Rev 4.2.

JAN 28 1997 ENGINEERING DATA TRANSMITTAL

1. EDT 620251

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Characterization Project Ops. (LMHC)	Characterization Field Eng. (NHC)	N/A
5. Proj./Prog./Dept./Div.:	**6. Design Authority/ Design Agent/Cog. Engr.:**	**7. Purchase Order No.:**
Characterization Project	C. A. Esvelt	N/A

8. Originator Remarks:
The attached OTR describes provides the results of testing the Mobile Color Camera System (MCCS).

9. Equip./Component No.: N/A

10. System/Bldg./Facility: 200 Gen

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: 1/24/97

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Desig-nator	(G) Reason for Trans-mittal	(H) Origi-nator Dispo-sition	(I) Receiv-er Dispo-sition
1	WHC-SD-TWR-OTR-001	N/A	0	Operability Test Report for the Mobile Color Camera System (MCCS)	SQ	1/2	1	/

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved 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 (L) Date (M) MSIN
		Design Authority N/A			
		Design Agent N/A			
1	/	Cog.Eng. C. A. Esvelt 1-22-97	ST-12		
1	/	Cog. Mgr. J. S. Schofield 1-22-97			
1	/	QA M. L. McElroy 1-22-97	ST-07		
1	/	Safety J. A. Harvey 1/22/97	ST-07		
		Env. N/A			

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No.
C. A. Esvelt 1-22-97 Signature of EDT Originator Date	D. C. Langlois Authorized Representative for Receiving Organization Date	J. S. Schofield 1/22/97 Design Authority/ Cognizant Manager Date	[] Approved [] Approved w/comments [] Disapproved w/comments

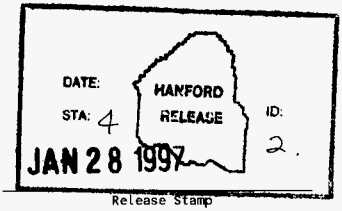
OPERATIONAL TEST REPORT FOR THE MOBILE COLOR CAMERA SYSTEM (MCCS)

C. A. ESVELT
NUMATEC HANFORD CORPORATION, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: ~~619136~~ 620251 KMB 1/28/97 UC: 2070
Org Code: 8C440 Charge Code: N4J2C
B&R Code: EW3120074 Total Pages: ~~18~~ 25 KMB 1/20/97

Key Words: OTP, MCCS, CAMERA

Abstract: This supporting document is the Operational Test Procedure for the Mobile Color Camera System (MCCS). This is a purged camera for temporary in-tank video use in Hanford waste tanks



Release Approval 1/28/97 Date

Release Stamp

Approved for Public Release

OPERABILITY TEST REPORT

FOR THE

MOBILE COLOR CAMERA SYSTEM (MCCS)

WHC-SD-TWR-OTR-001 REV 0

AUTHOR

C. A. ESVELT

CHARACTERIZATION FIELD ENGINEERING

NUMATEC HANFORD CORPORATION

JANUARY 1997

TABLE OF CONTENTS

1.0 PURPOSE

The purpose of this Operability Test Report is to document the completion of the operability testing of the Mobile Color Camera System (MCCS). The procedure follows "Test Plans, Specifications, Procedures, and Reports", contained in WHC-IP-1026, *Engineering Practices Guidelines*, EPG 4.2 "Testing" Rev 1.

2.0 SCOPE

Operability testing of the MCCS verified that functional and operational requirements have been met. The test showed by demonstration that the camera system is fully operational to perform the task of surveillance activities during sampling operations within a Hanford waste tank.

Testing was completed under the guidance of Characterization Project Operations (CPO), Characterization Field Engineering (CFE), and Characterization Project Quality Control (QC) and funded by the Characterization Project. The test procedure used was WHC-SD-TWR-OTP-001, "Operability Test Procedure of the Mobile Color Camera System (MCCS)" and was completed on January 22, 1997. Test completion information is documented in Appendix A.

3.0 TEST AND SYSTEM DESCRIPTION

The criteria for this OTR is based on operability and reliability of the equipment as if it were being used in the field. Each step was evaluated and signed off by the CFE Cognizant Engineer as well as Operations to verify that the equipment is acceptable for field use. A Quality Control representative verified all steps requiring QC verification during testing.

Tests were performed in 2101HV (warehouse), 200 area.

The system tested is the Mobile Color Camera System (MCCS), or a purged VITIS II system. The property number is The system to be tested includes the camera, mobile platform, and control cabinet.

The equipment and materials listed below were necessary to perform this operational test:

- MCCS camera system, including vacuum pump with hoses and control electronics
- Coaxial cable to connect control electronics to the MCCS camera
- 110VAC power source
- Miscellaneous (e.g. duct tape, common tools, etc.)

4.0 TEST RESULTS AND CONCLUSION

Acceptable reliability, based on this testing, was approved by the judgement of the CFE Cognizant Engineer and CPO Manager, or their delegates. All testing was completed per the OTP with minor exceptions as noted in the "OTP Exception/Resolution Data Sheet".

APPENDIX A

Field copy of OTP

STA 4

JAN 2 1 1997

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 619136

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Characterization Project Ops. (LMHC)	Characterization Field Eng. (NHC)	N/A
5. Proj./Prog./Dept./Div.:	6. Design Authority/ Design Agent/Cog. Engr.:	7. Purchase Order No.:
Characterization Project	C. A. Esvelt	N/A
8. Originator Remarks: The attached OTP describes the method for operationally testing the Mobile Color Camera System (MCCS)		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 200 Gen
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: 1/21/97

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-TWR-OTP-001	N/A	0	Operability Test Procedure for the Mobile Color Camera System (MCCS)	SQ	1/2	1	/

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D or N/A (see WHC-CM-3-5, Sec.12.7)	1. Approval 4. Review 2. Release 5. Post-Review 3. Information 6. Dist. (Receipt Acknow. Required)	1. Approved 4. Reviewed no/comment 2. Approved w/comment 5. Reviewed w/comment 3. Disapproved 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	(L) Date	(M) MSIN
		Design Authority N/A									
		Design Agent N/A									
1	/	Cog.Eng. C. A. Esvelt		1-21-97	S7-12						
1	/	Cog. Mgr. J. S. Schofield		1-21-97							
1	/	QA M. L. McElroy		1-21-97							
1	/	Safety J. A. Harvey		1-21-97							
		Env. N/A									

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No.
C. A. Esvelt 1-21-97 Signature of EDT Originator / Date	D. C. Langlois 1/21/97 Authorized Representative for Receiving Organization / Date	J. S. Schofield 1/21/97 Design Authority/ Cognizant Manager / Date	[ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments

BD-7400-172-2 (05/96) GEF097

BD-7400-172-1

OPERATIONAL TEST PROCEDURE FOR THE MOBILE COLOR CAMERA SYSTEM (MCCS)

C. A. ESVELT
NUMATEC HANFORD CORPORATION, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

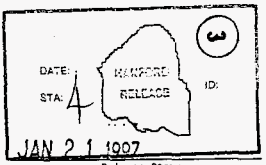
EDT/ECN: 619136 UC: 2070
Org Code: 8C440 Charge Code: N4J2C
B&R Code: EW3120074 Total Pages: 18

Key Words: OTP, MCCS, CAMERA

Abstract: This supporting document is the Operational Test Procedure for the Mobile Color Camera System (MCCS). This is a purged camera for temporary in-tank video use in Hanford waste tanks

Release Approval

1/21/97
Date



Release Stamp

Approved for Public Release

OPERABILITY TEST PROCEDURE

FOR THE

MOBILE COLOR CAMERA SYSTEM (MCCS)

WHC-SD-TWR-OTP-001 REV 0

AUTHOR

C. A. ESVELT / M. L. SUMSION

CHARACTERIZATION FIELD ENGINEERING

NUMATEC HANFORD CORPORATION

NOVEMBER 1996

TABLE OF CONTENTS

1.0 PURPOSE

The purpose of this Operability Test Procedure is to provide instructions for operability testing of the Mobile Color Camera System (MCCS). The procedure follows "Operability Test Procedures and Reports", contained in WHC-CM-6-1, *Standard Engineering Practices*, EP 4.2 "Testing Requirements" Rev 5, Change 1.

2.0 SCOPE

Operability testing of the MCCS will verify that functional and operational requirements have been met. The test will show by demonstration that the camera system is fully operational to perform the task of surveillance activities within a Hanford waste tank.

The camera focus, iris, and zoom remote controls will be operationally tested. The pan-and-tilt will be tested for range of motion, and the light will be operationally tested. The resolution of the camera, purge function, pressure and flow, differential pressure switches, and electric shutdown capabilities were all tested in the Acceptance Test Procedure (ATP). The vendor provided the test data that documented that the light housing temperature was below the 80% auto-ignition temperature of hydrogen, which is included in the ATP.

The test will not include radiation testing or all environmental testing. Specific steps are provided to verify that the pressurized safety system functions as designed to meet NFPA 496 Type X pressurization requirements.

These factors were reviewed during the design phases of the project and were deemed acceptable based on published data on radiation and environmental components used in the camera designs. Testing of the purge system to meet the requirements of NFPA 70 National Electrical Code (1993), Class 1 Division I, Group B requirements, NFPA 496, Standard for Purged and Pressurized Enclosures for Electrical Equipment (1993), and Hanford Safety Class requirements for shutdown of the system, and testing to verify maximum temperature of the camera under normal operations was be performed in the Acceptance Test Procedure, WHC-SD-TD-ATP-003.

Testing will be performed in the 2101HV warehouse 200 Area.

3.0 RESPONSIBILITIES

Safety, Quality Assurance (QA), Characterization Project Operations (CPO), and Characterization Field Engineering (CFE) shall approve this procedure prior to release. Responsibilities are identified as follows:

Operations Test Director

Responsible for the overall performance of the OTP. Responsible for the proper conduct of operations for the entire test site as well as personnel involved in the testing. Ensures the execution of all testing activities are within the scope of the OTP. Directs the overall conduct and sequence of testing activities. Acts through the Operations Person-In-Charge (PIC) for the proper performance of all operations at the test site. Maintains cognizance of test exceptions as documented by the CFE Cognizant Engineer and the resolution of same. Concurs with all changes

and with the acceptability and reliability of the equipment by signing the OTR. The Test Director may be the Cog Engineer or other personnel familiar with the MCCS.

CFE Cognizant Engineer

Controls the sequence in which the OTP is conducted through the PIC with concurrence of the Test Director. Maintains configuration control during testing. Approves any changes to the OTP. Acts as the single point of contact for all engineering matters. Notes exceptions to testing on "OTP Exception List". Resolves exceptions with the concurrence of the assigned Quality Engineer for those exceptions which initially required Quality verification. Prepares and releases the OTR at conclusion of operability testing. Concurs with the acceptability and reliability by signing the OTR.

CPO Management

Responsible through the Operations Test Director for the overall testing program. Reviews and approves test procedure. Ensures effective safety meeting is held prior to test start. Monitors testing to extent approval may be given for satisfactory equipment operability and reliability.

CPO Person-In-Charge (PIC)

Responsible for the assignment of personnel and directing the operation of the MCCS. Controls access to the test area in order to maintain a safe environment. Approves changes to the OTP in terms of operational steps or equipment configuration with concurrence of the Test Director. Conducts a pre-job safety meeting at the start of each shift during the performance of the OTP. Briefs the personnel on testing to be performed that day and associated hazards.

MCCS Operators

Conduct testing according to this procedure as directed by the PIC. Notifies the Test Director and Operation PIC of concerns, exceptions, and off-normal conditions during testing.

Quality Assurance

Reviews and approves test procedure to assure compliance with appropriate regulations. Resolves exceptions requiring quality verification jointly with CFE Cognizant Engineer. Quality verification of exceptions is only necessary for those exceptions relating to items which initially required Quality verification. QC will witness or review specific steps in this procedure.

Safety

Reviews and approves test procedure to assure compliance with applicable regulations. Monitors testing as appropriate.

4.0 INFORMATION

4.1 SYSTEM DESCRIPTION

The MCCS consists of three major components: 1) Imaging System, 2) Field Control Unit, and 3) the Mobile Platform.

Imaging System

- Pan and Tilt unit (RJ Electronics model #PTE-520)
- Camera and 8 : 1 zoom lens - (RJ Electronics model #RCS-2100)
- 75 Watt halogen light (RJ Electronics model #AL-540)
- Camera Control Unit (RJ Electronics model # CU 1150).
- Light Control Unit (RJ Electronics model # CU 1150).
- Gas supply lines
- 170' of camera control cable (RJ Electronics #R4444)

Field Control Unit (FCU)

- Field Control Unit Enclosure
- 13" Color Video Monitor (Panasonic BT-H1350Y)
- Light Control Unit (RJ Electronics model # CU 1150)
- Camera Control Unit (RJ Electronics model # CU 1150)
- Pan and Tilt Control Unit (RJ Electronics model # CU 1150)
- Electrical Safety Control Panel (9602HEF002)
- Keyboard
- VCR (Panasonic AG-1980P)
- Power Filter (SL Waber PH250)

Mobile Platform

- Air Compressor (Thomas Model #619CE44C)
- Dryer (Wilkerson Model #X25)
- Regulator (Norgren Model #R35-200-RNCA)
- Cable Reel (Hanney Model #1500)
- 1/2" Air Hose (Bosflex Model #55-1985-07)
- Hand Truck (Hanney Model #4300)

4.2 TEST GUIDANCE

Discrepancies, deviations, or irregularities involving the test procedure and equipment performance are to be noted on the "OTP Exception / Resolution Data Sheet". These exceptions shall be jointly resolved between the CFE Cognizant Engineer and the assigned Quality Assurance Representative. Quality verification of exceptions is only necessary for those exceptions relating to items which initially required Quality verification. Project related OTP deficiencies shall be addressed by the CFE Cognizant Engineer with approval of the Remote Surveillance (CPO) manager. All resolutions to the exceptions must be agreed upon by the responsible personnel, documented on the exception list, and initialed.

No testing shall be done which involves faulty equipment, as determined by the CFE Cognizant Engineer and Characterization Project PIC. However, at the discretion of the CFE Cognizant Engineer and with approval of the Characterization Project PIC, tests may proceed on equipment which is not affected by faulty equipment.

Test conditions which could cause the test to be aborted would be a loss of power in the facility, or complete failure of the camera system to perform its intended functions. If either of these occur, the test will be aborted until the problems are resolved. Once resolved the test will be repeated.

If, due to circumstances, modifications of the test procedure are warranted, written changes may be made with the concurrence of the CFE Cognizant Engineer, and CPO Management. Quality approval of modifications is also necessary for those modifications relating to items which initially required Quality verification. Safety approval is necessary for any modifications which could affect worker safety. Amendments shall be per instructions in WHC-CM-6-1, *Standard Engineering Practices*, EP-4.2, "Testing Requirements" Rev 5, Change 1. Modifications requiring an ECN to this OTP will be changed per EP-2.2.

4.3 REFERENCES

WHC-CM-6-1 REV 5 Change 1, *Standard Engineering Practices*, EP-4.2

WHC-IP-1026 REV 1, *Operability Test Procedures and Reports*, Appendix L

WHC-SD-WM-ATP-173, Rev. 0, "ACCEPTANCE TEST PROCEDURE MOBILE COLOR CAMERA SYSTEM"

4.4 SAFETY ISSUES

The MCCS system is a completely enclosed camera system, therefore no external wires or mechanical assemblies will be exposed as a shock hazard. During testing the camera will be deployed horizontally. A sign reading "HOT, DO NOT TOUCH", will be located next to the camera light. The Job Hazard Analysis (JHA) is located in Appendix A.

Warning - Personal protective equipment should be used during testing, such as safety glasses, gloves, and safety shoes, when appropriate.

(A Safety Awareness Session will be conducted at the test site prior to testing.)

4.5 RADIATION AND CONTAMINATION CONTROL

All testing will be non-radioactive.

4.6 QUALITY ASSURANCE

Quality Assurance shall approve of this Operability Test Procedure prior to its release. A Quality Control representative shall verify all steps requiring QC verification during testing.

4.7 ACCEPTANCE CRITERIA

The acceptance criteria for this OTP are based on operability and reliability of the equipment as if it were being used in the field. Each step shall be evaluated and signed off by the CFE Cognizant Engineer as well as Operations to verify that the equipment is acceptable for field use. Acceptable reliability based on this testing shall be determined by the judgement of the CFE Cognizant Engineer and CPO Manager, or their delegates. The acceptance of the overall reliability of the system shall be documented by the signatures on the *Test Completion Sign-Off Sheet*.

5.0 RECORDS

The CFE Cognizant Engineer shall prepare and release an Operability Test Report at the conclusion of OTP testing.

6.0 PROCEDURE

This procedure will be used to perform the operational testing of the MCCS system. As each step is performed signatures shall be logged onto the procedure in the blank spaces as indicated.

CE _____ Step 1: Notify all witnesses immediately prior to commencing the test.

OP/CE _____ Step 2: VERIFY that all the components to the Field Control Unit are properly connected prior to energizing the system per Figures 1 and 2.

OP/CE _____ Step 3: Plug in the power cord for the Field Control Unit.

OP/CE/QC _____ Step 4: Apply power to the unit and verify that the POWER light is functional. POWER display located on the front face of the ESCP illuminates when the unit ON/OFF switch is moved to the ON position and power is available inside the box.

OP/CE _____ Step 5: Turn on the vacuum pump located on the Mobile Platform to allow for flow and pressure through the ESCP.

OP/CE/QC _____ Step 6: Press the START/RESET button and verify that the FLOW indicator illuminates. START/RESET display located on the front face of the ESCP operates when flow has been sensed.

OP/CE/QC _____ Step 7: VERIFY PRESSURE #1 and PRESSURE #2 displays illuminate when pressure is sensed. With the START/RESET button previously activated, verify that the PRESSURE #1 and PRESSURE #2 indicators illuminate.

OP/CE/QC Step 8: Verify that the PURGING indicator is illuminated. PURGING display illuminates when the ESCP begins the purge cycle. After pressing the START/RESET button.

OP/CE/QC Step 9: **VERIFY** LOAD ENERGIZED display illuminates after approximately 8 - 10 minutes when the ESCP has enabled power output to the remaining MCCS.

OP/CE/QC Step 10: Manually kink the purge air supply hose to the camera cutting off flow. Verify that system power down occurs after purge air flow is interrupted and that SYSTEM ENERGIZED, PRESSURE 1 and PRESSURE 2 indicator lights located on the ESCP are no longer illuminated.

OP/CE/QC Step 11: **VERIFY** camera shuts down.

OP/CE Step 12: RESET

OP/CE Step 13: Using remote camera zoom control, manipulate the zoom control to wide angle. **VERIFY** the zoom moves towards wide when operated towards "wide".

OP/CE Step 14: Manipulate the zoom control to telephoto. **VERIFY** the zoom moves towards telephoto when operated towards "telephoto".

OP/CE Step 15: **VERIFY** that the auto focus adjusts to far when viewing an object at a distance.

OP/CE Step 16: **VERIFY** that the auto focus adjusts to near when viewing an object that's near.

OP/CE Step 17: Using the auto iris, adjust lighting to dim and **VERIFY** that auto iris adjusts accordingly.

OP/CE Step 18: Using the auto iris, adjust ambient lighting to bright and **VERIFY** that auto iris adjusts accordingly.

OP/CE Step 19: Bypass the auto focus control to manual control. **VERIFY** that the focus adjusts to near when focused on an object that is "near".

OP/CE Step 20: Using the far focus control. **VERIFY** that the focus adjusts to far when focused on an object that is "far".

OP/CE Step 21: Using the remote pan control, pan in the clockwise direction until stop is reached.

OP/CE Step 22: Tilt the camera up to the extreme upward position. **VERIFY** that the camera is approximately 60 degrees up from the horizontal position and the electronic brake holds.

OP/CE Step 23: Tilt the camera to the straight down position. **VERIFY** that the camera is pointing approximately 90 degrees downward from the horizontal position and the electronic brake holds.

OP/CE/QC Step 24: Raise the camera to a horizontal position and de-energize the pan and tilt unit and **VERIFY** that the camera returns to the downward position by gravity or with light manual pressure.

SEE EXCEPTION #1

FIGURE 1 - ELECTRICAL CONNECTIONS

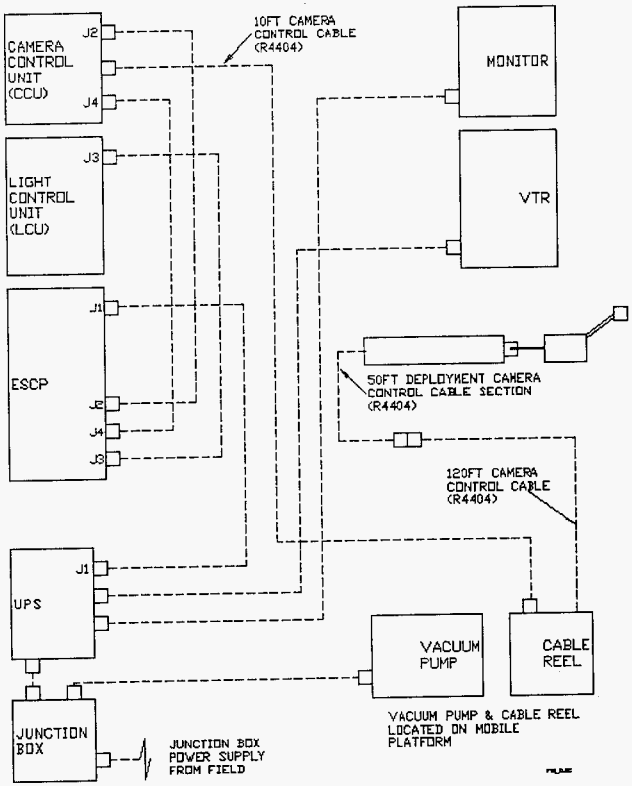


FIGURE 2 - PNEUMATIC CONNECTIONS

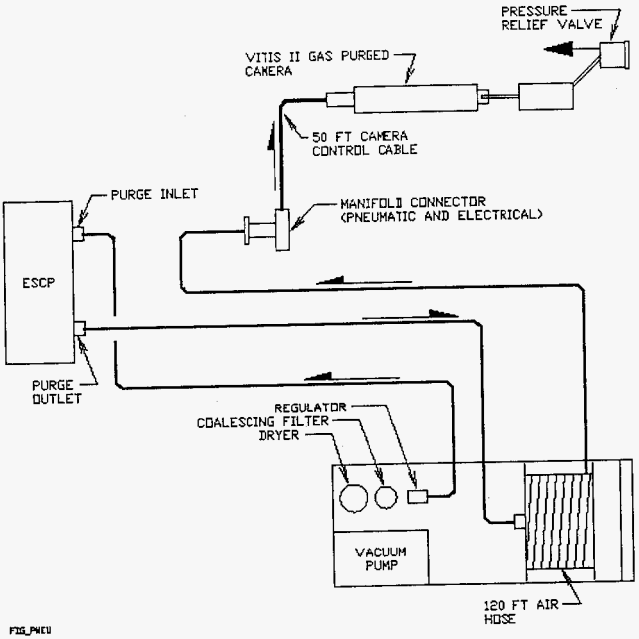
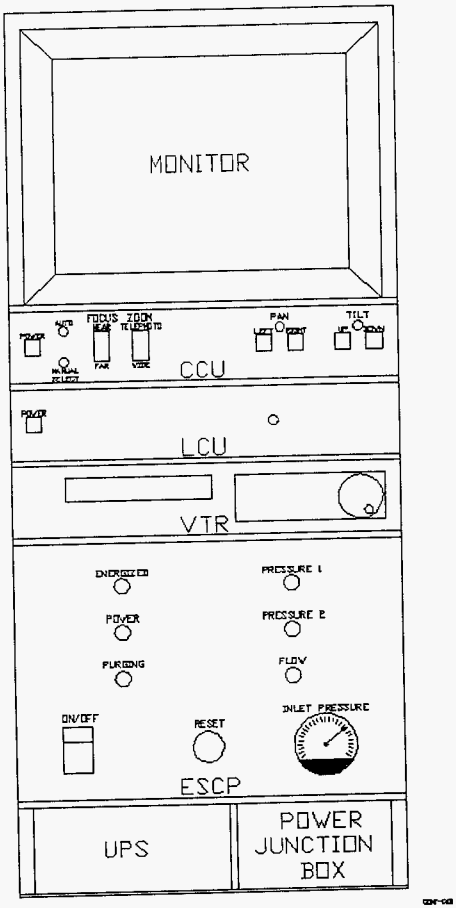


FIGURE 3 - MCCS CONTROL CABINET



ATTACHMENT 1 - OTP EXCEPTION / RESOLUTION DATA SHEET

STEP #	DESCRIPTION OF PROBLEM	RESOLUTION TO PROBLEM	COG INITIALS	QC INITIALS
24	CAMERA DID NOT RETURN TO STRAIGHT DOWN POSITION WITH LOSS OF PURGE. WAS ~20° FROM STRAIGHT DOWN	THIS WILL NOT AFFECT THE OPERATION OF CAMERA. THE CAMERA & LIGHT CAN MANUALLY BE STRAIGHTENED AS IT IS PULLED THROUGH THE RISER	GJG	1-22-97 KGO

APPENDIX A - JOB HAZARD ANALYSIS

HANFORD JOB HAZARD ANALYSIS CHECKLIST

Page 1 of 2

Prepared By: J.A. HARVEY/C. ESVELDT | Date: 01/20/97 | Area: 200E | Bldg.: 2704HV

Scope/Description: OPERATIONAL TESTING OF MOBILE COLOR CAMERA SYSTEMS

[X] New [ ] Revised

Emergency Contact Person(s):
Primary: DANA LANGLOIS 373-5794
Secondary: MIKE SUMSION 373-4643
Emergency Radio/Phone Number: 811/911

JHA Number (not required):

Specific Work Location(s): 2101 HV BLDG

KNOWN OR POTENTIAL HAZARDS

	Yes	No	✓	•	Reference		Yes	No	✓	•	Reference
1. Radiation Area Work		X	✓	•		10. Respiratory Hazards		X	✓		
2. Hazardous Waste Operations		X	✓	•		11. Electrical Hazards	X		✓		WKS 15
3. Confined Space Entry		X	✓	•		12. Lock and Tag		X	✓	•	
4. Cutting/Welding		X		•		13. Scaffolding		X			
5. Roof Work		X				14. Aerial Lifts		X	✓		
6. Fall Hazards (> = 10')		X				15. Asbestos Removal		X	✓	•	
7. Excavation/Trenching		X		•		16. Other (see JHA Sht. 2):					
8. Asbestos Inspection Report		X		•		✓ = Formal training required.					
9. Hazardous Materials		X	✓			• = Items that require a permit/form/report.					

Other Hazards	Yes	No	Control Measures
1. Temperature Extremes		X	
2. Noise		X	
3. Insufficient Lighting	X		PORTABLE LIGHT STANDS
4. Animals/Insects		X	
5. Process Chemicals/Steam		X	
6. Dust		X	
7. Flammable/Combustible Materials	X		ESTABLISH 35' CONTROL RADIUS FOR FLAMMABLES/COMBUSTIBLES
8. Ladders	X		USE WAREHOUSE STOCK LADDER
9. Wet/Slippery Floors or Surfaces		X	
10. Uneven Terrain	X		PROVIDE CABLE/CORD CONTROLS, YELLOW JACKETS
11. Adjacent Water Hazard		X	
12. Vehicle Traffic		X	
13. Heavy Equipment		X	
14. Rigging Operation		X	
15. Manual Lifting	X		PLANNED TWO-PERSON LIFT OF CAMERA TO LADDER
16. Power Tools		X	
17. Pinch Points		X	
18. Falling Objects		X	
19. Sharp Objects		X	
20. Overhead Obstructions		X	
21. Site Control (Signs/Barricades)		X	
22. Remote Work Area			X
23. Other (see JHA Sht. 2):	X		

MINIMUM DRESS REQUIREMENTS: HARD HAT/SAFETY SHOES

[ ] If further evaluation of the job steps, associated hazards, or safety measures need to be performed, continue job hazard analysis on page 2.

[ ] If work activities will, or are likely to result in employee exposure greater than or equal to the OSHA substance-specific medical surveillance criteria (in the absence of such criteria, use the lower of one-half the OSHA PEL or one-half the ACGIH), complete Site Form A-6001-981 (Potential Exposure Hazards).

APPROVALS

Supervisor, Person in Charge (Signature): MIKE SUMSION

Industrial Safety/Hygiene (Signature(s)): J.A. HARVEY 1/22/97

A-6002-027 (09/96)

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APPENDIX A - JOB HAZARD ANALYSIS (CONT)

HANFORD JOB HAZARD ANALYSIS (Sheet 2)		Page 2 of 2
Sequence of Basic Job Steps or Work Activity	Hazards Present	How to Eliminate Hazards
LIGHTS ARE EXTREMELY HOT	POTENTIAL CONTACT BURNS	PROVIDE WARNING SIGN/ZONE

A-6002-027 (09/96)

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TEST COMPLETION - SIGN OFF SHEET

All tests have been completed as described in this OTP. All exceptions have been documented and resolved as indicated on the "OTP Exception / Resolution Sheet". The MCCS can be operated in a safe manner and pose no unacceptable hazards to the operator.

NAME	ORGANIZATION	SIGNATURE	DATE
D. C. Langlois	CPO - Mgr		1/22/97
Don Reddart	Characterization Project Operations		1/22/97
Don K Hall	Characterization Project Operations		1/22/97
	Characterization Project Operations		
	Characterization Project Operations		
	Characterization Project Operations		
JA Petty	East Area Tank Farms Ops		1-22-97
W.A. Morris	East Area Tank Farms Ops		1-22-97
	East Area Tank Farms Ops		
D. P. Neibuhr	CPO-PIC		1/22/97
M. L. Sumsion	CPO-PIC		1-22-97
M. L. McElroy/ R. A. Arndt	Quality Assurance/Quality Control		1-22-97
J. A. Harvey	Safety		1/22/97
C. A. Esvelt	Characterization Field Engineering/Cog Engineer		1-22-97