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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

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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
1	1	Cog Eng. AF Pardini	A F Pardini	2/25/97	K5-25
1	1	Cog Mgr. TJ Samuel	T J Samuel	2/27/97	K5-17
1	1	GA Barnes		3-11-97	B4-51
1	1	Informal Review GR Kiebel	T J Samuel	2/26/97	K5-22
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18. G.A. Leshikar — Signature of EDT Originator — Date 2/26/97

19. Authorized Representative for Receiving Organization — Date 1/20/97 / 3-11-97

20. Design Authority/ Cognizant Manager — Date 2/28/97

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System Design Description for the LDUA Common Video End-Effector System

AF Pardini
Pacific Northwest National Laboratory, Richland, WA 99352
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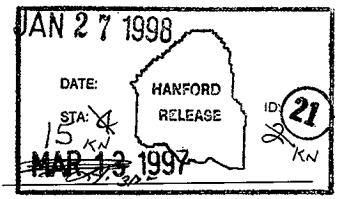
Key Words: LDUA, Light Duty Utility Arm, CVEE, robot arm, common video end effector, end effector

Abstract: This document describes the LDUA Common Video End Effector System which was designed by the Idaho National Engineering Laboratory to provide the control interface of the various video end effectors used on the LDUA.



Karen L. Noland 1/27/98
Release Approval Date
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Release Stamp

Approved for Public Release

SYSTEM DESIGN DESCRIPTION FOR THE LIGHT DUTY UTILITY ARM COMMON VIDEO END EFFECTOR SYSTEM (CVEE)

JULY 8, 1996

BY

A. F. PARDINI

REMOTE SYSTEM AND SENSOR APPLICATIONS

WESTINGHOUSE HANFORD COMPANY
RICHLAND, WASHINGTON

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SYSTEM DESIGN DESCRIPTION FOR THE LIGHT DUTY UTILITY ARM COMMON VIDEO END EFFECTOR SYSTEM (CVEE)

1.0 INTRODUCTION

The Common Video End Effector System (CVEE), system 6260, was designed by the Idaho National Engineering Laboratory (INEL) to provide the control interface of the various video end effectors used on the LDUA.

2.0 SYSTEM DESCRIPTION

The CVEE system consists of a Support Chassis which contains the input and output Opto-22 modules, relays, and power supplies and the Power Chassis which contains the bipolar supply and other power supplies. The combination of the Support Chassis and the Power Chassis make up the CVEE system. The CVEE system is rack mounted in the At Tank Instrument Enclosure (ATIE) (Figure 1). Once connected it is controlled using the LDUA supervisory data acquisition system (SDAS). Video and control status will be displayed on monitors within the LDUA control center.

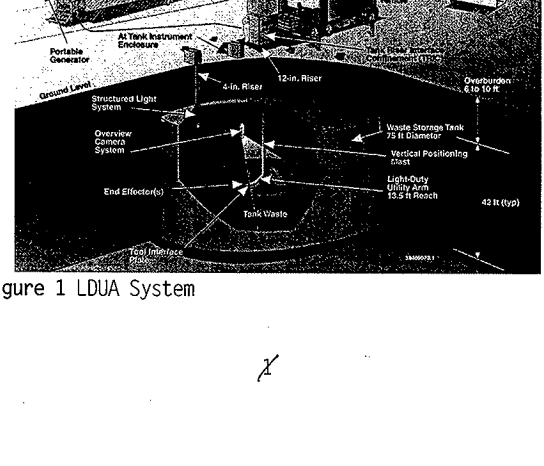

Figure 1 LDUA System

3.0 FUNCTIONALITY

The basic functions of the CVEE include:

Using Opto-22 analog and digital modules, the CVEE can control all of the video end effectors planned for use on the LDUA.

Power supply unit provides all necessary power for end effector lights, cameras, and motors.

4.0 SAFETY SYSTEMS

The CVEE was designed to assist the LDUA in meeting the requirements of NFPA 70 National Electric Code (1993), for use in class 1, division 1, group B, flammable atmospheres. Pressure sensors located on the LDUA system provide a signal to the CVEE electronics indicating a need to shutdown due to loss of purge pressure. The CVEE electronics will then shutdown all power to the end effector.

5.0 OPERATING SCENARIO

This section provides instructions for the normal handling and operation of the CVEE in support of routine operations of the LDUA within a Hanford tank.

Equipment Setup

The CVEE consists of the CVEE chassis and the CVEE Power Supply chassis. These are mounted next to each other in the ATIE (Figure 2).

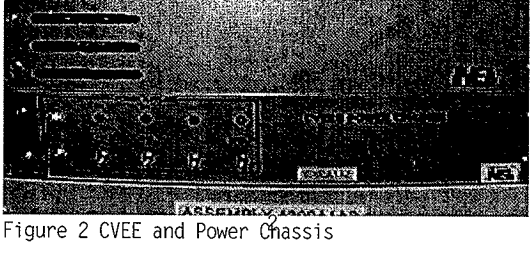

Figure 2 CVEE and Power Chassis

The CVEE chassis is hardwired directly to the CVEE power supply and the end effector power, signal 1 and signal 2, and video and purge connections are wired as shown in Figure 3.

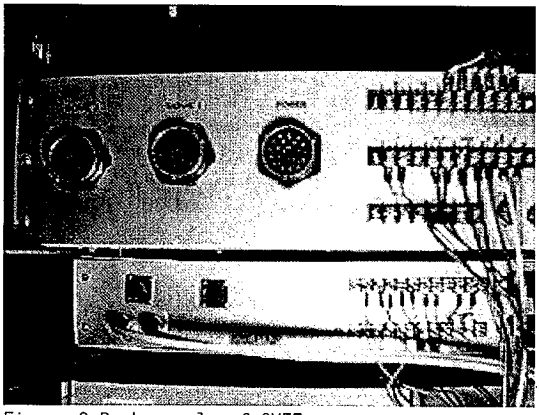

Figure 3 Back panels of CVEE

6.0 DESIGN DRAWINGS

The following is a complete list of drawings which constitute the mechanical and electrical drawings for the CVEE.

CVEE DRAWINGS

CVEE CHASSIS

H-6-14270 Rev. A	**Sheet 1 of 9**	**Common Video End Effector (CVEE) Support Electronics**
H-6-14270 Rev. A	**Sheet 2 of 9**	**CVEE and OAS end to end drawing**
H-6-14270 Rev. A	**Sheet 4 of 9**	**Common Video End Effector (CVEE) Chassis Layout**
H-6-14270 Rev. A	**Sheet 5 of 9**	**CVEE Chassis Preparation**
H-6-14270 Rev. A	**Sheet 6 of 9**	**CVEE Chassis Wiring Diagram (Part A)**
H-6-14270 Rev. A	**Sheet 7 of 9**	**CVEE Wiring Diagram (Part B)**
H-6-14270 Rev. A	**Sheet 8 of 9**	**CVEE/Kepco[1] Interface**
H-6-14270 Rev. A	**Sheet 9 of 9**	**CVEE/PC Serial Connections**

POWER SUPPLY DRAWINGS

H-6-14271 Rev. A	**Sheet 1 of 3**	**WHC Power Chassis Layout (CVEE)**
H-6-14271 Rev. A	**Sheet 2 of 3**	**WHC Power Chassis Wiring Diagram (CVEE)**
H-6-14271 Rev. A	**Sheet 3 of 3**	**WHC Power Chassis Schematic (CVEE)**

[1]Trademark of Kepco Inc.

RELEASED DRAWINGS

All drawings for the CVEE are vendor supplied. They have been formated in the WHC format and an H-6 drawing number assigned, however they have not been released into the WHC drawing system. The H-6 drawings may be found in the "Other Drawings" file.