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17. SIGNATURE/DISTRIBUTION (See Approval Designator for required signatures)											
(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	Design Authority	JR Kriskovich	3-16-99	R1-56	1	1	Prj. Mgr.	JL Smalley	3-16-99	S7-12
		Design Agent									
1	1	Cog. Eng.	EJ Waldo	3-11-99	S7-12						
1	1	Cog. Mgr.	JS Schofield	3-16-99	S7-12						
1	1	QA	JS Sparks	3-12-99	S7-07						
1	1	Safety	JA Ranschau	3-16-99	S7-07						
		Env.									

18. Signature of EDT Originator J.C. Rensch 3/11/99		19. Authorized Representative for Receiving Organization Pro Brown 3/17/99		20. Design Authority/Cognizant Manager JR Kriskovich 3-16-99		21. DOE APPROVAL (if required) Ctrl No.: ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
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ENGINEERING TASK PLAN FOR ROTARY MODE CORE SAMPLING EXHAUSTERS CAM HIGH RADIATION INTERLOCK

RM BOGER

Characterization Engineering
Lockheed Martin Hanford Corporation, Richland, WA 99352
Prepared by: JC Akers, COGEMA Engineering Corporation
U.S. Department of Energy Contract DE-AC06-96RL13200

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Abstract: The Rotary Mode Core Sampling (RMCS) Exhausters will need a modification to comply with a pending change to the Authorization Basis (AB). The change will require an automatic shut down of the Exhauster if the Continuous Air Monitor (CAM) detects a high radiation level in the exhaust stack.

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1.0 INTRODUCTION

The Rotary Mode Core Sampling (RMCS) system is primarily made up of the Rotary Mode Core Sample Trucks (RMCST) and the RMCS Exhausters. During RMCS operations an Exhauster is connected to a tank riser and withdraws gases from the tank dome vapor space at approximately 200 Standard Cubic Feet per Minute (SCFM). The gases are passed through two High Efficiency Particulate Air (HEPA) filters before passing out the exhaust stack to the atmosphere. A Continuous Air Monitor (CAM) monitors the exhaust gases in the exhaust stack for beta particle and gamma radiation. The CAM has a high radiation alarm output and a detector fail alarm output. The CAM alarms are currently connected to the data logger only. The CAM alarms require operator response per procedure LMHC 1998 but no automatic functions are initiated by the CAM alarms. Currently, there are three events that can cause an automatic shut down of the Exhauster. These are, Low Tank Pressure, High/Low Stack Flow and High HEPA Filter Differential Pressure (DP).

2.0 SCOPE

The plan is to reconfigure the CAM high radiation alarm output to provide an additional automatic shut down of the Exhauster. This modification is needed because of a pending change (LMHC 1998b) to the Basis for Interim Operation (BIO, HNF 1998a). A relay will be installed to provide a separate signal for the automatic shut down circuit and separate signal to the data logger. This modification will be performed on both RMCS Exhauster B and C.

DELIVERABLES

- Formal Design Review of modification to Exhauster(s)
- Two Engineering Change Notices (ECNs), one for each Exhauster (B & C) to facilitate work package execution, installation, and testing
- Unreviewed Safety Question Determination
- Design Review Report (DRR)
- Commercial Grade Item (CGI) Dedication forms
- Acceptance Test Procedure/Operational Test Procedure (ATP/OTP)
- Acceptance Test Report/Operational Test Report (ATR/OTR)
- Acceptance for Beneficial Use (ABU) document (Partial &/or Final) completed
- Revised essential drawings (HNF 1998b)
- Updated procedures (LMHC 1998a, LMHC 1998b)

The revision of the Design Compliance Matrix (DCM) and Safety Equipment List (HNF 1998) for these modifications are within the scope of this task but will be addressed concurrently in the SEL annual update ETP (HNF 1999). The modifications defined within this ETP will be included in the revision of the DCM and SEL and, if task schedules allow, will be documented in the ABU. The intent is to review and stage the design documentation for release soon after addendum 5 is approved by DOE. This assumes that no significant changes were made to the addendum. If any significant changes were made to addendum 5 then a re-review of the design documentation may be necessary.

3.0 DESCRIPTION

3.1 PHYSICAL DESCRIPTION

The following is from the draft AB change LMHC 1998b:

“Hardware change:

As part of the reconciliation with the BIO, a new control is imposed that requires the RMCS exhauster CAM interlock to be operable and capable of shutting down the exhauster within 5 minutes after detecting high radiation levels. To comply with the new control, an equipment change must be made. As currently configured the RMCS exhauster only has automatic shutdown capability on high CAM alarms when the exhauster is operated in the “Unattended” mode. This mode is typically used when the operating crew leaves the immediate job site. Although it is physically possible to run in the “Unattended” mode when conducting active sampling operations, it is not desirable, because of other features that are present when operating in this mode. Therefore, both RMCS exhausters will be modified such that the CAM interlock will shut down the exhauster on high radiation levels any time the exhauster is operating.”

The end result of this task will be two RMCS Exhausters (B & C) that have been modified to execute an automatic shut down if the CAM detects a radiation level that exceeds the high radiation alarm set point. This modification will require the installation of an electrical relay in each Exhauster and some wiring changes. Characterization Project Operations/Interim Stabilization (CPO/IS) Maintenance personnel will perform these modifications. The National Electrical Code® (NEC® 1996) will be adhered to for this modification.

3.2 ENGINEERING TASKS

There will be one ECN, per HNF 1997c, written for each of the two RMCS Exhausters (B & C) to accomplish this modification. The two ECNs will essentially be identical. This will be done to facilitate work package preparation, installation, testing, and use of the modified Exhausters. The modification/ECNs will then undergo a Formal Design Review (FDR) due to the Safety Significant (SS) and or Safety Class (SC) function this modification will provide. Refer to Section 8.0 Safety and Authorization Basis for details on the SC determination.

A CGI form will be completed for each relay that is installed. The CGI form is needed because the relay is a commercial, off the shelf, item that is being used in a Safety related function. The relay will be the same make and model as an existing SS relay currently being used on the RMCS Exhausters. All equipment on the Exhausters will be reviewed for any safety classification changes due to the anticipated approval of LMHC 1998b.

An ATP/OTP will be written and released to test the new automatic shut down feature for each Exhauster. Also, the existing automatic shut down events will be tested to insure that the modification did not alter any SS or SC shut down function. These will be the only tests performed. A full test of every function on the Exhauster is unnecessary due to the limited scope of the proposed modification. After the test(s) have been completed an ATR/OTR will be written and released to document the tests performed on each Exhauster.

The RMCS exhauster operating procedure (LMHC 1998) and CAM calibration procedure (LMHC 1998a) will be changed to reflect the modification to the exhauster.

Any engineering support needed for the procurement of parts, changing of procedures, modification installation and testing will also be provided.

An ABU form will be completed, for each Exhauster, after successful completion of all tests and required documentation. This will be done to return the modified Exhausters to Operations and to identify the work completed, any work remaining, and documentation changes required due to the design change/configuration modification.

While the changes to the DCM and SEL are within the scope of this task the changes to those documents will be coordinated with the tasks listed in this ETP and covered under the SEL annual update ETP (HNF 1999). The annual update ETP is currently being drafted.

3.3 VERIFICATION, TECHNICAL REVIEWS AND MODIFICATION MANAGEMENT

It is the policy of Characterization Engineering (CE) that all modifications involving SC Systems, Structures, and Components (SSC) MUST undergo a formal design review. The modification will, at a minimum, alter the automatic shut down circuit of the Exhauster. This circuit contains Safety Class (SC) components. The procedures governing design verification and reviews are being changed from the present set of procedures (HNF 1997d) to a new procedure (HNF 1998e) that covers several areas of engineering. When these tasks are performed the new procedure will be in effect. The new procedure (HNF 1998e) lists the following as typical design criteria:

- a. Description of and basis for the modification
- b. Functional and operational requirements for the modification
- c. Description of existing SSC and the design baselines that are to be modified
- d. Any requirements related to interfaces with other SSC or their design baselines
- e. Applicable information from any feasibility studies that have been performed
- f. Applicable DOE orders, regulatory requirements, standards/requirements identification document (S/RID) requirements, and national consensus codes and standards

- g. Constraints (e.g., waste handling, permitting, hazard classification, process hazards, functional and physical interfaces, unreviewed safety question evaluations)
- h. Other technical considerations to assist in evaluating alternative solutions during design development (e.g., preferred technology, major assumptions, previous studies, construction considerations, ALARA, and design objectives).

The quote in Section 3.1 from LMHC 1998b will cover items a through c listed above. The current and draft revisions of the DCMs and SELs will cover the remaining design criteria items. After the two ECNs have been drafted and the design criteria listed previously has been gathered a formal design review will be conducted. The results of the formal design review will be documented in a DRR and released.

3.4 SOFTWARE DEVELOPMENT TASKS

There are no software development tasks associated with this modification.

3.5 PROCUREMENT/FABRICATION TASKS

A Material Coordinator or Buyer for Characterization Projects Operations (CPO) Production Control will order the necessary parts with a Q (Quality) inspection requirement. The procedures HNF 1997, HNF 1997a, and HNF 1998d will be followed as applicable. The parts to be ordered are commercial off the shelf items and will require no pre-purchase testing. The items to be ordered are electrical relays that are currently being used in an SS function on the RMCS Exhausters. One relay will be needed for each Exhauster for a total of two relays ordered. The very same relays are available in the CPO spare parts inventory and can be used if the parts order is delayed. The existing documentation in the manufacturer/vendor catalogs and specification sheets, for the relay, are sufficient. The mating socket for the relay is also available in CPO spare parts in quantities sufficient that precludes the need to order any additional sockets for this modification. The wire and miscellaneous hardware to complete the modification are currently available in the shop or warehouse. The parts will be/have been ordered as General Service (GS) and upgraded to SC or SS status using the CGI dedication process.

3.6 INSTALLATION TASKS

The work package preparation and scheduling will be performed by CPO Production Control personnel. The primary document defining the modification will be the ECN. CPO Maintenance personnel will perform the installation of the modification. The author of the ECN will support the installation on an as needed basis.

3.7 PRE-OPERATIONAL AND OPERATIONAL TESTS (TEST AND EVALUATION)

The current procedure (HNF 1997e) that governs testing is being replaced by HNF 1998e on March 1, 1999. The tests that will be performed will conform to the new procedure. The QA Test Control procedure (HNF 1997b) will also be followed. After the installation of the modification is complete an ATP/OTP will be performed. At a minimum the following tests will be executed:

- CAM high radiation alarm automatically shuts down Exhauster operations (new function)
- Low tank pressure automatically shuts down Exhauster operations (existing function)
- High/low stack flow automatically shuts down Exhauster operations (existing function)
- High HEPA filter DP automatically shuts down Exhauster operations (existing function).

While this modification only installs the CAM high radiation shut down function the automatic shut down circuit will be changed. The existing automatic shut down functions are part of that circuit and will be tested to insure proper operation after this modification. The test results will be recorded and then documented in an ATR/OTR. Any required test verifications or witnessing (QA/QC) will be listed in the ATP and recorded in the ATR/OTR.

3.8 ACCEPTANCE FOR BENEFICIAL USE (ABU)

The ABU will help provide turnover, or return, of the modified Exhausters to CPO. The ABU checklist in Appendix B is for reference only. Any completed ABU forms will be released as a "...separate standalone turnover supporting document..." as required by TWRS Administration Procedures for Engineering (HNF 1998c). The first ABU will be a partial one due to the time involved in updating the essential and support drawings with the information on the ECNs. After the ECNs are incorporated into the drawings, and any other outstanding items are completed, a Final ABU will be accomplished by revising the turnover-supporting document via the ECN process.

3.9 RISK ASSESSMENT

The relative simplicity of the intended modification indicates that the design process for this task will be low risk. The driving force behind this modification is the approval (by the Department of Energy) of Addendum 5 (LMHC 1998b) to the BIO (HNF 1998a). Any delay in the approval of this addendum will impact the installation of this modification. While the addendum is being reviewed the design (& review) process can continue. However, changes to the Addendum resulting from multilevel review process may necessitate changes in the design criteria. It is

unlikely that changes will occur. However, the formal design review will conclude only after the approval of the addendum. The availability of personnel to install and test this modification is another area of concern. If these personnel are not available the timely completion of this task is will be affected. The tasks relating to this modification will be tracked in the CE Project Schedule.

4.0 ORGANIZATION

COGNIZANT ORGANIZATION

Characterization Engineering

Manager- RM Boger
 Project Manager - JL Smalley
 Design Authority (Characterization Systems)- GP Janicek
 Design Authority (RMCS Exhausters)- JR Kriskovich

Characterization Field Engineering

Cognizant Manager - JS Schofield
 Cognizant Engineer (RMCST) - RN Dale
 Cognizant Engineer (Exhauster) – EJ Waldo

The Cognizant Organization(s) will provide project management, design authority, and cognizant engineering support for the formal design review, implementation and testing of this modification.

SUPPORTING ORGANIZATIONS

Production Control

Manager – GP Graves
 Scheduler – RE Falon

The Production Control organization will provide resources to create, maintain, and schedule the work packages necessary to complete the modifications.

Characterization Project Operations/Interim Stabilization Maintenance

Supervisor - BJ Shoemake

The CPO/IS organization will provide qualified personnel to install and maintain the modification(s).

Characterization Project Ops Truck Sampling

Supervisor - JS Lee

The CPO organization will provide qualified personnel to operate the equipment to be modified for acceptance testing.

Quality Assurance

Manager – SM Byers
 Engineer – JS Sparks
 Technician – RA Arndt

This organization will provide input to the formal design review of the proposed modification and support any required verification/witnessing of acceptance testing.

Environmental Ops Compliance

Manger – PC Miller
 Engineer – DL Dyekman

This organization will provide input to the formal design review concerning any environmental issues relating to the modification.

CPO/IS Radiological Control Manager – RJ Reeder
This organization will support the acceptance testing of the exhausters.

TWRS Safety/Characterization Project Manager - MT Hughey
 Engineer – JA Ranschau
This organization will provide input to the formal design review of the proposed modification.

5.0 SCHEDULE/COST ESTIMATE

LMHC 1998b states that:

“If the amendment package is approved as submitted, it will be implemented within 6 months of approval. This period of time will allow the Contractor to accomplish the hardware modifications including design and procurement, while accommodating sampling commitments and coordinating with scheduled preventive maintenance outages.”

This ETP will be released prior to the approval of Addendum 5 (LMHC 1998b). The modification documentation (ECNs, revised DCM & SEL, etc.) will be reviewed, revised if necessary, and staged for release after approval of Addendum 5. If there are little, or no, changes to the addendum then no changes to the modification documentation will be necessary. The six-month grace period will provide time to install, test, and document the modifications to both exhausters.

SCHEDULE ESTIMATE

A schedule is listed in Appendix A. The following assumptions were made in the creation of the schedule:

- DOE approval of Addendum 5 (with little or no changes) to the BIO in March '99
- Modify Exhausters during scheduled maintenance outage (May '99)
- Availability of planning, craft, and operations personnel to support tasks.

COST ESTIMATE

Parts \$50 + any adders (see section 3.5)

Labor

Engineering	250 hours
QA	15 hours
QC	8 hours
Safety	15 hours
RADCON	10 hours
Environmental	15 hours
Crafts (Technicians)	24 hours
Operators (for ATP)	16 hours

6.0 CONFIGURATION MANAGEMENT

The proposed modification will produce some new design media in the form of ECNs. The ECNs will modify existing drawings and documents. The DCM, SEL, and several drawings will be modified as a result of this modification. As mentioned before in Section 3.2 ENGINEERING TASKS, the DCM and SEL revisions will be addressed under the annual SEL update ETP (HNF 1999) due to the numerous changes that will need to be made after Addendum 5 of the BIO is approved. The drawings that will be modified are classified as both Essential and Support. Refer to HNF 1998b and HNF 1998e for details on drawing evaluation and classification.

The policies, practices and procedures that will be used to govern configuration management during this task are listed in Section 11.0 References. However, many of the procedures (HNF 1997a, HNF 1997d, HNF 1997e, HNF 1997f) covering design and engineering requirements will be replaced by HNF 1998e on March 1 1999. This task plan has been written with this fact in mind.

The relative simplicity of the modification dictates a short design effort. However, due to the SC and or SS nature of the modification a formal design review will be required. Configuration control will be maintained using existing procedure (HNF 1997c) that governs the ECN process. Both of the RMCS Exhausters are mounted on skids for portability. The Exhauster to be modified will be physically removed from service and moved near the maintenance facility. The modification and testing will take place at the maintenance facility. The modification will be timed to coincide with the scheduled maintenance outages for both of the Exhausters.

The final configuration management documentation will consist of the existing drawings revised to include the modification ECN information. The current procedure (HNF 1997a) covering drawing requirements, as well as several other procedures, will be replaced by HNF 1998e when these tasks are completed. The drawings affected by the ECNs will be updated within the time listed below for each classification of drawings per HNF 1998e.

- Essential drawings - within 30 calendar days of ECN sign off as work complete
- SSC Design Baseline drawings - within 90 calendar days of the sixth ECN signed off as work completed
- General drawings - when required by Design Authority or Cognizant Engineer

7.0 QUALITY ASSURANCE

The Approval Designator for this modification will include Q (for Quality Assurance). The Design Control, Procurement, Inspection/Testing, and Documentation for this task shall meet the requirements reflected in LMHC 1998c. HNF 1997h shall be used in determining the appropriate organizational reviews and signatures required for the documentation produced in this design and equipment modification effort.

8.0 SAFETY AND AUTHORIZATION BASIS

The proposed modifications will change the automatic shut down circuit of the exhausters. This circuit is a safety SSC. Therefore the modifications will be designated SC and/or SS as defined in HNF 1997g. HNF 1997g contains definitions of SC and SS Structures, Systems and Components (SSC). This modification is being performed because of pending changes (LMHC 1998b) to the BIO (HNF 1998a) that will require this function in the RMCS Exhausters. The BIO is a major part of the Authorization Basis. The pending change to the BIO will quite probably change the safety classification of the CAM due to it being an integral part of the radiation monitoring system in the RMCS Exhausters.

9.0 SYSTEM ENGINEERING

The proposed modification is being driven by the pending approval of Addendum 5 (LMHC 1998b) to the BIO, a major portion of the AB. The proposed modification will quite likely be used throughout the remaining life cycle of the RMCS Exhausters. This modification is part of the TWRS Multi-Year Work Plan (HNF 1998f) WBS Structure 1.01.01.01.01.03.01.08, Engineering for Support of Authorization Safety Permit Basis.

10.0 CLOSEOUT COSTS

Due to the relative simplicity of this modification any closeout costs for this task would be very small. The material cost is quite low, approximately \$50. Even if the parts (relays) had been ordered, and received, the very same parts are currently in use on the RMCS Exhausters and Rotary Mode Core Sample Trucks (RMCST) and could still be used as spare parts. A close out document may need to be written to disposition any documentation. The engineering support for close out would also be minimal (approximately 10 hours).

11.0 REFERENCES

- NEC® 1996, NFPA 70, 1996 Edition, *National Electrical Code*®, National Fire Protection Association, Quincy, Maryland, July 1995.
- HNF 1997, HNF-PRO-183, *Preacquisition Planning Requirements*, Fluor Daniel Hanford, Richland, Washington, October 1997.
- HNF 1997a, HNF-PRO-242, *Engineering Drawing Requirements*, Fluor Daniel Hanford, Richland, Washington, July 1997. (Superseded by HNF 1998e on 3/1/99)
- HNF 1997b, HNF-PRO-286, *Test Control*, Fluor Daniel Hanford, Richland, Washington, September 1997.

HNH 1997c, HNF-PRO-440, *Engineering Document Change Control Requirements*, Fluor Daniel Hanford, Richland, Washington, July 1997.

HNH 1997d, HNF-PRO-445, *Design Verification Requirements*, Fluor Daniel Hanford, Richland, Washington, June 1997. (Superceded by HNF 1998e on 3/1/99)

HNH 1997e, HNF-PRO-446, *Testing Requirements*, Fluor Daniel Hanford, Richland, Washington, July 1997. (Superceded by HNF 1998e on 3/1/99)

HNH 1997f, HNF-PRO-447, *Procurement of Safety Class Items and Management of Spares*, Fluor Daniel Hanford, Richland, Washington, June 1997. (Superceded by HNF 1998e on 3/1/99)

HNH 1997g, HNF-PRO-517, *Safety Analysis Program Glossary*, Fluor Daniel Hanford, Richland, Washington, June 1997.

HNH 1997h, HNF-PRO-233, *Review and Approval of Documents*, Fluor Daniel Hanford, Richland, Washington, September 1997.

HNH 1998, HNF-SD-WM-SEL-044, Rev. 2, *A Safety Equipment List for Rotary Mode Core Sampling Systems Operation in Single Shell Flammable Gas Tanks*, Lockheed Martin Hanford Company, Richland, Washington, August, 1998.

HNH 1998a, HNF-SD-WM-BIO-001, Rev. 1, *TANK WASTE REMEDIATION SYSTEM BASIS FOR INTERIM OPERATION*, Lockheed Martin Hanford Company, Richland, Washington, November, 1998.

HNH 1998b, HNF-2305 Rev. 0, *DRAWING EVALUATION REPORT FOR SAMPLING EQUIPMENT*, Lockheed Martin Hanford Company, Richland, Washington, September 1998.

HNH 1998c, HNF-IP-0842, Vol. IV, *TWRS Administrative Procedures, Engineering*, Lockheed Martin Hanford Company, Richland, Washington, September, 1998.

HNH 1998d, HNF-PRO-123, *The Material Request/Contract Requisition Process*, Fluor Daniel Hanford, Richland, Washington, October 1998.

HNH 1998e, HNF-PRO-1819, *PHMC Engineering Requirements*, Fluor Daniel Hanford Inc., Richland, Washington, November 1998.

HNH 1998f, HNF-SP-1230, Rev. 1, *Tank Waste Remediation System Fiscal Year 1999 Multi-Year Work Plan WBS 1.1*, Fluor Daniel Hanford Inc., Richland Washington, November 1998.

LMHC 1998, TO-060-347, Rev. D-5, *Operate RMCS Exhauster on Passively Ventilated Tanks*, Lockheed Martin Hanford Company, Richland, Washington, July 1998.

LMHC 1998a, 6ES466, Rev. 0-1, *Eberline AMS-4 Continuous Air Monitor Calibration*, Lockheed Martin Hanford Company, Richland, Washington, April 1998.

LMHC 1998b, LMHC-9857075, 80232764-9-K001, *SUBMITTAL OF AUTHORIZATION BASIS AMENDMENT PACKAGE FOR ROTARY AND PUSH MODE CORE SAMPLING IN SATISFACTION OF PERFORMANCE AGREEMENT TWR1.2.2 EXPECTATIONS 1 AND 3*, Lockheed Martin Hanford Company, Richland, Washington, August 30 1998.

LMHC 1998c, HNF-SD-WM-QAPP-025, *TANK WASTE REMEDIATION SYSTEM CHARACTERIZATION PROJECT QUALITY POLICIES*, Lockheed Martin Hanford Company, Richland, Washington, September 1998.

HNF 1999, HNF-3740, *Engineering Task Plan For The Annual Rotary Mode Core Sampling System Safety Equipment List (DRAFT)*, Lockheed Martin Hanford Company, Richland, Washington, February 1999.

APPENDIX A - SCHEDULE

The following schedule assumes that Addendum 5 (LMHC 1998b) will be approved by DOE, as submitted (with no major changes), by 3/31/99.

Exhauster B modification schedule.

Exhauster C modification schedule.

APPENDIX B- ACCEPTANCE FOR BENEFICIAL USE

ACCEPTANCE FOR BENEFICIAL USE (ABU)					
3. Document No. HNF-3663	4. Project No. N/A	5. SSC Designator SC	6. System / Building / Facility 200 General	7. Equipment / Component No. Exhauster B	8. ECN/EDT No. ECN 648073
9. Final ABU () Partial ABU ()			10. ATP Rerun Required () Yes (X) No		
11. Description of Work Modify Rotary Mode Core Sampling (RMCS) Exhauster B to comply with Addendum 5 of the Basis for Interim Operation (HNF-SD-WM-BIO-001, REV. 1) by installing an automatic shutdown feature triggered by a high radiation alarm from the Continuous Air Monitor (CAM).					
12. Description of Work to be Completed ECN 648073		13. Scheduled Completion Date 5/24/99	14. Responsibility for Completion JC Akers	15. Impact on Operations/Safety Required for operations	

16. Documents or Other Items/Tasks to be Updated	17. Funding Source	18. Document Number	19. Responsibility for Completion	20. Required prior to final ABU (Yes/No)
TRAINING:				
• Training manuals ()				
• Training to Operating Crews ()				
• Training to Maintenance Crews ()				
ENGINEERING:				
• Engineering Procedure ()				
• Final Safety Analysis Report (FSAR) ()				
• Safety Assessment (SA) ()				
• Functional Design Criteria (FDC) ()				
• Design Review Report (X)			JR Kriskovich	Yes
• Conceptual Design Report (CDR) ()				
• Supplemental Design Requirements Document (SDRD) ()				
• System Design Description (SDD) ()				
• Test Procedures/Specifications Test Report ()				
• Safety Equipment List (X)			JD Criddle jr	Yes
• Environmental Report ()				
• Environmental Permits ()				

16. Documents or Other Items/Tasks to be Updated	17. Funding Source	18. Document Number	19. Responsibility for Completion	20. Required prior to final ABU (Yes/No)
• Stress/Seismic Analysis ()				
• Stress/Design Report ()				
• Equipment Specification ()				
• Procurement Specification ()				
• Construction Specification ()				
• Essential Material Specification ()				
• Technical Specification ()				
• As-built Drawing ()				
• Interface Control Drawing ()				
• Computer Software ()				
• DCM for Exhauster (X)			BL Coverdell	Yes

OPERATIONS:

• Operating and Maintenance Manuals()				
• Operating Procedures (X)		TO-060-347	RR Bafus	Yes
• Operation Instructions ()				
• Calibration Procedures (X)		6ES466	RR Bafus	Yes
• Preventative Maintenance Procedures()				
• Operations Safety Requirements ()				

QUALITY ASSURANCE:

• Inspection Plan ()				
• QAPP ()				
• QAP JP ()				
• NEC Inspection ()				

PROCUREMENT ACTIVITIES:

• Vendor Information ()				
• Material List ()				
• Spare Parts ()				
• Purchase Requisition ()				
• ALARA Management Worksheet ()				
• Other Commercial Grade Item forms (X)			JC Akers	Yes

PROJECTS: CHARACTERIZATION OPERATIONS AND ENGINEERING

Signature

Date

Cog/Field Engineer **EJ Waldo**

Cog/Field Mgr. **JS Schofield**

QA **JS Sparks**

Safety **JA Ranschau**

Modification Projects **RM Boger**

Characterization Ops **JG Kristofzski**

Design Authority

Design Authority **JR Kriskovich**

Design Engineer **JD Criddle**

DISTRIBUTION SHEET

To	From	Page 1 of 1
DISTRIBUTION	JC AKERS	Date 3/18/99
Project Title/Work Order		EDT No. 622058
HNF-3663 ENGINEERING TASK PLAN FOR ROTARY MODE CORE SAMPLING EXHAUSTERS CAM HIGH RADIATION INTERLOCK		ECN No.

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