software

A series of instructions executed by a computer (or calculator)

4.0 RESPONSIBILITIES**4.1 General**

Changes to the software or hardware on all computers are made by approving a "Change Request" or documenting review and approval as indicated below.

4.2 Information Systems (IS)

The manager, Information Systems, shall:

- a. Establish documentation requirements/guidelines for created and/or modified software. See WHC-CM-5-4, Section 8.3, "Laboratory Quality Affecting Software Control."
- b. Establish programming language coding and documentation guidelines (see Appendix A).
- c. Document and approve hardware and software development and changes as appropriate in areas of responsibility.
- d. Represent AS on matters of ADP.

4.3 AS Managers

Managers of AS shall direct personnel to:

- a. Document quality affecting software as defined in Section 4.5, 6.1 and WHC-CM-5-4, Section 8.3, "Laboratory Quality Affecting Software Control."
- b. Document and approve hardware systems and changes as required. See Sections 4.4 through 4.8, 6.1, and Appendix A of this section.
- c. Coordinate large software projects with the Information Systems group.

Laboratory Computer Configuration Control

- d. Route all personal computer procurements through the Computer Steering Group representative for review.
- e. Identify a system manager for each computer system. It is the responsibility of the system manager to identify computer system security requirements, provide computer system data to the WHC Computer Protection Program Manager (CPPM), develop and maintain computer system security plans, and obtain certification for computer systems that process sensitive applications or have incoming communications capability.
- f. Each sensitive application shall have an appointed application manager who determines application sensitivity, provides required sensitive application data to the CPPM, and ensures that a security plan is developed and maintained for sensitive applications.

4.4 Configuration Identification Responsibilities

AS managers are responsible to determine and identify the Configuration Items (CIs) that must be controlled. If specific versions of the software or hardware are to be preserved all CIs 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 CIs which make up the system. Initially this list will constitute the production baseline and be documented. Subsequent changes and/or release activity will then be the new baseline.

CIs for analytical systems must be documented in one of the following places: instrument logbook, procedure, controlled document, or posted internal memo.

4.5 Item Release

At strategic times during the life cycle of a system, new releases will be issued. A new release will require the software and all applicable documentation to be rebaselined. The assigned manager will be responsible for ensuring the implementation of the release.

4.6 Item Documentation

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

For laboratory-developed software systems, a copy of the original program code shall be maintained, and all changes shall include a description of the change, authorization for the change, and test data that validates the change.

Configuration control and acceptance test data shall be maintained for commercial software packages.

Laboratory Computer Configuration Control

Software systems shall be tested for acceptance when installed, after changes, and periodically during their use as appropriate. The frequency of the test shall be based on the potential for adverse impact on the laboratory and the ease in which changes can be made to the computer code. Testing may consist of:

- Manually performing calculations
- Checks against another software system that has been previously tested
- Comparison of output with previous output
- By analysis of standards.

4.7 Configuration Control

The responsible Manager (or designate) has the responsibility and the authority to ensure all CIs are kept in controlled environments. For software, a designated library or set of libraries is recommended. For hardware, authority to make changes should be limited.

If 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 CIs enter into the customers configuration domain.

4.8 Interface Control

The Information Systems group will generally represent AS on ADP related matters. On some specific items, a technical expert may be chosen by management. The use of specific analytical procedures and the associated computer hardware and software is handled by the laboratory managers when establishing sample schedules with the customers and are not part of the ADP program.

4.9 Computer System Interface

The LABCORE Change Board is the controlling board for interface between LABCORE and laboratory ADP and customer systems.

The responsible manager is responsible for notifying Information Systems of any project interface changes that affect LABCORE operations. Any system which LABCORE will interface requires interface control.

4.10 Implementation

This procedure applies to all ADP matters in accordance with the Scope section. Existing software deficiencies (if found) will be brought into compliance as per a corrective action plan.

Laboratory Computer Configuration Control**4.11 Policies, Directives, and Procedures**

The project complies with the *Quality Assurance Manual* (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 laboratory operations. The assigned 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.

5.0 COMPUTER SECURITY

The computer security management control process is contained in WHC-CM-4-7, *Management Control Process for Unclassified Computer Systems*.

6.0 CONFIGURATION MANAGEMENT ACTIVITIES**6.1 Configuration Identification**

Before CIs 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. Every CI will have a responsible person(s) assigned to place such an item under configuration management.

The configuration management approach will allow for the ability to store and retrieve all the configuration items (CIs) in the system. Historical releases, previous baselines and/or archived CIs will be identified, stored, and easily retrieved as required and appropriate.

The responsible manager will be designated as the Software Configuration Management authority.

The software configuration for a project is defined in WHC-CM-5-4, Section 8.3, "Laboratory Quality Affecting Software Control."

7.0 ACCESS CONTROL

Access control, read and write protection, and disaster recovery for each minicomputer system is covered by the Risk Analysis (WHC-CM-4-7) for that specific system. For personal computers all of these items except disaster recovery are covered by the security and sensitivity assessment forms. For the personal computers, alternate computers can be used using backup data.

Laboratory Computer Configuration Control**7.1 Physical Security**

Physical access to the laboratories is controlled by location (approximately 30 miles from Richland) and laboratory access requirements.

7.2 Information Security

Information security is the procedural and technical methods utilized to control access to data.

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

7.3 Backup and Recovery

Both software and data shall be backed up. The frequency of backup shall be based on the amount of data and the impact of the loss of data or software on the organization.

8.0 TOOLS, TECHNIQUES, AND METHODOLOGIES

There are no specific software tools, techniques, or methodologies required to support the activities of this instruction.

9.0 SUPPLIER CONTROL

Provisions for assuring that vendor-provided and subcontractor developed software meet established software configuration management requirements are covered through the procurement process and the establishment of approval designators.

10.0 RECORDS COLLECTION AND RETENTION

The RIDS system is used to determine record retention requirements.

11.0 DESIGNATED REVIEWERS

<u>Designated Reviewing Organizations</u>	<u>CMPOC</u>
Information Systems (Champion)	S3-30
HASQAP Compliance	T6-16
222-S Analytical Operations	T6-16
WSCF Analytical Operations	S3-28
Analytical/Environmental Quality Assurance	T6-03

12.0 REFERENCES

- 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-4-7, *Management Control Process for Unclassified Computer Systems*, Westinghouse Hanford Company, Richland, Washington.
- WHC-CM-5-4, *Laboratories Administration*, Section 8.3, "Laboratory Quality Affecting Software Control," Westinghouse Hanford Company, Richland, Washington.
- WHC-CM-6-1, *Standard Engineering Practices*, Westinghouse Hanford Company, Richland, Washington.

Laboratory Computer Configuration Control

Appendix A. Example

LABORATORY PROGRAM DOCUMENTATION CHECKLIST

Program Number _____

PROGRAM NAME: _____ REVISION: _____
 COGNIZANT SCIENTIST: _____ DATE SUBMITTED: _____
 AUTHOR (if different): _____ APPROVAL DESIGNATOR: _____
 PROGRAM TYPE (In-House, Vendor, Vendor/Modified): _____
 LANGUAGE/PACKAGE (BASIC, PAL, LOTUS 1-2-3, etc.): _____
 COMPUTER SYSTEM(S): _____
 SUPPORTING DOCUMENT NUMBER(S): _____

Program Documentation (Check All That Apply)			
(N/C-No Change from Previous Revision, N/A-Not Applicable, N/R-Not Required)			
	Requirements		User Documentation
	Data Flow Diagram/Pseudo Code		Module Hierarchy Chart
	Algorithms/Technical		Variable Lists
	I/O Assignments		File Formats
	Change Control Log		Internal Documentation
	Source Code		Validation (Test Data)
	Hardware Specific Information (Printer Codes, Screen Codes)		Description of Modifications (For Program Revisions Only)
	Named Ranges Documentation (Spreadsheets Only)		Registers and Flags Used (Calculator Programs Only)

Configuration Control: _____

Location of Record Copy: _____

Location of Electronic Copy: _____

Program Review		
Review Type	Signature of Reviewer	Date of Approval
Technical		
Documentation		
Release		

9613390.2721

WHC-CM-5-4, *Laboratories Administration*

8.6

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December 15, 1995

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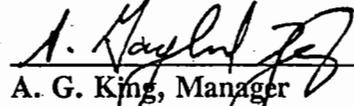
Laboratory Computer Configuration Control

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November 21, 1995

222-S Laboratory Management Assessments

Approved by


A. G. King, Manager
Analytical Services 11/27/95

1.0 PURPOSE

This instruction defines the process for 222-S Laboratory Management implementation of the 222-S *Laboratory Quality Assurance Plan* (LABQAP) policy of performing Laboratory Management Assessments. This process shall require direct laboratory management participation. It may include personnel from other QA organizations to participate in a facilitator capacity. These management assessments will be performed at a minimum of two per year. If a specific area of the 222-S Laboratory quality program shows potential deficiencies, the 222-S Analytical Operations Manager has the authority to initiate additional management assessments, focusing on the area of concern.

2.0 SCOPE

The scope of these management assessments will include review of four areas of the quality program being assessed:

- Process — such as policy and documents
 - Does the laboratory documentation satisfy what the requirements dictate?
- Implementation — procedures, training, and performance evaluations
 - Does the laboratory do what it says it does in the implementing procedures?
- Management Effectiveness — Performance Indicators, review of prior assessments, audits and surveillances for open corrective action issues in the area to be assessed
 - How effective is management involvement in the process?
- System maintenance — via surveillances, audits, assessments, and corrective actions
 - How effectively does 222-S observe, identify issues, and correct deficiencies?

Assessments are anticipated to be conducted on one or more of the following quality areas: Personnel Qualifications and Training, LABCORE (the Laboratory Information Management System), Software Quality Assurance, Chain of Custody, Calibration, Technical Procedures, Data Collection, Data Reduction and Data Reporting, Technical Data Review Process, Records and Documentation, and Data Validity. Other areas related to the quality program may be identified as an assessment target at the discretion of the 222-S Analytical Operations Manager.

222-S Laboratory Management Assessments**3.0 RESPONSIBILITIES AND PROCEDURE**

The 222-S Laboratory Management Assessment will be planned in accordance with the following information.

3.1 222-S Analytical Operations Manager

The 222-S Analytical Operations Manager or designee shall select assessment topics and schedule the 222-S Laboratory Management Assessments. Other responsibilities of the 222-S Analytical Operations Manager are as follows.

1. Appoint the Lead Assessor. The lead assessor will be selected from the 222-S Laboratory management organization directly related to the scope as listed in Section 2.0. The lead assessor can be selected from technical managers such as the organic chemistry manager, inorganic chemistry manager, radiochemistry manager, hot cell and sample preparation manager, etc., and the Deputy Analytical Operations Manager.
2. Select, with the assistance of the Lead Assessor, a minimum of two 222-S Laboratory managers to serve as Assessment Team members.
3. Request the assistance of a facilitator from the Office of Quality Assessment (OQA) and/or Analytical Environmental Quality Assurance (AEQA), as needed.

3.2 Lead Assessor

The Lead Assessor shall report to the 222-S Analytical Operations Manager on all phases of the management assessment. Other responsibilities of the Lead Assessor are as follows.

1. Coordinate the planning of the assessment.
2. Acquire an assessment number from the Hanford Action Tracking System (HATS). The format shall be LMA-YR-### (for example, LMA-95-001).
3. Coordinate the preparation of the assessment plan.
4. Conduct pre-assessment conference. Document attendees and date of meeting.
5. Meet with the assessment team, as required, to:
 - a. Review assessment progress
 - b. Solve questions and concerns
 - c. Establish observations based on activities witnessed and evidence gathered.

222-S Laboratory Management Assessments

6. Conduct the post-assessment conference. Include the operations manager of the 222-S Laboratory and the 222-S Laboratory QA Officer.
7. Prepare the Management Assessment Report. Document attendees and date of meeting.
8. Sign the Management Assessment Report and transmit to the Manager, Analytical Services, with copies to the appropriate laboratory managers and 222-S Laboratory QA Officer.
9. Ensure entry into the HATS database for tracking and closure of corrective action. The corrective action process will follow WHC-CM-1-4, *Corrective Action Management Manual*.

NOTE: Follow-up of laboratory corrective action commitments ensures that the laboratory has completed and implemented the corrective actions identified in the response to the assessment observation. Follow-up and closure of corrective actions includes review and verification of submitted documents. Additional follow-up actions may include on-site laboratory inspections if warranted.

3.3 Assessment Team

The responsibilities of the assessment team are as follows:

1. Document assessment preparation activities.
2. Prepare an Assessment Plan describing the objectives. The Assessment Plan must identify the following:
 - a. Area of the 222-S Laboratory to be assessed (refer to scope, Section 2.0, areas to be assessed)
 - b. Laboratory Management Assessment number that will be tracked by HATS
 - c. Assessment Team members
 - d. Assessment Scope and Objectives
 - e. Source/Reference documents
 - f. Listing of assessment documentation requirements or tools, i.e., assessment checklist, outlines, line of questioning, details process flowchart, etc.
3. Forward a copy of the assessment plan to the lead assessor for review.
4. Perform the assessment field work.

222-S Laboratory Management Assessments

5. Record observations, and gather information and evidence through interviews, witnessing the activity, or document reviews.
6. Inform the Lead Assessor of the progress of the assessment, particularly upon discovery of conditions which may result in an observation.
7. Prepare the draft Management Assessment Report.
8. Review assessment report and provide concurrence.

4.0 RECORDS

Any records generated as a result of activities described in this section will be managed in accordance with applicable Records Inventory and Disposition Schedules.

5.0 DESIGNATED REVIEWERS

Organizations designated to review changes to this document are listed below. The controlled manual point-of-contact listed for the designated reviewing organizations is responsible for coordinating the review and consolidating and submitting comments to the originating organization.

<u>Designated Reviewing Organizations</u>	<u>CMPOC</u>
222-S Analytical Operations (Champion)	T6-16
HASQAP Compliance	T6-16
Operations Assurance and Support	T6-14
Office of Quality Assessment	S3-30

Comments from other organizations are welcome; however, such courtesy comments are resolved at the option of the originating organization.

6.0 REFERENCES

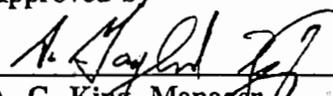
DOE/RL-94-55, *Hanford Analytical Services Quality Assurance Plan*

WHC-CM-4-2, *Quality Assurance Manual*

WHC-SD-CP-QAPP-016, *222-S Laboratory Quality Assurance Plan (LABQAP)*

Material Control

Approved by



A. G. King, Manager
Analytical Services

1.0 PURPOSE

Analytical Services material support will provide procurement assistance for all groups housed within the 222-S facility and the Waste Sampling and Characterization Facility. Analytical Services groups housed in a facility not managed by Analytical Services will use the material support of the landlord or general site services support.

2.0 SCOPE

This section does not apply to the following: (1) procurement of "unique" or technically focused equipment; (2) laboratory stockroom items procured through the use of store orders; and (3) office or janitorial materials.

3.0 DEFINITIONS

certifiable

Installed materials that have verifiable documentation in accordance with original material specifications or design documents.

controlled storage

Any enclosure, device, or area that provides physical containment of components for the purpose of controlling materials.

shop stock

Commonly used material obtained in bulk quantity and stored for subsequent subdivision and use for specific maintenance jobs.

staging

The process of collecting in one or more specified places, materials required to complete a maintenance job.

traceability

The ability to trace the history, application, or location of an item and like items or activities by means of recorded identification. Recorded identification may include marking, tagging, or assignment of unique numbers for traceability to the required certifications.

Material Control**4.0 RESPONSIBILITIES AND PROCEDURE****4.1 Requestor/Cognizant Engineer/Maintenance Engineer**

4.1.1 The requestor of material is responsible for:

1. Submitting documentation to material support for the request, including a Material Request Form, if material is not associated with a work package, and a Bill of Materials to identify materials required for a work package.
2. Identifying certification requirements, installation, and shelf life or age control in accordance with WHC-CM-6-1, EP 5.2.
3. Preparing all material specifications.

4.2 Material Coordinator/Specialist

4.2.1 The material coordinator is responsible for:

1. Reviewing submitted forms for completeness
2. Returning any incomplete forms to requestor
3. Initiating purchase order or purchase requisition
4. Routing purchase requisition for review if applicable
5. Developing and implementing work instructions and procedures as needed for the management of material inventories.

4.3 Quality/Safety Assurance

4.3.1 The designated quality/safety assurance reviewers are responsible for:

1. Reviewing purchase requisitions and return of the requisitions to the material coordinator, in accordance with WHC-CM-3-5, Section 12.7, and WHC-CM-4-2.

4.4 Material Support

4.4.1 Material support is responsible for all material acquisition and storage activities, including:

1. Ordering, statusing, and staging of all applicable materials in accordance with WHC-CM-2-2, Section 4, "Material Control Procedures."

Material Control

- 4.4.2 After receipt of an order for material(s), material support is responsible for the following:
1. Verifying order contents and documentation
 2. Filing documentation
 3. Disposition of incorrect or nonconforming items
 4. Tagging materials as applicable for storage
 5. Logging material into inventory
 6. Performing routine monthly reviews of inventory
 - a. If excess material is found, Credit Store Orders, Warehouse Storage Requests, or Excess documents will be prepared to remove overstock items.
 - b. Purchase Orders or Store Orders will be initiated for restocking inventories that are at a minimum.
 7. Maintaining a controlled area (staging) for storage. Access to the area is limited to Material Support personnel. Materials are controlled as necessary to:
 - a. Ensure traceability of origin
 - b. Prevent damage, loss, or deterioration
 - c. Preclude inadvertent mixing of dissimilar materials.
- 4.5 Standards Laboratory**
- 4.5.1 The Standards Laboratory is responsible for:
1. Submitting all 222-S Material Requests for chemicals. The Material Request Form will be filled out and forwarded to Material Support for processing.
- 4.6 Miscellaneous**
- 4.6.1 Chemical storage will be the responsibility of the laboratories.
- 4.6.2 All stored materials will have an identification tag, containing the following information, as applicable:
- a. Purchase order number
 - b. WHC stock number
 - c. Quantity and unit of issue
 - d. Work package number.

Material Control

- 4.6.3 Removal of materials from storage will be documented.
1. Material relating to a work package will be documented on the white copy of the Bill of Materials.
 2. A Plant Equipment Transfer Form (54-3000-212) will be used to issue all capital equipment not related to construction, spare equipment, or property identified with a WHC property number.
- 4.6.4 Shop stock will be maintained to ensure availability for routine use.
1. Inventories will be established to maintain the lowest cost effective levels commensurate with lead times and economy.
- 4.6.5 Minimum and maximum inventory levels for shop stock will be maintained. (A maximum quantity is normally a 90 day supply.)

5.0 RECORDS

Any records generated as a result of activities described in this section will be managed in accordance with applicable Records Inventory and Disposition Schedules.

6.0 DESIGNATED REVIEWERS

<u>Designated Reviewing Organizations</u>	<u>CMPOC</u>
Maintenance/Work Control (Champion)	T6-14
HASQAP Compliance	T6-16

Material Control

7.0 REFERENCES

WHC-CM-3-5, *Document Control and Records Management Manual*

Section 12.7, "Approval of Environmental, Safety, and Quality Affecting Documents"

WHC-CM-2-2, *Materials Management Manual*

MCP-3 "Controlling Spare Parts Inventory."

MCP-11 "Preparing and Processing Store Orders and Credit Store Orders."

WHC-CM-4-2, *Quality Assurance Manual*

Appendix A "Procurement Clauses."

QR 8.0 "Identification and Control Items."

QR 8.1 "Identification and Control of Nonconforming Items."

QR 15.0 "Control of Nonconforming Items."

WHC-CM-6-1, *Standard Engineering Practices*

EP 5.2 "Cognizant Engineer Responsibilities."

8.0 BIBLIOGRAPHY

WHC-CM-2-1, *Procurement Manual and Procedures*

Section 7.1 "Disposition of Equipment and Materials."

WHC-IP-0258 "Procurement Users Guide"

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WHC-CM-5-4, *Laboratories Administration*

9.1

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