

**CENTER FOR NUCLEAR WASTE  
REGULATORY ANALYSES**

Proc. TOP-012  
0

Revision \_\_\_\_\_

**TECHNICAL OPERATING PROCEDURE**

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Title IDENTIFICATION, CONTROL, STORAGE, HANDLING, SHIPPING, AND ARCHIVING OF SAMPLES

**EFFECTIVITY AND APPROVAL**

Revision 0 of this procedure became effective on Dec. 18, 1990. This procedure consists of the pages and changes listed below.

<u>Page No.</u>	<u>Change</u>	<u>Date Effective</u>
ALL	0	12/18/90

**SUPERSEDED**

Supersedes Procedure No. NONE

**Approvals**

Written By <i>N. Sridhar</i>	Date <i>12/17/90</i>	Technical Review <i>[Signature]</i>	Date <i>12/17/90</i>
Quality Assurance <i>[Signature]</i>	Date <i>12/18/90</i>	Cognizant Director <i>[Signature]</i>	Date <i>12/17/90</i>

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TOP-012

**TECHNICAL OPERATING PROCEDURE FOR  
IDENTIFICATION, CONTROL, STORAGE, HANDLING, SHIPPING, AND ARCHIVING  
OF SAMPLES**

1. PURPOSE

The purpose of this procedure is to provide general methods for identification, control, storage, handling, shipping, and archiving of samples. This procedure establishes controls required by CQAM Sections 8 and 13.

2. RESPONSIBILITY

2.1 The Director of Systems Engineering and Integration shall be responsible for the development and maintenance of this procedure.

2.2 The cognizant Principal Investigators shall be responsible for the implementation of this procedure.

2.3 Personnel performing the tasks described in this procedure are responsible for complying with its requirements.

3. PROCEDURE

3.1 Sample Identification

3.1.1 The base sample identification shall consist of the manufacturer's lot or heat number for procured items. For non-procured or field samples, the base identification shall contain a sample code and sequential sample number. Examples of specific sample codes are identified in the attachments to this procedure. Coded suffixes to the base identification, illustrated in the attachments, may be added as desired. Base materials that are combined shall be identified by the base material

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identifications of the source materials separated by a slash, i.e., 1055/1157. A complete listing of sample codes shall be recorded in a sample code catalog which shall be maintained and updated by the cognizant principal investigators.

3.1.2 Subsamples are defined as parts of the original sample which have an identity unique from that of the original. Subsamples are physically separate from their parent, and may have been modified from their parent materials, or may be intended for unique uses. Several levels of subsamples are possible depending on the sequence of preparation, treatment, or intended use.

3.1.3 Subsample identification shall consist of the base sample identification, plus one or more of a series of a treatment, preparation, or use codes followed by a sequential number. Examples of specific treatment, preparation, and use codes are identified in the attachments to this procedure.

3.1.4 The base and each subsample identification series shall be separated by an asterisk. Example: 1055/1157\*T-3, designates a material combined from base materials identified as 1055 and 1157, test sample number 3.

3.1.5 While a separate log for sub-sample identification codes is not necessary, these codes shall be identified either in the code catalog mentioned under section 3.1.1 or in appropriate Scientific Notebooks.

3.2 Identification Methods

3.2.1 Large samples, such as plates, rock specimens, and containers of solutions, shall be marked by indelible markers, by indentation (punches, vibrating tools etc), or tags. Direct marking shall be such that the eventual use of the

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item is not adversely affected.

3.2.2 Samples on which direct marking is not possible shall be identified by marking on the containers/bags containing all the items of the sample.

3.3 Sample Control

3.3.1 A Sample Custody Log shall be maintained which provides the following sample information, as applicable.

- \* Identification of the sample (mandatory)
- \* Sample designation
- \* General description of the sample (mandatory)
- \* Reference TOP or Scientific Notebook entry
- \* Amount of sample; pieces, volume, mass
- \* Size
- \* Date of receipt or collection (mandatory)
- \* Date of initial log entry and updates (mandatory)
- \* Person making log entry (mandatory)
- \* Storage location (mandatory - indicate "Discarded" for tested samples not retained)
- \* Collection site (reference maps or field notes as necessary)
- \* Person who made the sample collection

3.3.2 The log shall be updated whenever new samples are added or sub-samples taken. Sample and sub-samples entries shall be made into the log using the Sample Custody Entry form, CNWRA Form TOP-004, Figure 1.

3.3.3 Identification of samples and sub-samples shall be maintained through sub-division and transfer to different containers by prelabeling or others means to the greatest extent possible.

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3.4 Sample Shipping, Storage, and Handling

3.4.1 Routine sample storage shall be accomplished in SwRI and Center laboratories providing limited access, protection from environmental extremes and protection from deterioration.

3.4.2 Samples requiring storage conditions beyond those provided in paragraph 3.3.1 shall have their special storage requirements identified in TOPs or in Scientific Notebook entries. Samples requiring special storage conditions shall be clearly labeled identifying or providing reference to the special storage requirements.

3.4.3 Samples shall be shipped and handled in accordance with industry accepted or customary practices unless special requirements are identified in TOPs by the Principal Investigator.

3.5 Archival Samples

In many experimental programs, a need may arise to examine the original, untested sample. This need may arise out of a necessity to repeat some previous tests, conduct any new tests not part of previous programs, or compare new samples with old samples. Hence, where possible, a portion of untested, as-received material should be archived for future reference.

The identification and logging of this archival sub-sample shall follow the procedures outlined above. The archival piece shall be uniquely marked as "ARCHIVAL", so that it may not be used for any testing. The storage and handling of the archival samples shall follow the same guidelines described in Section 3.3.

3.6 Identification of Laboratory Reagents and Standards

3.6.1 The preparation of laboratory reagents and standards shall be documented in Scientific

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Notebook entries. Entries shall identify the lot numbers of the source reagents and the calibrated measuring equipment used to prepare the reagent or standard.

3.6.2 Reagents and standards that are retained for use beyond the day of preparation shall be labeled with the following information:

- \* Appropriate identification of the reagent corresponding to the entry in the Scientific Notebook.
- \* Date of preparation, and as applicable, date of expiration
- \* Reference the Scientific Notebook entry of the preparation by notebook control number and page number

4. RECORDS

4.1 The Sample Custody Logs shall be controlled as QA records in accordance with CQAM Section 17. These shall be retained for as long as the samples controlled by the logs are stored plus three years thereafter.

4.2 The sample code catalog shall be controlled as QA records along with the sample custody log.

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**Attachment 1. Examples of Sample Identification Codes for  
Integrated Waste Package Experiments**

**A. Base Identification Codes**

B = Base Metal            W = Weld Filler

**B. Sub-sample Codes**

Code Letters

Process/Treatment

	None Required As Received
RA	Re-annealed after receipt
A	Aged after receipt
HRA	Hot-rolled and annealed after receipt
CRA	Cold-rolled and annealed after receipt
CR	Cold-rolled after receipt
P	Plasma cut
C	Cut by other means
ASW	As-welded after receipt
WA	Welded and annealed
ST	Surface treated after receipt
S	Sintered

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**Attachment 2. Examples of Sample Codes for Seismic Rock Mechanics  
Research**

**Project**

**A. Base Identification Codes**

SRM = Seismic Rock Mechanics      LFM = Lucky Friday Mine core  
sample

Base identification sequence numbering = IJK, where I = hole number, J = core box number, and K = core piece number from the hole. Multiple pieces from the same core shall be designated by the suffix a,b,c, etc.

**B. Sub-sample Codes**

<u>Code Letters</u>	<u>Test Type</u>
U	Uniaxial Compressive Test
JS	Jointed Shear Test
B	Brazilian Test
T	Triaxial Test
SU	Uniaxial Test under saturated conditions
SB	Brazilian Test under saturated conditions
ST	Triaxial Test under saturated conditions

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Attachment 3. Examples of Sample Codes for Geochemistry  
Research Project

A. Base Identification Codes

CDV = Clinoptilolite; Death Valley, CA

CH = Clinoptilolite; Hector, CA

CB = Clinoptilolite; Barstow, CA

CAV = Clinoptilolite; Amargosa Valley, NV

CGC = Clinoptilolite; Grant County, NV

CCC = Clinoptilolite; Castle Creek, ID

CT = Clinoptilolite; Tilden, TX

CSC = Clinoptilolite; Succor Creek, Malheur County, OR

HPI = Heulandite; Poonah, Maharashtra State, India

ASH = Analcime; Mt. St. Hilaire, Quebec, Canada

B. Sub-sample Codes

<u>Code Letters</u>	<u>Treatment/Test</u>
HL	Treated to heavy liquid (density) separation
XRD	Analyzed by X-ray diffraction
Naf	Homoionic Na-form (or Na enriched form)
NaK	Binary NaCl-KCl aqueous system

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**SAMPLE CUSTODY ENTRY FORM**

**SAMPLE IDENTIFICATION (Mandatory)**

\_\_\_\_\_

**SAMPLE  
DESIGNATOR** \_\_\_\_\_

**DESCRIPTION OF SAMPLE (Mandatory)**

\_\_\_\_\_

\_\_\_\_\_

**REFERENCE TOP or SCIENTIFIC NOTEBOOK ENTRY**

\_\_\_\_\_

**AMOUNT of SAMPLE** \_\_\_\_\_ **SIZE** \_\_\_\_\_

**DATE of SAMPLE RECEIPT (Mandatory)** \_\_\_\_\_

**DATE of LOG ENTRY** \_\_\_\_\_ **by** \_\_\_\_\_  
**(Mandatory)**

**SAMPLE STORAGE LOCATION (Mandatory)**

\_\_\_\_\_

**c o l l e c t i o n   s i t e :**

\_\_\_\_\_

**Supplier:** \_\_\_\_\_

**Other:** \_\_\_\_\_

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**EFFECTIVITY**

Revision 1 of this procedure became effective on August 1993.  
This procedure consists of the pages and changes listed below.

<u>Page No.</u>	<u>Change No.</u>	<u>Date Effective</u>
All	0	08/31/93

**SUPERSEDED**

Supersedes Procedure No. Revision 0, Change 0 - December 1990

Approvals			
Written by <i>N. Sanchez</i>	Date 9/1/93	Technical Review <i>James D. Hill</i>	Date 9/2/93
Quality Assurance <i>Steve Williams</i>	Date 9/2/93	Cognizant Director <i>John B. SAGAN</i>	Date 7/3/93

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**TECHNICAL OPERATING PROCEDURE FOR IDENTIFICATION, CONTROL,  
STORAGE, HANDLING, SHIPPING, AND ARCHIVING OF SAMPLES**

1. PURPOSE

The purpose of this procedure is to provide general methods for identification, control, storage, handling, shipping, and archiving of samples. This procedure establishes controls required by CQAM Sections 8 and 13.

2. RESPONSIBILITY

2.1 The Technical Director shall be responsible for the development and maintenance of this procedure.

2.2 The cognizant Principal Investigators shall be responsible for the implementation of this procedure.

2.3 Personnel performing the tasks described in this procedure are responsible for complying with its requirements.

3. DEFINITION

Subsamples are defined as parts of the original sample which have an identity unique from that of the original. Subsamples are physically separate from their parent, and may have been modified from their parent materials, or may be intended for unique uses. Several levels of subsamples are possible depending on the sequence of preparation, treatment or intended use.

4. PROCEDURE

4.1 Sample Identification

4.1.1 The base sample identification shall consist of the manufacturer's lot or heat number for procured items. For non-procured or field samples, the base identification shall contain a sample code and sequential sample number. Examples of specific sample codes are identified in the attachments to this procedure. Coded suffixes to the base identification, illustrated in the attachments, may be added as desired. Base materials that are combined shall be identified by the base material identifications of the source materials separated by a slash, i.e., 1055/1157. A complete listing of sample codes shall be recorded in a sample code catalog which shall be maintained and updated by the cognizant principal investigators.

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4.1.2 Subsample identification shall consist of the base sample identification, plus one or more of a series of a treatment, preparation, or use codes followed by a sequential number. Example of specific treatment, preparation, and use codes are identified in the attachments to this procedure.

4.1.3 The base and each subsample identification series shall be separated by an asterisk. Example: 1055/1157\*T-3, designates a material combined from base materials identified as 1055 and 1157, test sample number 3.

4.1.4 While a separate log for subsample identification codes is not necessary, these codes shall be identified either in the code catalog mentioned under section 3.1.1 or in appropriate Scientific Notebooks.

4.2 Identification Methods

4.2.1 Large samples, such as plates, rock specimens, and containers of solutions, shall be marked by indelible markers, indentation (punches, vibrating tools etc), or tags. Direct marking shall be such that the eventual use of the item is not adversely affected.

4.2.2 Samples on which direct marking is not possible shall be identified by marking on the containers/bags containing all the items of the sample.

4.3 Sample Control

4.3.1 A Sample Custody Log shall be maintained which provides the following sample information, as applicable.

- Identification of the sample (mandatory)
- Sample designation
- General description of the sample (mandatory)
- Reference TOP or Scientific Notebook entry
- Amount of sample; pieces, volume, mass
- Size
- Date of receipt or collection (mandatory)
- Date of initial log entry and updates (mandatory)
- Person making log entry (mandatory)
- Storage location (mandatory - indicate "Discarded" for tested samples not retained)
- Collection site (reference maps or field notes as necessary)
- Person who made the sample collection

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4.3.2 The log shall be updated whenever new samples are added or subsamples taken. Sample and subsamples entries shall be made into the log using the Sample Custody Entry form, CNWRA Form TOP-004, Figure 1.

4.3.3 Identification of samples and subsamples shall be maintained through sub-division and transfer to different containers by prelabeling or others means to the greatest extent possible.

4.4 Sample Shipping, Storage, and Handling

4.4.1 Routine sample storage shall be accomplished in SwRI and CNWRA laboratories providing limited access, protection from environmental extremes and protection from deterioration.

4.4.2 Samples requiring storage conditions beyond those provided in paragraph 3.4.1 shall have their special storage requirements identified in TOPs or in Scientific Notebook entries. Samples requiring special storage conditions shall be clearly labeled identifying or providing reference to the special storage requirements.

4.4.3 Samples shall be shipped and handled in accordance with industry accepted or customary practices unless special requirements are identified in TOPs by the Principal Investigator.

4.5 Archival Samples

In many experimental programs, a need may arise to examine the original, untested sample. This need may arise out of a necessity to repeat some previous tests, conduct any new tests not part of previous programs, or compare new samples with old samples. Hence, where possible, a portion of untested, as-received material should be archived for future reference.

The identification and logging of this archival subsample shall follow the procedures outlined above. The archival piece shall be uniquely marked as "ARCHIVAL", so that it may not be used for any testing. The storage and handling of the archival samples shall follow the same guidelines described in Section 3.3

4.6 Identification of Laboratory Reagents and Standards

4.6.1 The preparation of laboratory reagents and standards shall be documented in Scientific Notebook entries. Entries shall identify the lot numbers of the source reagents and the calibrated measuring equipment used to prepare the reagent or standard.

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4.6.2 Reagents and standards that are retained for use beyond the day of preparation shall be labeled with the following information:

- Appropriate identification of the reagent corresponding to the entry in the Scientific Notebook.
- Date of preparation, and as applicable, date of expiration
- Reference the Scientific Notebook entry of the preparation by notebook control number and page number

4.6.3 Reagents and standards with expiration dates shall be discarded upon expiration, unless:

- (a) the expiration date is extended by the Principal Investigator, as evidenced by revision of the date on the container, or
- (b) limited use is permitted by the Principal Investigator, as evidenced by striking out the original expiration date and identifying the container "EXPIRED" and including appropriate limitations to its usage.

Revisions to expiration dates by (a) or (b) shall be validated by the Principal Investigator's initials and date of change on the affected container.

5. RECORDS

5.1 The Sample Custody Logs shall be controlled as QA records in accordance with CQAM Section 17. These shall be retained for as long as the samples controlled by the logs are stored plus three years thereafter.

5.2 The sample code catalog shall be controlled as QA records along with the sample custody log.

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Attachment 1. Examples of Sample Identification Codes for Integrated Waste Package Experiments

A. Base Identification Codes

B = Base Metal

W = Weld Filler

B. Subsample Codes

Code Letters

Process/Treatment

None Required As Received

—

RA

Re-annealed after receipt

A

Aged after receipt

HRA

Hot-rolled and annealed after receipt

CRA

Cold-rolled and annealed after receipt

CR

Cold-rolled after receipt

P

Plasma cut

C

Cut by other means

ASW

As-welded after receipt

WA

Welded and annealed

ST

Surface treated after receipt

S

Sintered

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Attachment 2. Examples of Sample Codes for Seismic Rock Mechanics Research

Project

A. Base Identification Codes

SRM = Seismic Rock Mechanics

LFM = Luck Friday Mine core samples

Base identification sequence numbering - IJK, where I = hole number, J = core box number, and K = core piece number from the hole. Multiple pieces from the same core shall be designated by the suffix a,b,c, etc.

B. Subsample Codes

Code Letters

Test Type

U

Uniaxial Compressive Test

SRMI<sub>1</sub>J<sub>1</sub>K<sub>2</sub>/SRMI<sub>2</sub>J<sub>2</sub>K<sub>2</sub>

Joint Shear Test

B

Brazilian Test

T

Triaxial Test

SU

Uniaxial Test under saturated conditions

SB

Brazilian Test under saturated conditions

ST

Triaxial Test under saturated conditions

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Attachment 3. Examples of Sample Codes for Geochemistry Research Project

A. Base Identification Codes

CDV = Clinoptilolite; Death Valley, CA  
CH = Clinoptilolite; Hector, CA  
CB = Clinoptilolite; Barstow, CA  
CAV = Clinoptilolite; Amargosa Valley, NV  
CGC = Clinoptilolite; Grant County, NV  
CCC = Clinoptilolite; Castle Creek, ID  
CT = Clinoptilolite; Tilden, TX  
CSC = Clinoptilolite; Succor Creek, Malheur County, OR  
HPI = Heulandite; Poonah, Maharashtra State, India  
ASH = Analcime; Mt. St. Hilaire, Quebec, Canada

B. Subsample Codes

<u>Code Letters</u>	<u>Treatment/Test</u>
HL	Treated to heavy liquid (density) separation
XRD	Analyzed by x-ray diffraction
Naf	Homoinoc Na-form (or Na enriched form)
NaK	Binary NaCl-Kcl aqueous system

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**SAMPLE CUSTODY ENTRY FORM**

SAMPLE IDENTIFICATION (Mandatory)

\_\_\_\_\_

SAMPLE  
DESIGNATOR \_\_\_\_\_

DESCRIPTION OF SAMPLE (Mandatory)

\_\_\_\_\_  
\_\_\_\_\_

REFERENCE TOP or SCIENTIFIC NOTEBOOK ENTRY

\_\_\_\_\_

AMOUNT of SAMPLE \_\_\_\_\_ SIZE \_\_\_\_\_

DATE of SAMPLE RECEIPT (Mandatory) \_\_\_\_\_

DATE of LOG ENTRY \_\_\_\_\_ by \_\_\_\_\_

SAMPLE STORAGE LOCATION (Mandatory)

\_\_\_\_\_

Collection site:

\_\_\_\_\_

Supplier:

Other: \_\_\_\_\_

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Title IDENTIFICATION, CONTROL, STORAGE, HANDLING, SHIPPING, AND  
ARCHIVING OF SAMPLES

**EFFECTIVITY**

Revision 2 of this procedure became effective on 01/30/2003 This procedure consists of the pages and changes listed below.

<u>Page No.</u>	<u>Change No.</u>	<u>Date Effective</u>
All	0	01/30/2003

**SUPERSEDED**

Supersedes Procedure No. TOP-012, Revision 1, Change 0 - 10/03/2001

Approvals			
Written by <i>A. Lawrence McKay</i> FOR JOHN STAMATAKOS John Stamatakos	Date 1/22/03	Technical Review <i>James P. Prikryl</i> James Prikryl	Date 1/21/03
Quality Assurance <i>Bruce Mabrito</i> Bruce Mabrito	Date 1/23/2003	Cognizant Director <i>Budhi Sagar</i> Budhi Sagar	Date 1/23/2003

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TOP-012  
IDENTIFICATION, CONTROL, STORAGE, HANDLING, SHIPPING, AND ARCHIVING OF  
SAMPLES

1. **PURPOSE**

The purpose of this procedure is to provide general methods for identification, control, storage, handling, shipping, and archiving of samples. This procedure establishes controls required by CNWRA Quality Assurance Manual Section 8 and 13.

2. **RESPONSIBILITY**

2.1 The Technical Director shall be responsible for the development and maintenance of this procedure.

2.2 The cognizant Principal Investigators shall be responsible for the implementation of this procedure.

2.3 Personnel performing the tasks described in this procedure are responsible for complying with its requirements.

3. **DEFINITION**

Samples at the CNWRA take many different forms. Some of the different forms of samples are manufactured samples, natural geological samples, and laboratory reagents and standards. Subsamples are parts of the original sample which have a unique identity. Subsamples are physically separate from the original sample and have generally been modified (e.g., polished, crushed, or chemically treated) for a specific use or analysis. Several levels of subsamples are possible depending on the sequence of preparation, treatment or intended use.

4. **PROCEDURE**

4.1 **Sample Identification**

4.1.1 The base sample identification shall consist of the manufacturer's lot or heat number for procured items. For non-procured or field samples, the base identification shall contain a sample code and sequential sample number. For example, two water samples taken from well EW could be labeled EW1 and EW2. Base samples that are combined shall be identified by the base sample identifications of the sample separated by a slash,(e.g., EW1/EW2).

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4.1.2 Subsample identification shall consist of the base sample identification, plus one or more subsample, identification codes identifying a treatment, preparation, or use that the subsample has undergone followed by a sequential number. For example, if two rock thin sections are made from base rock sample DR3 then they could be labeled DR3-TS1 and DR3-TS2.

4.1.3 The base and each subsample identification series shall be separated by an asterisk or a hyphen. Example: DR3-XRD1, designate a subsample of base sample DR3 analyzed by x-ray diffusion (SRD).

4.1.4 While separate logs for base samples and subsample identification codes are not necessary, these codes shall be identified either in each sample custody/control log maintained by a cognizant principal investigator or in appropriate Scientific Notebooks.

**4.2 Identification Methods**

4.2.1 Large samples, such as plates, rock specimens, and containers of solutions, shall be marked by indelible markers, indentation (punches, vibrating tools, etc), or tags. Direct marking shall be such that the eventual use of the item is not adversely affected.

4.2.2 Samples on which direct marking is not possible shall be identified by marking on the containers/bags containing all the items of the sample.

**4.3 Sample Control**

4.3.1 A Sample Custody/Control Log shall be maintained. Separate logs for separate projects are allowed. The cognizant Principal Investigator for each project is responsible for maintaining and updating the log.

The log can be kept either in conventional paper form or on a computer spreadsheet. If the paper method is used, form TOP-004 (attachment A) will be used to document sample custody or when subsample are taken. The following information is mandatory for both types of logs:

- Sample identifier (base sample and subsample codes)
- General description of the sample

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- Date of receipt or collection
- Date of initial log entry and updates
- Person making log entry
- Storage location (indicate "Discarded" for tested samples not retained)

4.3.2 The log shall be updated whenever new samples are added or subsamples taken. Sample and subsamples entries shall be made into the log by the appropriate Investigator.

4.4 Sample Shipping, Storage, and Handling

4.4.1 Routine sample storage shall be accomplished in SwRI and CNWRA laboratories providing limited access, protection from environmental extremes and protection from deterioration.

4.4.2 Samples requiring storage conditions beyond those provided in paragraph 4.4.1 shall have their special storage requirements clearly identified. Samples requiring special storage conditions shall be clearly labeled identifying or providing reference to the special storage requirements.

4.4.3 Samples shall be shipped and handled in accordance with industry accepted or customary practices unless special requirements are clearly identified by the Principal Investigator.

4.5 Archival Samples

In many experimental programs, a need may arise to examine the original, untested sample. This need may arise out of a necessity to repeat some previous tests, conduct any new tests not part of previous programs, or compare new samples with old samples. Hence, where possible, a portion of untested, as-received material should be archived for future reference. The identification and logging of this archival subsample shall follow the procedures outlined above. The archival piece shall be uniquely marked as "ARCHIVAL," so that it may not be used for any testing. The storage and handling of the archival samples shall follow the same guidelines described in Section 4.4.

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4.6 Identification of Chemical Reagents and Solution Standards

4.6.1 The use of procured chemical reagents and solution standards shall be documented in Scientific Notebook entries. Entries shall identify the lot numbers of the source reagents or standards.

4.6.2 Solutions prepared from chemical reagents and diluted solution standards that are retained for use beyond the day of preparation shall be labeled with the following information:

- Appropriate identification of the chemical solution or diluted solution standard corresponding to the entry in the Scientific Notebook
- Date of preparation, and as applicable, date of expiration
- Reference of Scientific Notebook entry of the preparation by notebook control number and page number

4.6.3 Chemical reagents and solution standards with expiration dates shall be discarded upon expiration, unless:

- (a) the expiration date is extended by the Principal Investigator, as evidenced by revision of the date on the container, or
- (b) limited use is permitted by the Principal Investigator, as evidenced by striking out the original expiration date and identifying the containers "EXPIRED" and including appropriate limitations to its usage.

Revisions to expiration dates by (a) or (b) shall be validated by the Principal Investigator's initials and date of change on the affected container.

5. RECORDS

5.1 The sample Custody/Control Logs shall be controlled as Quality Assurance records in accordance with CNWRA Quality Assurance Manual Section 17. These shall be retained for as long as the sample controlled by the logs are stored plus three years thereafter.

5.2 For projects that maintain a sample code catalog (i.e., a complete listing of sample codes used in a sample custody control log), the sample code catalog shall be controlled as Quality Assurance records along with the sample custody log.

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SAMPLE CUSTODY/CONTROL LOG ENTRY FORM

SAMPLE IDENTIFICATION (Mandatory)

DESCRIPTION OF SAMPLE (Mandatory)

REFERENCE TOP OR SCIENTIFIC NOTEBOOK ENTRY

AMOUNT OF SAMPLE

SIZE

DATE OF SAMPLE RECEIPT (Mandatory)

DATE OF INITIAL LOG ENTRY (Mandatory)

BY

SAMPLE STORAGE LOCATION (Mandatory)

COLLECTION SITE (Reference Maps or Field Notes As Required)

PERSON(S) WHO COLLECTED SAMPLE(S)

SUPPLIER

OTHER

CNWRA FORM TOP-004

Attachment A

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**Title TOP-012 IDENTIFICATION AND CONTROL OF SAMPLES AND CHEMICAL  
REAGENTS AND STANDARDS**

**EFFECTIVITY AND APPROVAL**

Revision 3 of this procedure became effective on 8/21/2003. This procedure consists of the pages and changes listed below.

<u>Page No.</u>	<u>Change</u>	<u>Date Effective</u>
All	0	8/21/2003

**Supersedes Procedure No. TOP-012, Rev 2, Chg 0 dated 1/30/2003**

**Approvals**

Written By <i>Bradley Werling</i> Bradley Werling	Date 8-20-03	Technical Review <i>Paul Bertetti</i> Paul Bertetti	Date 20 Aug 2003
Quality Assurance <i>Robert Brient</i> Robert Brient	Date 8/21/03	Cognizant Director <i>Budhi Sagar</i> Budhi Sagar	Date 8/21/03

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TOP-012  
IDENTIFICATION AND CONTROL OF SAMPLES AND CHEMICAL REAGENTS  
AND STANDARDS

1. PURPOSE

The purpose of this procedure is to provide general methods for identification, control, storage, handling, shipping, and archiving of samples and the identification of chemical reagents. This procedure establishes controls required by Center for Nuclear Waste Regulatory Analyses (CNWRA) Quality Assurance Manual Sections 8 and 13.

2. RESPONSIBILITY

- 2.1 The Technical Director shall be responsible for the development and maintenance of this procedure.
- 2.2 The cognizant Principal Investigators shall be responsible for the implementation of this procedure and ensure that the sample control logs are maintained and up-to-date.
- 2.3 Personnel performing the tasks described in this procedure are responsible for complying with its requirements.

3. DEFINITION

Samples at the CNWRA take many different forms. Some of the different forms of samples are manufactured samples, natural geological samples, and synthesized samples. Parts of the original or base sample that have a unique identity are subsamples. Subsamples are physically separate from the original or base sample and have generally been modified (e.g., polished, crushed, or chemically treated) for a specific use or analysis. Several levels of subsamples are possible depending on the sequence of preparation, treatment, or intended use. Aliquots removed from a sample or subsample that are unmodified prior to testing are not considered subsamples.

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**4. PROCEDURE**

**4.1 Sample Identification**

Each sample and subsample shall be given a unique sample identification code. These sample identification codes may consist of both letters, numbers, and/or symbols. Sample identification shall be traceable to the appropriate documentation (purchase item receiving record, drill log, test record, etc.).

4.1.1 The base sample identification code may consist of the manufacturer's lot or heat number for procured items. For nonprocured or field samples, the base identification code may contain a sample code and sequential sample number. For example, two water samples taken from well EW could be labeled EW1 and EW2. Base samples that are combined shall be identified by the base sample identification codes of the sample separated by a slash (e.g., EW1/EW2).

4.1.2 Subsamples shall be given unique sample identification codes based on the base sample identification code. This may be accomplished by adding one or more suffixes called subsample identification codes. These suffixes may identify a treatment, preparation, or use that the subsample has undergone followed by a sequential number. For example, if two rock thin sections are made from base rock sample DR3 then they could be labeled DR3-TS1 and DR3-TS2.

4.1.3 The base and each subsample identification series may be separated by an asterisk or a hyphen. Example: DR3-XRD1, designates a subsample of base sample DR3 analyzed by x-ray diffraction.

**4.2 Identification Methods**

4.2.1 Large samples, such as plates, rock specimens, and containers of solutions, may be directly marked by indelible markers, indentation (punches, vibrating tools, etc), or tags. Direct marking shall be such that the eventual use of the item is not adversely affected.

4.2.2 Samples on which direct marking is not possible or is impractical shall be identified by marking on the containers/bags containing all the items of the sample.

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**4.3 Sample Control**

**4.3.1** An appropriate Sample Custody/Control Log shall be maintained to document sample receipt, storage, subdivision, and disposition of samples. Separate logs for separate projects are allowed. The logs may be kept either in conventional paper or electronic form. The Sample Custody/Control Log Entry Form (CNWRA form TOP-004 - see Attachment A) may be used as a mechanism to transfer data into the Sample Custody Log. This form lists information that may be included in the sample custody log. The following information is mandatory:

- Sample identification code
- General description of the sample (including sample collection location if applicable)
- Date of receipt, collection, or synthesis
- Date of entry into log
- Person making entry
- Long term Storage location (indicate discarded for tested samples destroyed, disposed of, or not retained)

**4.3.2** The Sample Custody/Control Log shall be updated whenever new samples are added, subsamples are taken, or samples or subsamples are discarded. These updates shall include the same information as identified in Section 4.3.1 of this TOP. Sample and subsamples entries shall be made into the log by the appropriate Investigator.

**4.4 Sample Shipping, Storage, and Handling**

**4.4.1** Routine sample storage shall be accomplished in SwRI and CNWRA laboratories providing limited access, protection from environmental extremes, and protection from deterioration.

**4.4.2** Samples requiring storage conditions beyond those provided in paragraph 4.4.1 shall have their special storage requirements clearly identified.

**4.4.3** Samples shall be shipped and handled in accordance with industry accepted or customary practices unless special requirements are clearly identified by the Principal Investigator.

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**4.5 Archival Samples**

In many experimental programs, a need may arise to examine the original, untested sample. This need may arise out of a necessity to repeat some previous tests, conduct any new tests not part of previous programs, or compare new samples with old samples. Hence, where possible, a portion of untested, as-received material should be archived for future reference. The identification and logging of this archival subsample shall follow the procedures outlined above. The archival sample shall be marked "ARCHIVAL," so that it may not be inadvertently used for any testing. The storage and handling of the archival samples shall follow the same guidelines described in Section 4.4.

**4.6 Identification of Chemical Reagents and Standards**

**4.6.1** The use of chemical reagents and standards not explicitly identified as samples shall be documented in Scientific Notebook entries. Entries shall identify the lot numbers of the source reagents or standards.

**4.6.2** Solutions prepared from chemical reagents and diluted solution standards that are retained for use beyond the day of preparation shall be labeled with the following information:

- Appropriate identification of the chemical solution or diluted solution standard corresponding to the entry in the Scientific Notebook
- Date of preparation, and as applicable, date of expiration
- Reference of Scientific Notebook entry of the preparation by notebook control number and page number

**4.6.3** Chemical reagents and standards with expiration dates shall be discarded upon expiration, unless:

- (a) the expiration date is extended as evidenced by revision of the date on the container, or
- (b) limited use is permitted as evidenced by striking out the original expiration date and identifying the containers "EXPIRED" and including appropriate limitations to its usage.

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Revisions to expiration dates by (a) or (b) shall be validated by the Principal Investigator's initials and date of change on the affected container.

**5 RECORDS**

- 5.1 The sample Custody/Control Logs shall be controlled as Quality Assurance records in accordance with CNWRA Quality Assurance Manual Section 17. These shall be retained for as long as the sample controlled by the logs are stored plus three years thereafter.
- 5.2 For projects that maintain a sample code catalog (i.e., a complete listing of sample codes used in a sample custody control log), the sample code catalog shall be controlled as Quality Assurance records along with the sample custody log.

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<b>CENTER FOR NUCLEAR WASTE REGULATORY ANALYSES SAMPLE CUSTODY/CONTROL LOG ENTRY FORM</b>	
SAMPLE IDENTIFICATION (Mandatory)	
DESCRIPTION OF SAMPLE (Mandatory)	
REFERENCE TOP OR SCIENTIFIC NOTEBOOK ENTRY	
AMOUNT OF SAMPLE	SIZE
DATE OF INITIAL LOG ENTRY (Mandatory)	
DATE OF INITIAL LOG ENTRY (Mandatory)	BY
SAMPLE STORAGE LOCATION (Mandatory)	
COLLECTION SITE (Reference Maps or Field Notes As Required)	
PERSON(S) WHO COLLECTED SAMPLE(S)	
SUPPLIER	
OTHER	
CNWRA FORM TOP-004	