

COMPLETE

<b>ENGINEERING CHANGE NOTICE</b>	Page 1 of <u>2</u>	1. ECN No <b>617534</b>
		Proj. ECN

<b>2. ECN Category (mark one)</b>  Supplemental <input type="checkbox"/> Direct Revision <input checked="" type="checkbox"/> Change ECN <input type="checkbox"/> Temporary <input type="checkbox"/> Standby <input type="checkbox"/> Supersedeure <input type="checkbox"/> Cancel/Void <input type="checkbox"/>	<b>3. Originator's Name, Organization, MSIN, and Telephone No.</b> CA CARPENTER SSQA L6-35 376-8070	<b>3a. USQ Required?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No	<b>4. Date</b> 02-24-95
<b>5. Project Title/No./Work Order No.</b> Quality Assurance Program Plan for the Site Physical & Electrical Calibration Services Lab		<b>6. Bldg./Sys./Fac. No.</b> 3717 B	<b>7. Approval Designator</b> Q ac
<b>8. Document Numbers Changed by this ECN (includes sheet no. and rev.)</b> WHC-SD-GN-QAPP-30001 Rev 0		<b>9. Related ECN No(s).</b> N/A	<b>10. Related PO No.</b> N/A

<b>11a. Modification Work</b>  <input type="checkbox"/> Yes (fill out Blk. 11b) <input checked="" type="checkbox"/> No (NA Blks. 11b, 11c, 11d)	<b>11b. Work Package No.</b> N/A	<b>11c. Modification Work Complete</b>  N/A  _____ Cog. Engineer Signature & Date	<b>11d. Restored to Original Condition (Temp. or Standby ECN only)</b> N/A  _____ Cog. Engineer Signature & Date
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**12. Description of Change**  
 Complete rewrite of the document.

**13a. Justification (mark one)**

Criteria Change <input checked="" type="checkbox"/>	Design Improvement <input type="checkbox"/>	Environmental <input type="checkbox"/>	Facility Deactivation <input type="checkbox"/>
As-Found <input type="checkbox"/>	Facilitate Const <input type="checkbox"/>	Const. Error/Omission <input type="checkbox"/>	Design Error/Omission <input type="checkbox"/>

**13b. Justification Details**  
 Record of revision completely replaces the previous revision.

<b>14. Distribution (include name, MSIN, and no. of copies)</b> CA Carpenter L6-35 1 MS Cochrane S1-52 1 RJ Ausere L6-86 1 KL Chubb L6-86 1 MJ Charney L6-86 1 DSTI L8-07 2 Central Files L8-04 2	<b>RELEASE STAMP</b>  OFFICIAL RELEASE BY WHC DATE MAR 02 1995 Sta. 21
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A-7900-013-2 (11/94) GEF095

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## RELEASE AUTHORIZATION

**Document Number:** WHC-SD-GN-QAPP-001, REV. 1

**Document Title:** QUALITY ASSURANCE PROGRAM PLAN FOR THE SITE PHYSICAL AND ELECTRICAL CALIBRATION SERVICES LAB.

**Release Date:** 2/27/95

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

**APPROVED FOR PUBLIC RELEASE**

**WHC Information Release Administration Specialist:**

*Christine Willingham*

C. Willingham



2/27/95

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SUPPORTING DOCUMENT		1. Total Pages <i>17/16</i>
2. Title Quality Assurance Program Plan for the Site Physical & Electrical Calibration Services Lab	3. Number WHC-SD-GN-QAPP- 30001	4. Rev No. 1
5. Key Words Quality Assurance, M & TE	6. Author Name: CA Carpenter  Signature Organization/Charge Code 38940 MDC23	
7. Abstract This document completely replaces the previous revision of the QAPP for the Site Physical & Electrical Calibration Services		
		8. RELEASE STAMP <div data-bbox="1053 1575 1484 1806" style="border: 1px solid black; padding: 5px;">             OFFICIAL RELEASE              BY WHC               DATE MAR 02 1995  <i>Sta. 21</i> </div>



QUALITY ASSURANCE PROGRAM PLAN

FOR THE

SITE PHYSICAL & ELECTRICAL CALIBRATION SERVICES

Issued By:  
Westinghouse Hanford Company

February 1995

For

U.S. Department of Energy  
Richland Operations Office  
Richland, Washington

WHC Approvals:

C. A. Carpenter *C.A. Carpenter*  
Cognizant Quality Engineer

2/24/95  
Date

M. S. Cochrane *M.S. Cochrane*  
Manager - Site Support  
Quality Assurance

2/27/95  
Date

R. J. Ausere *R.J. Ausere*  
Project Engineer - Site Physical & Electrical  
Calibration Services

2/24/95  
Date

K. L. Chubb *K.L. Chubb*  
Manager - Site Physical & Electrical  
Calibration Services

2/24/95  
Date

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A-6000-485 (2/90) (EF) WEF092  
Project Specific QA Plan Coversheet

MASTER

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## 1.0 INTRODUCTION

Westinghouse Hanford Company (WHC) corporate policy and assigned responsibilities and authorities for quality assurance are described by Company Policies and Charters (CPC's) WHC-CM-1-1<sup>(21.4)</sup>, and Management Requirements and Procedures (MRP's), WHC-CM-1-3<sup>(21.5)</sup>. The current Quality Assurance (QA) Manual, WHC-CM-4-2<sup>(21.11)</sup> provides definitive requirements and associated instructions for implementation.

This Quality Assurance Program Plan (QAPP) is organized to address WHC's implementation of quality assurance requirements as they are presented as interpretive guidance endorsed by the Department of Energy (DOE) Field Office, Richland DOE Order 5700.6C<sup>(21.1)</sup> "Quality Assurance". Application of requirements shall be invoked on a graded approach where the importance of the activity or safety classification mandates the level of compliance and as amplified or supplemented by this plan. The quality assurance requirements presented in this plan will assure Measuring and Test Equipment (M & TE) are in conformance with prescribed technical requirements and that data provided by testing, inspection or maintenance are valid.

## 2.0 SCOPE

This QAPP covers all activities and work elements that are variously called QA, quality control, and quality engineering regardless of the organization performing the work. The independent oversight activities for QA are the responsibility of the WHC QA department. Attachment 1, Quality Assurance Program Index (QAPI) details the governing manuals, procedures, and instructions that regulate these activities.

This QAPP identifies the QA requirements for planning, control, and documentation of operations, modifications, and maintenance of the WHC Site Physical & Electrical Calibration Services Laboratory. This plan implements the requirements of DOE order 5700.6C as described in the WHC QA Manual.

## 3.0 ORGANIZATION

The primary function of the WHC Site Physical & Electrical Calibration Services Laboratory is providing calibration, standardization, or repair service of M & TE. The control of M & TE, applies to the extent that WHC has the authority to enforce these requirements when physically possessed, handled, or when being calibrated by the WHC Site Physical & Electrical Calibration Services Laboratory. WHC is not responsible for the customers M & TE when such equipment is not in their care, custody, or control. Figure 1 identifies the lines of authority for QA and WHC Site Physical & Electrical Calibration Laboratory.



#### 4.0 QUALITY ASSURANCE PROGRAM

The QA program requirements of DOE order 5700.6C are implemented through the QA Manual, WHC-CM-4-2. This QAPP provides the quality requirements that apply to the Site Physical & Electrical Calibration Services Laboratory in providing calibration and repair services for M & TE.

Activities requiring certified or qualified personnel for compliance with applicable codes or standards and specifications shall be identified in appropriate test plans, program plans or procedures. These plans shall be reviewed and approved by QA, as required by WHC-CM-3-5, <sup>(21.10)</sup> Section 12.7 Table 1, "Document Approval Matrix." Certification and qualification is the responsibility of the organization performing the activity unless otherwise stated by the governing criteria. Personnel performing calibrations at the Site Physical & Electrical Calibration Services Laboratory shall meet the requirements designated in WHC-SP-0446 <sup>(21.18)</sup> (Section 3).

The manager of the facility will define and implement a system to identify the appropriate training and proficiency requirements for personnel performing activities affecting quality. The manager is responsible for providing training necessary to assure that qualified personnel are available to conduct operations within the Site Physical & Electrical Calibration Services Laboratory. It will also be the responsibility of the facility manager to inform QA of any needed training/certification of QA/QC personnel that support the Site Physical & Electrical Calibration Services Laboratory.

#### 5.0 DESIGN CONTROL

There are no design activities within their function.

#### 6.0 PROCUREMENT DOCUMENT CONTROL

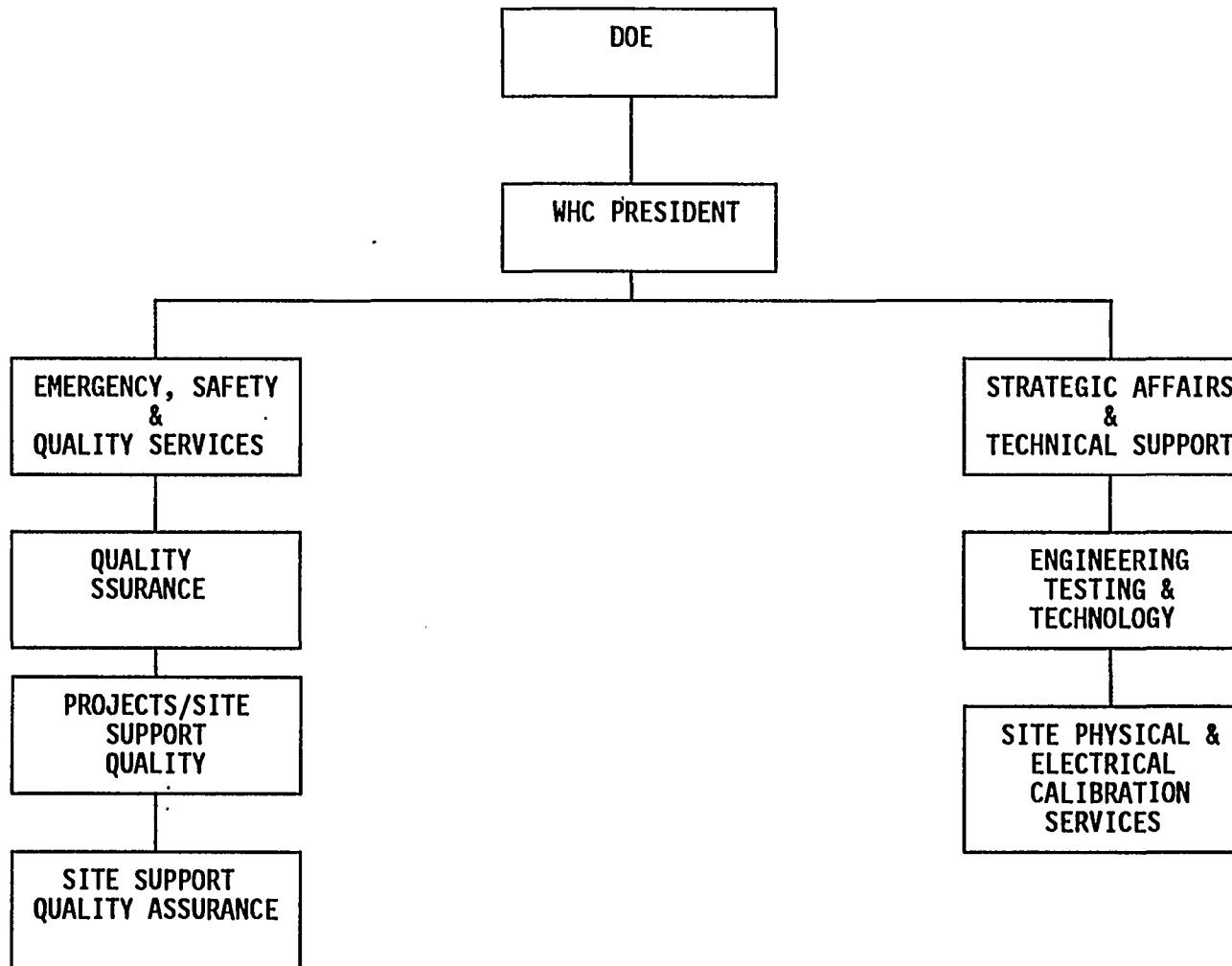
As a minimum, Safety Class 1 and 2 items require QA approval per table 1, T4, WHC-CM-3-5, Section 12.7.

#### 7.0 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Activities affecting the quality of items and services shall be prescribed by and performed in accordance with approved procedures or instructions appropriate for their application. WHC-CM-4-2, QR 5.0 identifies the QA Program requirements for instructions, procedures, and drawings. Approval requirements are identified in WHC-CM-3-5, Section 12.7 "Approval of Environmental, Safety and Quality Affecting Documents."

Written methods or procedures for calibrating M & TE shall be used to assure calibration technique uniformity. Documented procedures such as published standards practices, equipment manuals or other acceptable instructions shall be used. Maximum use shall be made of existing methods, practices or procedures.

FIGURE 1



## 8.0 DOCUMENT CONTROL

The requirements for preparation, review, approval, issue, and revision to documents that prescribe activities affecting quality are identified in WHC-CM-4-2, QR 6.0 "Document Control." Controlled manuals shall comply with the requirements of WHC-CM-1-3, MRP 2.16 "Controlled Manual System." Operating documents are controlled in accordance with WHC-CM-1-5<sup>(21.6)</sup>, "Standard Operating Practices" and WHC-CM-3-5 "Document Control and Records Management."

## 9.0 CONTROL OF PURCHASED ITEMS AND SERVICES

Procurement of Safety Class 1 & 2 and designated 3 items and services shall be controlled. Established WHC procedures for procurement control as documented by Procurement (WHC-CM-2-1) and QA Manuals (WHC-CM-4-2, QR 7.0) shall be used to assure that end products and services comply to establish requirements. The applicable quality and record requirements of this QAPP shall be extended to any subcontractor or supplier who performs a calibration service for the Site Physical & Electrical Calibration Services Laboratory. The control of purchased items and services shall be controlled in accordance with WHC-CM-2-1<sup>(21.8)</sup> and WHC-CM-4-2 (QR 4.0).

## 10.0 IDENTIFICATION AND CONTROL OF ITEMS

Requirements for the identification and control of items are contained in WHC-CM-4-2, QR 12.0. The identification of each item of M & TE shall be maintained throughout the useful life of the item. Measuring and Test Equipment shall be identified by a unique identification number that accurately identifies the specific device and provides positive traceability. A list identifying M & TE instruments and locations shall be developed and kept current.

## 11.0 CONTROL OF PROCESSES

Processes requiring in-process controls or special processes (e.g., welding, and NDE) to assure quality shall be performed by qualified personnel using qualified procedures. The requirements for the "Control of Processes" are identified in WHC-CM-4-2, QR 9.0.

## 12.0 INSPECTION

All inspections required to verify conformance to specified requirements shall be planned, identified, and controlled. Inspections at WHC shall be planned and conducted in accordance with WHC-CM-4-2 (QR 10.0). In accordance with the provisions in DOE Order 5700.6C (with the exception of "operator-to-calibrate" equipment) personnel performing calibrations or standardizations shall be independent of the operating organization responsible for generating the data, performing the acceptance testing, etc. Inspections for acceptance will be performed by qualified personnel not involved in the performance of the work being inspected. Inspections are required for activities associated with Safety Class 1 and 2 items.

Site Physical & Electrical Calibration Services Laboratory personnel shall perform the inspection function of M & TE maintained by them. Written procedures will be used to functionally test and calibrate M & TE. When applicable, as-received and as-calibrated data will be recorded. The Standards Laboratory Supervisor or his designee shall review and approve all calibration reports. The calibration report and status label shall indicate the calibration status of the item of M & TE. Copies of the approved calibration report will be sent to the equipment custodian and others requested by the custodian.

### 13.0 TEST CONTROL

It is WHC policy and practice that all tests and inspections for acceptance are planned and documented. The QA program requirements for "Test Control" are documented in WHC-CM-4-2, QR 11.0.

The procedures, standards and equipment used to calibrate M & TE shall be documented on the calibration report. The equipment manual or standard procedures shall be used as much as possible. Special instructions and test set-ups shall be documented in the individual equipment file.

### 14.0 CONTROL OF MEASURING AND TEST EQUIPMENT

Measuring and test equipment used in the acceptance of material, equipment, controlling special processes, or in obtaining experimental data shall be calibrated against certifiable standards. These standards must be traceable to the National Institute of Standards and Technology or having valid traceable relationships to other nationally recognized standards. The equipment and standards used in the calibration and standardizations process shall have calibration ranges, precision and accuracies such that M & TE can be calibrated and maintained within the required tolerances. The QA program requirements for the "Control of Measuring and Test Equipment are identified in WHC-CM-4-2, QR 12.0, QI 12.2, QI 12.3, and QI 12.4 and WHC-CM-8-7, 803. <sup>(21.16)</sup>

### 15.0 HANDLING, STORAGE, AND SHIPPING

Handling, shipping and storing M & TE items or equipment or standards used to calibrate M & TE shall be controlled to prevent and protect against damage, deterioration or loss of calibration status.

M & TE shall be transported, stored and calibrated in environments that will not adversely affect their accuracy. Environmental factors which shall be considered include, but are not limited to temperature, humidity, vibration, electromagnetic interference, dust, etc. When inaccuracy of M & TE or reference standards, because of environmental effects, cannot be avoided, compensating corrections shall be determined and applied. Approved procedures shall be prepared and implemented. Attachment 1 details the DOE and WHC requirement procedures.

## 16.0 INSPECTION, TEST, AND OPERATING STATUS

The status of components, assemblies, or systems shall be identified on the item or documents traceable to the items. Status shall be maintained through the use of status indicators such as tags, labels attached to the items, markings, travelers, stamps, inspections records, or other suitable means. Status indicators shall also provide identification for physical separation of calibrated items from those which are nonconforming or awaiting inspection or calibration. The QA program requirements for "Inspection, Test, and Operating Status are documented in WHC-CM-4-2, and QR 14.0. Lock and Tag requirements are identified in the "Industrial Safety Manual," WHC-CM-4-3<sup>(21.12)</sup>, Volume 1, G1.

## 17.0 CONTROL OF NONCONFORMING ITEMS

M & TE or reference standards found to be out of calibration or which have not been properly maintained or calibrated, or which have been subjected to possible damage shall be identified and removed from service. Items or services that do not conform to specified requirements shall be documented on Nonconformance Reports (NCR). The nonconformance control system includes a standardized nonconformance form to identify, report, and establish disposition. All equipment tested or calibrated by the nonconforming item since the last calibration shall be identified and sufficient investigations performed to either re-establish the acceptability of the equipment or to confirm a nonconformance. The results of such investigations shall be documented as part of the NCR disposition.

M & TE submitted for calibration, which is found to be out of tolerance, will be documented on a "Notice of Discrepancy (NOD)." Copies of the Notice of Discrepancy will be sent to the equipment custodian and the cognizant Quality Assurance Engineer responsible for the standards lab who will disposition the NOD's to the cognizant Quality Managers responsible for surveillance activities of the customer or user of the discrepant M & TE. Requirements and responsibilities for nonconformance control are documented and described in WHC-CM-4-2 (QI 12.4, QR 15.0, QI 15.1, and QI 15.2).

Nonconforming items or systems shall be identified by attaching a hold tag to the item if practical, otherwise indicate hold status on the container, follower card, or traveler. Where practical, physical segregation should be practiced. Administrative control, trending, and reporting is provided by the Quality Assurance Organization.

## 18.0 CORRECTIVE ACTION

Conditions adverse to quality and safety shall be promptly identified and corrected as soon as possible. Corrective action may be required as a result of conditions documented on an NCR, Inspection/Surveillance Report (ISR), Corrective Action Request (CAR), or Occurrence Reports (OR).

Corrective Action may also be required as a result of an audit or trend analysis. The QA program requirements are identified in WHC-CM-4-2, QR 16.0.

## 19.0 QUALITY ASSURANCE RECORDS

WHC has an established system for assuring records, which furnish evidence of quality, are specified, prepared, and maintained. This system is responsive to DOE Order 1324.2<sup>(21.2)</sup>, "Records Disposition." The maintenance of the record systems shall be in accordance with WHC-CM-4-2, QR 17.0 and WHC-CM-3-5.

Records shall be maintained for each individual item of M & TE to show the established schedules and procedures for the calibration of M&TE and reference standards have been followed. The records shall contain the history of calibration and other means of control showing calibration interval, date of last calibration, when next calibration is due, conformance or nonconformance to required tolerances prior to and following adjustments and any limitations on use. The requirements for the data which must be listed on a calibration report is found in WHC-SP-0446 (section 6 Item 3.0).

## 20.0 AUDITS

Audit policy and responsibilities are defined and documented by the WHC Management Requirements and Procedures, MRP 1.10 and WHC Quality Manual, WHC-CM-4-2 QR 18.0. Audit Program Administration is responsible for scheduling, planning, and performing quality assurance audits. Surveillances shall be conducted to verify conformance to operation, maintenance, and repair/modification activities. Surveillances shall be scheduled, planned and performed by Site Support Quality Assurance (SSQA) as deemed appropriate.

## 21.0 REFERENCES

Listed below are the more significant or top level documents referenced or identified in the text and Attachment 1 as primary sources of policy and procedures for implementation:

1. DOE Order 5700.6C, Quality Assurance, August 21, 1991.
2. DOE Order 1324.2, Records Disposition
3. ASTM E29, "Indicating Which Places of Figures are to be Considered Significant in Specified Limiting Values."

4. WHC-CM-1-1, "Company Policies and Charters."
5. WHC-CM-1-3, "Management Requirements and Procedures."
6. WHC-CM-1-5, "Standard Operating Procedure."
7. WHC-CM-1-8, "Work Management."
8. WHC-CM-2-1, "Procurement Manual and Procedures."
9. WHC-CM-2-3, "Property Management Manual."
10. WHC-CM-3-5, "Document Control and Records Management."
11. WHC-CM-4-2, "Quality Assurance Manual."
12. WHC-CM-4-3, "Industrial Safety Manual."
13. WHC-CM-4-5, "Quality Assurance Qualifications & Instructions."
14. WHC-CM-6-1, "Standard Engineering Practices."
15. WHC-CM-7-5, "Environmental Compliance."
16. WHC-CM-8-7, "Operations Support Services."
17. WHC-CM-8-8, "Job Control System."
18. WHC-SP-0446, "Physical and Electrical Standards Laboratory General Operating Procedures."
19. IEEE 498, "IEEE Standard Requirements for the Calibration and Control of Measuring and Test Equipment Used in the Construction and Maintenance of Nuclear Power Generating Stations."
20. DOE-RL-36, "Hanford Hoisting and Rigging Manual."

## QUALITY ASSURANCE PROGRAM INDEX

DOE ORDER 5700.6C CRITERION	NQA-1 (BASIC REQ.) SUPPLEMENTS	QA REQUIREMENT TITLE	IMPLEMENTING PROCEDURES				
			WHC CM MANUALS				
			ADMIN	QA	ENG	S LAB	ENV
1	NQA-1 (1) BR-1 1S-1	Organization	CM-1 CM-1-3 MRP 1.1	CM-4-2 QR 1.0			
1		General Provisions					CM-7-5 Part A
1	NQA-1 (2) BR-2	Quality Assurance Program		CM-4-2 QR 2.0			
1	NQA-1 2A-2	QA Program Planning		QI 2.2	CM-6-1 EP 1.12		
2	NQA-1 2S-4	Indoctrination and Training for QA Personnel		CM-4-5 1.0,1.3			
2	NQA-1 2S-1	Qualification of QA Inspection and Test Personnel		CM-4-5 1.5			
2	NQA-1 2S-3	Qualification of QA Program Audit Personnel		CM-4-5 2.2			
9		Management Assessment of QA Program Effectiveness		CM-4-5 QAI 2.4			
2		Environmental Training					CM-7-5 Part S
7	NQA-1 (3) BR-4	Procurement Document Control	CM-1-3 MRP 2.13 CM-2-1 CM-2-2 CM-3-5 Sec 12.7	CM-4-2 QR 4.0 QI 4.1 QR 5.0	CM-6-1 EP 2.3 3.3		
6, 8	NQA-1 (4) BR-5	Instructions, Procedures, and Drawings	CM-1-3 MRP 2.16 MRP 6.1	CM-4-2 QR 5.0	CM-6-1 EP 4.1	CM-SP- 0446 SEC. 1	
4		Preparation of QA Documents	CM-3-5	QI 5.1			
4	NQA-1 (5) BR-6 6S-1	Document Control	CM-1-3 MRP 6.1 CM-3-5 Sec 12	CM-4-2 QR 6.0	CM-6-1 EP 1.1 EP 1.7 EP 1.12 EP 2.2	CM-SP- 0446 SEC. 1	
4		QA Document Control	CM-3-5 Sec 9 & 12	QI 6.1			
4		Records and Reporting Requirements	CM-3-5				CM-7-5 Part V

NOTE: LEGENDS FOR UNUSUAL ACRONYMS IN TABLE HEADER AND DOE ORDER 5700.6C ARE ON LAST PAGE.  
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			WHC CM MANUALS				
			ADMIN	QA	ENG	S LAB	ENV
7	NQA-1 (6) BR-7	Control of Purchased Items and Services	CM-2-1	CM-4-2 QR 7.0	CM-6-1 EP 2.3 EP 3.3		
7		Procurement, Planning, and Control	CM-2-1	QI 7.1			
7		Supplier Evaluation	CM-2-1	QI 7.2			
7		Source Surveillance		QI 7.3		CM-SP- 0446 SEC. 12	
7		Receiving Inspection	CM-2-2	CM-4-5 QAI 7.1			
7		Procurement	CM-2-1				CM-7-5 Part R
5	NQA-1 (7) BR-8 8S-1	Identification and Control of Items		CM-4-2 QR 8.0 QI 8.1	CM-6-1 EP 1.1 EP 2.2 EP 2.4 EP 5.0	CM-SP- 0446 SEC. 6, 7	
5	NQA-1 (8) BR-9	Control of Processes		CM-4-2 QR 9.0	CM-6-1 EP 1.5 EP 4.2		
8	NQA-1 (9) BR-10 10S-1	Inspection		CM-4-2 QR 10.0	CM-6-1 EP 1 EP 4.2		
10		Surveillance		QI 10.4			
5, 8	NQA-1 (10) BR-11	Test Control		CM-4-2 QR 11.0	CM-6-1 EP 1 EP 4.2		
5, 8	NQA-1 (11) BR-12 12S-1 NQA-2 Part 2.16	Control of Measuring and Test Equipment (M & TE)		CM-4-2 QR 12.0	CM-6-1 EP 4.2	CM-SP- 0446	
5, 8		Acquisition and Calibration of Portable M&TE		QI 12.1			
5, 8		M&TE Calibration by User		QI 12.2			

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			ADMIN	QA	ENG	S LAB	ENV	
5, 8		Acquisition and Calibration of Plant Installed M&TE		QI 12.3				
5	NQA-1 (12) BR-13 13S-1	Handling, Storage, and Shipping		CH-4-2 QR 13.0	CH-6-1 EP 4.2	CH-SP-0446 SEC. 9, 10		
8	NQA-1 (13) BR-14	Inspection Test and Operating Status		CH-4-2 QR 14.0	CH-6-1 EP 1 EP 4.2	CH-SP-0446 SEC. 6		
8		Inspection Test and Operating Status Indicators		QI 14.1		CH-SP-0446 SEC. 6		
3	NQA-1 (14) BR-15 15S-1	Control of Nonconforming Items	CH-1-5 Sec 7.1	CH-4-2 QR 15.0	CH-6-1 EP 4.2	CH-SP-0446 SEC. 8		
3		Nonconforming Item Reporting		QI 15.1		CH-SP-0446 SEC. 8		
3		Nonconformance Report Processing		QI 15.2		CH-SP-0446 SEC. 8		
9	NQA-1 (15) BR-16	Corrective Action	CH-1-5 Sec 7.1	CH-4-2 QR 16.0				
3		Trending/Trend Analysis		QI 16.1				
10		Corrective Action Reporting		QI 16.2				
9		Quality Assurance Bulletins		QI 16.3				
9		Review and Processing of External Event Reports	CH-1-5 Sec 7.1	QI 16.4				
4	NQA-1 (16) BR-17	Quality Assurance Records	CH-3-5 Sec 4 Sec 9	CH-4-2 QR 17.0	CH-6-1 EP 5	CH-SP-0446 SEC. 1		
4		Quality Assurance Records Control	CH-3-5 Sec 9 & 12	QI 17.1		CH-SP-0446 SEC. 1		

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			WHC CM MANUALS				
			ADMIN	QA	ENG	S LAB	ENV
10	NQA-1 (17) BR-18	Audits	CM-1-3 MRP 1.10	CM-4-2 QR 18.0			
10		Audit Programming and Scheduling		QI 18.1			
10		Planning, Performing, Reporting, Follow-up, and Closure of Quality Assurance Audits		CM-4-8 QAI 18.1			

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## LEGEND:

ADMIN = ADMINISTRATIVE  
ENG = ENGINEERING  
ENV = ENVIRONMENTAL  
PROJ = PROJECTS  
QA = QUALITY ASSURANCE

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## DOE ORDER 5700.6C CRITERION LEGEND:

### MANAGEMENT

- 1 PROGRAM
- 2 PERSONNEL TRAINING AND QUALIFICATION
- 3 QUALITY IMPROVEMENT
- 4 DOCUMENTS AND RECORDS

### PERFORMANCE

- 5 WORK PROCESSES
  - WORK
  - IDENTIFICATION AND CONTROL OF ITEMS
  - HANDLING, STORING, AND SHIPPING
  - CALIBRATION AND MAINTENANCE OF MONITORING AND DATA COLLECTION EQUIPMENT
- 6 DESIGN
- 7 PROCUREMENT
- 8 INSPECTION AND ACCEPTANCE TESTING
  - INSPECTION
  - ACCEPTANCE TESTING
  - MEASURING AND TEST EQUIPMENT

### ASSESSMENT

- 9 MANAGEMENT ASSESSMENT
- 10 INDEPENDENT ASSESSMENT