JUN 04 1997 (20) Sta. 37

ENGINEERING DATA TRANSMITTAL

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5. Proj./Prog./Dept./Div.: Safety Upgrade Projects/ TWRS	6. Design Authority/ Design Agent/Cog. Engr.: MF Erhart/ DD Tate/ MF Erhart	7. Purchase Order No.: P.R.# 478656
8. Originator Remarks: Approval/Release		9. Equip./Component No.: n/a
		10. System/Bldg./Facility: 200 Areas
11. Receiver Remarks: 11A. Design Baseline Document? [ ] Yes [X] No		12. Major Assm. Dwg. No.: H-14-100834
		13. Permit/Permit Application No.: n/a
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(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	HNF-SD-WM-ETP-226	-	0	Standard Hydrogen Monitoring System (SHMS-E) Engineering Task Plan	SQ	1	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 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	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) Rea-son	(H) Disp	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Rea-son	(H) Disp	(J) Name	(K) Signature	(L) Date	(M) MSIN
1	1	Ops.SHMS Cog. Mike Erhart	M F Erhart	5-19-97	R-51	1	1	Project Mgr. Dennis Crass	D Crass for HE-18	20 May 97	
1	1	Design Agent Daron Tate	D Tate	4/2/97	46-37	3	1	Field Inst.Engr. Keith Carpenter	K E Carpenter	5/20/97	
1	1	Cog.Engineer Tom Schneider	T Schneider	4/24/97	46-37				R3-47		
1	1	Program Mgr. Jerry Johnson	J Johnson for GDJ	5/23/97	57-14						
1	1	QAE L.Salsberry	L Salsberry	5/9/97	87-41						
1	1	Safety S.Zaman	S Zaman	5/9/97	R3-	01					

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No.
D Tate 4/21/97	D Crass for MF Erhart 5/20/97	5/29/97	[ ] Approved [ ] Approved w/comments [ ] Disapproved w/comments
EDT Originator Daron Tate Date	Authorized Representative for Receiving Organization Date	Design Authority/ Cognizant Manager Date	

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

STANDARD HYDROGEN MONITORING SYSTEM (SHMS) ENGINEERING TASK PLAN

Daron Tate & Barb Philipp
SGN Eurisys Services Corporation, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-96RL13200

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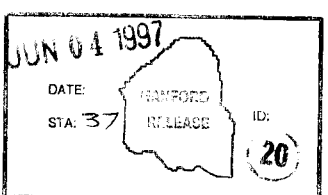
Key Words: Standard Hydrogen Monitoring System, SHMS, Hydrogen, Methane, Ammonia, Nitrous Oxide, Gas Chromatograph, Whittaker, Gas Monitoring

Abstract: This document details the responsibilities and requirements for the design, technical documents, fabrication, testing, and installation of the SHMS-E and SHMS-E+ continuous gas monitors. The SHMS-E is identical in function to a SHMS-B but has the interface to accommodate an analytical module containing a gas chromatograph and a B&K photo acoustic gas monitor. Temporary addition of the analytical module adds the "+" to the SHMS-E designation. The analytical module is temporary in all installations.



Release Approval Date

Release Stamp

Approved for Public Release

TWRS SAFETY PROGRAM

STANDARD HYDROGEN MONITORING SYSTEM (SHMS-E) ENGINEERING TASK PLAN

Prepared by

Daron Tate
&
Barb Philipp

Remote Sensing & Sampling Equipment Engineering

May 1997

SGN Eurisys Services Corporation
P.O. Box 840
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CONTENTS

1.0 INTRODUCTION

Tanks which are known or suspected to retain and occasionally release flammable gases are equipped with continuous gas monitors called Standard Hydrogen Monitoring System (SHMS). The primary function of the continuous gas monitors is to determine tank vapor space gas composition and gas release rate, and to detect gas release events. These SHMS units contain two Whittaker™[1] electrochemical cells which monitor hydrogen. Air from the dome vapor space or vent header is continuously drawn through these cells to verify that the vapor space gasses remain below 25% of the lower flammability limit (LFL) for hydrogen and produce a continuous measurement of the concentration. Vapor grab samples are also collected, automatically, if the concentration reaches 25% of the LFL. Vapor grab samples can be taken at any time by manually triggering the process.

SHMS units configured with the two Whittaker™ electrochemical cells and vapor grab sample capability comprise the majority of the operating systems, and are designated "B" model SHMS or SHMS-B. Three SHMS-A units exist (the earliest SHMS design) with only one Whittaker™ electrochemical cell and manual vapor grab sample capability. Some SHMS units are equipped with additional analytical equipment. A SHMS-C contains all of the SHMS-B capabilities plus a Gas Chromatograph to allow more sensitive and accurate measurements of hydrogen. A SHMS-D contains all of the SHMS-B capabilities plus a B&K photo-acoustic infrared monitor to measure other gasses such as Ammonia.

Demand for analytical measurement of Hydrogen (H_2), Ammonia (NH_3), as well as Nitrous Oxide (N_2O), Methane (CH_4) and potentially other gasses, using a further enhancement of a SHMS-B initiated development of the SHMS-E+, defined in this Engineering Task Plan..

Characterization of the gas composition is needed for safety analysis. The lower flammability limit, as well as the peak burn temperature and pressure, are dependent upon the gas composition. If there is little or no knowledge about the gas composition, safety analysis utilize compositions that yield the worst case in a deflagration or detonation. This conservative approach to unknowns necessitates a significant increase in administrative and engineering costs. Knowledge of the true composition could lead to reductions in the assumptions and therefore there may be a potential for a reduction in controls and work restrictions. Also, knowledge of the actual composition will be required information for the analysis that is needed to remove tanks from the Watch List. Similarly, the rate of generation and release of gases is required information for performing safety analysis, developing controls, designing equipment, and closing safety issues. To determine release rate, both the gas concentrations and the dome space ventilation rates (exhauster flow rate or passive dome/atmosphere exchange rate) are needed.

Therefore, a flexible gas continuous monitoring system is needed that can be expanded to measure gas compositions at both high and low sensitivities. For these reasons, a modified version of the SHMS (entitled SHMS-E or -E+) is being developed.

[1] Whittaker is a trademark of the Whittaker Corporation.

2.0 SCOPE

This task plan details organizational responsibilities and requirements for the design, technical documents, fabrication, testing, and installation of the SHMS-E and SHMS-E+ continuous gas monitors. The SHMS-E will be similar to the current SHMS-C system, with modular, expandable characterization capabilities.

The SHMS-E+ will measure gas concentrations in selectable ranges of approximately:

Hydrogen	(3-100,000 ppm)
Nitrous Oxide	(10-4,000 ppm)
Ammonia	(10-10,000 ppm)
Methane	(10-4,000 ppm).

The SHMS-E will have the same basic cabinet, wiring, tubing, and layout design as SHMS-E+ but without the analytical equipment. The SHMS-E will monitor Hydrogen using electro-chemical cells like a basic SHMS-B. Additionally, the analytical equipment is to be designed to be modular and removable and reinstallable from one SHMS-E to another. This will allow any SHMS-E to be temporarily upgraded to a SHMS-E+ and later restored to an "E". This modular package will include an MTI Gas Chromatograph, a B&K Photo Acoustic Infrared monitor , and associated computers and analog to digital converters configured as "plug-in" subsystems.

2.1 DELIVERABLES

The following items shall be prepared:

1. Drawings for system fabrication and installation:
   - Drawing index tree
   - Electrical one-line and elementary diagrams
   - Piping and instrument diagram
   - SHMS-E assembly drawings
   - Site specific installation details
   - Tubing routing
   - Instrumentation wiring diagram
   - Loop diagrams
   - Block diagram for the data system and HLAN within SHMS-E

2. Supporting documents:
   - Test plans and procedures
   - Test reports
   - Design description
   - Safety assessment letter of applicability
   - Software documentation
   - Work packages for system installation at the tanks listed in Appendix "A"

3. Vendor information file
4. As-built documentation drawings on task completion
5. Nine fully-tested and installed full-feature SHMS-E+ systems, and six basic SHMS-E systems

Approved H-series drawings will be issued prior to SHMS-E installation on the selected tanks.

3.0 DESCRIPTION

3.1 PHYSICAL DESCRIPTION

The Gas Continuous Monitoring System design feature are as follows:

SHMS-E Basic Design Features:

-Dual Whitaker electrochemical cells to measure high hydrogen concentrations in the range of 2000-100,000 ppm.

-Grab sample capability

-Digital data logging plus TMACS connection

SHMS-E+ All features of the "E" plus the Analytical Subsystem Design Features:

-MTI gas chromatograph to measure low hydrogen concentrations, nitrous oxide, and methane concentrations

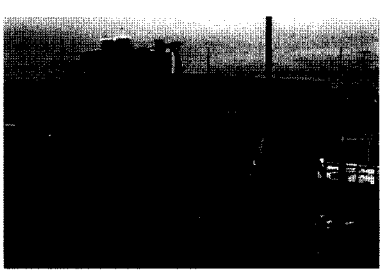
-B&K photo-acoustic monitor to measure ammonia concentration

-Network data access, archiving, and remote diagnostics

- Capability for future tracer gas injection/sampling, or the possibly dome ventilation rate measurement.

The sample gas analytical system will provide local display of analyzed sample gases, as well as both local and remote data logging capabilities through the HLAN data link. Functional requirements for the SHMS-E are detailed in HNF-SD-WM-FDC-054, "Gas Continuous Monitoring System Functional Design Criteria."

It is important that the new SHMS-E and SHMS-E+ units look, feel, and have close to the same valve and part locations as the SHMS model "B", "C", and "D". This will minimize operator retraining as well as procedure changes.



SHMS-E+ on 241-AN-101

3.2 ENGINEERING TASKS

1. Prepare and release Functional Design Criteria
2. Prepare procurement specification for remaining design elements and fabrication of SHMS-E.
3. Procure the government furnished equipment and materials.
4. Evaluate and process vendor submittals
5. Coordinate fabrication of the SHMS-E
6. Prepare test procedures.
7. Conduct and witness testing of equipment.
8. Prepare and release test reports (completed test procedures).
9. Prepare and release System Design Description (SDD)
10. Prepare and release Computer SoftWare Documentation (CSWD)
11. Prepare and release As-Built Drawings
12. Update SHMS training needed for the new system
13. Update Operating and Maintenance Manual
14. Update Preventative Maintenance Procedures for Operations
15. Suppliment Vendor Information Files
16. Suppliment Spare Parts List
17. ABU and Turn-over (see appendix "B" for draft ABU checklist)

The design and fabrication will be controlled in accordance with "Engineering Practice Guidelines," WHC-IP-1026, EPG-2.0, "Engineering System Design Control." Changes to the design documentation during fabrication of the SHMS-E will be by the ECN process initiated by the cognizant engineer. The design drawings plus the ECNs issued during the fabrication will provide as-built documentation. Following fabrication, the system will be tested to verify compliance with the design.

Each SHMS-E, not skid mounted for portability, will be assigned a specific facility destination and will be coordinated with the installation drawings for that facility.

Computer software purchased and written for the operation of the ammonia monitor and the gas chromatographs will be prepared and controlled in accordance with WHC-CM-3-10, "Software Practices," SP-3.0, "Development," and SP-6.0, "Configuration Control." The GC operation will use commercially- available software. Software will be developed as necessary for the interface with the data acquisition system.

3.3 VERIFICATION

An informal design review will be held prior to the issuance of the H-series drawings for fabrication, thus allowing interested parties to have input to the system design. Copies of the final drawings will be provided to the review team for information at the time the drawings are issued for fabrication. The fabrication will be subject to monitoring and inspection by the cognizant engineer or his designee. The fabrication will be inspected by the cognizant engineer prior to verification testing.

The design will be verified by acceptance testing. Acceptance testing will be performed in the fabricator's shop and witnessed by the cognizant design engineer (or his designated alternate) and the cognizant quality engineer. The cognizant engineer may elect to have additional personnel witness the testing.

Computer software will be validated by testing. Requirements, test procedures, and validation requirements will be issued for the required software per the requirements of WHC-CM-3-10, "Software Practices." The equipment being controlled and/or operated by personal computers shall pass the validation testing prior to being placed in operation.

3.4 PROCUREMENT

After preparation and release of the Procurement Specification, proposals were received from several companies wishing to supply the engineering and fabrication of the SHMS-E+ units. The contract was awarded to Mid Columbia Engineering. MCE is contracted to procure the majority of the materials.

Government furnished items will be purchased by WHC and provided to the fabrication contractor for assembly and installation into the SHMS-E. The material being provided to the fabrication contractor will be identified in the specification prior to the start of fabrication.

Supplimental materials and software will be procured by Numatec/SESC to support the telecommunications tie-in to HLAN, software integration tools, bottled calibration and carrier gasses, etc. The Project Engineer for the SHMS-E+ project is authorized to utilize the Fluor-Daniel Purchasing Card for procurements under $5K without additional approvals. All procurements in excess of $5K will be authorized by the Program Manager or the Cost Account Manager.

3.5 FABRICATION

The SHMS-E cabinet will be fabricated using engineering drawings controlled in accordance with WHC-IP-1026, "Engineering Practice Guidelines," EPG-2.0, "Engineering System Design Control."

4.0 ORGANIZATIONAL RESPONSIBILITIES

The task responsibilities are outlined in the following sections.

4.1 TWRS Safety Program

Program Manager: GD Johnson

- Plan and coordinate overall program.
- Approve engineering documentation.
- Approve design criteria.

4.2 Safety Upgrade Projects

Project Manager: DW Crass

- Cost account manager
- Customer representative coordinating scope, cost, and schedule
- Approve engineering documentation.

4.3 Remote Sensing & Sampling Equipment Engineering

Organizational Manager CE Hanson
Project Engineer: DD Tate
Design Engineer: TC Schneider

- Provide cost and schedule estimates
- Design and coordinate fabrication, assembly, and installation of the SHMS
- Prepare specification for contract procurement
- Coordinate offsite component fabrication
- Prepare acceptance test procedures and perform acceptance testing as required
- Provide system fabrication and installation engineering support
- Support preparation of engineering installation requirements documents
- Support installation design activities, as required
- Support engineering documentation as-building, review, and release process
- Support preparation draft system maintenance and operations procedures
- Support field operation and system maintenance
- Support maintenance and operations system training
- Operate, maintain, baseline & validate the analytical portion of the SHMS-E+

4.4 Field Installation Project Engineer

Installation Engineers: Keith Carpenter

- Will act as the cognizant engineer for all field construction activities, on behalf of TWRS Safety Projects, and the Remote Sensing & Sampling Equipment Engineering , SHMS project team.
- Prepare and issue field installation ECNs and supporting USQs
- Coordinate installation of SHMS cabinets
- Coordinate installation of Sample Probes and Gas Sample Conditioners

4.5 TWRS Projects Planning & Scheduling

Planning & Scheduling Coordinator: Rich Rodriquez

- Will prepare work packages for field installation
- Will schedule work with construction or plant forces as needed.

4.6 Operations Cog. Engineer for SHMS

Operations Cog. Manager: RL Schlosser

Operations SHMS Cog. Engineer: Mike Erhart

- Will advise, review, and approve applicable SHMS documentation and equipment: functional and design criteria, design, description, training, operation, maintenance, and safety documents.
- Will define what is required for "Acceptance for Beneficial Use" (ABU).

4.7 TWRS Programs QA

Quality Assurance Engineer Larry Salsberry

PQS Engineer (FDH-QA): George E. Mata

Field AI (FDNW): Mark H. Brown

- Review and approve the fabrication and installation documents, work plans, and work instructions, as required.
- Perform the necessary surveillance and inspection activities to assure conformance to the appropriate documents and procedures throughout fabrication and installation.
- Provide acceptance testing and documentation (green tag) at the vendors facility
- Perform receipt inspection at delivery
- Review and concur with impact level and safety class designations.
- Support the system readiness review process.

4.8 TWRS Nuclear Safety

Manager: MN Islam

Cognizant Engineer: SU Zaman

- Review and approve the fabrication and installation documents, work plans, work instructions, and test procedures and reports, when required.
- Review and concur with impact levels and safety class designations.
- Coordinate all required safety reviews, including industrial health and safety, fire safety, nuclear safety and radiological control.

4.9 Procurement

Procurement Contract Administrator: MW Meagher / KS Hoeft

- Provide request for proposal and contract award
- Administer contract and progress payments.

4.10 Applications Design Services

Drafting Team Coordinator: LA Watson

- Provide vendor design drawing review

Responsibilities associated with Acceptance for Beneficial Use (ABU) are listed in Appendix "B" titled: "Acceptance for Beneficial Use Checklist".

5.0 SCHEDULE

Following are the task milestones:

Complete specification	May 1996
Award procurement contract	June 1996
Complete fabrication design	Aug. 1996
Complete first two SHMS-E+ units	Nov. 1996
Complete SHMS units 3,4,5,6,7, &8	Jan. 1997
Complete SHMS units 9, 10, 11, & 12	Mar. 1997
Complete SHMS units 13, 14, 15, 16, & 17	May 1997
Install first 7 SHMS units	May 30, 1997
Install additional 6 SHMS units (total of 13 in FY97)	Sept. 30, 1997

6.0 COST ESTIMATE

FUNCTION		ESTIMATED MANHOURS	ESTIMATED COST	CHARGE CODE
Numatec/SESC Engineering ETP, SA, FDC, SDD, CSWD, Spec., Software Development, O&M/ Maint./Op./Cal.Manuals	E	FY96 3043 FY97 3640 FY98 1920	$ 228K $ 273K $ 145K	N2165 N2022 N_ _ _
Contract Design & Fabricate	C	FY96 FY97	$1,200K	N2239 N2068
Government Supplied Materials	C	FY96 FY97 FY98	$ 100K $ 50K $ 100K	N2239 N2068 N2068
Construction Forces Installation	C	FY96 9334 FY97 12308 FY98 6154	$ 700K $ 800K $ 462K	N2239 N2068 N2068
TMACS & HLAN tie-in	C	FY96 FY97 FY98	$ 10K $ 200K $ 200K	N2239 N2068 N2068
TOTALS	FY96 E= 228K C=2,000K FY97 E= 273K C=1,650K FY98 E= 145K C= 762K			

7.0 QUALITY ASSURANCE

The design documents generated for this task will be prepared and verified in accordance with WHC-IP-1026, "Engineering Practice Guidelines," EPG-2.0, "Engineering System Design Control," and WHC-CM-3-5, "Document Control and Records Management Manual," Section 12.7, Rev.0, "Approval of Environmental, Safety, and Quality Affecting Documents". This task has been identified as Impact Level SQ in accordance with Section 12.7. The work associated with this task plan will meet the requirements of the Quality Assurance Project Plan as outlined in WHC-EP-550, "Project Plan for Mitigation," and WHC-CM-4-2, "Quality Assurance Manual."

8.0 SAFETY

This system is General Service in accordance with the requirements of WHC-CM-4-46, "Safety Analysis Manual,". WHC-SD-WM-BIO-001 Rev.E, addresses SHMS operation in the tank farms. Although the SHMS function does not require it to be safety class or safety significant, it's connection with the tank vapor space (a safety class system) does indicate a need for potential spark source isolation. Defense in Depth may necessitate designation of protective equipment as Safety Equipment List components.

9.0 REFERENCES

1. HNF-SD-WM-FDC-054, "Gas Continuous Monitoring System, Functional Design Criteria."

2. WHC-CM-1-3, "Management Requirements and Procedures."
   - MRP 2.16, "Controlled Manual System, Paragraph 5.0, Requirements."
   - MRP 5.46, "Safety Classification of Systems, Components and Structures."

3. WHC-CM-3-5, "Document Control and Records Management Manual."
   - Section 12.7, Rev. 0, "Approval of Environmental, Safety, and Quality Affecting Documents."

4. WHC-CM-3-10, "Software Practices."
   - SP-3.0, "Development."
   - SP-6.0, "Configuration Control."

5. WHC-CM-4-2, "Quality Assurance Manual."

6. WHC-CM-4-46, "Safety Analysis Manual."

7. WHC-CM-6-1, "Standard Engineering Practices."
   - EP-1.3, "Preparation of Engineering Drawings."
   - EP-1.7, "Engineering Document Approval and Release."
   - EP-2.2, "Engineering Document Change Control Requirements."
   - EP-3.3, "Vendor Information."
   - EP-4.1, "Design Verification Requirements."
   - EP-4.2, "Testing Practices."
   - EP-5.8, "Engineering Document Contents."

8. WHC-EP-550, "Project Plan for Mitigation."

9. WHC-IP-1026, "Engineering Practice Guidelines."
   - EPG-2.0, "Engineering System Design Control."

10. General
    - DOE Order 6430.1a,"General Design Criteria."
    - NFPA-70, "National Electrical Code."

APPENDIX "A"

SHMS-E INSTALLATION INFORMATION

PRI	TANK#	SHMS TYPE	NEW / UPGRD	PROBE	SST	ADDITNL EQUPMNT	TMACS/ HLAN	DATE Field ATP	MONITOR LOCATION	COG. ENGR	
1	C-106 slucing	SHMS-C	New	Exhstr Tap	X	Chiller	New / --	Mar 97	SW OF THE VENT SAMPLE POINT	Mike Erhart	
2	AY-102 rcvr	SHMS-C	New	Probe		Big Chiller	New / LAN to MO-439	Mar 97	Adjacent to Riser to the NorthEast	Mike Erhart	
3	A-101 [WL]	SHMS-E+	UP	Existg	X	Chiller	New / Radio LAN 242A	May 97	26' WEST OF RISER (Existing)	Mike Erhart	
4	AN-101 rcvr	SHMS-E+	New	Probe		--	New / LAN to GCS	May 97	Adjcnt to Riser to the East	Mike Erhart	
5	BY-105	SHMS-E+	New	Probe	X	--	New / New	May 97	Adjacent to Riser to the North	Mike Erhart	
6	AZ-101 rcvr	SHMS-E	New	Probe		Big Chiller	-- / --	May 97		Mike Erhart	
7	AZ-102 rcvr	SHMS-E	New	Probe		Big Chiller	-- / --	May 97		Mike Erhart	
8	AN-107	SHMS-B frm A101	New	Probe		--	New / --	May 97	Adjacent to Riser to West	Mike Erhart	7 SHMS by 5/30 (T22.97-113)
9	S-109	SHMS-E+	New	Probe	X	--	New / New	July 97	Adjacent to Riser to the East	Mike Erhart	
10	S-106	SHMS-E+	New	Probe	X	--	New / New	July 97	Adjacent to Riser to the East	Mike Erhart	
11	S-101	SHMS-E	New	Probe	X	--	New / --	July 97	Adjacent to Riser to East	Mike Erhart	
12	SY-102 rcvr	SHMS-E+	New	Probe		--	New / LAN to DACS	July 97	Adjacent to Riser to the North	Mike Erhart	
13	SX-103 [WL]	SHMS-E+	UP	Existg	X	--	Existing / New	Aug 97	3' North of Riser (Existing)	Mike Erhart	
14	AW104	SHMS-E (Skid)	New	Probe		--	New / --	Sept 97	Adjacent to Riser to East	Mike Erhart	Remaining SHMS by 9/30 (T22.97-009)
	FY98	Jobs	-----	-----							
15	S-107	SHMS-B (from SX-103)	New	Probe	X	--	New / --		Adjacent to Riser to East	Mike Erhart	
16	U-102	SHMS-E	New	Probe	X	--	New / --		Adjacent to Riser to NorthEast	Mike Erhart	
17	U-105	SHMS-E+	UP	Existg	X	--	Existing / New		S.W.ofRiser (Existing)	Mike Erhart	
18	AP-104	SHMS-E+	New	Probe		--	-- / New		Adjacent to Riser to N.W.	Mike Erhart	

	Skid	SHMS-E+	--	--	--	Chiller	-- / Radio LAN	Aug. 97	--	Mike Erhart
	Skid	SHMS-E+	--	--	--	Chiller	-- / Radio LAN	Aug. 97	--	Mike Erhart

Appendix "B"

Acceptance for Beneficial Use Checklist

Program/Project Title: Project W-369, Standard Hydrogen Monitoring System (SHMS)

DOCUMENTATION REQUIRED FOR ACCEPTANCE FOR BENEFICIAL USE

DESCRIPTION	RESPONSIBILITY
ENGINEERING	
[X] Engineering Task Plan	DW Crass
[ ] Activity Schedule	
[ ] Final Safety Analysis Rpt. (FSAR)	
[ ] Interim Safety Basis - update	
[X] Safety Assessment (SA)	OM Serrano
[X] Safety Equipment List (SEL)	OM Serrano
[ ] Operational Safety Requirements (ORR) - update existing	
[ ] Operational Safety Document(s) (OSD) - or update existing	
[] Design Criteria	
[X] System Design Description (SDD)	DW Crass
[ ] Test Plan/Specifications	
[X] Acceptance Test Procedures (ATPs) and Final Test Report	DW Crass
[ ] Operational Test Procedures (OTPs) and Final Test Report	
[ ] Environmental Impact Statement	
[ ] Environmental Report	
[ ] Environmental Permit	
[ ] Hazardous Waste Disposal Plan/ Procedures	
[ ] Solid Waste Disposal Plan/ Procedure	
[ ] Stress/ Seismic Analysis	
[ ] Stress/ Design Report	
[ ] Design Specifications/ Report	
[X] Equipment Specifications	DW Crass
[X] Procurement Specifications	DW Crass
[X] Construction Specification	DW Crass
[ ] Essential Material Specifications	
[ ] Final Design Drawings	
[X] Installation Drawings	DW Crass
[X] Installation Work Plan	DW Crass
[X] As-built Drawings	DW Crass
[ ] Interface Control Drawings	
[ ] IEFD Drawings	
[ ] Systems Drawings	
[X] Drawing Tree	DW Crass
[X] Incorporate Outstanding Project Generated ECNs	DW Crass

DESCRIPTION	RESPONSIBILITY
ADP	
[X] Software Configuration Management Plan	DW Crass
[ ] System requirements Specification	
[X] Computer SoftWare Description (CSWD) or Software Design Description (SDD)	DW Crass
[ ] Software Validation/Verification	
TRAINING	
[ ] Training Plan	
[ ] Training Manuals	
[X] Training to Operating Crews	JM Morris
[X] Training to Maintenance Crews	JM Morris
[X] Training Mock-Up	DW Crass
OPERATIONS/MAINTENANCE	
[X] Operating and Maintenance Manuals	DW Crass
[X] Operating Procedures	TM Horner
[X] Surveillance Procedures	TM Horner
[X] Calibration Procedures	DP Kerwick
[ ] Preventative Maintenance Proc.	
[ ] Repair/Maintenance Procedures	
[ ] Functional Check Procedures	
[X] PM/S Data sheets	DW Crass
QUALITY ASSURANCE	
[X] Inspection Plan	DW Crass
[X] QAPP	JA Peltier
PROCUREMENT	
[X] Vendor Information Files	DW Crass
[ ] Comprehensive Equip. List	
[X] Spare Parts List	DW Crass
[X] Spare Parts in Stock	DW Crass

DISTRIBUTION SHEET

To	From	Page 1 of 16
Distribution	TWRS/Waste Mgmt./Safety Prog.	Date 5/27/97
Project Title/Work Order		EDT No. 619515
Standard Hydrogen Monitoring System (SHMS-E) Engineering Task Plan		ECN No. n/a

Name	MSIN	Text With All Attach.	Text Only	Attach./ Appendix Only	EDT/ECN Only
K.E. Carpenter	H6-35	X			
D.W. Crass	H5-68	X			
J.A. Peltier	B7-41			X	
D.P. Kerwick	R2-88			X	
M.F. Erhart	R1-51	X			
C.E. Hanson	S7-12				X
T.M. Horner	R2-82			X	
G.D. Johnson	S7-14	X			
J.M. Morris	R2-87			X	
L.D. Salaberry	B7-41	X			
C.C. Scaief	R1-56	X			
T.C. Schneider	L6-37	X			
O.M. Serrano	R1-43			X	
D.D. Tate	L6-37	84			
S.U. Zaman	R3-01	X			
Central Files	A3-88	X			