2. To: (Receiving Organization)  
Distribution

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.:  
CA Esvelt

7. Purchase Order No.:  
N/A

8. Originator Remarks:  
The attached ETP is submitted for release.

11. Receiver Remarks:  
11A. Design Baseline Document? [ ] Yes [X] No

12. Major Assm. Dwg. No.:  
N/A

13. Permit/Permit Application No.:  
N/A

14. Required Response Date:  
January 8, 1999

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18.  
AJ Koester  
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Originator
ENGINEERING TASK PLAN FOR PURGED LIGHT SYSTEM

R. M. Boger
Prepared by Lockheed Martin Hanford Corporation
Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

EDT/ECN: 622150 Org Code: 74900
B&R Code: EW3120074 Charge Code: 102258EI00
Total Pages: 13

Key Words:
video, closed circuit television, tank farm, characterization project

Abstract:
This ETP defines the tasks and deliverables required to support the procurement of a new light system. The light is necessary to enhance the capabilities of the closed circuit video system used inside the Hanford waste tanks.

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Approved For Public Release

A-6400-073.1 (10/97)
ENGINEERING TASK PLAN FOR PURGED LIGHT SYSTEM

Prepared by
A.J. Kostelnik

COGEMA Engineering Corporation
Richland, Washington

for
Characterization Engineering
Tank Waste Remediation System
Lockheed Martin Hanford Corporation
Richland, Washington

January 1999
1.0 INTRODUCTION

2.0 SCOPE

3.0 DESCRIPTION
   3.1 Physical Description
   3.2 Engineering Tasks
      3.2.1 Design Requirements
      3.2.2 Procurement Specifications
      3.2.3 Design
      3.2.4 Operating and Maintenance Procedures
      3.2.5 Spare Parts
   3.3 Design Verification
   3.4 Procurement / Fabrication Tasks
   3.5 Installation Tasks
   3.6 Pre-Operational and Operational Tests
   3.7 Acceptance for Beneficial Use (ABU)
   3.8 Risk Assessment

4.0 ORGANIZATION
   4.1 Characterization Field Engineering (CFE)
   4.2 Characterization Engineering (CE)
   4.3 Characterization Project Operations (CPO)
   4.4 Quality Assurance and Safety
   4.5 Radiation Engineering (RADCON)
   4.6 Flammable Gas Equipment Advisory Board (FGEAB)

5.0 SCHEDULE AND COST ESTIMATE
6.0 CONFIGURATION MANAGEMENT

7.0 QUALITY ASSURANCE

8.0 SAFETY AND AUTHORIZATION BASIS

9.0 SYSTEMS ENGINEERING

10.0 CLOSEOUT COSTS

11.0 REFERENCES

APPENDIX A
1.0 INTRODUCTION

A purged, closed circuit television system is currently used to video inside of waste tanks. The video is used to support inspection and assessment of the tank interiors, waste residues, and deployed hardware. The system is also used to facilitate deployment of new equipment. A new light source has been requested by Characterization Project Operations (CPO) for the video system. The current light used is mounted on the camera and provides 75 watts of light, which is insufficient for clear video. Other light sources currently in use on the Hanford site either can not be deployed in a 4-inch riser or do not meet the ignition source controls.

2.0 SCOPE

The scope of this Engineering Task Plan is to address all activities associated with the specification and procurement of a light source for use with the existing CPO video equipment. The installation design change to tank farm facilities is not within the scope of this ETP.

3.0 DESCRIPTION

3.1 Physical Description

The light system will provide adequate lighting for video inside the Hanford underground waste storage tanks. The system will be qualified for use in the highly corrosive and potentially flammable atmosphere. The light system will make use of the existing power supply or will include an upgrade to the existing power supply system if necessary. All support equipment for deployment, operation, transportation and storage will be provided.

3.2 Engineering Tasks

The engineering tasks contained in this work plan are the minimum necessary activities to acquire a light system that is safe to deploy in the Hanford waste tanks. The overall task is to specify and procure a system that will meet the requirements. The specification will contain all of the design, fabrication, and testing requirements and define the activities necessary to ensure the light system meets the requirements. Characterization Engineering (CE) will complete the engineering tasks.

3.2.1 Design Requirements

Design criteria will be prepared and documented per sections 3.2 and 3.4 of LMHC 1998a and will be summarized in a Design Compliance Matrix per Raymond 1997b. The Authorization Basis for the light system is located in section 5.4 of LMHC 1998a.

3.2.2 Procurement Specifications

A specification document will be prepared per HNF 1997a for the system.
3.2.3 Design

The equipment supplier will prepare the design of systems and components. The design will be documented per HNF 1997b, and HNF 1997c.

3.2.4 Operating and Maintenance Procedures

Operation and maintenance procedures will be prepared and/or revised as required to support the operation and maintenance of the new system.

3.2.5 Spare Parts

A list of recommended spare parts will be provided for long lead items that should be kept in inventory.

3.3 Design Verification

Design verification will be performed prior to contract award and prior to the start of fabrication. A graded approach will be used for the determination of design review requirements based upon the expected consequence of failure of the particular system. Design reviews will be conducted per HNF 1997d. Formal Design Review will be conducted for the design of components that are determined to be Safety Class (SC).

The Flammable Gas Equipment Advisory Board (FGEAB) will review the design of the system and components prior to the start of fabrication of components which will be used in locations requiring ignition source controls per LMHC 1998b.

3.4 Procurement / Fabrication Tasks

The procurement of the system will be performed as a competitive bid through standard procurement procedures. The Hanford site Procurement Services organization will perform the procurement.

Vendor proposals will go through a preliminary design review prior to award of the fabrication contract. The design will go through a final design review prior to fabrication.

3.5 Installation Tasks

The system will be designed to be portable. The initial installation will be completed by the organization that will operate the system, CPO. The installation ECNs to tank farm facility drawings is not within the scope of this ETP.

3.6 Pre-Operational and Operational Tests

Acceptance testing of off-site supplier provided systems will be performed as defined in the procurement specification. A pre-operational test will be performed on site to ensure the new systems function as required and are compatible with interacting equipment.
Testing will be documented and conducted per HNF 1997e and HNF 1997f. A test report will be issued to document the results of acceptance and operational testing performed.

3.7 Acceptance for Beneficial Use (ABU)

An ABU will be developed per section 3.12 of LMHC 1998a and Raymond 1997a as part of this task. The ABU will be added as an appendix to this ETP.

3.8 Risk Assessment

The programmatic risk assessment will not be performed for this task. This task is requested as an operating enhancement. The scheduled completion of this task will be affected by the priorities assigned by the customer based upon project commitments. The failure to complete this task would result in the potential inability to perform some sampling events without adequate in-tank visual monitoring.

4.0 ORGANIZATION

4.1 Characterization Field Engineering (CFE)

CFE will provide Cognizant Engineer support as required for this task. CFE will prepare or revise all operating and maintenance procedures as required to support the deployment of the new system.

Cognizant Manager: JS Schofield
Cognizant Engineer: CA Esvelt

4.2 Characterization Engineering (CE)

CE will provide Design Authority support for this task. CE personnel will prepare all documentation associated with the development of the design requirements, procurement specifications, fabrication and testing of the new system. CE personnel will witness all testing and the Design Authority will approve the results of all testing.

Design Authority: GP Janicek
Project Manager: JL Smalley
Responsible Engineer: AJ Kostelnik

4.3 Characterization Project Operations (CPO)

CPO will provide review of specifications and procedures that are associated with this task. CPO should witness all off-site testing and perform all on-site testing. The logistics of performing on-site testing will be the responsibility of CPO with the support of CE/CFE.

Responsible Manager: TD Jarecki
Operations Representative: ML Sumsion
4.4 Quality Assurance and Safety

Lockheed Martin Hanford Company (LMHC) will provide Quality Assurance and Safety support. QA and Safety will participate in the review of design, specification, and testing documents, witness testing as specified in the test procedures, and approve test results as required by HNF 1997g.

QA Engineer: ML McElroy
Safety Engineer: JA Ranschau

4.5 Radiation Engineering (RADCON)

LMHC will provide Health Physics review support. RADCON should participate in the review of design, specification, and testing documents, witness testing as specified in the test procedures, and approve test results as necessary.

RADCON Engineer: DJ Foust

4.6 Flammable Gas Equipment Advisory Board (FGEAB)

LMHC will provide FGEAB support. The FGEAB will participate in the review of design, specification, and testing documents as required. If applicable, the FGEAB will approve all test results as specified in the test procedures.

Responsible Manager: SH Rifaey

5.0 SCHEDULE AND COST ESTIMATE

The CPE Project Manager will track a detailed schedule of all tasks. A rough schedule is included in Appendix A. The schedule will support completion of a procurement specification document by January 31, 1999 and initial deployment of the light system by July 31, 1999. The scheduled completion of this task will be affected by the priorities assigned by CE and CPO based upon project commitments.

The estimated engineering cost to prepare this ETP (30-hrs), prepare a procurement specification (50-hrs), support procurement (60-hrs), support testing (80-hrs), document configuration (180-hrs) and support initial deployment (100-hrs), for a total of 500 man-hours. An additional estimate of 100 man-hours is required for Safety, QA, RADCON, and FGEAB. The estimate for CPO is 100 man-hours. The estimated material and equipment cost, assuming a purged system is built, is $75K.

Engineering expenses will be charged to Cost Account Charge Number (CACN) 102258 Code of Account (COA) E100, Quality Assurance, and Safety, FGEAB, RADCON, and CPO expenses are funded separately by LMHC Characterization Engineering.
6.0 CONFIGURATION MANAGEMENT

The design of the system will be documented. Standard H-series drawings will be created to
document the configuration and Essential and Support drawings will be assigned as required by
HNF 1997c. A vendor information file will be established per HNF 1997b, to contain catalog
cuts, performance specifications, and/or installation/operation instructions for components or
systems supplied by the manufacturer. All modifications made to standard manufacturer
products will be documented on H-2 series drawings.

7.0 QUALITY ASSURANCE

All work associated with this task will be in compliance with LMHC 1998c. QA oversight will
be provided as defined in this ETP.

8.0 SAFETY AND AUTHORIZATION BASIS

The light system will be used inside the underground radioactive waste tanks on the Hanford
Site. The Authorization Basis for tank farms, section 5.4 of LMHC 1998a, and the applicable
industry safety standards will be considered for all safety concerns associated with this task. The
USQ process will be used as required per section 5.4 of LMHC 1998a.

9.0 SYSTEMS ENGINEERING

This activity is necessary to support the characterization of the waste in the underground waste
tanks on the Hanford site. This activity supports the Tank Farms task identified in the Work
Breakdown Structure (WBS) as task number 1.1.1.13.1.17, Core Sampling Systems (LMHC
1998d).

10.0 CLOSEOUT COSTS

An estimate will be prepared prior to the closure of the task if the task is no longer required. The
amounts of all outstanding purchase agreements will be included as closeout costs.

11.0 REFERENCES

HNF-1998 is a newly issued engineering requirement procedure but does not become effective
until March 1, 1999. At that time, many of the Project Hanford Policy and Procedure System
level engineering requirements given in the HNF-PRO-XXX series of procedures will be
replaced by LMHC level procedures in LMHC 1998a. A cross-reference will be developed by
LMHC and utilized for the purposes of this ETP when these procedures become available.


## SCHEDULE

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* Schedule may vary dependent upon procurement contract