EVALUATION RESEARCH CORPORATION

COMANCHE PEAK RESPONSE TEAM

PROJECT PROCEDURE FOR QA/QC ISSUE-SPECIFIC ACTION PLANS

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**REVISION:** 1

EFFECTIVE DATE:

(08/09/85)

SAMPLE SELECTION

Shilland PREPARED BY:

APPROVED BY: OA REPRESENTATIVE ON-SITE

APPROVED BY:

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QA:/QC REVIEW TEAM LEADER

DATE: 8/8/85

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## 1.0 PURPOSE

This procedure establishes the **method to randomly select items** and related documentation for reinspection/review utilizing established statistical techniques required by applicable Issue-Specific Action Plans.

#### 2.0 APPLICABILITY

This procedure is applicable to safety related hardware constructed and QC accepted at Comanche Peak Units 1, 2, and areas common to both units.

## 3.0 REFERENCES

- 3.1 CPP-005 Establishing Populations
- 3.2 CPRT Program Plan, Appendix D, CPRT Sampling Approach, Applications, and Guidelines
- 3.3 CPP-012 QA/QC Interface with Constructor and TUGCO
- 3.4 CPP-008 Preparation of Verification Packages

## 4.0 GENERAL

Random samples of complete safety related construction activities and/or QC documentation will be reinspected and/or reviewed in order to establish, at a minimum, a 95 percent confidence level that 95 percent of the population complies with the acceptance criteria.

The first sample provides information about the total population. As required by Issue Specific Action Plan (ISAP) VII.c, a second sample provides additional information about a portion of the total population that is required for safe shutdown.

NOTE: Marchandon Hample, as defined in this procedure is not required per TSAFS VIL, FrancivII;b.

## 4.1 Responsibilities

# 4.1.1 \_OATOG DIRCIPITNE Engineers/Issue Coordinators

The QA/QC Discipline Engineers/Issue Coordinators select the random samples and prepare the Random Sample. Identification List

CPP-006 Rev. 1

# 4.1.2 QA/QC Lead Discipline Engineers/Category I Supervisors

The QA/QC Lead Discipline Engineers/Category I Supervisors review and approve Random Sample Identification Lists.

Moreover, the QA/QC Lead Discipline Engineers ensure the distribution of approved Random Sample Identification Lists to the required personnel.

## 4.1.3 QA/QC Inspectors

QA/QC Inspectors assist in the process to determine the (in)accessibility of the randomly selected items and initiate Requests for Equipment/Services as required.

## 4.2 Policy

Activities performed under this procedure shall conform to the policies contained in the latest Comanche Peak Response Team Program Plan, ERC Management Program Plan, and the applicable Issue-Specific Action Plan(s).

Where an activity is designated as the responsibility of a QA/QC Lead Discipline Engineer/Category I Supervisor, or higher, it may be delegated by that individual to an individual under his or her supervision.

## 4.3 Conflicts

In the case of a conflict between this procedure and the documents referenced in Section 4.2, the latter shall govern.

# 4.4 Definitions

- 4.4.1 First Random Sample A selection of population items in which each item in the population has an equal chance of being selected.
- 4.4.2 <u>Second Random Sample</u> Items selected from the safe shutdown systems or, for populations such as concrete which do not directly contain items in the safe shutdown systems, comprises items which support those systems, or are in locations where failures could adversely impact these systems.
- 4.4.3 <u>Accessible Sample Item</u> An item which can be reinspected without invalidating any previously installed and accepted work. Accessible items may include those items for which scaffolding must be erected. It does not include those items which must be disassembled, such as valve and piping internals and

## 5.0 PROCEDURE

# 5.1 Random Sample Selection

Upon completion of the Population Item List in accordance with Reference 3.1, the QA/QC Discipline Engineers establish random samples as follows. In addition, Issue Coordinators establish random samples, as required, in accordance with this procedure.

- 5.1.1 Assign a sequential number, beginning with one to each item in the population. (This may be accomplished by writing the numbers on a copy of the approved Population Item List.)
- 5.1.2 Determine the number of items in the population which are unrelated to safety, incomplete, and/or unaccepted by QC. The number of remaining items is the estimated population size.
- 5.1.3 Using Table 5.1-1, determine the minimum sample size which corresponds to the estimated population size. Reference 3.2 establishes minimum sample sizes.
  - NOTE: Establish a longer list of randomly selected items in case a particular item is inaccessible.

POPULATION SIZE	MINIMUM RANDOM SAMPLE SIZE*
01-45	all
46-100	45
101-or more	60

# TABLE 5.1-1 SAMPLE SIZE FOR POPULATIONS

- 5.1.4 Determine the particular table of random digits in accordance with instructions in "A Million Random Digits,"\*\* then place a decimal in front of each set of five random digits and multiply it by the population size.
- For the second random sample (refer to Section 5.2), include those items from the first randomly selected sample that are required for safe shutdown.

\*\* Rand Corporation

CPP-006 Rev. 1

5.1.5 Drop the decimal portion of the product and add one. The result will the same as the previously assigned sequential number of an item (refer to Paragraph 5.1.1), thereby randomly selecting the item.

Example: Generate a sample of 60 items from a population of size 900.

Sample Number		Random		Population Size								Random Number
11	-	.04146	x	900	•	37.314	-	37	+	1	-	38
2	•	.23432	x	900	-	210.888	-	210	+	1		211
3	•	.74381	x	900	-	669.429	=	669	+	1		670
		•		•								
		•		·								
•		1		•		•						
•		•		1 · · ·								14.13
60	-	.65339	x	900	-	588.051	=	588	+	1		589

5.1.6 Establish the validity of each randomly selected item by confirming that it is complete, i.e., incorporates all changes, is QC accepted, and is accessible.

- NOTE: QA/QC Inspectors assist in the process to determine the (in)accessibility of the randomly selected items. When equipment and/or services are fequired, e.g., scaffolds, lights, etc., in order to perform reinspections, Inspectors initiate Requests for Equipment/Services in accordance with Reference 3.3
- 5.1.7 If a selected item is found to be an invalid part of the population, or inaccessible the next random number is generated.

5.2 Second Random Sample

As required by ISAP VII.c, a second random sample will be selected from the population which is characterized as items required for safe shutdown.

\* "A Million Random Digits," Rand Corporation, page 355.

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Items identified in the first random sample that are required for safe shutdown shall be included in the second random sample.

The QA/QC Discipline Engineers/Issue Coordinators establish the second random sample according to the procedure in Section 5.1, except they also determine whether the randomly selected item is or is not within any system identified in the Final Safety Analysis Report (Section 7.4) as being required for safe shutdown and identified in Table 5.2-1.

## TABLE 5.2-1

#### SYSTEMS REQUIRED FOR SAFE SHUTDOWN

Auxiliary Feedwater System (AFWS) Atmospheric Steam Relief Valves (PORV's) Chemical and Volume Control System (CVCS) Residual Heat Removal System (RHRS) Pressurizer Pressure Control During RCS Depressurization Station. Service Water System (SSWS) Component Cooling Water System (CCWS) Onsite Power Systems (Diesels, D. C.) Control Room Ventilation System ESF Ventilation System Safety Chilled Water System UPS Ventilation System Monitoring Indicators in the St. Gen., RCS, Cond. Stor. Tank, Boric Acid Tank

## 5.3 Random Sample Identification List

## 5.3.1 Preparation, Review, and Approval

The QA/QC Discipline Engineers/Issue Coordinators document the selection of the random samples by completing the Random Sample Identification List in accordance with Attachment 6.1.

Subsequently, the QA/QC Lead Discipline Engineer/Category I Supervisor reviews and approves complete Random Sample Identification Lists in accordance with Attachment 6.1.

## 5.3.2 Distribution and Control

The QA/QC Lead Discipline Engineer/Category I Supervisor ensures that approved Random Sample Identification Lists are distributed to the:

- QA/QC Records Administrator (File Location [Ltr.])
- QA/QC Reinspection Engineering Supervisor

# 6.0 ATTACHMENTS

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6.1 Random Sample Identification List Form (Sample and Instruction)

Attachment 6.1 CPP-006 Revision: 1 Page 1 of 3

# RANDOM SAMPLE IDENTIFICATION LIST

		(1) RANDOM	CHE PEAN SAMPLE	RESPO	NSE TEAM	
POPULA	TION NAM	E :	(2)			
PREPAR	ED BY:		(3)		0	ATE: (3)
in Particle Mar	in the second	DAVOC DISC	IPLINE I	INGINEE	R	
NO.	RAN/ SEO NO.	DESCRIPTION	POP	ACCESS	PKG NO.	COMMENTS
(4)	(4)	(5)	(6)	(7)	(8)	(9)
	-	So	< la	(MD)		~
	84.200					
Action of	ED 87 :			10 (19)	0	ATE: (1C)

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Attachment 6.1 CPP-006 Revision: 1

## INSTRUCTIONS TO COMPLETE FORM CPP-006.1 "RANDOM SAMPLE IDENTIFICATION LIST"

#### The Preparer enters:

- (1) "First" or "Second" as applicable.
- (2) The population name.
- (3) Name as preparer and date.
- (4) The sample number of the item and the corresponding random/sequential number of each item which comprises the sample as established in Section 5.1.
  - NOTE: For second random samples, determine whether the randomly selected item is or is not required for safe shutdown (refer to Section 5.2). Include each item which is required for safe shutdown and determined to be in the first randomly selected sample. In order to attain the required sample size (refer to Table 5.1-1), list additional items in the same population required for safe shutdown and discount any other item. Continue to list/discount items until the necessary sample size is established.
- (5) The appropriate description of each randomly selected item.
- (6) "Y" (Yes) or "N" (No) to indicate whether the randomly selected item is safety related, constructed, and QC accepted.
- (7) "Y" (Yes) or "N" (No) after verifying, by examination, that the randomly selected item is (in)accessible.
  - NOTE: When verification of accessibility is not performed, enter "N/A" (not applicable) and provide justification for not performing the verification in the comments portion of the form.
- (8) As applicable, the Verification Package number (refer to Reference 3.4). Otherwise enter "N/A" to indicate not applicable.
- (9) Justification when "N" or "N/A" is indicated, e.g., the item is embedded in..., etc. In addition, summarize the basis and the results of the accessibility review.

Attachment 6.1 CPP-006 Revision: 1

The QA/QC Lead Discipline Engineer/Category I Supervisor reviews Random Sample Identification Lists to ensure that they are complete, accurate, provide clear and reasonable justification as required, and are otherwise consistent with the requirements of this procedure. Upon the completion of a satisfactory review, the reviewer:

(10) Signs and dates the form.

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