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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT

620268

2. To: (Receiving Organization) LMHC Characterization Engineering		3. From: (Originating Organization) Characterization Engineering		4. Related EDT No.: N/A	
5. Proj./Prog./Dept./Div.: Characterization Project		6. Design Authority/Design Agent/Cog. Engr.: GP Janicek/BL Coverdell/RN Dale		7. Purchase Order No.: N/A	
8. Originator Remarks: Engineering Task Plan submitted for review and approval prior to release.				9. Equip./Component No.: N/A	
				10. System/Bldg./Facility: 200G	
11. Receiver Remarks:				12. Major Assm. Dwg. No.: N/A	
11A. Design Baseline Document? ☐ Yes ☒ No				13. Permit/Permit Application No.: N/A	
ENGINEERING DATA TRANSMITTAL				14. Required Response Date: ASAP	

15. DATA TRANSMITTED					(F)	(G)	(H)	(I)
(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	Approval Designator	Reason for Transmittal	Originator Disposition	Receiver Disposition
1	HNF-3873	N/A	0	Engineering Task Plan for the Development, Fabrication and Installation of Rotary Mode Core Sample Truck Grapple Hoist Box Level Wind System	SQ	1	1	

16. KEY		
Approval Designator (F) E, S, Q, D or N/A (see WHC-CM-3-5, Sec. 12.7)	Reason for Transmittal (G) 1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	Disposition (H) & (I) 1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

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
1	/	Design Authority GP Janicek	<i>GP Janicek</i>	2/3/99	S7-12	1	/	GW Wilson	<i>GW Wilson</i>
1	/	Design Agent BL Coverdell	<i>BL Coverdell</i>	1/21/99	S7-12	1	/	CE Mgr. RM Boger	<i>RM Boger</i>
1	/	Cog. Eng. RN Dale	<i>RN Dale</i>	2/2/99	S7-12	1	/	Proj. Mgr. J. L. Smalley	<i>J. L. Smalley</i>
1	/	Cog. Mgr. JS Schofield	<i>JS Schofield</i>	2/3/99	S7-12				
1	/	QA ML McElroy	<i>ML McElroy</i>	1/21/99	S7-07				
1	/	Safety JA Ranschau	<i>JA Ranschau</i>	1/27/99	S7-07				
		Env.							

18. <i>BL Coverdell</i> 1/21/99 BL Coverdell Signature of EDT Originator		19. <i>RM Boger</i> 2/11/99 RM Boger Authorized Representative For Receiving Organization		20. <i>JS Schofield</i> 2/3/99 JS Schofield Design Authority/ Cognizant Manager		21. DOE APPROVAL (if required) Ctrl No. ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments	
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ENGINEERING TASK PLAN FOR THE DEVELOPMENT, FABRICATION AND INSTALLATION OF ROTARY MODE CORE SAMPLE TRUCK GRAPPLE HOIST BOX LEVEL WIND SYSTEM

R.M. Boger

Prepared by Lockheed Martin Hanford Company

Richland, WA 99352

U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 620268

UC: 2070

Org Code: 74900

Charge Code: CACN: 102248

COA: BO00

B&R Code: EW3120074

Total Pages: 15

Key Words: Characterization Project, Sampling, RMCST, Engineering Task Plan, Level Wind, Grapple Hoist

Abstract: This Engineering Task Plan is to design, generate fabrication drawings, fabricate, test, and install the grapple hoist level wind system for Rotary Mode Core Sample Trucks (RMCST) 3 and 4. Deliverables will include generating fabrication drawings, fabrication of one level wind system, updating fabrication drawings as required, and installation of level wind systems on RMCST 3 or 4. The installation of the level wind systems will be done during a preventive maintenance outage.

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Release Approval

2/11/99
Date

Approved for Public Release

**ENGINEERING TASK PLAN FOR THE DEVELOPMENT,
FABRICATION AND INSTALLATION OF ROTARY
MODE CORE SAMPLE TRUCK GRAPPLE
HOIST BOX LEVEL WIND SYSTEM**

Prepared for Lockheed Martin Hanford Corporation
Characterization Engineering Group

By

B. L. Coverdell/G. W. Wilson
COGEMA Engineering Corporation

February 1999

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1.0 INTRODUCTION

The Rotary Mode Core Sampling Trucks (RMSCTs) currently use a grapple hoist assembly to actuate the sampler and retrieve the pintle rod during sampling operations. This grapple hoist assembly uses a two-inch wide by six-inch diameter drum to reel in the 5/32-in. diameter cable. The current grapple hoist assembly, which is detailed on drawing H-2-690057 is prone to "bird nesting" the cable. Therefore, a task has been identified to design, fabricate, test, and install a level wind system for the grapple hoist assembly.

This Engineering Task Plan (ETP) is the management plan document for accomplishing the identified tasks. Any changes in scope of the ETP shall require formal direction by the Characterization Engineering manager.

This document shall also be considered the work-planning document for developmental control per Development Control Requirements (HNF 1997d).

2.0 SCOPE

The scope of the ETP is to design, generate fabrication drawings, fabricate, test, and install the grapple hoist level wind system for RMCST 3 and 4. Deliverables will include generating fabrication drawings, fabrication of an initial level wind system, updating fabrication drawings as required, testing of the initial level wind system and installation of the level wind system on either RMCST 3 or 4. The installation of the level wind systems will be done during a preventive maintenance outage. After successful testing, installation and use by operations, a second level wind system will be fabricated and installed on the remaining RMCST (RMCST 3 or 4).

3.0 DESCRIPTION

3.1 PHYSICAL DESCRIPTION

The result of this task will be a grapple hoist level wind system installed on RMCST 3 or 4. This level wind system will provide a reliability improvement for the grapple hoist assembly.

The grapple hoist level wind system will meet all applicable requirements in the Baseline Design Compliance Matrix for the Rotary Mode Core Sampling System (LMHC1998a). One additional requirement is that the grapple hoist box, which is an ASME pressure vessel, cannot be modified in any way that would change the structural integrity.

3.2 ENGINEERING TASKS

Engineering services and deliverables provided by Characterization Engineering will include the following.

- Provide overall task management and schedule
- Provide day-to-day guidance of design services during generation of fabrication drawings
- Conduct design review as directed by Design Authority
- Provide engineering support during fabrication
- Generate Engineering Change Notices (ECNs) as required during fabrication
- Generate test plan and test report.
- Conduct pre-operational testing

- Generate drawings/ECN as required for installation
- Provide engineering support for installation work package preparation
- Provide engineering support during installation
- Provide changes to operations and maintenance procedures.
- Update Design Compliance Matrix with additional requirements due to the design modifications.
- Provide changes to the Essential or Support Drawing List (LMHC 1998b)
- Provide changes to Drawing Evaluation Report (LMHC 1998c).

All drawings shall be prepared, approved, and released per Engineering Drawing requirements (HNF 1997a). Any subsequent changes shall be done per Engineering Document Change Control Requirements (HNF 1997b). All subsequent design media and engineering documentation generated in support of this task shall reference Engineering Task Number ETN-99-0002.

3.3 VERIFICATION AND TECHNICAL REVIEWS AND MODIFICATION MANAGEMENT

The design changes requiring verification and review will include new fabrication and installation drawings for the level wind system and any subsequent changes. Design verification requirements for the new drawings and any Engineering Change Notices (ECN's) will be determined on a case-by-case basis per Design Verification Requirements (HNF 1997c). All changes to Safety Class equipment will receive a formal design review. The remaining equipment shall receive a design verification method approved by the Characterization Design Authority.

The requirement basis for purpose of design verification of modified design will be the Design Compliance Matrix.

Modifications during fabrication will be completed using the development control process per Development Control Requirements (HNF 1997d). All design changes will be documented by redlining the pre-released drawings. After completion of fabrication all redlines will be incorporated into the drawings and the drawings will be released.

3.4 SOFTWARE DEVELOPMENT TASKS

There are no software development tasks associated with this task.

3.5 PROCUREMENT TASKS

The majority of any procurement associated with this task will be subcontracted to Dyncorp Tri-Cities Services, Inc. for parts necessary for fabrication of the level wind system. Any long lead items required for fabrication may be procured through Lockheed Martin Hanford Company (LMHC) Characterization Procurement.

3.6 INSTALLATION TASKS

Installation of the level wind system will be done by Characterization Maintenance per a work package that is generated by Characterization Production Control. The installation of the level wind systems will be done during a preventive maintenance outage. Work Package development will take approximately one week and overall installation is estimated to take approximately two

weeks. The lengthy two-week installation time allows for any problems that may develop due to a new installation.

3.7 PRE-OPERATIONAL AND OPERATIONAL TESTS

Depending on availability, either Characterization Engineering or the Engineering Testing Laboratory shall prepare and issue a test procedure that describes how both pre-operational testing and operational testing shall be performed. The pre-operational testing will require a mockup grapple hoist assembly to be fabricated. During pre-operational testing the weight of the grapple hoist shall be varied to represent expected operating conditions. After successful pre-operational test, the level wind system shall be shipped to 2101HV (contact Amy Hay) for final installation. Operational testing will consist of a functional test after installation and will be conducted by Characterization Maintenance and Operations per instructions in the installation work package. LMHC Quality Assurance shall observe all testing.

3.8 ACCEPTANCE FOR BENEFICIAL USE (ABU)

A formal acceptance for beneficial use process and form will be used for this task per LMHC 1998d. This ETP will be revised to include a partial ABU for first RMCST modified and a final ABU will be completed for the second RMCST modified (see Appendix B).

3.9 RISK ASSESMENT

The main risk envisioned with this task is that the reliability of the level wind system may require design changes after pre-operational testing. Attaining the required reliability is questionable due to the small size of the grapple hoist box.

4.0 ORGANIZATION

Responsibilities are assigned to various organizations as identified below:

COGEMA Engineering Corporation will provide task management, engineering support, and design services support as outline in section 3.2.

Responsible Manager: J. L. Smalley
Responsible Engineer: G. W. Wilson

LMHC, Characterization Engineering will provide funding and overall task management:

Responsible Manager: R. M. Boger

LMHC, Characterization Engineering will also provide Cognizant Engineer support for document review and Un-reviewed Safety Question (USQ) screening preparation.

Responsible Manager: J. S. Schofield
Responsible Engineer: R. N. Dale

LMHC will also provide Design Authority support.

Characterization Project System Design Authority: G. P. Janicek

Fluor Daniel Northwest, Inc. (FDNW) will provide designers to assist in design and generating design documentation as requested.

Responsible Designer R. L. Miller

Dyncorp Tri-Cities Services, Inc. will be responsible for fabrication and inspections of the new level wind system.

Responsible Manager: M. A. Butterworth

Numatec Hanford Corp., Engineering Testing Laboratories will be responsible for pre-operational testing and generation of test plans and test reports.

Responsible Manager: M. J. Schliebe

Responsible Engineer: K. S. Witwer

Characterization Production Control will be responsible for generation of installation work packages.

Responsible Manager: J. A. Crawford

Responsible Lead: R. E. Falon

Characterization Maintenance will be responsible for provide craft support for installation.

Responsible Manager: B. J. Shoemake

5.0 SCHEDULE

The estimated schedule for this task is shown in Appendix A. Installation of the replacement level wind system will be scheduled and completed during a scheduled maintenance outage. For this reason, installation can not be scheduled at this time.

6.0 COST ESTIMATE

Cost estimates, shown in man-hours, associated with this task are denoted in the table below:

SUBTASK	COGEMA	LMHC	LMSI	FDNW	DYNC.	NHC
Issue ETP	40	10				
Fabrication Drawings	100	20	16	180		
Installation Drawings	210*	10	24	50		
Fabrication	40	20			20k**	
Testing	200	20				200
Installation	60					
TOTAL	530	80	40	230	20k**	200

* Includes 160 man-hours drafting support.

** Cost estimated by Dyncorp in dollars.

Costs for installation and life cycle cost are not included in this cost estimate since they are funded by Characterization Project Operations.

7.0 DEVELOPMENTAL CONTROL REQUIREMENTS

Below is a list of requirements that must be identified in the work plan for any Facility-Use item per HNF 1997d. After each item is a description of where the information can be found.

• Description of the work to be performed.	Preliminary Revision of Drawing H-2-690057 and HNF-3873, Section 3.0
• Any restrictions and/or special conditions.	None
• Inspection/fabrication criteria.	On the Fabrication Request (J-10) and HNF-3873, Section 9.0
• Work order number.	On the Fabrication Request (J-10) and HNF-3873, Section 12.0
• Material requirements.	Preliminary Revision of Drawing H-2-690057
• Special testing requirements.	HNH-3873, Section 3.7
• Safety Class.	On the Fabrication Request (J-10) and HNF-3873, Section 10.0
• Approval designator.	On the Fabrication Request (J-10) and HNF-3873, Section 9.0 and 10.0
• Shipping and handling instructions.	On the Fabrication Request (J-10) and HNF-3873, Section 3.7
• Delivery Date.	HNH-3873, Appendix A

Only Characterization Engineering personnel shall have signature authority on any redline changes.

8.0 CONFIGURATION MANAGEMENT

Configuration management will comply with requirements in Engineering Drawing Requirements (HNH 1997a) and Engineering Document Change Control Requirements (HNH 1997b).

9.0 QUALITY ASSURANCE

Quality Assurance review of tasks will be determined on a task-by-task basis per Review and Approval of Documents (HNH 1997f). The cognizant engineer will assign approval designators for all documentation with concurrence from the Design Authority. All documents assigned an approval designator "Q" will be reviewed and approved by Quality Assurance.

Dyncorp Quality Control shall inspect all fabricated items. Also, any testing completed in the Dyncorp fabrication shops shall be inspected by Dyncorp Quality Control.

10.0 SAFETY AND AUTHORIZATION BASIS

Safety review of tasks will be determined on a task-by-task basis per Review and Approval of Documents (HNH 1997f). The cognizant engineer will assign approval designators for all documentation with concurrence from the Design Authority. All documents assigned an approval designator "S" will be reviewed and approved by Safety.

No authorization basis or permitting documentation changes are anticipated, however, an un-reviewed Safety Question Screening/Determination will be completed on any changes made.

11.0 RADIATION CONTROL

Radiation Control (RadCon) will be responsible for review and approval of the Engineering Study.

12.0 SYSTEM ENGINEERING

This task plan defines the work required to design, fabricate and install a new level wind system for RMCST 3 & 4. This subtask is currently covered under the Work Breakdown Structure (WBS)

1.1.1.1.1.3.1.7 with a Cost Account Charge Number (CACN) of 102248 and a Code Of Account (COA) of BO00. Any major changes will be made to the WBS through the change request process (CR-TWRS-98-024).

13.0 CLOSEOUT COSTS

Closeout costs could vary depending on when closeout occurred but would be limited to less than 100 hrs. The closeout costs could include time to ensure that partially completed datasets, ECNs, work packages, and/or new level wind systems would be placed in a retrievable condition.

14.0 REFERENCES

- Drawing, Hanford Document Control, H-2-690057 Sheet 1-7, *Grapple Hoist Assembly, RMCS*, Hanford Site, Richland, Washington.
- FDH, 1997a, HNF-PRO-242, Rev. 1, *Project Hanford Policy and Procedure System, Engineering Drawing Requirements*, Fluor Daniel Hanford, Inc., Richland, Washington.
- FDH, 1997b, HNF-PRO-440, Rev. 1, *Project Hanford Policy and Procedure System, Engineering Document Change Control Requirements*, Fluor Daniel Hanford, Inc., Richland, Washington.
- FDH, 1997c, HNF-PRO-445, Rev. 1, *Project Hanford Policy and Procedure System, Design Verification Requirements*, Fluor Daniel Hanford, Inc., Richland, Washington.
- FDH, 1997d, HNF-PRO-442, Rev. 1, *Development Control Requirements*, Fluor Daniel Hanford, Inc., Richland, Washington.
- FDH, 1997e, HNF-PRO-446, Rev. 1, *Testing Requirements*, Fluor Daniel Hanford, Inc., Richland, Washington.
- FDH, 1997f, HNF-PRO-233, Rev. 1, *Project Hanford Policy and Procedure System, Review and Approval of Documents*, Fluor Daniel Hanford, Inc., Richland, Washington.
- LMHC, 1998a, HNF-SD-WM-CR-062, Rev. 1, *Baseline Design Compliance Matrix For The Rotary Mode Core Sampling System*, Lockheed Martin Hanford Corporation, Richland, Washington.
- LMHC, 1998b, HNF-3240, Rev. 2, *Characterization Equipment Essential/Support Drawing Plan*, Lockheed Martin Hanford Corporation, Richland, Washington.
- LMHC, 1998c, HNF-2305, Rev. 0, *Drawing Evaluation Report for Sampling Equipment Drawings*, Lockheed Martin Hanford Corporation, Richland, Washington.
- LMHC, 1998d, HNF-IP-0842, Vol. IV, *TWRS Administration*, Sec 3.12, *Acceptance of Structures, Systems and Components for Beneficial Use*, Lockheed Martin Hanford Corporation, Richland, Washington.

Appendix A Schedule

ID	Resource Name	Start	Finish	February 1999	March 1999	April 1999	May 1999	June 1999	July 1999	August 1999	September
1	DESIGN/GENERATE FAB. DRAWN	Mon 2/7/99	Fri 4/10/99	DESIGN/GENERATE FAB. DRAWINGS							
2	GENERATE INSTALLATION DR.	Fri 4/10/99	Fri 4/30/99	GENERATE INSTALLATION DRAWINGS							
3	FABRICATION	Fri 4/10/99	Wed 8/19/99	FABRICATION							
4	ISSUE TEST PROCEDURE	Mon 6/28/99	Wed 8/19/99	ISSUE TEST PROCEDURE							
5	PRE-OPERATION TESTING	Wed 8/19/99	Wed 9/30/99	PRE-OPERATION TESTING							
6	ISSUE TEST REPORT	Wed 9/30/99	Wed 7/14/00	ISSUE TEST REPORT							
7	INSTALL	Thu 7/15/00	Thu 7/15/00	INSTALL							

Appendix B ABU

APPENDIX B- ACCEPTANCE FOR BENEFICIAL USE

ACCEPTANCE FOR BENEFICIAL USE (ABU)					
3. Document No. HNF-3873	4. Project No. N/A	5. SSC Designator SC	6. System / Building / Facility 200 General	7. Equipment / Component No.	8. ECN/EDT No. TBD
9. Final ABU () Partial ABU ()			10. ATP Rerun Required () Yes (X) No		
11. Description of Work Modify level wind system on Rotary Mode Core Sample Truck (RMCST) 3 and 4.					
12. Description of Work to be Completed		13. Scheduled Completion Date	14. Responsibility for Completion	15. Impact on Operations/Safety	

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)
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TRAINING:

• Training manuals ()				
• Training to Operating Crews ()				
• Training to Maintenance Crews (X)		TBD	TBD	YES

ENGINEERING:

• Engineering Procedure ()				
• Final Safety Analysis Report (FSAR) ()				
• Safety Assessment (SA) ()				
• Functional Design Criteria (FDC) ()				
• Design Review Report ()				
• Conceptual Design Report (CDR) ()				
• Supplemental Design Requirements Document (SDRD) ()				
• System Design Description (SDD) ()				
• Design Criteria Matrix (X)		TBD	TBD	YES
• Test Procedures/Specifications Test Report (X)		TBD	TBD	YES
• Safety Equipment List ()				
• 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 ()				
• Essential/Support Drawing List (X)		TBD	TBD	YES

OPERATIONS:

• Operating and Maintenance Manuals()				
• Operating Procedures ()				
• Operation Instructions ()				
• Calibration Procedures ()				
• Preventative Maintenance Procedures (X)		TBD	TBD	YES
• Operations Safety Requirements ()				

QUALITY ASSURANCE:

• Inspection Plan (X)		TBD	TBD	YES
• QAPP ()				
• QAP JP ()				
• NEC Inspection ()				

PROCUREMENT ACTIVITIES:

• Vendor Information (X)		TBD	TBD	YES
• Material List ()				
• Spare Parts (X)		TBD	TBD	YES
• Purchase Requisition ()				
• ALARA Management Worksheet ()				
• Other ()				

PROJECTS: CHARACTERIZATION OPERATIONS AND ENGINEERING**Signature****Date**Cog/Field Engineer **RN Dale**Cog/Field Mgr. **JS Schofield**QA **ML McElroy**Safety **JA Ranschau**Characterization Engineering **RM Boger**Modification Projects **JL Smalley**Characterization Ops **JG Kristofzski**

Design Authority

Design Authority **GP Janicek**Design Engineer **GW Wilson**