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**VORTEC CORPORATION
FLUOR DANIEL FERNALD PROGRAM
QUALITY ASSURANCE PLAN**

REVISION 0

**Remediation of Silo 1 And 2 Residues Using the Vortec Cyclone
Melting System (CMS™) Proof-of-Principle Testing**

**Contract: 98WO002241
Document No.: BFA-4200-904-002(C)
Fernald Submittal No. 40720-2241-C3-002 R/3**

BFA-4200-900-002-C

SUBMITTED TO:
Fluor Daniel Fernald (FDF)
P.O. Box 538704
Cincinnati, OH 45253-8704

A - Conforms to the Subcontract Requirements
 B - Minor Comment - Incorporate and Resubmit
 C - Revise and Resubmit
Sig: *D. J. ...* Date: *9/4/98*

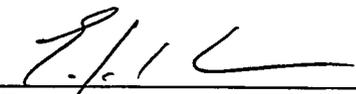
SUBMITTED BY:
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August 21, 1998

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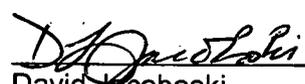
Fluor Daniel Fernald Program Quality Assurance Plan

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REVISION HISTORY

REVISION	DATE	CHANGE DESCRIPTION
A	June 19, 1998	Submitted for FDF Review
B	August 4, 1998	Submitted for FDF Review
C, Final	August 21, 1998	Submitted to FDF

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PURPOSE AND SCOPE

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The purpose of the Fluor Daniel Project Quality Assurance Plan (QAP) is to assure and document that all activities defined in the Proof-of-Principle program are conducted in a planned and systematic manner. A successful completion of this objective is essential in order to demonstrate that the CMS™ technology can produce a treated waste that consistently meets the FDF waste acceptance criteria.

The scope of this QAP plan is to ensure that the methods and methodology used are documented, and that they are in conformance with the Proof-of-Principle Work Plan requirements. This is essential in order to validate and certify the results needed by FDF to complete their feasibility study/ROD (Record of Decision) amendment.

The Vortec Engineering Quality Assurance Plan (EQAP) has been modified to meet the needs of the FDF Proof-of-Principle project. Table 1-1 indicates the sections of the Vortec Engineering Quality Assurance Plan that support the corresponding sections of the Fluor Daniel Fernald Quality Assurance Plan (QAP) listed below.

1.0 MANAGEMENT PLAN

The Vortec Engineering Quality Assurance Plan (EQAP) identifies all of the management activities to conduct a program in a systematic manner. It specifically addresses the project organization by defining the functional responsibilities of all involved, and illustrates their level of authority. The Vortec Engineering Quality Assurance Plan (EQAP) details the interfaces needed to ensure a successful project.

Table 1-1 gives the relationship between the FDF Quality Assurance Plan and Vortec's existing Engineering Quality Assurance Plan.

The project organization for the Fluor Daniel Fernald Project includes personnel from Fluor Daniel Fernald, Vortec Corporation, and Foster Wheeler Corporation. Foster Wheeler is a Vortec subcontractor for the full-scale preliminary engineering design task. See Figure 1-1 for the Fernald Project Organization chart.

It should be noted that the quality assurance procedures that apply to the generation of system performance data, sampling procedures, and laboratory analysis of samples are included in the Test Plan under the appropriated headings. Their inclusion in the Test Plan is in accordance with the FDF Test Plan Outline presented in Section C of the contract.

It should be further noted that the laboratories selected for sampling and analysis have been approved by FDF since they comply with the FDF Q/A procedures and have undergone FDF Q/A audits. Vortec has selected procedures that have received EPA approval on other Proof-of-Principle type projects, however, any discrepancies that may arise between the sampling and analysis procedures defined in the Vortec Test Plan and the ones recommend by the FDF approved laboratory will be selected to favor the FDF approved laboratory procedures.

1.1 VORTEC RESPONSIBILITIES

1.1.1 Vortec Program Manager

Vortec's Program Manager (PM) is responsible for assuring that the Vortec project team is aware of this EQA Plan and implementing procedures that relate to their function. The Vortec Program Manager will be the single point of contact between program participants and FDF

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Table 1-1. Relationship Between FDF Program Quality Assurance Plan and Vortec Engineering Quality Assurance Plan

Vortec Corporation Engineering Quality Assurance Plan	FDF Proof of Principle Testing Quality Assurance Plan							
	Management Plan 1.0	Training and Qualification 2.0	Quality Improvement 3.0	Documents and Records 4.0	Work Process 5.0	Design 6.0	Procurement 7.0	Inspection and Testing 8.0
Vortec Engineering Quality Assurance Plan	X	X	X	X	X	X	X	X
<i>Vortec QA Plan Quality Procedures</i>								
QP # 1, Engineering and Design Control		X	X	X	X	X		
QP # 2, CMS HIPT Facility Control, Operation, and Maintenance		X	X	X	X	X		X
QP # 3, Control of Test Conditions in the HIPT Facility		X	X	X	X	X		X
QP # 4, Sample Handling Control in the HIPT Facility		X	X	X	X	X	X	X
QP # 5, Management of Test Instrumentation in thr HIPT Facility		X	X	X	X	X	X	X
QP # 6, Survellience of the CMS TM Process Performance in the HIPT Facility		X	X	X	X	X		X
QP # 7, Evaluation of CMS TM Process Performance in thr HIPT Facility		X	X	X	X	X	X	X
QP # 8, Procurement and Purchasing		X	X	X	X	X	X	X
QP # 9, Government Contract Receiving, Inspection, and Maintenance Survellience		X	X	X	X	X	X	X
QP # 10, Performing Construction and Installation Surveilance Activities at Government Demonstration Plants	Not Applicable							
QP # 11, Control of Non-conforming Conditions for Government Contracts		X	X	X	X	X	X	X
QP # 12, Government Contract Demonstration Plant Installation Control	Not Applicable							
QP # 13, Control of Government-Owned Property, Facilities, and Materials		X	X	X	X	X	X	

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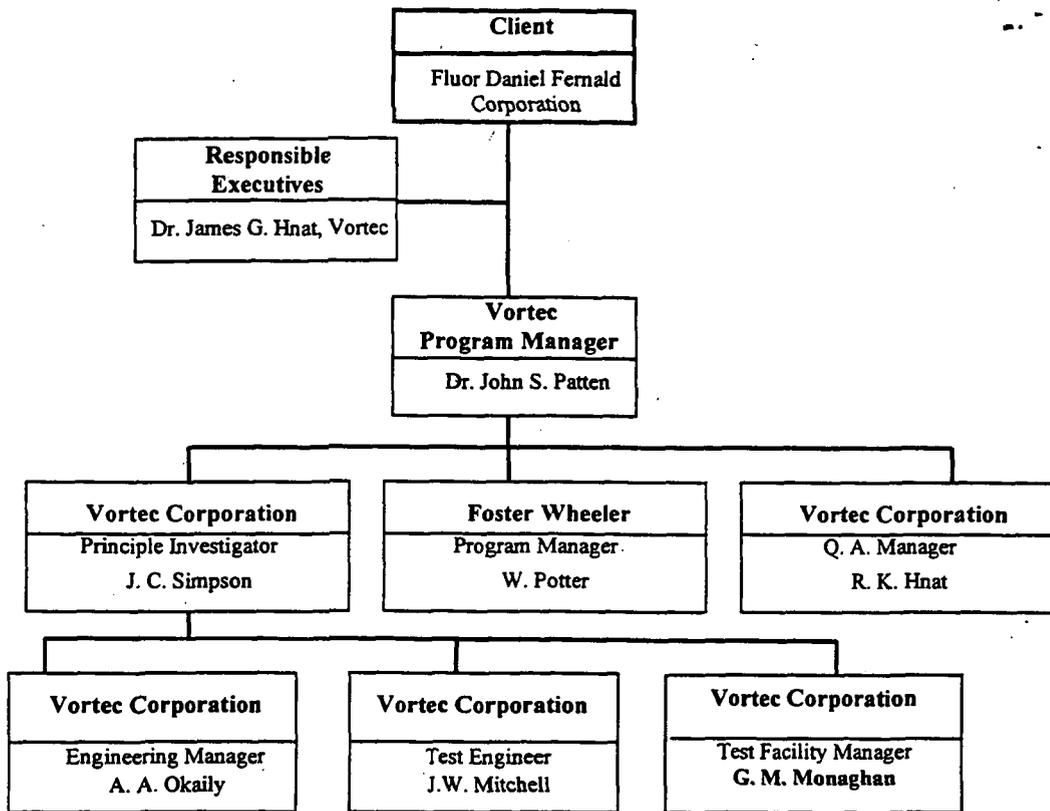


Figure 1-1. FDF Fernald Project Organization

Representative. All technical and administrative correspondence shall be addressed to Vortec's Program Manager. The mailing address is as follows:

Vortec Corporation
 3770 Ridge Pike
 Collegeville, PA 19426-3158
 Attn: John S. Patten, Ph.D.
 Telephone: (610) 489-2255 Ext. 131
 Fax: (610) 489-3185

1.1.2 Vortec Test Facility Manager

Vortec's Test Facility Manager (TFM) is responsible for assuring that the test crew is familiar with the requirements of this EQA Plan and that its procedures are implemented.

1.1.3 Vortec Engineering Manager

Vortec's Engineering Manager (EM) is responsible for assuring that project-assigned personnel are familiar with the requirements of this EQA Plan and that its procedures are implemented.

The Engineering Manager has lead responsibility for the full-scale preliminary design. 000009

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1.1.4 Vortec Environmental Compliance Manager

Vortec's Environmental Compliance Manager (ECM) is responsible for assuring that the program is in compliance with all Federal, State, and Local regulatory and environmental requirements.

1.1.5 Vortec Process Development Manager

Vortec's Process Development Manager (PDM) is responsible for approval of engineering design changes and construction modifications related to improved control and maintenance of the CMS™ HTPT facility.

1.1.6 Vortec Quality Assurance Manager (QAM)

The QAM has the responsibility for the development effectiveness of the program by performing and documenting on-going audits and assessments. Significant deviations from the program definition shall be documented and resolved, and evidence of resulting actions submitted to the QAM for review and concurrence. If the identified deviation cannot be resolved between the QAM and responsible manager, the deviation shall be transmitted by the QAM to the Vortec FDF Program Manager.

Vortec's QAM's function is to:

- Ensure that an appropriate QA program is established, implemented, and documented.
- Verify the effectiveness of the QA program by conducting audits and assessments of activities affecting quality.
- Identify and document conditions adverse to quality.
- Initiate, recommend, or provide solutions to quality-related problems.
- Review, approve as required, and then verify the implementation of solutions.
- Maintain direct access to all levels of management deemed necessary to ensure that QA functions are being implemented in an acceptable manner.

Vortec's QAM reports to Vortec's Program Manager for schedule and commitment requirements.

1.1.7 Vortec Test Engineer

The Test Engineer is responsible for the overall coordination, oversight and implementation of the POP Test Plan. The Test Engineer communicates with other Vortec Management Staff to update on the status of the testing process and to relay any suggestions/requirements for process improvement.

1.1.8 Vortec Employees and Contractors

Vortec employees and contractors are responsible for implementation of their assigned responsibilities in accordance with the intent of the EQA Plan.

1.2 FLUOR DANIEL FERNALD RESPONSIBILITIES

Review and approve the Work Plan, Quality Assurance Plan, and Final Report.

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Fluor Daniel Fernald Program Quality Assurance Plan

1.2.1 Technical Correspondence

Technical correspondence shall be addressed to FDF Engineering/Construction Document Control.

Fluor Daniel Fernald
FDF Engineering/Construction Document Control, MS 52-7
P.O. Box 538704
Cincinnati, OH 45253-8704
Attn: Melissa Crews

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1.2.2 Administrative Correspondence

All correspondence, other than technical correspondence, shall reference the contract number, and be addressed to the FDF Contract Administrator, with information copies of the correspondence to the FDF technical representative. The mailing address is as follows:

Fluor Daniel Fernald
P. O. Box 538704
Cincinnati, OH 45253-8740
Attn: William Hensley, MS 52-3
Telephone: (513) 648-4478
Fax: (513) 648-3971

2.0 TRAINING AND QUALIFICATION

The training and qualification for the QAP Plan is tailored to the Test Plan, which will identify the specific requirements for this project. Once defined and implemented, on-going conformance with these requirements will be assessed, and documented as an integral part of the QAP Plan.

As noted in Table 1-1, QP # 1 through QP #9, QP #11, and QP #13 are applicable Vortec Corporation Engineering QA Plan Procedures.

3.0 QUALITY IMPROVEMENT

Inherent in the QAP Plan are protocols for assuring that all the necessary reporting, tracking, and approval requirements are verified, and conformed with. All non-conformances will be formally documented and all dispositions annotated. These records will be reviewed on a regular basis to assure continued and on-going quality operations, as well as, to assess for new quality enhancements with existing operations.

As noted in Table 1-1, QP # 1 through QP #9, QP #11, and QP #13 are applicable Vortec Corporation Engineering QA Plan Procedures.

4.0 DOCUMENTS AND RECORDS

The QAP Plan provides protocols and procedures for ongoing surveillance of all covered activities to assure all activities are conducted in a planned and systematic manner. All information and records will be formally documented, reviewed with the functional representatives identified to ensure contract compliance, and then archived in the project QAP plan files.

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As noted in Table 1-1, QP # 1 through QP #9, QP #11, and QP #13 are applicable Vortec Corporation Engineering QA Plan Procedures.

In addition to who does what in QP-11, page 11.3, Vortec shall:

1. Document and submit all corrective actions relative to DR's to FDF, and
2. Generate a "Lessons Learned" internal notification to appropriate Vortec personnel working on Contract 98WO00224.

4.1 QA Plan Correspondence

The QA Plan shall be addressed to the FDF Technical Representative. The mailing address and schedule is as follows:

Fluor Daniel Fernald
P.O. Box 538704
Cincinnati, OH 45253-8704
Attn: David Jacoboski, MS 52-4
Telephone: (513) 648-4786
Fax: (513) 648-4850

4.2 Quality Assurance Events

Table 4-1 presents a schedule of that are to be conducted during the program.

5.0 WORK PROCESSES

The QAP Plan reviews and identifies any specific quality verification requirements that exist in the Test Plan for this project. It provides for and implements the systems, structures and components necessary to provide the level of quality assurance required for safe and successful process management. The QAP Plan is the regulating document from which the Test Plan is implemented, and where documentation variances of the operating conditions is maintained

As noted in Table 1-1, QP # 1 through QP #9, QP #11, and QP #13 are applicable Vortec Corporation Engineering QA Plan Procedures.

Key work process verifications are identified in Table 5-1.

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Table 4-1. List of QA Requirements

Item No.	Requirement	Tasks	Expected Date	
			Week No.	Date of QA Inspection
1	Prepare Q/A Plan	Document Results of Review of the Q/A Final Draft	15	9/10/98
2	Prepare Work Plan	Document Results of Review of Work Final Draft	15	9/10/98
3	Procure Surrogate Materials	a. Audit Documentation of the Characterization of the Surrogate Materials	13	8/28/98
		b. Review documentation of characterization to be sent to FDF	16	9/17/98
4	Surrogate Preparation	a. Validate Surrogate Preparation Procedure	15	9/11/98
		b. Validate Laboratory Calibration Procedure	14	9/4/98
		c. Review support documentation sent to FDF	16	9/17/98
5	Develop Treatment Recipes	a. Validate Glass Preparation Procedure	15	9/11/98
		b. Validate Laboratory Calibration Procedure	14	9/4/98
		c. Review support documentation sent to FDF	16	9/17/98
6	Slurry Feed System	a. Design Review Documentation	13	8/28/98
		b. Document System Performance	18	10/2/98
7	Injector System	a. Document Cold Testing	13	8/28/98
		b. Document Hot Testing	18	10/2/98
8	Preparation of Feedstock for the 72-hour Test	a. Document Slurry Preparation	20	10/16/98
		b. Review Sampling Contractors Procedures	23	11/4/98
		c. Review Sampling Contractors Q/A Documentation	23	11/4/98
		d. Confirm Shipment to FDF Laboratory	25	11/20/98
9	72-hour Test	a. Review Sampling Contractors Procedures and Calibration (Glass and Other Effluents)	23	11/4/98
		b. Review Sampling Contractors Procedures and Calibrations (Flue Gas)	23	11/4/98
		c. Review Vortec Test Procedure and System Calibrations	15	9/9/98
		d. Review Sampling Contractors Q/A Documentation	28	12/11/98
		e. Confirm Shipment of Samples to Quanterra Laboratory	23	11/5/98
10	Test Report	a. Review and Document Test Report Final Draft	45	4/8/99
11	Full Scale Design	a. Review and Document System Design Requirements	34	1/22/99
		b. Document Design Review of the Full Scale Preliminary Design	??	1/11/99
		c. Review Full Scale Preliminary Design Report	32	1/8/99
12	Final Report	Review Final Report	42	3/19/99

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Table 5-1. Key Work Process Verifications

Item No.	Description	Method of Verification	Performed By (Vortec or Laboratory)
1	Engineering Document Change Control	Document Revision No.	Vortec
2	Chemistry Analysis, Slurry Batch	Spiked Samples	Quanterra
3	Chemistry Analysis, Glass Batch	Spiked Samples	Corning Engineering Lab Services
4	TCLP, Glass	Spiked Samples	Quanterra
5	Chemistry Analysis, Evaporative Water Cooler	Spiked Samples	Quanterra
6	Sampling, Flue Gas	Spike Samples	Comprehensive Safety Compliance
7	Particle Analysis, Flue Gas	-	Quanterra

6.0 DESIGN

The QAP Plan identifies and controls all the engineering functions critical to the design requirements. This control is effected through existing Vortec Engineering Quality Assurance Plans (EQAP). This plan assures control in areas including Engineering Design; Document Control; and Configuration Management. Any new specific requirements will be incorporated. All activities in this area currently operate under this Engineering Quality Assurance Plan (EQAP).

As noted in Table 1-1, QP # 1 through QP #9, QP #11, and QP #13 are applicable Vortec Corporation Engineering QA Plan Procedures.

Critical design requirements are identified in Table 6-1.

Table 6-1. Critical Design Requirements and Method of Verification

Item No.	Description	Method of Verification	Note
1	Slurry Composition	FDF Review & Approval	-
2	Slurry Preparation	FDF Review & Approval	-
3	Slurry Delivery System	Cold Test	-
4	Injector Feed Rate	Cold/Hot Test	Flow, Supply Pressure

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7.0 PROCUREMENT

The QAP Plan identifies, tracks, and documents all procurement items. The QAP Plan will document compliance and assure on going verification.

As noted in Table 1-1, QP # 1, QP #4, OP #5, QP #7, QP #8, QP #9, QP #11, and QP #13 are applicable Vortec Corporation Engineering QA Plan Procedures.

Key procurement items which require verification or oversight are listed in Table 7-1.

Table 7-1. Key Procurement Item that Require Verification or Oversight

No.	Description	Supplier	Record(s) Used to Verify Performance	Method(s) Used to Verify Performance
1	Injector	Vortec Design/TBD Manufacturer	Test	During Injector Cold/Hot Test
2	Slurry Pump	TBD	Vendor Data	During Injector Cold Test
3	Spare Thermocouples	TBD	Vendor Data	None

8.0 INSPECTION AND TESTING

The list of systems, structures or components and schedule of inspections and tests required for the project are defined in the Test Plan. The QAP Plan will assure that the instructions and procedures required for the control, calibration, maintenance, accountability, and use of the measuring and testing equipment are provided, and that they are in accordance with accepted reference standards.

As noted in Table 1-1, QP # 2, through QP #9, and QP #11 are applicable Vortec Corporation Engineering QA Plan Procedures.

Equipment that requires calibration for the FDF Proof-of-Principle Test is listed in Table 8-1.

The list of Vortec selected and FDF approved analytical laboratories that will be used during the Proof-of-Principle tests is presented in Table 8-2.

Table 8-1. List of Items and Schedule of Inspections and Tests Required

No.	Description	Location	Inspection Schedule	Calibration Test Required	Evidence of Calibration/Test
1	Scales, Laboratory	Vortec Lab	Test Prep.	Yes	Log
2	Scale, Crane	HTPT (U-PARC)	Test Prep.	Yes	Log
3	Scale, Platform	HTPT (U-PARC)	Test Prep.	Yes	Log
4	Scale, Loss & Weight Feed	HTPT (U-PARC)	Test Prep.	Yes	Log
5	Thermocouple, CRV Lid	HTPT (U-PARC)	Test Prep.	Yes	Log
6	Thermocouple, Cyclone Melter Exit	HTPT (U-PARC)	Test Prep.	Yes	Log
7	Thermocouple, Glass Temperature	HTPT (U-PARC)	Test Prep.	Yes	Log
8	Transmitter, Pressure Flow	HTPT (U-PARC)	Test Prep.	Yes	Log
9	Transmitter, Vessel Pressure	HTPT (U-PARC)	Test Prep.	Yes	Log
10	Gage, Delta Pressure	HTPT (U-PARC)	Test Prep.	Yes	Log

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Table 8-2. Approved Proof of Principle Test Laboratories

No.	Laboratory Name	Service	Note
1	Quanterra 13715 Rider Trail North Earth City, MO 63045 314-298-8566 POC: Daine Mueller or Robert White	Chemical	On original list of FDF Approved Laboratories
2	Corning Engineering Lab Services (CELS) S&A Receiving; Houghton Park HP-ME-03-078 Pulteney St. Corning, NY 14831 800-235-2357 POC: Lisa Hepburn	Glass Chemistry	Approved in proposal for glass analysis
3	Comprehensive Safety Compliance (CSC) 295 William Pitt Way Pittsburgh, PA 15238 414-826-5840 POC: Richard Campbell	Flue Gas Flow Particulate Sampling Hydrocarbon Analysis	Approved in proposal for air monitoring
4	Galbraith Laboratories, Inc. 1323 Sycamore Dr. Knoxville, TN 37921 423-546-1333 POC: Ima Profit	RCRA 8 - metal analysis	Approved in proposal for analysis of waste disposal

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APPENDIX A

Engineering Quality Assurance Plan

And

Quality Procedures

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Engineering Quality Assurance Plan

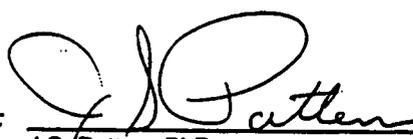
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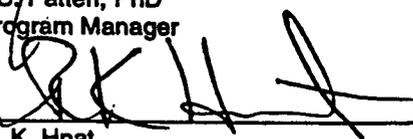
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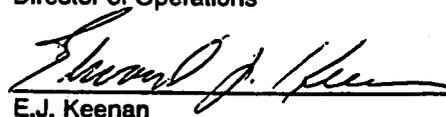
REVISION HISTORY

ISSUE:	NUMBER:	DATE:	CHANGE DESCRIPTION
Revision 0	EQAPlan-0	March 1996	Draft Issue for DE-AC21-92MC29120
Revision 1	EQAPlan-0 Rev 1	May 1997	Added QP# 13, Revised QP # 9 & 10
Revision 2	EQAPlan-0 Rev 2	June 1998	Page numbering now relates to QP #. Revised QP # 1, # 8

PREPARED BY:  6/15/98
 R. Hnat Date

APPROVED BY:  6/15/98
 J.S. Patten, PhD
 Program Manager Date

APPROVED BY:  6/23/98
 R. K. Hnat
 Director of Operations Date

APPROVED BY:  6/23/98
 E.J. Keenan
 QA Manager Date

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Engineering Quality Assurance Plan

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Engineering Quality Assurance Plan

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Purpose and Scope

The objective of the Engineering Quality Assurance (EQA) Plan is to assure that engineering activities which are important to quality are conducted in a planned and systematic manner. This assurance is accomplished by conducting EQA audits and assessments of the controls used on the project. This plan is intended to assure the following:

- Level of accuracy, precision, and reproducibility of data is adequate to fulfill the objectives of the work to be performed.
- Level of accuracy required for the design of the integrated system is adequate to fulfill the design objectives.
- Safety and health of employees—and the public—are adequately protected.

Responsibilities

Program Manager

The Program Manager (PM) is responsible for assuring that the Vortec project team is aware of this EQA Plan and implementing procedures that relate to their function.

The Test Facility Manager

The Test Facility Manager (TFM) is responsible for assuring that the test crew is familiar with the requirements of this EQA Plan and implement its procedures.

The Engineering Manager

The Engineering Manager (EM) is responsible for assuring that project-assigned personnel:

- Are familiar with the requirements of this EQA Plan,
- Implement its procedures, and
- Carry out the responsibilities as defined in these procedures.

The Environmental Compliance Manager

The Environmental Compliance Manager (ECM) is responsible for assuring that the program is in compliance with all Federal, State, and Local environmental requirements.

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The Process Development Manager

The Process Development Manager (PDM) is responsible for approval of engineering design changes and construction modifications related to improved control and maintenance of the CMS™ HTPT facility.

The Quality Assurance Manager (QAM)

The QAM has the authority and responsibility for the development and evaluation of the effectiveness of the program by performing and documenting on-going audits and assessments. Significant deviations from the quality program shall be documented and resolved, and evidence of resulting actions submitted to the QAM for review and concurrence. If the identified deviation cannot be resolved between the QAM and responsible manager, the deviation shall be transmitted by the QAM to the President of Vortec Corporation.

The QAM's function is to:

- Ensure that an appropriate QA program is established, implemented, and documented.
- Verify the effectiveness of the QA program by conducting audits and assessments of activities affecting quality.
- Identify and document conditions adverse to quality.
- Initiate, recommend, or provide solutions to quality-related problems.
- Review, approve as required, and verify the implementation of solutions.
- Maintain direct access to all levels of management deemed necessary to ensure that QA functions are being implemented in an acceptable manner.

The QAM reports to the Program Manager for schedule and commitment requirements.

Vortec Employees and Contractors

Vortec employees and contractors are responsible for implementation of their assigned responsibilities in accordance with the intent of the EQA Plan.

Plan Implementation

Effective implementation of the EQA Plan is accomplished through the performance of quality activities in accordance with approved procedures.

Engineering Quality Assurance Plan

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WHO

DOES WHAT

QAM

1. Ensures proper implementation of the program by establishing procedures which address the following areas:
 - Control of experimental conditions, using technical standards, instructions, and other appropriate means commensurate with the complexity and risk of the work.
 - Control, identification, and maintenance of equipment, facilities, and materials.
 - Control of handling, storage, shipping, and cleaning of data and materials to prevent damage, loss, or deterioration.
 - Control of calibration, maintenance, accountability, and use of measuring and testing equipment.
 - Control of design functions to assure use of sound engineering/scientific principles and current appropriate standards.
 - Assurance that purchased items and services meet requirements established for them by the performing organization.
 - Develop methods to specify when and what type of inspections are required.
 - Assurance that equipment and processes perform as intended.
 - Continuous improvement of the quality of the work performed through the improvement of work practices guided by internal performance assessment.

Engineering and Test Controls

WHO

DOES WHAT

QAM

1. Ensures that reviews and/or assessments are conducted to verify that the Engineering and Test Management functions have been performed in accordance with applicable procedures and test plans.

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Engineering Quality Assurance Plan

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Procedures

In general, procedures will serve as the basis for indoctrinating pertinent personnel to ensure that quality-related activities are accomplished in the prescribed manner. Additionally, procedures provide sufficient guidelines for performing quality tasks and serve as a management tool for use in measuring the adequacy of work performed.

<i>WHO</i>	<i>DOES WHAT</i>
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Appropriate level of management	<ol style="list-style-type: none">1. Approves written procedures.2. Ensure that vendor and subcontractor work is performed in accordance with this Engineering Quality Assurance Plan, or a similar program acceptable to DOE and Vortec when performing critical activities.
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All employees	<ul style="list-style-type: none">• Perform project activities in accordance with written procedures.
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Vendors and Subcontractors	<ul style="list-style-type: none">• Adhere to this Engineering Quality Assurance Plan, or a similar Vortec approved program acceptable to DOE when performing critical activities.
----------------------------	--

Corrective Action

<i>WHO</i>	<i>DOES WHAT</i>
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QAM	<ol style="list-style-type: none">1. Promptly identifies and corrects conditions considered adverse to quality2. Controls the corrective action program and will:<ul style="list-style-type: none">• Implement requirements which provide for the identification, control, and correction of conditions requiring corrective action.• Involve appropriate levels of management in the resolution of corrective action items.• Document corrective actions.
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Documentation of Corrective Action

WHO	DOES WHAT
QAM	<ol style="list-style-type: none">1. Initiates QA assessments2. Conducts QA assessments by using written checklists which address the requirements of the project contract and procedures.3. Upon completion of the assessment:<ul style="list-style-type: none">• Prepares an assessment report, and• Distributes the report to the managers of the assessed organization as well as other appropriate levels of management.4. Maintains an Assessment Status Log for tracking purposes to ensure that deficiencies identified during assessment are properly corrected.5. Assesses each area at least once annually during the life of the project.

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Engineering Quality Assurance Plan

Quality Procedure #1: Engineering and Design Control

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QP-1: Engineering and Design Control

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Purpose and Scope

Purpose—This procedure establishes methods for the preparation, review, and approval of designs of engineered systems and design revisions.

Scope—This procedure applies to the design of engineered systems and design revisions activities performed by Vortec. Also, this procedure *may* apply to design activities performed by a contracted Architect/Engineer (A/E)—the A/E may work to his or her design procedures *if* stated in the contract and provided that they meet or exceed Vortec Corporation Procedures or approved requested exceptions.

Definitions

Acceptance Criteria	Specified limits placed on characteristics of an item, process, or service defined in codes, standards, or other requirement documents, such as design output.
Computer Hardware Validation	The process which demonstrates that computer equipment correctly performs its stated capabilities and functions.
Computer Program Validation	The process that demonstrates that the computer program correctly performs its stated capabilities and functions.
Computer Program Verification	The process which demonstrates that the mathematical or statistical model embodied in the computer program is an acceptable representation of the process or system for which it is intended and meets all specified requirements.
Design Change	Any revision or alteration of the technical requirements defined by approved and issued design output documents, and any approved and issued changes thereto.
Design Input	Those criteria, parameters, bases, or other design requirements upon which detailed final design is based.
Design Output	Drawings, specifications, or other documents used to define technical requirements of structures, systems, components, and computer programs.
Design Process	Technical and management processes that begin with identification of design input and that lead to, and include the issuance of, design output documents.
Design Verification	The act of evaluating and documenting that the design meets specified requirements. Examples of how this can be accomplished are design reviews, alternate calculations, and/or qualification testing.

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QP-1: Engineering and Design Control

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Responsibilities

<i>WHO</i>	<i>DOES WHAT</i>
Originators	<ul style="list-style-type: none">• Develop design documents
Technical Reviewers	<ul style="list-style-type: none">• Review design documents• Resolve comments with the originator• Sign and date final design package
Interface Engineers, Lead Designer, and System Engineering Manager	<ul style="list-style-type: none">• Review conceptual drawings• Review preliminary drawings• Review and sign final drawings
Engineering Manager	<ul style="list-style-type: none">• Approves and signs final drawings• Assigns independent Technical Reviewers to review calculations• With the Program Manager, conducts design reviews• Reviews, approves, and signs final calculations
Program Manager	<ul style="list-style-type: none">• Assembles a design team and assigns responsibilities• With Engineering Manager, conducts design reviews• Conducts status meetings with Engineering and Task Managers

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Design Procedures

Whenever Vortec Corporation wins a contract, a Program Manager (PM) is assigned to that contract. His or her responsibilities are summarized in the following outline.

PERSON OR FUNCTION:	REQUIREMENTS:
Program Manager	<ol style="list-style-type: none">1. Assembles design team.2. Assigns responsibilities.3. Reviews contract and associated documentation to determine applicable codes and standards and specific program requirements.4. Defines design input from information compiled from step #3.5. Determines design activities (which may be accomplished manually or with verified/validated computer programs).6. Determines whether or not each computer program—if any of the design activities are to be accomplished using computer programs—has been verified/validated.<ul style="list-style-type: none">• If the program has been verified/ validated, places documentation of such in the program files.• If the program has not been verified/validated, PM does this. <p>Some options are to:</p> <ul style="list-style-type: none">- Compare the program output with that of a previously verified program.- Compare the program output with results of approved hand calculations.- Identify the program as an industry standard. <p>When verification/validation has been accomplished, places documentation in the program files.</p>

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QP-1: Engineering and Design Control

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PERSON OR FUNCTION:

REQUIREMENTS:

**Systems
Requirement
Document**

1. Must contain the following identifiers:
 - A. Program title and contract number
 - B. Date of first submittal
 - C. Revision level with date
 - D. Controlled document copy number
 - E. Engineering Manager's approval signature and date.
 - F. Environmental Compliance Manager's approval signature and date
 - G. Program Manager's approval signature and date

2. Must contain the following information:
 - A. Introduction
 - B. Facility requirements
 - C. Major system requirements
 - D. Equipment design requirements
 - E. General requirements

3. Must be reviewed and approved by the Program Manager or designee.

Engineering Manager

1. Reviews contents based on the following:
 - A. All information is consistent with design objectives, environmental requirements, project requirement meetings, and pertinent correspondence.
 - B. All data are requirements and not solutions.

2. Transmits reviewed calculations as follows:
 - A. Transmits document with review comments to the originator for resolution.
 - B. Signs and dates the satisfactory resolved differences.
 - C. Submits document to Program Manager for final review and approval.

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QP-1: Engineering and Design Control

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**Environmental
Compliance
Manager**

Reviews contents to ensure that all information is consistent with environmental requirements.

Originator

1. Analyzes the review comments, resolves any differences, and makes the necessary corrections.
2. Returns document to the Engineering Manager for final review and approval.

Program Manager

1. Reviews and approves final document.
2. Places document in the program file.
3. Issues the document through document control.

**Controlled
Engineering
Calculations**

Controlled Engineering Calculations

- CMS™ Heat and Mass Balance
 - Process Mass Balance
 - Structural Calculations
 - Strength of Materials
 - Water Jacket Sizing
 - Heat rejection system calculations
 - Pressure drop calculations for gases and liquids
 - Engineering calculations submitted to either a subcontractor or customer.
1. Must contain the following identifiers:
 - a. Program title and contract number
 - b. Subject
 - c. A unique calculation number
 - d. Originator's name
 - e. Date of calculation
 - f. Name of computer programs used for calculation
 - g. Revision level with date and initials
 - h. Technical Reviewer's signature and date
 - i. Engineering Manager approval signature and date

QP-1: Engineering and Design Control

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PERSON OR FUNCTION::	REQUIREMENTS:
Controlled Engineering Calculations (cont'd)	<ol style="list-style-type: none">2. Each calculation shall include the following:<ol style="list-style-type: none">a. Objective of the calculationb. Scope of the calculationc. Referencesd. Assumptions used in the calculation and those assumptions requiring future confirmatione. Technical approachf. Input datag. Calculationsh. Results of the calculation3. Must be reviewed and approved by the Engineering Manager or designee.
Technical Reviewer	<ol style="list-style-type: none">1. Reviews each calculation, considering the following:<ol style="list-style-type: none">a. Does the calculation contain all the required identifiers?b. Are all the inputs to the calculation clearly identified, and are they consistent with the objectives and technical approach?c. Are assumptions reasonable?d. Is the technical approach appropriate?e. Are the calculations accurate?f. Are the results reasonable, considering the inputs and assumptions?2. Transmits reviewed calculations as follows:<ol style="list-style-type: none">a. Transmits calculations with review comments to the originator for resolution.b. Signs and dates the satisfactorily resolved differences.c. Submits calculation to EM for final review and approval.
Originator	<ol style="list-style-type: none">1. Analyzes the review comments, resolves any differences, and makes the necessary corrections.2. Returns calculation(s) to the Technical Reviewer for approval.
Engineering Manager	<ol style="list-style-type: none">1. Reviews and approves final calculations.2. Places the calculations in the program file.

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QP-1: Engineering and Design Control

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PERSON OR FUNCTION:

REQUIREMENTS:

Engineering Drawings

1. Drawings are defined as conceptual, preliminary, and final.
 2. All drawings shall contain the following identifiers:
 - a. Program title and contract number
 - b. Client's name
 - c. Originator's name
 - d. Unique drawing identification number
 - e. Date of issue
 - f. Revision level
 3. The title block will contain the company name, revision level, and brief description.
 - a. Conceptual and preliminary drawings identify the revision level with a letter.
 - 1.) The original revision level will be "A," with revision levels progressing alphabetically.
 - 2.) To avoid confusion between lettered and numbered revision levels, the letters "I" and "O" will not be used on conceptual and preliminary drawings.
 - b. Final drawings identify the revision level with a number. The original revision level will be "0" (zero), with revision levels increasing numerically.
-

Interfacing Engineers, System Engineering Manager(s), and Lead Designer

1. Reviews each conceptual, preliminary, and final drawing considering the following:
 - a. Does the drawing contain all the identifiers as specified above?
 - b. Are the objectives of the drawing clearly identified, and are they consistent with the technical approach?
 - c. Are assumptions reasonable?
 - d. Is the technical approach appropriate?
 - e. Is all the information accurate?
 - f. Are the results reasonable, considering the inputs and assumptions?
2. Transmits reviewed drawings as follows:
 - a. Transmits drawings with review comments to the originator for resolution.
 - b. Signs and dates the satisfactorily resolved differences.
 - c. Submits drawing to EM for final review and approval.

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QP-1: Engineering and Design Control

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<i>PERSON OR FUNCTION:</i>	<i>REQUIREMENTS:</i>
Originator	<ol style="list-style-type: none">1. Analyzes the review comments, resolves any differences, and makes the necessary corrections.2. Returns drawings(s) to the Technical Reviewer for approval.
Technical Reviewer	<ol style="list-style-type: none">1. Verifies that drawings are in compliance with the SRD.2. Signs and dates the satisfactorily resolved differences.3. Submits them to the EM for final review and approval.
Engineering Manager	<ol style="list-style-type: none">1. Approves final drawings and revisions.2. Issues drawings through document control.
All Personnel	Maintain all drawings in the program file.

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QP-1: Engineering and Design Control

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PERSON OR FUNCTION:

REQUIREMENTS:

Engineering Specifications

1. Must contain the following identifiers:
 - a. Program title
 - b. Subject
 - c. A unique specification number
 - d. Originator's name
 - e. Date issued
 - f. Revision level with date and initials
 - g. Technical Reviewer's signature and date
 - h. EM's approval signature and date.
2. Each specification must follow the procedures for format and content.
3. Must be reviewed.

Technical Reviewer

1. Reviews each specification, considering the following:
 - a. Does the specification contain all the required identifiers?
 - b. Are all the necessary attachment specifications included?
 - c. Is the technical approach appropriate?
 - d. Is the description of work accurate?
 - e. Are the design requirements accurate?
 - f. Are the correct drawings referenced?
 - h. Is the specification in compliance with the SRD?
 - i. Is the specification in compliance with environmental requirements
2. Transmits reviewed calculations as follows:
 - a. Transmits specifications with review comments to the originator for resolution.
 - b. Signs and dates the satisfactory resolved differences.
 - c. Submits specifications to EM for final review and approval.

Originator

1. Analyzes the reviewed comment, resolves any differences, and makes the necessary corrections.
2. Returns specifications to the Technical Reviewer for approval.

Engineering Manager

1. Reviews and approves specifications.
2. Places the specification into the project file.

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QP-1: Engineering and Design Control

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PERSON OR FUNCTION: REQUIREMENTS:

Design Review and Approval

1. Meet design review objectives—including, but not limited to, the following:
 - a. Obtain concurrence of appropriate levels of program management and in-house expertise as to technical quality of the work.
 - b. Reinforce the program design and systems engineering through assessment of program elements, both incrementally and cumulatively.
 - c. Support the schedule for submittal of quality program deliverables.
2. Conduct design reviews both informally and formally during the course of the work.
 - a. Informal reviews encompass such concerns as the progress of work, the need for additional resources or data input, and the technical quality of the work. These reviews need not be documented.
 - b. Formal reviews are conducted by the Engineering Manager and Program Manager.
 - c. Schedule formal reviews to parallel program development milestones and reinforce the ultimate goal of configuration management which are:
 - 1.) Assurance that discrete system components have been addressed.
 - 2.) Satisfaction of the requirements of interfacing systems.
3. Encourage the participation of subject matter experts in the design review process.
4. Incorporate the formal design review proceedings and resulting action items into the appropriate documentation:
 - Final calculations
 - Final drawings
 - Specifications
 - System Requirements Document

Interface Management

1. The PM will define the interface between Vortex's functional organizations and the corresponding group with the subcontractor established.
2. Define the procedure for the flow of information between Vortec and its subcontractors. Assure that all information is documented and approved by the PM.
3. QA Manager will assure uniformity of terminology and concepts between Vortec and its subcontractor. QAM will assure documentation requirements of the program are met.

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Engineering Quality Assurance Plan

Quality Procedure #2: CMS HTPT Facility Control, Operation, and Maintenance

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Purpose and Scope

Purpose—This procedure provides instructions for the control, operation, and maintenance of the Vortec Combustion Melting System (CMS™) in Vortec's High Temperature Process Test (HTPT) Facility which is used to support Vortec design and engineering activities.

Scope—This procedure applies to the Vortec HTPT Facility at the University of Pittsburgh Applied Research Center, Harmarville, PA.

References

This procedure was developed in accordance with these resources:

- *Plant Operations Manual for the Vortec HTPT Facility*
- QP-6: Surveillance of the CMS™ Pilot Plant Activities
- *Safety and Health Manual for the Vortec High Temperature Process Test Facility*

Responsibilities

The Process Development Manager

The Process Development Manager (PDM) is responsible for approval of process engineering design changes and construction modifications related to improved control and maintenance of the CMS™ HTPT facility.

The Test Facility Manager

The Test Facility Manager (TFM) is responsible for:

- The implementation of control, operation, and maintenance of the CMS™ HTPT facility during daily operations and for test runs.
- The implementation and management of modification improvements and normal maintenance activities at the CMS™ HTPT facility.

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QP-2: CMS HTPT Facility Control, Operation, and Maintenance

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The Quality Assurance Manager

The QAM is responsible for ensuring implementation of this procedure through surveillance and for assessment activities associated with the project.

The QAM, as required by Quality Procedures and when requested by the Vortec Program Manager, shall review project documents to incorporate quality requirements and verify compliance with contract and technical specifications.

Vortec employees and contractors

Vortec employees and contractors are responsible to report observations of abnormal operations to the Test Facility Manager.

Control and Maintenance Procedures

General Procedures

<i>WHO</i>	<i>DOES WHAT</i>	<i>WHEN—TIMING / CONSIDERATIONS</i>
Test Facility Manager	1. Directs all control, operation, and maintenance activities at the CMS™ HTPT facility.	These activities include the following areas: <ul style="list-style-type: none">• Components and equipment critical for successful project tests and safety.• Highly sensitive components and systems.• Recently modified components and systems intended to improve the process or reliability of process.

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QP-2: CMS HTPT Facility Control, Operation, and Maintenance

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Pre-Operation Procedures

WHO	DOES WHAT	WHEN—TIMING / CONSIDERATIONS
Test Facility Manager or designee	1. Verifies the CMS™ HTPT facility status by conducting appropriate system walkdowns	Prior to <i>any</i> testing . . . These activities ensure compliance with the Operations Manual, approved Test Plan, and Safety Manual for the project
	2. Records required data in the Operations Log Book	
	3. Completes Pre-Operation Procedures/Checklist	
Test Crew	1. Identifies and documents any discrepancies in test.	
	2. Communicates discrepancies to Test Facility Manager	
	3. Corrects discrepancies identified as directed and documents the specific discrepancy, the means/methods used for correction, and perceived Quality consequences.	

Conditions Operations

WHO	DOES WHAT
Test Facility Manager	1. Monitors system operations to: <ul style="list-style-type: none">• Assure operating conditions consistent with test plan• Assist QAM in assuring test data and sampling procedures are being followed.
	Test Crew

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QP-2: CMS HTPT Facility Control, Operation, and Maintenance

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Cold/Hot Start Operation Procedures

WHO	DOES WHAT	WHEN—TIMING / CONSIDERATIONS
Test Facility Manager	<ol style="list-style-type: none">1. Verifies the satisfactory completion of the startup checklist as required by:<ul style="list-style-type: none">• The <i>Plant Operations Manual</i>,• Applicable portions of the approved Test Plan,• The <i>Safety and Health Manual</i>.	<p>This activity includes:</p> <ul style="list-style-type: none">• Completion of the detailed verification checklist.• Facility startup.• Steady state conditions.• Orderly shutdown.

Emergency Shutdown Procedures

WHO	DOES WHAT	WHEN—TIMING / CONSIDERATIONS
Process Development and Test Facility Managers	<ol style="list-style-type: none">1. Provide for emergency shutdown operations so as to ensure safety of personnel and proper documentation of the emergency and any lessons learned.2. Reports and documents any emergency shutdown to Vortec management for evaluation.	Emergency Shutdown

Post-Operation Procedures

WHO	DOES WHAT	WHEN—TIMING / CONSIDERATIONS
Process Development and Test Facility Managers	<ol style="list-style-type: none">1. Completes and documents a post-operations review of the CMS™ HTPT facility which includes:<ul style="list-style-type: none">• Securing the facility.• A facility inspection by the Test Crew.• Recording the feedstock storage status.• Waste disposal.2. Identifies and documents potential maintenance and modification activities, based on this review.	Post Operation

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Engineering Quality Assurance Plan

Quality Procedure #3 Control of Test Conditions in the HTPT Facility

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Purpose and Scope

Purpose—This procedure ensures that the test is conducted and documented to meet the objective of the test plan. It also ensures that all testing is conducted using a uniform method for accuracy, precision, and reproducibility of test data.

Scope—This procedure applies to the control of all tests conducted in support of this project.

References

This procedure was developed in accordance with objectives of these resources:

- *Plant Operations Manual for the Vortec High Temperature Process Test Facility*
- *Safety and Health Manual for the Vortec High Temperature Process Test Facility*

Definitions

Test Plan A document which prescribes the test conditions, controls, and sampling protocols to be applied to the tests, using applicable technical standards, instructions, and safety guidelines.

Responsibilities

Program Manager

The Program Manager (PM) is responsible for the review and approval of test plans.

The Process Development Manager

The Process Development Manager (PDM) is responsible for the development of test plans.

The Test Facility Manager

The Product Development Manager (TFM) is responsible for the implementation of test plans.

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Test Plan Development Procedure

WHO

DOES WHAT

Process Development Manager	<ol style="list-style-type: none">1. Gathers pertinent information required to develop a test plan.2. Identifies—from the information gathered—the:<ol style="list-style-type: none">a. Test objectives,b. Test input,c. Test parameters, andd. Equipment needed to perform the test.3. Develops a test plan from the information compiled above. As a minimum, this test plan will include:<ol style="list-style-type: none">a. An Introduction identifying background information on the test.b. Test objectives and scope.c. Test matrix.d. Test schedule.e. Feedstock preparation procedure.f. Process description and operating conditions.g. Test parameters and conditions.h. Sampling and analysis methods.i. Methods for data acquisition and analysis.j. Test data evaluation and interpretation.
Test Facility Manager	<ol style="list-style-type: none">1. Reviews the test plan.
Program Manager	<ol style="list-style-type: none">1. Resolves all comments.2. Signs and dates the test plan.
Test Facility Manager	<ol style="list-style-type: none">1. Implements approved test plan.
QAM	<ol style="list-style-type: none">1. Ensures proper implementation of the test plan.

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Engineering Quality Assurance Plan

Quality Procedure #4 Sample Handling Control in the HTPT Facility

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QP-4: Sample Handling Control in the HTPT Facility

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Purpose and Scope

Purpose—This procedure provides instructions for the control of handling, storage, shipping, cleaning, and preservation of samples.

Scope—This procedure applies to *feedstock materials*, the *vitrified products*, *waste water*, and *flue gas samples*.

References

This procedure was developed in accordance with these resources:

- QP-5: Management of Test Instrumentation in the HTPT Facility
- *Safety and Health Manual for the Vortec HTPT Facility*

Responsibilities

The Quality Assurance Manager

The Quality Assurance Manager (QAM) is responsible for validating compliance with the handling, storage, shipping, cleaning, preservation requirements, and procedures.

Additionally, the QAM is responsible for ensuring that the test plan is being properly implemented through assessments and surveillances.

Test Facility Manager

The Test Facility Manager (TFM) is responsible for:

- Maintaining custody and identity of samples and data collected during testing.
- Maintaining custody of sample transfer documentation.
- Delineating and documenting any specific, non-routine requirements for sampling (duplicate samples) and sample transfer (i.e., time limits, special packaging).

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Sample Handling Procedures

Receiving Procedure

WHO	DOES WHAT
Receiving person	<ol style="list-style-type: none"> Ensures compliance with package specifications and requirements, including critical characteristics (i.e., identification and chemical and physical characteristics), by controlling all materials for test, including: <ul style="list-style-type: none"> Feedstocks, Additives, and Surrogate materials. Verifies applicable characteristics either by: <ul style="list-style-type: none"> Ensuring that the vendor has provided all the required/requested certificates —from a bona fide source—which substantiates the purchase requirements, or by Submitting the materials for sampling according to the requirements/procedures.
QAM or his designee and the TFM	<ol style="list-style-type: none"> Validate the acceptability of materials.

Storing Procedure

WHO	DOES WHAT
All applicable employees	<ol style="list-style-type: none"> Immediately transfers all samples requiring refrigeration for preservation to coolers packed with ice or ice-packs. Maintains proper Chain-of-Custody documentation as detailed in the Sample Custody procedures.

Mixing Procedure

WHO	DOES WHAT
All applicable employees	<ol style="list-style-type: none"> Identify and document materials used and any special mixing requirements by keeping written records of all test materials mixed. When repetitive tests or test batches are required, follow all documented mixing instructions to reduce variability in mixing results.

QP-4: Sample Handling Control in the HTPT Facility

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Sampling and Sample Custody Procedures

The primary objective of sample custody procedures is to create an accurate written record which can be used to trace the possession and handling of all samples from the moment of their collection, through analysis, until their final disposition.

WHO	DOES WHAT	WHEN—TIMING & CONSIDERATIONS
Vortec or its contractor	1. Supplies all necessary sample containers and preservatives.	Prior to the sampling event
Vortec Sample Custodian	1. Ensures that all sampling containers are procured clean from supplier. 2. Documents the preparation of all sample bottles (cleaning technique, preservative added, etc.) 3. Adds to the bottles (containers) all necessary chemical preservatives.	Prior to the sampling event
TFM	1. Verifies the integrity of the bottles and ensures that the proper bottles have been assigned to the task to be conducted. 2. Relinquishes sample bottles needed for a specific sampling task to the sampling team.	Prior to the sampling event
Sampling Team	1. Ensures that each cooler (when required) to be used for samples contains sufficient ice and/or ice packs to maintain proper temperature. 2. Affixes self-adhesive sample label to each container that contains, at a minimum: <ul style="list-style-type: none"> • Client-Job name • Sample number • Sample identification—place of sampling • Data and time collected • Sampler's name..... 3. Transfers samples to properly labeled sample containers with all necessary preservatives added. 4. Seals each bottle in an individual plastic bag. 5. When required, places samples into an insulated cooler to maintain them at approximately 4 degrees Celsius for shipment to the laboratory; and packs them in a manner to prevent damage to sample containers. 6. Completes a Vortec Sample Analysis Request (SAR) form..... 7. Seals the completed SAR form(s) in a Ziploc® plastic bag to protect them against moisture; and place them <i>inside</i> the cooler(s) to accompany sample shipment to the laboratory.	Prior to the sampling event During sample collection Refer to Figure 4-1 for a sample of an acceptable label Immediately after placing each bottle in plastic bag Refer to Figure 4-2 for (SAR) form.

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QP-4: Sample Handling Control in the HTPT Facility

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WHO	DOES WHAT	WHEN—TIMING & CONSIDERATIONS
Sampling Team (continued)	8. Completes the Vortec Field Chain-of-Custody Record (FCCR) form..... 9. Relinquishes packed samples with FCCR form to the TFM.	Sample Custody Refer to Figure 4-3 for (FCCR) form.
TFM or the field personnel collecting the samples	1. Initials and custody-seals (completes/approves FCCR forms) each sample cooler; 2. Documents each sample transfer; and 3. Maintains custody for samples collected during this investigation until they are sent to the laboratory; or In cases where direct test results are obtained at the test facility, ensures that results are properly identified and maintained.	Each time the sample changes hands, both the relinquishing and receiving parties must: <ul style="list-style-type: none"> • sign Chain-of-Custody form <i>and</i> • indicate the reason for transfer.
Vortec or laboratory rep.	1. Transfers all coolers directly or by overnight courier according to applicable U.S. DOT regulations.	
Laboratory Sample Custodian (external)	1. Inspects the condition of the samples; 2. Compares the information on the sample labels against the Field Chain-of-Custody Record and Traffic Reports (if applicable), and assigns a control identification number (if required). 3. Logs the control number into the computer sample inventory system. 4. When samples requiring preservation by either acid or base are received at the laboratory, measures and documents the pH. 5. Stores the sample in a secure sample storage cooler maintained at 4 degrees Celsius and maintains custody until the sample is assigned to an analyst for analysis; and Maintains custody until the analyzed samples are disposed. 6. Notes any damaged sample containers or discrepancies between the sample label and information on the Field Chain-of-Custody Record for the sample. Communicates this information to the TFM or field personnel so that proper action can be taken.	

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QP-4: Sample Handling Control in the HTPT Facility

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Shipping

All samples will be transferred directly by the laboratory or Vortec personnel, or shipped in coolers (if required) by an overnight courier according to applicable U.S. DOT regulations.

Cleaning

PROCEDURE:

STEPS TO FOLLOW:

Decontaminate sampling equipment

1. Decontaminate portable equipment at specific decontamination zone designated at the site.
2. *If required by the Test Plan*, Decontaminate all portable equipment (thief samplers, hand trowels, bucket auger, etc.) by performing the following:
 - Manual scrub—with nonphosphate soap solution plus tap water wash
 - Tap water rinse
 - Distilled/de-ionized water rinse
 - 10% nitric acid rinse (for metals only)
 - Distilled/de-ionized water rinse

Dispose of contaminated equipment

1. Must follow the applicable procedures/regulations and obtain approval of *both* the TFM and the QAM in order to process disposal of any contaminated equipment

Preservation

Samples of surrogate soils, vitrified product, or waste water will be placed in laboratory-prepared sample bottles, placed in a cooler, and maintained at approximately 4 degrees Celsius.

Figures

Figures referenced in this procedure appear on the next three pages:

- Sample Label
- Chain of Custody Record
- Sampling Analysis Request

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SAMPLE LABEL

Project: _____

Collector: _____ **Sample No.** _____

Place of Collection: _____

Date Sampled: _____ **Time Sampled:** _____

Field Information _____

Testing Required: _____

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FIGURE 4-1. SAMPLE OF ACCEPTABLE CONTAINER LABEL

E-1723

SAMPLING ANALYSIS REQUEST

Part I: Field Section

Collector: _____ Date Sampled: _____ Time _____ hours

Affiliation of Sampler _____

Address _____
number street city state zip

Telephone () _____ Company Contact _____

<u>Laboratory Sample No.</u>	<u>Collector's Sample No.</u>	<u>Type of Sample*</u>	<u>Field Information**</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Analysis Requested _____

Special Handling and/or Storage _____

Part II: Laboratory Section**

Received by _____ Title _____ Date _____

Analysis Required _____

* Indicates whether sample is soil, sludge, etc.

** Use back of page for additional information relative to sample location.

000054

FIGURE 4-2. VORTEC SAMPLE ANALYSIS REQUEST (SAR) FORM



E-1723

Engineering Quality Assurance Plan

Quality Procedure #5 : Management of Test Instrumentation in HTPT Facility

000056

Purpose and Scope

Purpose—This procedure provides instruction for the control, calibration, maintenance, accountability, and use of M&TE used for data monitoring and collection at the Vortec CMS™ HTPT facility.

Scope—The scope of this procedure will be dependent upon the applicable phase of the project.

For Phase 3 of the FETC project, only those equipment and instruments which control input of materials into the process and those which measure the vitrified product and effluents are covered in this procedure and will be clearly specified by the Test Plan.

Definitions

- Accountability** Define the method and interval of calibration for each item, based on the type of equipment, stability, required accuracy, intended use, and other conditions affecting measurement control.
When measurement and test equipment is found to be out of calibration, document the variances found and then evaluate and document the validity of previous test results and of the acceptability of items previously tested.
Segregate "out-of-calibration" equipment and do not use until re-calibrated. Repair or replace any M&TE consistently found to be out of calibration.
- Accuracy** The degree of conformance of a measured quantity to a recognized standard.
- Calibration** Comparison of an item of M&TE with a reference standard of closer tolerance to detect and quantify inaccuracies and to report or eliminate inaccuracies by adjustment.
- Maintenance** Any activity performed to ensure the ongoing integrity of measuring and test equipment.
- Measuring and Test Equipment (M&TE)** Measuring and Test Equipment is usually divided into two classifications: 1) monitoring and 2) control. All defined precision instruments (normally a control instrument) that require periodic calibration will be calibrated to the specific accuracy with a traceable reference standard.
- Reference Standards** Standards that are directly traceable to the National Institute of Standards and Technology (NIST).

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QP-5: Management of Test Instrumentation in HTPT Facility

1723

Responsibilities

Quality Assurance Manager or Designee

The Quality Assurance Manager (QAM) or designee:

- Validates the unique identification of all M&TE.
- Reviews and audits supplied documentation and calibration records to ensure compliance with calibration requirements.
- The QAM and TFM review all M&TE found to be out of calibration for impact on post-test results.
- Maintains a documented list of M&TE and the appropriate approved testing laboratories.
- Reviews incoming M&TE records—whether new or returning from re-calibration.
- Validates implementation of this procedure by Vortec personnel and for M&TE used by contract personnel.

Test Facility Manager and Vortec Procurement Personnel

The Test Facility Manager (TFM) and Vortec procurement personnel ensure that the purchase orders include appropriate approved calibration and accuracy requirements.

Vortec TFM and Program Manager (PM) ensure implementation of this procedure, including review of calibrated instruments, prior to each test.

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QP-5: Management of Test Instrumentation in HTPT Facility

1723

Procedures

PROCEDURE

STEPS

Receiving new M&TE and to process M&TE returning from calibration

- As a minimum, follow any specific receiving procedures that are in place.
- If the equipment supplier's calibration records *do not* meet the minimum requirements of Vortec's specification/requirement:
 - Annotate and document any deficiency on the receiving paperwork and the Daily Material Received Log (DMRL) as required (Reference QP9).
 - Annotate and/or Tag the deficiency on the M&TE itself.
 - If a M&TE was sent out for calibration and it could not be calibrated, annotate/document the specific M&TE record. If an investigation is required, see the following procedure "When a M&TE is out of calibration".
 - Place the M&TE in a place where it cannot be used (quarantine).
- If the supplier's calibration records *do* meet the minimum requirements of Vortec's specification/requirement:
 - Forward the M&TE and associated paperwork to the requestor who will review, and update as required, before entering the M&TE into the records or the process.
 - Forward any calibration records to the Quality Assurance Manager.
 - When the M&TE is placed into service, the date of initial service, its location, and any other start-up information will be documented to the calibration record.

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QP-5: Management of Test Instrumentation in HTPT Facility

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PROCEDURE

STEPS

When M&TE is out of calibration

1. If M&TE that is in service is found to be out of calibration—or suspected to be out of calibration:
 - Remove it from service and
 - Send it for re-calibration.
2. When M&TE is determined to be out of calibration:
 - Conduct an investigation to determine where the M&TE had been used and possible impact on test results since the last calibration.
 - Evaluate records of where and when the M&TE had been used against the as-received calibration results to determine whether or not any further evaluation is required.
 - If it is determined that a non-conformance exists or may exist, take corrective action.
 - If it is determined that all is in conformance, no further action is required.
 - Document this investigation and its results, including corrective actions.

Before each test

- Identify the M&TE that is critical to the production of test data for this test.
- Assure that the calibration of the critical M&TE is accurate, up to date, and that it satisfies the required standards (Vortec, NIST, etc).

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E-1723

Engineering Quality Assurance Plan

***Quality Procedure #6:
Surveillance of the CMS HTPT Facility Activities***

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Purpose and Scope

Purpose—This procedure describes the preparation and implementation of a Surveillance Plan to assure conformance to Vortec and customer requirements. This procedure applies to inspection and test activities associated with Vortec's Cyclone Melting System (CMS™) in Vortec's HTPT Facility

Scope—This procedure is to be used for activities and contracts that are critical to the control of experimental conditions; or when Management directs that other purchase orders or contracts are to be processed in accordance with this procedure.

Definitions

- Final Surveillance** Functions that are performed after the completion of test activities to verify that the completed product conforms to prescribed acceptance criteria and to assure that any identified nonconformances have been satisfactorily resolved.
- Hold Point** Surveillance functions that are to be performed before that next specified test activity is permitted to be performed.
- In-Process Surveillance** Surveillance functions that are performed during test to verify that selected processes conform to prescribed acceptance criteria.
- Inspector** The individual assigned to perform QA surveillance activities.
- Witness Point** Test activities that are to be observed by a designated party, such as DOE or an Inspector.

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QP-6 : Surveillance of the CMS HTPT Facility Activities

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Responsibilities

WHO	DOES WHAT
QA Manager or designated representative	<ul style="list-style-type: none">• Prepares the Surveillance Plan.• Performs or assigns a qualified individual to execute this Surveillance Plan.• Reviews the completed plan to ensure that all characteristics have been accomplished.• Ensures that nonconformances detected by surveillance are satisfactorily resolved and documented.• Assembles a completed surveillance records package at the completion of the activity.
Surveillance Inspector (assigned)	<ul style="list-style-type: none">• Implements the Surveillance Plan.• Documents the results of each surveillance function in an accurate, clear, legible, and complete manner.• Notifies the QA Manager and the Test Facility Manager of any nonconformances detected by inspection.• Maintains records in an organized manner for turnover to the QA Manager.
Test Facility Manager	<ul style="list-style-type: none">• Reviews the Surveillance Plan and ensures that all witness and hold points are coordinated with the test process.• Implements the prescribed disposition for all nonconforming conditions identified by inspection.

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QP-6 : Surveillance of the CMS HTPT Facility Activities

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Surveillance Plan Preparation Procedure

PERSON OR FUNCTION:

REQUIREMENTS:

QA Manager or
designated
representative

1. Manages personnel assigned to perform surveillance functions.
2. Prepares a Surveillance Plan to validate the correct completion and compliance of activities within the scope of this Procedure.
3. Defines *Surveillance Plan requirements* which are to:
 - a.) Identify all project documents that define the scope of the work and the technical requirements established for the work.
 - b.) Review the following documents to establish the input for the Surveillance Plan:
 - Contractual Documents (i.e., contract purchase order)
 - Specifications
 - Test Plans
 - Drawings
 - c.) Verify that all the documents referenced in the contractual document have been received before the Surveillance Plan is completed.
 - d.) Prepare a Surveillance Plan, based on the requirements contained in the Project documents; and use the Surveillance Plan and Record form shown in Figure 6-1, to document the plan and provide a record of the surveillances performed.
 - e.) Identify in the Surveillance Plan the:
 - Items to be inspected,
 - Inspection characteristics to be examined,
 - Inspection function to be performed,
 - Frequency for each function, and
 - Acceptance criteria.
 - f.) Identify in the Surveillance Record the:
 - Inspector,
 - Date of the surveillance,
 - Acceptability of the results,
 - Objective evidence examined, and
 - Action taken in connection with any discrepancies detected.

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QP-6 : Surveillance of the CMS HTPT Facility Activities

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PERSON OR FUNCTION:

REQUIREMENTS:

QA Manager or designated representative (continued)

- g.) Bases inspection characteristics on the Project requirements, as established by DOE and Vortec. These characteristics shall include the following, as applicable:
- Sample material specifications
 - Identification of test requirements
 - General arrangement of the CMS™ facility
 - Calibration of instruments and gauges
 - Qualification/approval of procedures
 - Qualification/approval of contractors and suppliers
 - Use of proper sample methods
 - Proper incorporation of changes
 - Identification of samples
 - Sample preparation for shipment
 - Special technical requirements of DOE
- h.) Identifies the surveillance function in the Plan which will include the following, as appropriate:
- Visual inspection
 - Review of documentation
 - Witness of a test activity
 - Validation that the records and procedures required for the release of materials at the identified Hold Points are in place and conformed to.
- i.) Validates any Contract or DOE-specified witness or hold points.
- j.) Includes, as a minimum, some in-process surveillances and a final surveillance function. Identifies the frequency—based on the complexity of the tests, the length of tests, any special DOE requirements, and any unique test details associated with the Project.
- k.) Identifies the acceptance criteria for each inspection characteristic which based on the following requirements:
- DOE requirements (i.e., specifications, drawings, etc.).
- NOTE:** The revision number of all specifications and drawings listed in the Plan must be included as part of the identification.
- Vortec Plans, Manuals, and Procedures applicable to the Project.

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QP-6 : Surveillance of the CMS HTPT Facility Activities

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Surveillance Plan Implementation Procedure

PERSON OR FUNCTION:

REQUIREMENTS:

QA Manager or designated representative

- Reviews with the Test Facility Manager to ensure that inspection characteristics, witness points, and hold points meet the contract requirements, are sufficient to control the process, and are understood before testing begins.

Inspector

- Performs the surveillance functions indicated in the Plan and completes the Surveillance Record as follows:
 - Documents the results as accepted or rejected.
 - Identifies, in the Inspection Record, those surveillance functions which have already been completed, those which cannot be performed during the surveillance period represented, and then document the reasons why.
 - Initials and dates each surveillance function to validate the status indicated.
- Provides additional surveillance comments whenever necessary to clarify the status of the characteristic inspected or to provide additional information. (When additional space is required, use the Supplement Sheet shown in Figure 6-2 for this purpose).

For tests requiring surveillance over an extended period of time

- Make copies of the Surveillance Plan and use a copy to complete the Surveillance Record for each day or other logical surveillance period for which the inspection is performed. The completed Surveillance Plan/Records for each time period that the surveillance was performed collectively constitutes the Surveillance Record for that test.

Final surveillance for each test

- Perform final surveillance for each test to verify that all inspection characteristics have been documented and resolved; and that DOE or customer requirements have been satisfied, including preparation of any documentation submittals required.

All completed Surveillance Plans

- Submit the completed Surveillance Plan to the QA Manager for final review and sign-off.

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QP-6 : Surveillance of the CMS HTPT Facility Activities

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Nonconformances

PERSON OR FUNCTION:	REQUIREMENTS:
Inspector	<ol style="list-style-type: none">1. Report all nonconformances detected to the Test Facility Manager and the QA Manager.2. Address any characteristics identified as "Unacceptable" to verify one of the following:<ol style="list-style-type: none">a. Adjustment, Repair, Retest, or Rejectb. Modification or Engineering Acceptance in accordance with the approved disposition by the Project Manager.3. Expand the Surveillance Plan to identify any re-inspection of characteristics that were found to be nonconforming.<ol style="list-style-type: none">a. Document by adding a re-inspection line item to the Plan and identify the number of the characteristic re-inspected.b. List the identification number of any reports issued in conjunction with the inspection of the characteristic in the comments section corresponding to the re-inspection characteristic.c. Refer to Figure 6-3 for an example of completed Surveillance Plan and Record, using a hypothetical plan.<p>NOTE: This example only illustrates the use of the form and does not represent a complete Surveillance Plan.)</p>

Records

PERSON OR FUNCTION:	REQUIREMENTS:
QA Manager or designee	<ol style="list-style-type: none">1. Reviews all completed Surveillance Records for the Project.2. Consolidates the records package with the other records for the Project.3. Defines the records package system to assure proper maintenance or turnover, as required.

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Surveillance Plan and Record								
Plan Page: ___ of ___			Plan Revision Number / Date: _____ / _____					
Project: _____			Test Identifier: _____					
Project Number: _____			Date(s) of Surveillance: _____					
Specification/Drawings: _____			QA Manager Surveillance Record Final Approval: _____					
Surveillance Plan				Surveillance Record				
No.	Inspection Characteristics	Criteria	Function			Frequency N/C	Initials A/R/ Date	Inspection Comments*
			V	W	H			

Code Key:

V = Verify	N/C = N: Not checked during this period—see comments for details, or
W = Witness	C: Inspection function completed—see previous Surveillance Plan/Record.
H = Hold	A/R = A: Accept, or R: Reject

* If more space is needed to record Surveillance comments, use the Surveillance Plan and Record Supplement Sheet which follows.

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FIGURE 6-1. SURVEILLANCE PLAN AND RECORD

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Surveillance Plan and Record Supplement Sheet	
Page # _____	Project Number: _____
Date: _____	Project: _____
No. *	Surveillance Comments

• Use the same number as the Surveillance Plan numbered item for which you're recording comments.

FIGURE 6-2. SURVEILLANCE PLAN AND RECORD SUPPLEMENT SHEET

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Surveillance Plan and Record

Plan Page: 11 of 18

Plan Revision Number/Date: Rev. 3 / 2-3-93

Project: METC

Test Identifier: Task 3.1.2.1

Project Number: DE-AC21-92 MC 29120

Date(s) of Surveillance: 3-15-93

Specification/Drawings: _____

QA Manager Surveillance Record Final Approval: _____

Surveillance Plan					Surveillance Record			
No.	Inspection Characteristics	Criteria	Function V W H		Frequency	N/C	Initials A/R Date	Inspection Comments
1	Feedstock Preparation							
	• Personal safety	per S&H plan		Å			A	Full protective clothing & respirator used
	• Soil mixing	40 min.		Å			A	Mixing process lasted 95 min.
	• Sample collection	representative		Å			A	4 samples taken at different locations in feedstock

000020

3-15-93

Code Key:
 V = Verify N/C = N: Not checked during this period — see comments for details, or
 W = Witness C: Inspection function completed — see previous Surveillance Plan/Record.
 H = Hold A/R = A: Accept, or R: Reject

• If more space is needed to record Surveillance comments, use the Surveillance Plan and Record Supplement Sheet which follows.

QP-6: Surveillance of the CMS HTPPT Activities

Figure 6-3 EXAMPLE OF COMPLETED SURVEILLANCE PLAN AND RECORD—PAGE 1 OF 2

Surveillance Plan and Record

Plan Page: 12 of 18

Plan Revision Number/Date: Rev. 3 / 2-3-93

Project: METC

Test Identifier: Task 3.1.2.2

Project Number: DE-AC21-92 MC 29120

Date(s) of Surveillance: 3-21-93

Specification/Drawings: _____

QA Manager Surveillance Record Final Approval: _____

Surveillance Plan				Surveillance Record		
Item	Description	Reference	Frequency	Result	Comments	
2	Product sample collection • Personal safety	METC S&H plan glasses/ coat/shoes	2 times during test	R	Heat protective coat not donned	
	• Sample labeling	per Fig. 3.1 in QA plan		A		

Code Key:
 V = Verify N/C = N: Not checked during this period — see comments for details, or
 W = Witness C: Inspection function completed — see previous Surveillance Plan/Record.
 H = Hold A/R = A: Accept, or R: Reject

• If more space is needed to record Surveillance comments, use the Surveillance Plan and Record Supplement Sheet which follows.

Figure 6-3 EXAMPLE OF COMPLETED SURVEILLANCE PLAN AND RECORD—PAGE 2 OF 2

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page 6.11

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Engineering Quality Assurance Plan

***Quality Procedure #7: Evaluation of CMS Process Performance in the
HTPT Facility***

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QP-7: Evaluation of CMS Process Performance in the HTPT Facility

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Purpose and Scope

Purpose—The purpose of this procedure is to provide a method to demonstrate that the processes satisfy the tasks for which they have been designed.

Scope—This procedure applies to data quality indicators to be applied to two categories of sample measurements that will be made during this project. These categories are:

- a) Weights of influent and effluent materials and the time to accumulate a known amount of these materials; and
- b) Determination of the organic, inorganic, and radionuclide concentrations in the influent and effluent streams, by analyzing the surrogate materials.

All sample collections will be performed in accordance with established sampling methods.

Definitions

Accuracy	A determination of how close the measurement is to the true value. Will be assessed using matrix spiked samples (sample with a known value).
Comparability	The confidence with which one data set can be compared to another data set measuring the same property.
Completeness	A measure of the amount of valid data obtained from a measurement system, compared with the amount that was expected to be obtained under correct normal conditions.
Data Quality Indicators	Expressed in terms of precision, accuracy, completeness, and comparability—each defined within this list.
Precision	The degree to which a measurement is reproducible. Can be assessed by measuring duplicate samples.

Responsibilities

The Quality Assurance Manager (QAM) is responsible for the implementation of this procedure.

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QP-7: Evaluation of CMS Process Performance in the HTPT Facility

1723

Soil Mixing Validation

PERSON OR FUNCTION:

REQUIREMENTS:

QAM or designee

1. Assure that the proper ratios of components are being mixed.
2. Sample the mixed feedstock and transmit sample for analysis.

Feedstock Flow Measurement

The batch tank weighing system uses a weight controller in conjunction with three strain gauge load cells.

PERSON OR FUNCTION:

REQUIREMENTS:

QAM

1. Initially calibrate the system by suspending known weights, traceable to the National Institute of Standards and Technology (NIST), from the tank itself.
2. Check for zero, span, and linearity by varying the weights attached in increments of 3000 lbs. from 0 to 9000 lbs.
3. Check the calibration of the weighing system at the beginning of each test when the known amounts of batch material are added to the tank, and check the output to see if it agrees with the weight added.
4. If the system is greater than 2%, the system is recalibrated.
5. Document all calibration findings and results.

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QP-7: Evaluation of CMS Process Performance in the HTPT Facility

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Scrubber Water Flow Measurement

PERSON OR FUNCTION:

REQUIREMENTS:

Test crew members

1. Measure the time to fill a 55-gallon drum with a stop watch.
2. After filling, seal the drum.
3. Thirty minutes later, fill a second 55-gallon drum, and measure the time with a stop watch.
4. After filling, seal the drum.
5. Weigh each drum using a crane scale.
6. Calculate and document the flow rate: it is the quotient of net weight and time to fill. The derived flow rate computation's objective will be within plus/minus 5%.

Cullet Cart Water Flow Measurement

PERSON OR FUNCTION:

REQUIREMENTS:

Test crew members

1. Measure the time to fill a 10-gallon container with a stop watch.
2. After filling, seal the container.
3. Thirty minutes later, fill a second 10-gallon container, and measure the time with a stop watch.
4. After filling, seal the container.
5. Weigh each container using a scale.
6. Calculate and document the flow rate: it is the quotient of net weight and time to fill. The derived flow rate computation's objective will be within plus/minus 5%.

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QP-7: Evaluation of CMS Process Performance in the HTPT Facility

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Vitrified Product

PERSON OR FUNCTION:

REQUIREMENTS:

Test crew members

1. Drain cullet cart.
2. Sample cullet cart contents.
3. Transmit sample for analysis.
4. Weigh cullet cart contents.
5. Document all results..

Effluent Gases

PERSON OR FUNCTION:

REQUIREMENTS:

QAM or Designee

1. Monitor and document subcontractor's sampling procedure.

Sample Control/Chain of Custody

PERSON OR FUNCTION:

REQUIREMENTS:

QAM

1. Monitor and document the preparation of chain-of-custody documentation.

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Engineering Quality Assurance Plan

Quality Procedure #8 Procurement and Purchasing Control

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QP-8: Procurement and Purchasing Control

Purpose and Scope

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Purpose—The purpose of this procedure is to establish a uniform method to control procurement, purchasing, and inspection.

Scope—This procedure applies to:

- Procurement of construction, professional, and manufacturing services;
- Purchasing of materials, supplies, and equipment;
- Requesting quotations for materials and equipment;
- Evaluating requests for proposals and quotations; and
- Receiving of purchased items.

References

This procedure was developed in accordance with objectives stated in the *Vortec Procedures Manual (VPM)*, Section 3: Procurement and Purchasing.

Definitions

Purchase Requisition (PR)	The document used internally to request the purchase of materials, supplies, equipment, engineering support, subcontractors.
PR Number	Unique number assigned to purchase requisitions.
Purchase Order (PO)	The document used for purchasing materials, supplies, or equipment.
PO Number	A unique number assigned to each Purchase Order. PO number is based on the contract number it supports.
PO Register	A structured log sheet used to record all purchasing actions.
Tax Exempt Form	Form used to exempt Vortec Corporation from payment of state sales tax on purchases made under Government contracts or manufactured items.

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Definitions (cont'd)

Request for Quote (RFQ)	A document issued to potential material and equipment suppliers as a request for price data. The document contains a detailed description of the item(s) required and conditions for quoting. RFQs do not obligate the Vortec Corporation to a purchase.
Quotation	A contractor's offer in response to an RFQ.
RFQ Log	A structured log sheet used to record all RFQ actions.
RFQ Number	A unique number assigned to each RFQ.
Source Evaluation and Selection Board (SESB)	Personnel appointed by the Program Manager to evaluate and select a contractor or supplier based on their proposals and quotations.
Short List	A list developed as the result of the evaluation process that identifies the most technically qualified firms in descending order of qualification.
Receiving	The process of counting item quantities and examining their physical characteristics for shipping damage and for conformance with the requirements of the procurement documents.
Material Receiving Report	A structured form used to record the receipt and acceptability of purchased items.
Disposition Inquiry	A structured form used to advise the purchasing agent of receipts which have incorrect price counts, damaged material, or other supplier or carrier discrepancies.
Procurement Document	Purchase Order, contract, specification, or other descriptive document used to procure items of supply.
Receiving Coordinator	The designated person responsible for determining acceptability of all purchased items.

QP-8: Procurement and Purchasing Control

1723

Responsibilities

<i>WHO</i>	<i>DOES WHAT</i>
QA Manager or designated representative	<ul style="list-style-type: none">• Prepares procurement procedures• Ensures that procurement procedures are implemented.
Procurement Specialist	<ul style="list-style-type: none">• Ensures that procurement is accomplished in accordance with established procedures.• Maintains logs of procurement activities.
Cost Account Manager	<ul style="list-style-type: none">• Ensures that procurements are within the scope of the contract.• Approves Purchase Requisitions.
Accounting Specialist	<ul style="list-style-type: none">• Prepares and issues Purchase Orders• Maintains cost records of procurements.
Program Manager	<ul style="list-style-type: none">• Approves Purchase Orders
Operations Manager	<ul style="list-style-type: none">• Approves Purchase Orders.
Vortec Corporate Officer	<ul style="list-style-type: none">• Approves Purchase Orders exceeding \$10,000.

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Procurement and Purchasing Procedures

<i>WHO</i>	<i>DOES WHAT</i>
Requisitioner - Vortec employee or subcontractor requiring material, supplies, or equipment	<ol style="list-style-type: none">1. Completes Request for Quotations (RFQs) seeking pricing information on supplies, material, or equipment.2. Forwards RFQs along with a list of potential suppliers to the Cost Account Manager (CAM).3. Prepares purchase requisitions (PRs) using Vortec's PR Form (Example Figure 8-1).4. Prepares Request for Proposals.5. Forwards PRs to the Procurement Specialist.6. Participates, as required, on Source Evaluation and Selection Board (SESB) for review of Quotations and Proposals and Selection of Vendors.
Procurement Specialist	<ol style="list-style-type: none">1. Ensures that RFQs and PRs contain adequate information.2. Assigns numbers to and logs RFQ, RFP, and PR activities.3. Forwards RFQs to suppliers.4. Notifies requisitioner of vendor selection of SESB.5. Notifies successful bidder.6. Notifies bidders who were not selected by the SESB.7. Signs PR and forwards PR to Cost Account Manager.8. Logs date/time that Quotations and Proposals are received and forwards Quotations and Proposals to SESB.9. Follow up on any supplier who does not respond to RFQs to determine if they will respond.10. Sends copy of PR to Property Manager.11. Contacts vendor to assure that PO was received and resolve and questions.12. Tracks progress of and expedites purchase order.

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QP-8: Procurement and Purchasing Control

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WHO	DOES WHAT
Procurement Specialist (cont'd)	<ol style="list-style-type: none">13. Prepares Purchase Order (PO) using Vortec's PO Form (Figure 8-2) from PR.14. Forwards PO to Program Manager for Approval.15. Assigns PO Number to approved POs and distributes PO to vendor.16. Distributes copy of PO to Accounting Specialist.17. Checks the packing slip for items received against the PO to ensure that all items purchased have been delivered.18. Initiates corrective action with vendor or carrier for discrepancies noted by Receiving Coordinator on the Material Receiving Report (MRR) and the Disposition Inquiry.19. Checks invoices against MRR, Disposition Inquiry, and PO and approves invoices.
Cost Account Manager	<ol style="list-style-type: none">1. Reviews RFQs, RFPs, and PRs to ensure that request is within scope of contract, all applicable codes are included, and that standards and quality requirements are met.2. Signs PRs and forwards PRs to Accounting Specialist.3. Participates on SESB, as required, for review of Quotations and Proposals and Selection of Vendors.4. Forwards RFQs with any comments to Procurement Specialist
Accounting Specialist	<ol style="list-style-type: none">1. Receives approved PO from Procurement Specialist.2. Enters PO into accounting system3. Receives invoices from vendor.4. Forwards copy of invoice to Procurement Specialist for approval.5. Forwards approved invoices to Finance Officer for payment.
Operations Manager	<ol style="list-style-type: none">1. Reviews and approves PRs and forwards PRs to Program Manager for approval.2. Assigns Vortec Personnel to SESB and designates an SESB Chairman.

QP-8: Procurement and Purchasing Control

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WHO	DOES WHAT
Program Manager	<ol style="list-style-type: none">1. Reviews PRs/POs to ensure that all requirements of contract are satisfied, PRs/POs have been prepared in accordance with Vortec's procedures, and all required signatures are in place.2. Signs PR/PO indicating his/her approval and forwards PR to Procurement Specialist and PO to Accounting Specialist.3. Participates on SESB for review of Quotations and Proposals and selection of vendors, or reviews findings of SESB.
QA Manager	<ol style="list-style-type: none">1. Develops procurement procedures.2. Conducts periodic audits to ensure that established procurement procedures are being followed.
Engineering Manager	<ol style="list-style-type: none">1. Participates in SESB meetings as required.
Corporate Officer	<ol style="list-style-type: none">1. Approves POs with value in excess of \$10,000.
Source Evaluation and Selection Board (SESB)	<ol style="list-style-type: none">1. Review RFQs to ensure that they understand the requirements to which the proposers are responding.2. Review the Quotations and Proposals received relative to the requirements identified in the RFQs.3. Grade the Quotations and Proposals recording findings on Vortec's Source Evaluation and Selection Form.4. The SESB Chairman will generate a short list based on the results of the evaluation.5. After completion of the short list, the SESB Chairman will determine the type of interview, if necessary, to be conducted with the firms on the short list.6. Conduct interviews of firms on the short list.7. Make a final selection of the vendor/firm as supplier.8. Notify the Procurement Specialist of the selected supplier.

000083

QP-8: Procurement and Purchasing Control

1723

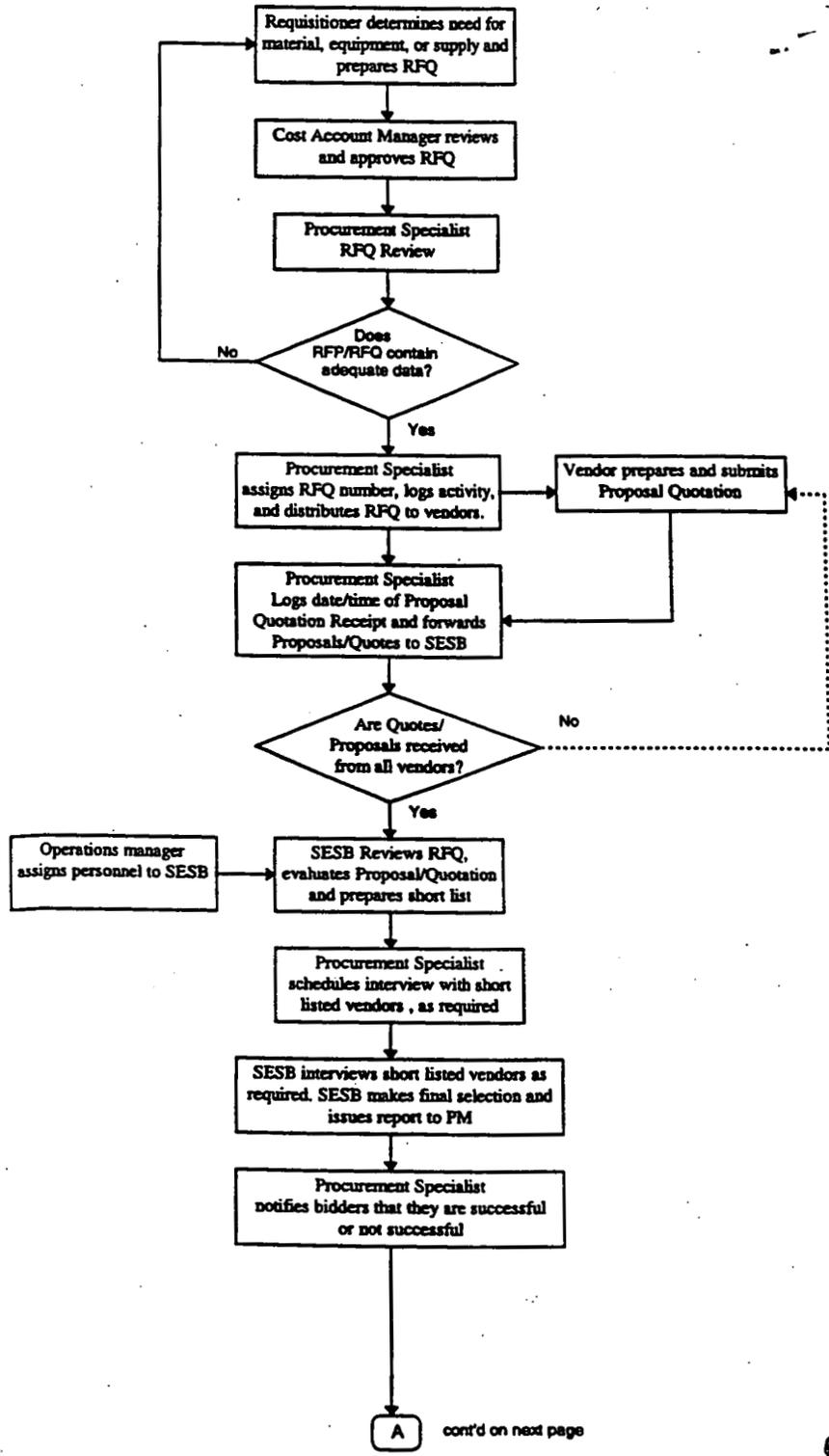
<i>WHO</i>	<i>DOES WHAT</i>
Receiving Coordinator	<ol style="list-style-type: none">1. Logs the receipt of delivered items on a Materials Receiving Report. (MRR).2. Checks the packing slip to verify that agreement with the packing slip and contents of the package and inspects the delivered items for damage or other supplier or carrier discrepancies..4. If no discrepancies exist, acceptance of the items are noted on the MRR.5. If discrepancies exist, the discrepancies are described in detail on a Disposition Inquiry form.6. Forwards the MRR, Disposition Inquiry form, and a copy of the packing slip to the Procurement Specialist.
Property Manager	<ol style="list-style-type: none">1. Enters items into appropriate Property Management System.

000084

QP-8: Procurement and Purchasing Control

Procurement and Purchasing Procedures — Flow Diagram

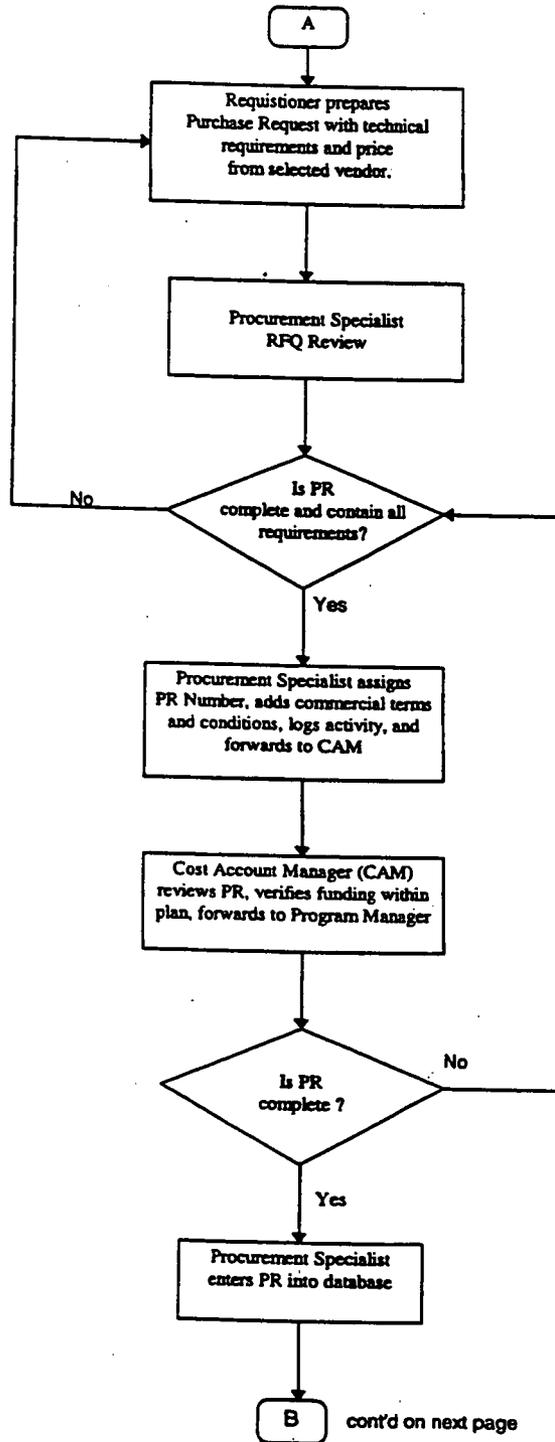
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000085

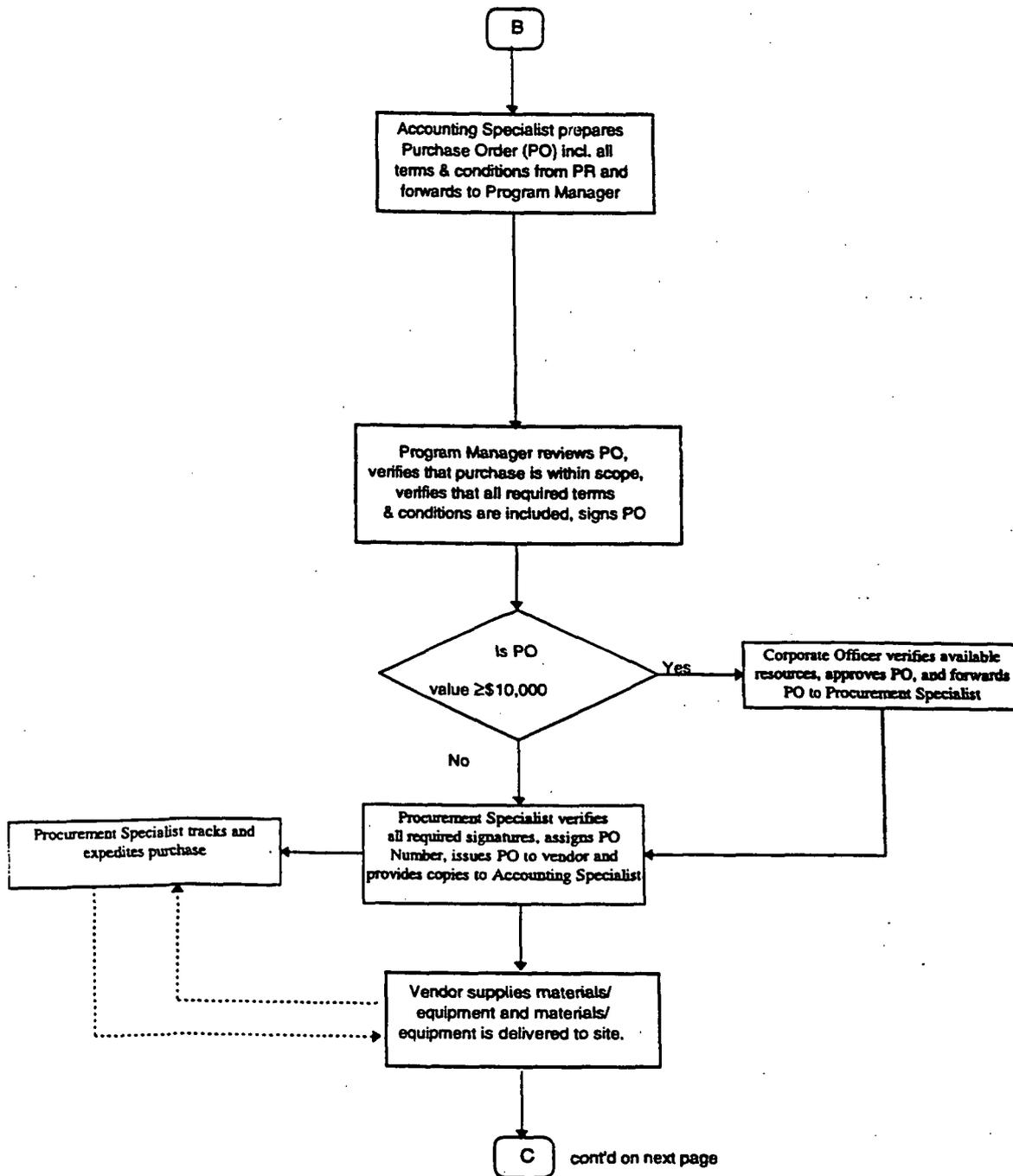
Procurement and Purchasing Procedures — Flow Diagram (cont'd)



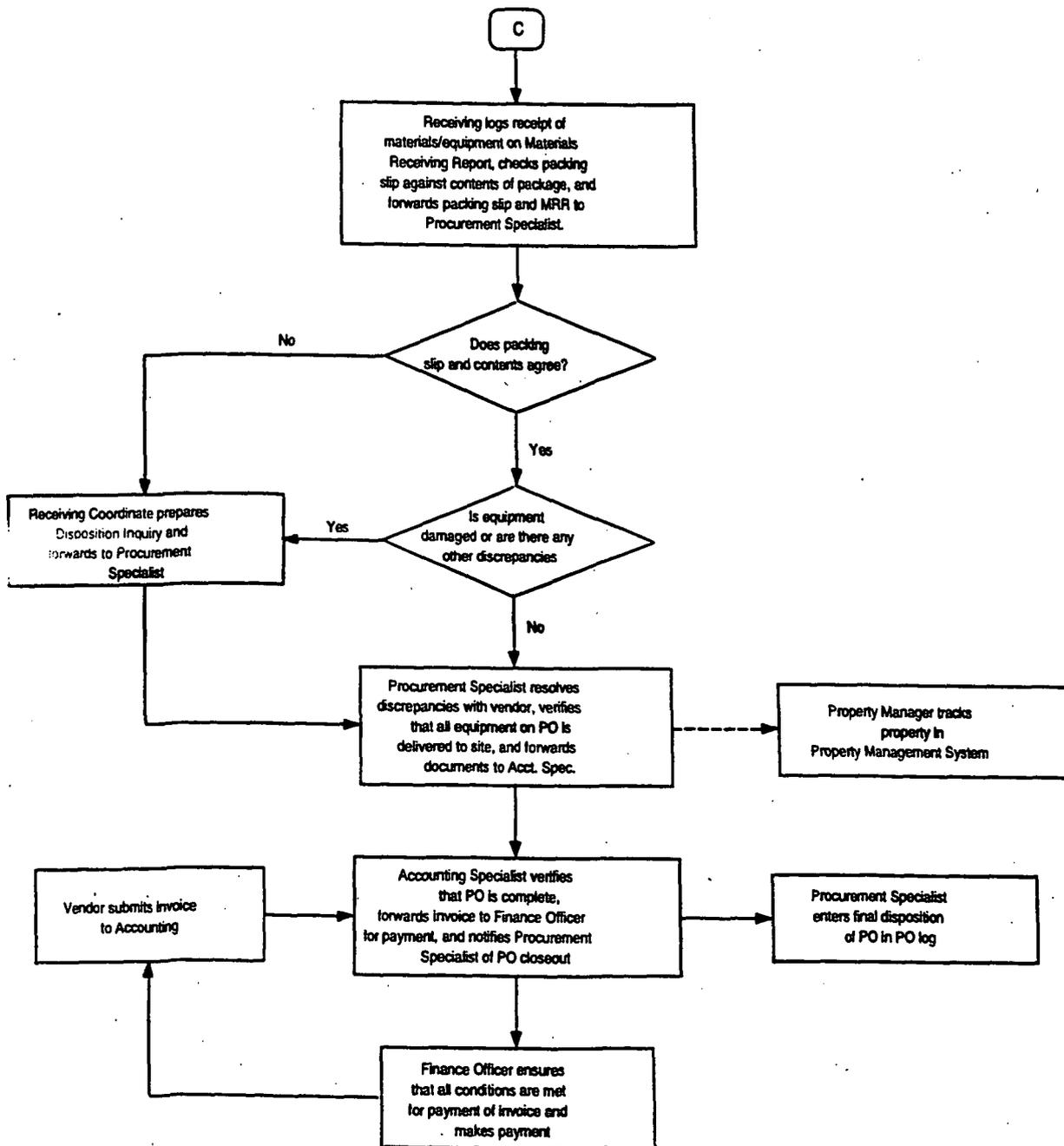
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000086

Procurement and Purchasing Procedures — Flow Diagram (cont'd)



Procurement and Purchasing Procedures — Flow Diagram (cont'd)





1723

Engineering Quality Assurance Plan

Quality Procedure #9: Government Contract Plant Receiving, Inspection, and Maintenance Surveillance

000091

**QP-9: Government Contract Plant Receiving, Inspection, & Maintenance
Surveillance**

1723

Purpose and Scope

Purpose — This procedure describes the surveillance activities which shall be performed by Vortec personnel to verify that appropriate receipt, inspection, and maintenance of materials, items and components in storage are being performed.

Scope — This procedure shall apply to materials, items and/or components received and/or stored by the Contractor while performing work at the project site.

Definitions

Unique Requirements	Material Test Reports, ASME Code Data Forms, storage requirements, storage maintenance requirements, Instruction Manuals or other like items required by Purchase Order or Specification.
DMRL	Daily Material Received Log
MISL	Maintenance in Storage Log

References

- Applicable Purchase Order and/or Specification
- Applicable Codes and Standards
- Supplier's Manuals and/or Recommendations

Responsibilities

- | | |
|---------------------------------|--|
| Vortec Corporation
Personnel | <ol style="list-style-type: none">1. Perform surveillance checks of material control as specified by this procedure.2. Document surveillance activities by utilizing the example surveillance checklists (Figures 9-1 and 9-2). |
|---------------------------------|--|

000092

**QP-9: Government Contract Plant Receiving, Inspection, & Maintenance
Surveillance**

1723

Procedures

<i>Who</i>	<i>Does What</i>
Receiving Surveillance	<ol style="list-style-type: none">1. Review the "Daily Material Received Log" to determine which items shall be reviewed.2. Upon determining which item(s) shall be verified, the purchase order and applicable specification and standards shall be reviewed for specific requirements.3. Make note of any unique storage requirements.4. The requirements found in either 2 or 3 shall be documented in the "Receiving Inspection Checklist" (Figure 9-1) prior to the verification. The documentation required as indicated on the checklist (Items "A") shall also be examined to verify that the information on the document(s) is correct.5. Verification of acceptance shall be achieved either in conjunction with the Contractor's Receiving Inspector or by means of audit of Contractors' receiving reports and actual visual examination.6. Nonconformance shall be handled in accordance with Procedure QP-11.

000093

**QP-9: Government Contract Plant Receiving, Inspection, & Maintenance
Surveillance**

1723

Storage Surveillance

1. Tour those areas which have been designated as storage areas.
 2. During this tour, select a sampling of items and review the storage requirements (Levels A, B, C or D) of the purchase order (if applicable) and the technical specifications for each item.
 3. After the item storage requirements have been determined, the requirements for the storage area shall also be determined and noted.
 4. Verify that the item(s) and the storage areas are in compliance with the requirements of the contract, purchase order, and supplier's specification.
 5. The surveillance shall be documented in a "Storage Area Checklist" and "Receiving Procedure QDP-211-9-001".
 6. Nonconformance shall be handled in accordance with Procedure QP-11.
-

000094

**QP-9: Government Contract Plant Receiving, Inspection, & Maintenance
Surveillance**

1723

Storage Requirements

Items shall be classified based upon contract specifications, procurement documents, and/or supplier recommendations. Conflicts should be resolved with the Engineer.

1. Level A - Items classified to Level A are those that are sensitive to environmental conditions and require special measures for protection from one or more of the following effects: sudden temperature changes, humidity, physical damage, and airborne contamination (e.g. rain, snow, and dirt).
2. Level B - Items classified to Level B are those that are less sensitive to environmental conditions than Level A items, but require indoor storage for protection from normal airborne contaminants (e.g. rain, snow and dirt) and protection from physical damage
3. Level C - Items classified to level C are less sensitive to environmental conditions than Level B items, but require protection from physical damage as well as adequate tarping or covering for protection from airborne contamination (e.g. rain, snow, dust and dirt).
4. Level D - Items classified to Level D are less sensitive to the environment conditions than Level C items, can be stored outdoors, and uncovered, but require protection from physical damage.

000095

QP-9: Government Contract Plant Receiving, Inspection, & Maintenance Surveillance

1723

Figure 9-1. Receiving/Inspection Checklist (Example)

ortec Corporation		Receiving / Inspection Checklist			
Section 1. Receiving Checklist		Contract No.:			
P. O. No.:		ID/Stock No.:			
Manufacturer:		Vendor:			
Specification No.:		Inspection Report No.:			
Property Tag No.:		Quantity:			
Item Description:					
Storage Requirements:		Level 'A'	Level 'B'	Level 'C'	Level 'D'
Special Handling/Storage and/or Maintenance Requirements: Yes <input type="checkbox"/> No <input type="checkbox"/>					
Signature:		Date:			
Section 2. Inspection Checklist					
(A) VISUAL EXAMINATION		Reqd	Sat/Unsat	Comments	
Checklist Item		Y/N	S/U		
A1 Evidence of Moisture					
A2 Fastener Type					
A3 Grease/Oil Fittings					
A4 Loose, Missing, Binding Parts					
A5 Position of Indicator/Actuator					
A6 Properly Sealed/Protected					
A7 Internal Surface/Proper Preservative					
A8 External Surface/Proper Preservative					
A9 Workmanship					
A10 Oil Level					
OTHER:					
A11					
A12					
A13					
(B) MANUFACTURERS' MARKINGS		Reqd	Sat/Unsat	Comments	
Item Checked		Y/N	S/U		
B1 Electrical Rating/Name-Plate Data					
B2 Press Rating/Temp. Range					
B3 Nameplate Data					
B4 Material Type					
B5 Motor Size					
B6 Contract Marking Requirements					
OTHER:					
B7					
B8					
B9					
B10					
Signature:		Date:			
Attach additional sheets if required					
Form QDP9-001					

000096



1723

Engineering Quality Assurance Plan

***Quality Procedure #10: Performing Construction & Installation Surveillance
Activities at Government Demonstration Plants***

000098

**QP-10: Performing Construction & Installation Surveillance Activities at
Government Demonstration Plants**

Purpose and Scope

Purpose — This procedure provides instructions for performing and documenting Vortec Corporation surveillance of Contractor activities at Government Demonstration Plants.

Scope — This procedure applies to all site surveillance performed by Vortec Corporation personnel at the project site.

Definitions

Contractor	An organization assigned to perform a specific function or service with respect to site activities.
Contractor Work/Test Schedule	A planned or projected series of events or activities submitted by a Contractor(s) or Subcontractor(s) which identify construction or test activities to be performed within a specific time span.
Detailed Surveillance Checklist (DSC)	A Vortec document identifying specific surveillance activities and attributes to be sampled and/or verified during the performance of surveillance activities.
Procedure	Document describing how an activity is to be performed, including acceptance/rejection criteria.
Specification	A concise statement of requirements to be satisfied by a product, material, process or service during design, fabrication, construction, erection or testing.
Surveillance	A review, observations, or inspection for the purpose of verifying that Contractor's construction and quality activities have been accomplished as specified.

Responsibilities

Construction Manager	Periodically monitor, verify and document Contractor's activities in accordance with the procedure.
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000099

QP-10: Performing Construction & Installation Surveillance Activities at Government Demonstration Plants

Instructions

1723

Surveillance Activity Requirements

1. Surveillance activities shall consider the relative importance of activities, degree of previous coverage and consistency of overall coverage on total site quality-related functions. Quantities, frequencies, and priorities of surveillance will be established by the QAM and Construction Manager based on the above logic and the following considerations:
 - a. Construction Surveillance/Test Schedules.
 - b. Past surveillance activity results.
 - c. Construction Manager input.
 - d. Unique construction activities which allow only one opportunity for surveillance, test, and/or verification.
 - e. Frequencies of surveillance will be determined by past performance. In general, areas/activities found to be deficient or nonconforming are documented at more frequent intervals. Conversely, areas/activities found satisfactory will require less documentation.
 - f. Attempts shall be made to document each Contractor's activities regardless of the performance of other Contractors in similar areas. Additionally, efforts shall be made to document Contractors at the onset of their activities so as to identify and resolve potential or actual problem areas.

Preliminary Review and Preparation

Section I

1. Review, become familiar with, and utilize the specific Detailed Surveillance Checklists.
 2. Determine the following:
 - a. Reference Codes and Standards.
 - b. Applicable Specifications, Contractor Procedures and Drawings.
-

000100

**QP-10: Performing Construction & Installation Surveillance Activities at
Government Demonstration Plants**

1723

**Performance of Surveillance
Activities**

Section II

1. In general, surveillance will be performed simultaneously with the actual activities in a particular area of interest. Where conflicting schedules or surveillance priorities preclude observation of actual efforts, a surveillance of the Contractor's records and inspection verification documentation may be substituted.
2. Where surveillance is conducted by either observation of the actual physical activities in the field or by review of documentation packages, a sampling technique shall be utilized. This sampling should be a random selection and have a sufficient quantity to establish a representative sample.
3. Surveillance observations of physical activities or documentation review shall be accomplished by utilizing the attributes of the applicable DSC's. These attributes shall be reviewed and/or examined as necessary to determine inconsistencies, nonconforming conditions, or conformance to the controls and/or procedural requirements identified.

**Documentation of
Surveillance Activities**

Section III

1. DSC's shall be used to document surveillance activities.
2. Recording of information on DSC's shall be accomplished using permanent type markers.
3. Changes to entries on DSC's shall be made by drawing a single line through the entry and annotating the lined out area with the originator's initials and date.
4. Utilizing data obtained from the preliminary review and preparation, complete Section I of the DSC. Assure that all data is precise and accurate. Assure that all items checked are completely identified.
5. Complete Section II of the DSC for the surveillance activity as follows:
 - a. Check either "yes" or "no" for each attribute observed.
 - b. Where attributes are not checked during the surveillance, write "N/C" in the yes/no column.
 - c. Where attributes are not applicable for the specific surveillance, write "N/A" in the yes/no column.

000101

**QP-10: Performing Construction & Installation Surveillance Activities at
Government Demonstration Plants**

1723

Documentation of
Surveillance Activities
(cont'd)

- d. Items marked "No" represent conditions nonconforming to requirements and will be further explained in Section III, Comments.
 - e. Where additional specific surveillance attributes exist and are not covered within the DSC, utilize the comment section to document such items. Where additional space is needed, supplementary sheets shall be used.
6. Complete Section III of the DSC for the specific surveillance as follows:
- a. Where items marked "No" are noted as stated in Section III No. 5, identify the specific attribute by referencing the applicable number or letter. When giving details, be precise and accurate to assure complete understanding of the existing condition.
 - b. In addition to any additional attributes per Section III No. 5a, a statement shall be made to indicate that the surveillance is "Closed" based on one of the following conditions:
 - 1.) Condition I - All areas were found to be satisfactory.
 - 2.) Condition II - Nonconforming conditions were identified and documented by the Owner/Contractor Quality Group. The DSC shall remain open until an acceptable disposition is verified.
 - 3.) Condition III - Nonconforming conditions were identified. The processing of nonconforming conditions shall be in accordance with Procedure No. QP-11.
7. Upon completion of the DSC Section I, II, and III, the originator shall affix his signature and title in the comments section.
8. Completed DSC's shall be filed upon completion of the surveillance.

000102



1723

Engineering Quality Assurance Plan

**Quality Procedure #11: Control of Non-Conforming Conditions for
Government Contracts**

000103

QP-11: Control of Non-Conforming Conditions for Government Contracts

1723

Purpose and Scope

Purpose — This procedure establishes controls for processing nonconformance in contractor quality control activities and status tracking of nonconformance documentation generated by Vortec Corporation personnel for Government Contracts.

Scope — This procedure includes, but is not limited to, surveillance over contractor quality control activities.

Definitions

Non-conformance Items and/or activities which fail to conform to applicable established codes, specifications, or standards.

Responsibilities

Vortec Construction Manager

1. Identify and document non-conforming Contractor's Quality Control (CQC) activities on a Deficiency Surveillance Checklist (DSC).
2. Transmit a copy of completed DSC to CQC.
3. Close out DSC upon correction action by CQC.
4. Initiate Deficiency Report (DR) when the DSC is not promptly addressed by Contractor Quality Control.
5. Transmit DR to Program Manager for disposition.
6. Close out DRs upon receiving/verifying disposition.
7. Develop and maintain status tracking system for DRs.

Program Manager or Designee

1. Signature authority for approval of disposition of non-conforming conditions.

000104

QP-11: Control of Non-Conforming Conditions for Government Contracts

Procedures

1723

WHO

DOES WHAT

Vortec Construction
Manager (CM) or CM
Designated Inspector

1. Document activities not conforming to requirements established in applicable procedures, specifications, codes and/or standards on a Detailed Surveillance Checklists (DSCs).
2. DSCs shall be issued and controlled according to Procedure No. QP-10.
3. Upon completing the DSC the Inspector shall sign, date and transmit a copy of the DSC to Contractor Quality Control and Vortec CM.
4. If after seven (7) days from DSC transmittal no corrective action has been taken by Contractor Quality Control, a Deficiency Report (DR) shall be generated.
5. Upon completion of the DR, a unique identification number will be assigned to the DR and the DR number into the Deficiency Report Log (DRL) along with appropriate entries. The status of "open" deficiency reports will be documented monthly on the "Monthly "Open" Deficiency Report Log".
6. CM shall transmit a copy of the DR to the CQC and Vortec Program Manager.
7. Upon completion of disposition, the CM will record corrective action on the DR and transmit the DR to the CQC and Vortec Program Manager.
8. Upon final close-out of DR the Vortec Program Manager shall sign and date the DR and file the DR.

000105

QP-11: Control of Non-Conforming Conditions for Government Contracts

1723

ortec Corporation		DEFICIENCY REPORT (DR)													
ORIGINATOR															
WORK ORDER: _____	DR NO.: _____														
CONTRACTOR: _____	DSC NO.: _____														
PART / ASSY NO.: _____	ORIGINATOR: _____														
PART / ASSY NAME: _____	DATE: _____														
SPEC./DWG. NO.: _____	REFERENCE DOCUMENT: _____														
QUANTITY: _____	PROJECT: _____														
SYSTEM: _____															
IDENTIFICATION: _____															
MATERIAL: _____															
PROCEDURE: _____															
LOCATION: _____															
DEFICIENCY DESCRIPTION: _____															
REQUIREMENT: _____															
QUALITY / MRB / HARDWARE DISPOSITION:															
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="3" style="text-align: left; padding: 2px;">OWNERSHIP</th> </tr> <tr> <td style="padding: 2px;">CO.</td> <td style="padding: 2px;">GOV</td> <td style="padding: 2px;">CUST</td> </tr> <tr> <td colspan="3" style="padding: 2px; text-align: center;">T&R</td> </tr> <tr> <td style="padding: 2px; text-align: center;">Y</td> <td colspan="2" style="padding: 2px; text-align: center;">N</td> </tr> </table>	OWNERSHIP			CO.	GOV	CUST	T&R			Y	N		USE AS IS <input type="checkbox"/>	REWORK <input type="checkbox"/>	HOLD TAG NO. _____
OWNERSHIP															
CO.	GOV	CUST													
T&R															
Y	N														
	SCRAP <input type="checkbox"/>	RETURN TO SUPPLIER <input type="checkbox"/>													
	INSPECTOR: _____	DATE: _____													
	SUPERVISOR: _____	DATE: _____													
REINSPECTION: (SAT) <input type="checkbox"/> (UNSAT) <input type="checkbox"/>															
	INSPECTOR: _____	DATE: _____													
	SUPERVISOR: _____	DATE: _____													
CORRECTIVE ACTION:															
BY: _____ POSITION: _____ DATE: _____															
CORRECTIVE ACTION IMPLEMENTED: YES <input type="checkbox"/> NO <input type="checkbox"/>															
SIGNATURE: _____ DATE: _____															
DR CLOSEOUT:															
DR CLOSEOUT COMPLETE: YES <input type="checkbox"/> NO <input type="checkbox"/>															
CONTRACTOR QUALITY CONTROL: _____ DATE: _____															
CONSTRUCTION MGR.: _____ DATE: _____															
DISTRIBUTION: _____															
Form QDP11-001															

Figure 11-1. Deficiency Report Form (Example)

000106



1723

Engineering Quality Assurance Plan

***Quality Procedure #12 : Government Contract Demonstration Plant Installation
Control***

**This document will be developed for FETC after identification of applicable
DOE Regulations by PGDP**

000109



**ortec
Corporation**

1723

Engineering Quality Assurance Plan

***Quality Procedure #13: Control of Government-Owned Property, Facilities and
Materials***

000110

QP-13: Control of Government-Owned Property, Facilities and Materials

1723

Purpose and Scope

Purpose — This procedure describes the surveillance activities which shall be performed by Vortec personnel to verify the overall accountability and control of all Government property which has been assigned to the Vortec Corporation under the terms of this contract.

Scope — This procedure is intended to assure that the Property Management Procedures that the Vortec Corporation has put in place adequately control, protect, preserve, and maintain all Government-owned property, property furnished by the Government or acquired by the contractor at Government expense in accordance with the provisions of the contract.

Definitions

Government Property Tag Number (GPTN)	A unique number assigned to an unit of property. The tag number is used to identify the property for all purposes defined in the contract.
Property Tag	A legible, permanent, conspicuous, tamper-proof label affixed to the property indicating Government ownership, contract number and GPTN.
Capital Equipment (Non-Exempt)	A unit of property generally having an acquisition cost of \$5,000.00 or more with a two year shelf life.
Non- Capital Equipment (Exempt)	A unit of property generally having an acquisition cost of less than \$5,000.00 with a two-year shelf life.
Sensitive Item	Items of property which are susceptible to being appropriated for personal use or which can be readily converted to cash. Examples are firearms, photographic equipment, binoculars, tape recorders, calculators, and power tools.
Semi-Annual Summary Report	DOE Form F 4300.3
Termination or Completion Inventories	DOE Forms SF 120 and SF 1428
Property Management Procedure	A procedure instituted by Vortec Corporation, based on referenced government regulations, by which all property and materials are accounted for during the duration of the contract.
Accessory Item	An item that facilitates or enhances the operation of plant equipment but is not essential for its operation.
Auxiliary Item	An item without which the basic unit or plant equipment cannot operate.
Material	Property that may be incorporated into or attached to a deliverable end item or that may be consumed or expended in performing a contract. It includes assemblies, components, parts, raw and processed materials, and small tools and supplies that may be consumed in normal use in performing a contract.

000111

QP-13: Control of Government-Owned Property, Facilities and Materials 1723

Plant Equipment	Personal property of a capital nature (including equipment, machine tools, test equipment, furniture, vehicles, and accessory and auxiliary items) for use in manufacturing supplies, in performing services, or for any administrative or general plant purposes. It does not include special tooling or special test equipment.
Government Property	All property owned by or leased to the Government or acquired by the Government under the terms of a contract or subcontract. It includes Government-furnished property.
Government-Furnished Property	Property in the possession of or directly acquired by the Government and subsequently made available to a Contractor or Subcontractor.
Subcontractor-Acquired Property	Property acquired or otherwise provided by the Subcontractor for performing a subcontract and to which the Government has title.
Property	All property, both real and personal. It includes facilities, material, special tooling, special test equipment, and Government Agency peculiar property.
Real Property	Land and rights in land, ground improvements, utility distribution systems, and buildings and other structures. It does not include foundations and other work necessary for installing special tooling, special test equipment, or plant equipment.
Special Test Equipment	Means either single or multipurpose integrated test units engineered, designed, fabricated, or modified to accomplish special purpose testing in performing a contract or subcontract. It consists of items or assemblies of equipment that are interconnected and interdependent so as to become a new functional entity for special testing purposes. It does not include material, special tooling, facilities (except foundations and similar improvements necessary for installing special test equipment), and plant equipment items used for general plant testing purposes.
Special Tooling	Means jigs, dies, fixtures, molds, patterns, taps, gauges, other equipment and manufacturing aids, all components of these items, and replacement of these items, which are of such a specialized nature that without substantial modification or alteration, their use is limited to development or production of particular supplies or parts thereof or to the performance of particular services. It does not include material, special test equipment, facilities (except foundations and similar improvements necessary for installing special tooling), general or special machine tools, or similar capital items.

000112

References

Applicable Procurement, Receiving and Disposition Documents.

Vortec Corporation's Contract Document Number DE-AC21-92MC29120.

"Management of Government Property in the Possession of Contractors" (FAR Subpart 45.5 and DEAR Subparts 945.5 and 917.74).

Responsibilities

<i>WHO</i>	<i>DOES WHAT</i>
Program Manager	<ol style="list-style-type: none">1. Responsible for the use, care and keeping of government owned property and materials.2. Reviews and approves all reports.3. Ensures that the property management plan is implemented and monitors compliance.4. Appoints qualified person as Property Manager.5. Approves all reports submitted to FETC.
Property Manager	<p>Oversees implementation of and compliance with the property management plan.</p> <p>Assures the maintenance of all pertinent records including but not limited to:</p> <ol style="list-style-type: none">1. Contract purchase orders and sub-contracts.2. Up-to date property lists and required inventories.3. Excess property status lists.4. Disposition and disposal records.5. Sensitive Property determinations.6. Assignments of GPTN's.7. Out-of-Plant shipments. <p>Assures the preparation, and submittal of all the required Government property documents and reports.</p>

Vortec Construction Manager	During construction phase of the contract, the Field Construction Manager: <ol data-bbox="748 357 1381 676" style="list-style-type: none">1. Oversees the receipt, inspection, and maintenance of government property in accordance with Vortec Corporation's QP-9.2. Oversees installation of property.3. Assures property tags are applied as directed by the Property Manager.4. Performs construction and installation surveillance activities in accordance with Vortec Corporation's QP-10.
Facility Manager	<ol data-bbox="748 746 1389 1027" style="list-style-type: none">1. Assures compliance with the property management plan as part of daily operations through training programs and surveillance.2. Updates any changes to property/inventory lists per property management procedures.3. Assures receipt, inspections and maintenance of all government property and materials in accordance with Vortec Corporation's QP-9.
Plant-Site Operations Personnel	<ol data-bbox="748 1104 1410 1419" style="list-style-type: none">1. Maintains all Government property in accordance with the Vortec Corporation's property management procedures.2. Maintains property and materials in proper condition in accordance with Vortec Corporation's QP-9.3. Notifies appropriate management personnel of any unusual changes in condition, location or use of property.

000114

QP-13: Control of Government-Owned Property, Facilities and Materials

1723

Procedures

<i>Who</i>	<i>Does What</i>
Vortec Corporation Personnel	<ol style="list-style-type: none">1. Performs surveillance checks to ensure that the Vortec Corporation's Property Management Procedures provide for the overall accountability and control of all Government property assigned under the contract.2. Documents surveillance activities by performing audits in the various specific areas of responsibility addressed under this Quality Assurance Plan QP-13 to assure continued compliance.
Project Manager and/or Designee's surveillance of: the acquisition, receiving and storage functions in relation to property control.	<ol style="list-style-type: none">1. Samples and Reviews a specific sequences of transactions starting with the acquisition process of the purchasing of materials and follows it through receiving process and into the storage area requirements.2. Determine if the proper policies and procedures were followed. Specifically reviews compliance with the Vortec Corporation's property management and receiving procedures.3. Make notes of all activities that are correct, and in compliance with stated procedures, as well as, all activities that are not.4. Includes in the documentation of this surveillance and any and all reasons for non-compliance observed, as well as, any suggestions/observations for improvements to current methods.5. Nonconformance shall be handled in accordance with Procedure QP-11.

000115

Program Manager and/or Designee's Surveillance of the identification of Government property as related to property control

1. Inspects and analyzes a specific sampling of Government property under the Vortec Corporation's control in the various stages of receiving, placement, storage, and disposition to ensure it has been properly identified.
 2. Determines if the proper policies, procedures and documentation were followed. Specifically reviews compliance with the Vortec Corporation's property management and receiving procedures.
 3. Make notes of all activities that are correct, and in compliance with stated procedures, as well as, all activities that are not.
 4. Includes in the documentation of this surveillance and any and all reasons for the non-compliance observed, as well as, any suggestions/observations for improvements to current methods.
 5. Nonconformance shall be handled in accordance with Procedure QP-11.
-

000116

Program Manager and/or
Designee's Surveillance of
Government Property Records as
related to property control

1. Selects and reviews a sampling of the existing property records and documentation to observe compliance with the requirements of the Vortec Corporation's property management procedures.
2. Determines if the proper policies, procedures and documentation's were followed. Specifically reviews compliance with the Vortec Corporation's property management and receiving procedures.
3. Make notes of all activities that are correct, and in compliance with stated procedures, as well as, all activities that are not.
4. Includes in the documentation of this surveillance and any and all reasons for non-compliance found, as well as, any suggestions/observations for improvements to current methods.
5. Nonconformance shall be handled in accordance with Procedure QP-11.

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