Sta 4

FEB 12 1996

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT № 612071

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Characterization Plant Engineering	Characterization Equipment Improvement	N/A
5. Proj./Prog./Dept./Div.:	6. Cog. Engr.:	7. Purchase Order No.:
Core Sampling Aux. Equipment	J.L. Smalley	404870
8. Originator Remarks: ETN-94-0023-F This Acceptance Test Report is transmitted for approval. The ATR documents compliance with specification WHC-S-0249 Rev.1.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: 200 General
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 5/12/95

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-WM-ATR-108	N/A	0	Nitrogen Trailer Acceptance Test Report	Q	1	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 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	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
~~1~~	1	~~RES Cog.~~ Eng. J.L. Smalley	J.L. Smalley	7/6/95	~~R1-17~~ S7-12	Alois Kostelnik			S7-12 ~~R1-17~~	1	1
~~1~~		~~RES Cog.~~ Mgr. ~~R.J. Blanchard~~			~~R1-17~~	Dw Hamilton		7/6/95	S7-12	1	1
1	1	QA ~~J.J. Verderbee~~	M.L. McEvoy M.L. McEvoy		~~S1-57~~	S7-07					
		Safety N/A									
		Env. N/A									
1	1	Core Sampling Cog. ~~A.P. Mousset~~ TD Jaseki			S7-12						
1	1	Cog. Mgr. JS Schofield			S7-12						

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No.
AJ Kostelnik Signature of EDT Originator — Date: 5-8-95	TD Jaseki ~~AP Mousset~~ Authorized Representative for Receiving Organization — Date: 6/13/95	JS Schofield ~~Rd Blanchard~~ Cognizant Manager — Date: 6/14/95	[] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (04/94) GEF097

BD-7400-172-1

NITROGEN TRAILER ACCEPTANCE TEST REPORT

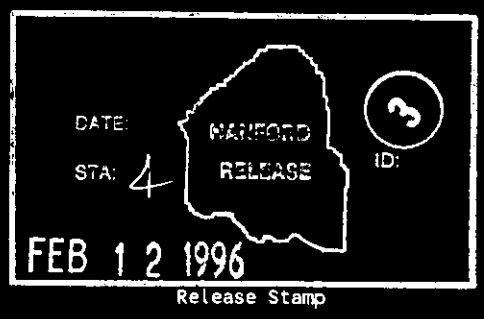
ALOIS J. KOSTELNIK
WESTINGHOUSE HANFORD COMPANY, Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-87RL10930

EDT/ECN: 612071 UC: 2070
Org Code: 75230 Charge Code: N4H2B
B&R Code: EW3120071 Total Pages: 47

Key Words: ETN-94-0023-F, Core Sampling, Liquid Nitrogen, Specification WHC-S-0249, Nitrogen Trailer, Cryogenic Experts, Norco, MVE, Minnesota Valley Engineering, Purchase Order 404870, Core Sampling Ancillary Equipment

Abstract: This Acceptance Test Report documents compliance with the requirements of specification WHC-S-0249. The equipment was tested according to WHC-SD-WM-ATP-108 Rev.0.

Release Approval 2/12/96 Date



Release Stamp

Approved for Public Release

TABLE OF CONTENTS

SUMMARY

The test was performed at Norco's facility in Boise, ID. All steps were completed at the time of testing. The exceptions could not be resolved while WHC personnel were present. The documentation required to close the exceptions was later provided by Norco.

The attached Appendix A contains the Acceptance Test Results for Trailer VIN 1G9FS2724RA065101. Appendix B contains the Acceptance Test Results for Trailer VIN 1G9FS2726RA065102. Appendix C includes the Receipt Inspection Report for both trailers.

RELEASE AUTHORIZATION

Document Number:	WHC-SD-WM-ATP-108, REV 0
Document Title:	Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply
Release Date:	October 4, 1994

* * * * * * * * * * * * * *

This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

* * * * * * * * * * * * * *

WHC Information Release Administration Specialist:

Kara Broz — (Signature)

October 4, 1994 — (Date)

Sta 4 (2)

OCT 04 1994 **ENGINEERING DATA TRANSMI**

WHC-SD-WM-ATR-108
Rev. 0
Appendix A-2 of A-20

Page 1 of 1

608889

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Core Sampling	Characterization Equipment	N/A
5. Proj./Prog./Dept./Div.:	**6. Cog. Engr.:**	**7. Purchase Order No.:**
Core Sampling Aux. Equipment	J.L. Smalley	404870
8. Originator Remarks: ETN-94-0023-F This Acceptance Test Procedure is transmitted for approval. A portion of the procedure was prepared by the Seller and will be performed at the Sellers location. The ATP will show compliance with specification WHC-S-0249 Rev.1.		**9. Equip./Component No.:** N/A
		10. System/Bldg./Facility: 200 General
11. Receiver Remarks:		**12. Major Assm. Dwg. No.:** N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: 10/4/94

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-WM-ATP-108	N/A	0	Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply	Q	1	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) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog.Eng. J.L. Smalley		9-28-94	R1-17	Alois Kostelnik		9-28-94	R1-17	1	1
1	1	Cog. Mgr. R.J. Blanchard			17	OSTI (2)			L8-07	3	
1	1	QA J.J. Verderber		9-29-94	S1-57	Central Files			L8-04	3	
		Safety N/A									
		Env. N/A									
1	1	Core Sampling Cog. A.P. Mousel		10/3/94	S7-12						

18.	19.	20.	21. DOE APPROVAL (if required) Ctrl. No.
AJ Kostelnik	AP Mousel	RJ Blanchard	☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments
Signature of EDT Originator — Date 9-28-94	Authorized Representative for Receiving Organization — Date 10/3/94	Cognizant Manager — Date 10/3/94	

BD-7400-172-2 (04/94) GEF097

SUPPORTING DOCUMENT

2. Title		
Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply	WHC-SD-WM-ATP-108	0

5. Key Words

ETN-94-0023-F
Core Sampling, Nitrogen Trailer, Specification WHC-S-0249, Liquid Nitrogen, Norco, MVE, Minnesota Valley Engineering, Vaporizer, Cryogenic Experts Incorporated, CEXI, Purchase Order 404870, Core Sampling Auxiliary Equipment

6. Author

Name: Alois J Kostelnik

Signature

Organization/Charge Code 7EA40/N457D

7. Abstract KMB 10/4/94

This Acceptance Test Procedure (ATP) will document compliance with the requirements of WHC-S-0249 Rev.1 and ECN 606112. The equipment being tested is a Portable, Self-Contained Nitrogen Supply. The unit was purchased as a Design and Fabrication procurement activity. The Functional Test was written by the Seller and is contained in Appendix A. The Functional test will be performed by the Seller with representatives of the Westinghouse Hanford Company performing inspection and witnessing the functional test at the Seller's location.

9. Impact Level Q

10. RELEASE STAMP

TABLE OF CONTENTS

1.0 SCOPE and PURPOSE

This acceptance test verifies the requirements specified in WHC-S-0249 Rev. 1 and ECN 606112 for a Portable, Self-Contained Nitrogen Supply are satisfied.

Because of the latest operating requirement changes, modifications which are necessary to comply with the requirements contained in ECN 613531 shall be tested at a later date and the results shall be included in the Acceptance Test Report.

2.0 TEST PERFORMANCE

Norco will complete the following test in the order deemed best by Norco personnel at Norco's facility. Westinghouse Hanford Company, (WHC) personnel shall witness all testing and shall perform the inspection portion of this procedure. All steps shall be completed and any exception noted on the attached exception sheet along with the resolution. Norco shall resolve all exceptions with the concurrence of WHC.

3.0 RECORDS REVIEW

GJK 3.1 The nitrogen storage tank is be a Portable Liquid Nitrogen Tank, Minnesota Valley Engineering (MVE) Liquid Delivery System, Model HLD-1530N with skid mounted hardware.

GJK 3.2 The liquid nitrogen tank is DOT approved for transporting liquid nitrogen under normal working pressure on public roads.

GJK 3.3 The liquid nitrogen tank was designed and built to the American Society of Mechanical Engineers (ASME) Section 8, Division 1, Boiler and Pressure Vessel Code.

GJK 3.4 The vaporizing system is equipped with a pressure regulator. The pressure regulator controls the pressure of the nitrogen gas exiting the vaporizing system. The pressure regulator has a pressure delivery range from 0 to 120 psig, when the flow rates range from 0 to 60 scfm. 50 to 150 psig range is acceptable because operation is at 120 psig. Flow demonstrated. GJK

See Exception 3.5 The vaporizing system will operate under maximum flow, when severe ambient conditions occur, for a minimum of 16 hours before refueling or servicing is required.

See Exception 3.6 The fuel used to operate the vaporizing system is propane and a suitably sized tank is supplied and attached to the trailer. Minimum of 16 hours of continuous operation.

4.0 INSPECTION

4.1 Record the model and serial numbers of the Nitrogen Storage Tank, Vaporizer, and Trailer.

TANK	VAPORIZER	TRAILER
Model# HLD-1530-SS-250	Model# FCVR 6x6x21/Propane	Model# Trailmax
Serial# 149	Serial # X940421-2	Vehicle# 1G9FS2724RA065101

4.2 The liquid nitrogen tank and all other pressure vessels have been stamped to indicate conformance with the American Society of Mechanical Engineers (ASME) Section 8, Division 1, Boiler and Pressure Vessel Code.

GJK 4.2.1 Nitrogen Tank

GJK 4.2.2 Propane Tank

See Exception 4.2.3 Heat Exchanger/Vaporizer

N/A 4.2.4 Other _____

4.3 The Nitrogen Tank has sufficient operating controls and instrumentation to insure safe operation and transportation.

GJK 4.3.1 Pressure building

GJK 4.3.2 Pressure relief

GJK 4.3.3 Liquid level indication

GJK 4.3.4 Pressure indication

GJK 4.3.5 Other Fill capability

GJK 4.4 The Nitrogen Tank's controls and operations are fully self-contained (requiring no auxiliary power or auxiliary support vehicles.)

GJK 4.5 The power required to operate the vaporizer is supplied by a propane powered, 4 KW generator. The capability of being either powered from an external source or the propane generator is available through a suitable receptacle/plug arrangement.

4.6 The vaporizer has sufficient operating controls and instrumentation to ensure safe operation including but not limited to the following.

GJK 4.6.1 Water temperature indication

GJK 4.6.2 Nitrogen outlet temperature indication

See Exception 4.6.3 Pressure indication

OK 4.6.4 Water flow ~~indication~~ Internal DP automatic shutdown

OK 4.6.5 Emergency shutdown

OK 4.6.6 Outlet pressure regulator

OK 4.6.7 Vent valve

See Exception 4.6.8 Other Pressure Relief of N_2 on Vaporizer

OK 4.7 The vaporizing system's propane fueled water heaters have automatic lighting starters.

Verify During Receipt Inspection 4.8 A 1 inch inside diameter, 100 foot long, flexible hose is connected to the outlet of the Nitrogen pressure regulator. The flexible hose is rated for pressures of at least 250 psig and temperatures from -40°F to 150°F. The free end of the hose is equipped with a Hansen LL12-H46 socket. The hose is on a manually operated hand crank hose reel which is mounted on the tongue assembly. 250psig

Verify During Receipt Inspection. 4.9 Two additional 50 foot sections of 1 inch inside diameter flexible hose are supplied. The 50 foot sections of hose are equipped with a Hansen LL12-K46 plug on one end and a Hansen LL12-H46 socket on the other end. The hose is rated for pressures of at least 250 psig and temperatures from -40°F to 150°F. Verify upon Receipt inspection.

OK

OK 4.10 The trailer is a flatbed, 36,000 pound rating, with a load capacity of 30,000 pounds, (See nameplate attached.) Trail Max Model TD-30-F.

See Exception 4.11 Grating is provided for the trailer mounted hoses and piping to prevent damage from personnel climbing on the unit for operation and maintenance. The grating is bolted in place so that it may be removed for maintenance.

OK 4.12 All major components are bolted to the trailer for ease of removal and maintenance.

See Exception 4.13 There are no suspect fasteners on the trailer, vaporizer or components. Refer to the Suspect Fasteners Headmark List included in the specification, WHC-S-0249.

4.14 All components and controls necessary for operation or safety are uniquely identified with a high impact plastic label with 1/8 inch tall characters, Black on a White background.

See Exception

____ 4.14.1 All valves (automatic, manual, or check)

____ 4.14.2 All pressure indicators

See Exception

____4.14.3 All temperature indicators

____4.14.4 All switches and alarms/lights.

____4.14.5 Walk through WHC Plant Operating Procedure TO-020-453 Rev. A-2 and verify labeling matches the procedure for operation. See label list contained in Appendix B.

4.15 Trailer Requirements

GJK 4.15.1 Mainframe and platform are manufacturer's standard

GJK 4.15.2 Crossmembers - 20 inch center maximum

GJK 4.15.3 Hitch - Pintle type, adjustable, minimum 2-3/4 inch.

See Exception 4.15.4 Main Jack - Screw type w/drop foot, 12,000 pound capacity.

See Exception 4.15.5 Leveling Jacks - Screw type w/drop foot, 12,000 pound capacity (all four corners).

GJK 4.15.6 Safety chains with hooks.

GJK 4.15.7 2 Axles - 15,000 pound each.

GJK 4.15.8 Brakes - 4 wheel air brakes.

GJK 4.15.9 Hubs - Oil bath type 10 on 8.75 BC.

GJK 4.15.10 Suspension - 3 point slipper spring type.

GJK 4.15.11 Wheels - Dual Disc 17.5 x 6.75 10 on 8.75 BC.

GJK 4.15.12 8 Tires - 215/75R 17.5 radial load range "H".

GJK 4.15.13 Electrical - ICC/DOT approved, sealed system - rubber isolated.

GJK 4.15.14 Decking - 3/16 inch minimum diamond plate deck.

GJK 4.15.15 Paint - Unit is painted with White enamel.

GJK 4.15.16 The bottom of the trailer is undercoated for rust protection.

GJK 4.15.17 The equipment is arranged on the trailer for weight distribution and ease of operation.

See Exception 4.15.18 Verify Flammable Gas placard is on the trailer as required by DOT for the Propane.

5.0 RUN TEST

Norco personnel shall perform this portion of the Acceptance test per their submitted Functional Test Procedure included as Appendix A. WHC personnel shall witness the Functional Test. A minimum of 50 feet of hose shall be connected to the outlet of the flowmeter during testing to simulate WHC operational conditions.

The following data as a minimum shall be recorded to document compliance with the requirements. Recommended to record data on intervals of approximate 5 minutes until relatively steady state conditions are achieved. System stability indicates the equipment will operate continuously at each setting.

5.1 Actual pressures of the Nitrogen exiting system with the regulator set at approximately 60, 80, 100 and 120 psig. (Final set point of 120 psig is desired.)

5.2 Nitrogen flow rates of 10 scfm, 50 scfm and the maximum achievable at each pressure setting.

5.3 Temperature of the Nitrogen at the flowmeter installed for testing purposes for each flow rate.

5.4 Vaporizer water temperature.

5.5 Ambient Temperature at the start and end of testing.

6.0 ACCEPTANCE TEST COMPLETION

a/k 6.1 The results of the Run Test indicate compliance with specification WHC-S-0249. The vaporizing system controls the temperature of the gas exiting the system to between 35°F and 100°F after steady state is achieved.
82°F to 86°F Temperatures recorded a/k

a/k 6.2 All portions of this test have been completed.

TEST COMPLETED BY:

PRINT NAME	COMPANY	SIGNATURE	DATE
Alois Kostelnik	WHC	Alois A. Kostelnik	10-12-94
Bradley M Kitteridge	Norco	Bradley M Kitteridge	10-12-94

APPENDIX A

WELDING, SAFETY, MEDICAL GASES AND SUPPLIES

102 East Columbia Drive • Kennewick, WA 99336 • (509) 582-6404 • FAX (509) 586-0573

September 22, 1994

Westinghouse Hanford
P.O. Box 1970
Richland, WA 99352

Re: Functional Test Procedures
P.O. # MDW-XYV-404870

Mr. Dale Whitworth,
Following will be the procedure for testing the Nitrogen Unit and Vaporizer at our Boise location.

1) Fill unit with all required consumables, nitrogen, propane and fuel for generator.
2) Turn propane system on and start power generator.
3) Start vaporizer allowing water to circulate.
4) Turn pressure building assembly on to build pressure in the nitrogen tank, and start liquid nitrogen flow.
5) Adjust pressure regulator on vaporizer from 0 - 120 PSIG. Check flow rates from 0 - 60 SCFM.
6) Check temperature of gas exiting the system and assure the range is between 35°F to 100°F.

Thank you,

Greg Stanley

Greg Stanley
Area Mgr.

APPENDIX B

LABELS ON NITROGEN TRAILER HO-74-5170. ADDITIONAL UNITS TO HAVE IDENTICAL LABELING TO EXTENT POSSIBLE. LABELING SHOULD BE ON 1" x 2" OR 1" x 3" PLASTIC WITH BLACK LETTERS ON A WHITE BACKGROUND. MINIMUM LETTER SIZE 1/8".

V-6 NITROGEN SUPPLY	RV-4 SUPPLY LINE RELIEF	V-5 PRESSURE BUILDING
V-1 TOP FILL	V-2 BOTTOM FILL	V-3 VENT TANK
V-4 LIQUID DELIVERY	V-12 ROAD RELIEF	V-8 FULL TRYCOCK
R-1 PRESSURE BUILDING REGULATOR	V-13 ANNULUS EVACUATION	V-7 DELIVERY HOSE DRAIN
SOV-1 NITROGEN SUPPLY SOLENOID	R-2 NITROGEN SUPPLY REGULATOR	PG-2 NITROGEN SUPPLY PRESSURE
V-16 VENT NITROGEN	V-14 TRUCK NITROGEN	V-15 EXHAUSTER NITROGEN
R-3 INSTRUMENT AIR REGULATOR	V-17 TANK LIQUID PROPANE	V-18 EXCHANGER LIQUID PROPANE
V-21 LEFT HEATER PROPANE	V-20 EXCHANGER PROPANE GAS	V-19 TANK PROPANE GAS
V-22 RIGHT HEATER PROPANE	R-4 HEATER PROPANE REGULATOR	TC-1 NITROGEN TEMP CONTROLLER
RV-6 PROPANE RELIEF	FS-1 WATER FLOW SENSOR	TS-1 WATER TEMP SENSOR
V-23 WATER VENT	V-24 WATER VENT	V-25 WATER VENT
FR-1 WATER FLOW REGULATOR	RV-5 DELIVERY HOSE RELIEF	RV-7 WATER EXCHANGER RELIEF
WATER PUMP OFF ON	V-27 ANTIFREEZE DRAIN	V-26 ANTIFREEZE FILL
V-28 GENERATOR PROPANE GAS		

NITROGEN GAS TEMP LOW CUTOFF (°F)	WATER TEMP LOW CUTOFF (°F)	EMERGENCY SHUTDOWN
LEFT HEATER	RIGHT HEATER	CONTROL PANEL
POWER ON	WATER PUMP ON	FAULT

TEST EXCEPTIONS

Step #	Description of exception and resolution.
4.2.3	No ASME Stamp. Norco shall document compliance with ASME Boiler + Pressure Vessel Code section 8 as required.
4.6.3	No N_2 Outlet Pressure Indication. Norco shall install pressure indication at ~~hose~~ reel supply valve. (upstream)
4.6.8	No Pressure Relief on N_2 Vaporizer. Norco shall install Safety Pressure Relief on Vaporizer as per vessel pressure requirements.
4.11	Propane Relief line unsupported. Norco to add support.
4.15.18	Placards not installed. Norco to install per DOT requirements.
4.14	Labeling not complete. Norco not supplied with label scheme prior to 10-11-94. To be completed and verified at a later date.
closed a/k 4.13.4	4.15.5 cont verify w/out records. Norco to supply vendor information to show dock capacity.
4.13	4 Bolts on the 2 #X supports are suspect. Bolts shall be replaced by Norco.
3.5+3.6	Documentation not available. Norco shall provide the documentation for propane consumption rates and tank capacities for generator and heaters.

EXCEPTION AND RESOLUTION CONCURRENCE:

PRINT NAME	COMPANY	SIGNATURE	DATE
Alois Kostelnik	WHC	A. J. Kostelnik	10-12-94
Bradley M. Kittredge	Norco	B. M. Kittredge	10-12-94

* Make additional copies as required.

TEST EXCEPTIONS

Step #	Description of exception and resolution.
	General Inspection.
	N_2 skid and Vaporizer bolted to 3/16 steel diamond plate deck. Norco to install a 1/4" minimum thickness C-channel to span 2 ribs beneath the trailer deck as mounting reinforcement.
	Control panel (Cexi) lists power requirements as 29 amps at 120 volts AC. The generator is breaked at 20 amps (120 volts AC). Check power requirements and correct data plate on control panel.
5.1	Testing at 80 psig was not performed to save time. Testing at higher pressures requires the equipment to work harder. Testing was performed at 100 psig and 120 psig and the equipment performed adequately. so 80 psig testing is not necessary.

EXCEPTION AND RESOLUTION CONCURRENCE:

PRINT NAME	COMPANY	SIGNATURE	DATE
Alois Kostelnik	WHC	Alois Kostelnik	10-12-94
Bradley M Kittridge	Norco	Bradley M Kittridge	10-12-94

* Make additional copies as required.

Unit 1 Run Test Tank Serial # 14'
Start Temperature ~~F~~

N_2 Pressure = 60 psig Actual - 60 PSI

N_2 Flow = 10, SCFM Actual N/A
50, ~~120~~ Max 50 @ 71°F

N_2 Temperature ~~82°F~~ 84°F @ 50 SCFM 190 @ 66°F
@ 190 SCFM
N/A

Water Temperature 108
104, 102

N_2 Pressure = 80 psig Actual

N_2 Flow = 10 SCFM Actual
= 50 SCFM
= ~~120~~ SCFM
Max

N_2 Temperature =

Water Temperature =

N_2 Pressure = 100 psig Actual 100 psi

N_2 Flow = 10 SCFM Actual N/A
= 50 SCFM 50 @ 75°F
= ~~120~~ SCFM Max 230 @ 84°F
Max

N_2 Temperature = 84 @ 50 SCFM
86 @ 230 SCFM

Water Temperature = 102 @ 50 SCFM
100 @ 230 SCFM

N_2 Pressure = 120 psig Actual 120 psi

N_2 Flow = 10 SCFM Actual N/A
= 50 SCFM 50 @ 84°F
= ~~120~~ SCFM Max 260 @ 87°F
Max

N_2 Temperature = 86 @ 50 SCFM
82 @ 260 SCFM

Water Temperature = 100 @ 50 SCFM
98 @ 260 SCFM

Recorded by Mois J Kostelnik 10-18-94

End Temperature 83°F

Test w/ Hedland Flowmeter
40 - 260 SCFM

$F_p = \sqrt{\frac{114.7}{14.7 + Psig}}$ $F_t = \sqrt{\frac{460 + F}{530}}$

Norco

WELDING, SAFETY, MEDICAL GASES AND SUPPLIES

1121 West Amity Road • Boise, Idaho 83705 • (208) 336-1643 • FAX (208) 384-1720

Reference: WHC-DS-WM-STP-108
Norco Revise Exception Lists

TANK	VAPORIZER	TRAILER
HLD-1530-SS-250	FCWBLX6X21/Propane	Trail Max
#149	X940421-2	169FS2724RA065101

STEP #		
BK	4.2.3	ASME Stamp Supplied
BK	4.6.3	N2 Outlet Pressure Indicator Installed
BK	4.6.8	N2 Safety Relief Mounted
BK	4.11	Additional Support Added to Propane Vent Line
BK	4.15.18	DOT Placards Installed on Propane Tank
BK	4.14	Labeling Complete as per Appendix B page 9 & 10
~~BK~~ n/a	4.15.4	Documentation Complete / See Attached
BK	4.13	All Suspect Fasteners We Charged According to Spec.
BK	3.5	Documentation Complete / See Attached
BK	3.6	Documentation Completes / See Attached
BK		23" Channel Are Spannedon Cross Member and Welded to support N2 Skis and Vaporizers.

Bradley M Kittridge Bradley M [illegible]

CRYOGENIC EXPERTS INC.

100 West Easy Street, Simi Valley, CA 93065 Phone (805) 520-8631
Toll Free 1-800-FOR-CEXI Facsimile (805) 520-8649

Post-it® Fax Note 7671	Date	# of pages ▶ 2
To Brad.	From R.B	
Co./Dept.	Co.	
Phone #	Phone #	
Fax # 208 324-1720	Fax #	

Norco
1121 West Amity Road
Boise, Idaho, 83705

Attn: Brad Kittridge

Re: CEXI Job No 940421 - Norco P.O. 28765

Brad;

This letter is to confirm that the total propane flow with the unit vaporizing 25,000 scfh of nitrogen and 325 scfh of propane will be 197 cubic feet of propane per hour. That equates to 5.78 gallons per hour of propane. For the unit to operate at full flow for 16 hours, the fuel tank would have to be approximately 95 gallons.

The consumption is as follows

Nitrogen vaporization - 25,000 scfh - Propane flow	167.5 cfh
Generator Set 4.3 Kilowatts continuous Propane flow	27.7 cfh
Propane Vaporization Requirement -	1.59 cfh
Total Flow	196.79 cfh

The power requirements for the system are as flows.

Controls Including Water Heaters	3 amps, 120 vac
Water Pump	15.8 amps at 120 vac 7.9 amps at 240 vac
Total Power Required	18.3 amps at full load

The generator set is capable of 35 amps at 120 vac full load continuous power generation. The question that Westinghouse raised may be based on the receptacle rating. At any rate we will be supplying a new nameplate to reflect the correct amperage rating.

On a more positive note, for you at least. It turns out that our purchasing department made a error and ordered water heaters that are double the required size. The units should have been the Model 255. Instead the model ordered was a 405. That means that for the most part, one of the units will be in the stand by mode almost all the time. The fuel consumption on the units will not be any higher because of this, you just have more water heating capacity than you will ever need. The only time the second water heater should come

on is during times of extremely cold (-20°F) ambient temperatures. During cold ambient temperatures, the second water heater should only come on for very short periods of time.

Sincerely,

Rob Worcester
President
CEXI

Post-it™ brand fax transmittal memo 7671	# of pages ► 1
To Brad Kittridge	From Greg Stanley
Co. Nowc	Co. Nalco
Dept. Service	Phone # Kennewick
Fax #	Fax #

P[illegible]

PERFORMER II 3/8 IN. (9.5MM) I.D. 2BR 300 P.S.I. W.P.

TUBE	Blended Nitrile.
REINFORCEMENT	1 or 2 Textile Braids.
COVER	Neoprene.
COLOR	Red.
TEMPERATURE RANGE	−40°F to +180°F.
TYPE OF BRANDING	Ink Print.
WORKING PRESSURE	225-300 PSI.
TYPE OF COUPLING	Barbed Inserts, Quick Acting, or Long Shank. Clamps—Interlocking, Single Bolt, Band, or Wire.

Features
- Neoprene cover
- Blended nitrile tube
- Continuous permanent brand
- Wide range of sizes
- Braid reinforcement

Benefits
- Abrasion, oil, and weather resistant
- Medium oil resistance
- Easy identification
- For many applications
- Better coupling retention for impulse applications

Markets / Applications

Markets	Applications
Assembly/Manufacturers	Pneumatic tools on production line.
Construction Industry	Provide power to air operated equipment.
Forest Industry	Convey air and water.
Metal Working	
Mining	
Ship Building	
Plastic Molding	

CODE	NOMINAL I.D. (IN)	NOMINAL I.D. (MM)	BRAID	NOMINAL O.D. (IN)	NOMINAL O.D. (MM)	APPROXIMATE WEIGHT POUNDS PER 100 FT.	MAXIMUM RECOMMENDED WORKING PRESSURE PSI	STANDARD [illegible]
55-1861-04	¼	6.3	1	½	12.7	10	225	650
[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	300	[illegible]
55-1861-10	5/16	7.9	1	⅝	15.9	14	225	650
55-1861-16	[illegible]	9.5	[illegible]	[illegible]	[illegible]	[illegible]	225	[illegible]
55-1861-19	⅜	9.5	2	23/32	18.3	19	300	650
55-1861-22	[illegible]	12.7	[illegible]	[illegible]	20.6	[illegible]	225	[illegible]
55-1861-25	½	12.7	2	⅞	22.2	27	300	650
[illegible]	[illegible]	[illegible]	2	[illegible]	29.4	[illegible]	[illegible]	[illegible]
55-1861-38	¾	19.1	2	15/32	29.4	41	300	5-50's Boxed
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
55-1861-46	1¼	31.8	2	1¾	44.5	101	225	300
[illegible]	[illegible]	[illegible]	2	[illegible]	[illegible]	[illegible]	225	[illegible]

BEST COPY AVAILABLE

Author: Alois J (Al) Kostelnik at ~WHC339
Date: 12/12/94 10:20 AM
Priority: Urgent
TO: Dale R Whitworth at ~WHC2
CC: Jeffery C Akers at ~WHC35
CC: Andrew P Mousel at ~WHC216
CC: Alois J (Al) Kostelnik
CC: Jeffory L Smalley at ~WHC340
CC: Roy J Blanchard at ~WHC340
Subject: PO 404870:Nitrogen Trailer from Norco.

---------- Message Contents ----------

In addition to the correction to the name plate on the vaporizer the following changes are necessary. The breaker, wiring, and receptacle amperage need to be increased to comply with the 1993 National Electric Code. Article 210-22 of the 1993 NEC requires continuous loads use less than 80% of the total ampere capacity of the electrical circuit rating.

The specified system power requirement is stated in the CEXI letter to Norco as 18.8 amps. The 20 amp receptacles powered from the 20 amp breaker on the generator are undersized, per the NEC these items should not be used for continuous loads in excess of 16 amps. WHC suggest using a 30 amp breaker, receptacle and plug (NEMA L5-30R and NEMA L5-30P combination). A wiring upgrade may also be required to ensure 30 amp capability.

The ASME stamps for the vaporizer must be attached to the pressure vessel per the ASME code. Another member in my group is returning the ASME stamps to you today so you can return them to Norco for attachment.

I am preparing a receipt inspection plan right now for PQS to perform inspection at Norco and allow them to be paid for the work they have completed thus far. I will let you know as soon as it is complete.

Al Kostelnik
373-0788

RELEASE AUTHORIZATION

Document Number:	WHC-SD-WM-ATP-108, REV 0
Document Title:	Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply
Release Date:	October 4, 1994

* * * * * * * * * * * * * *

This document was reviewed following the procedures described in WHC-CM-3-4 and is:

APPROVED FOR PUBLIC RELEASE

* * * * * * * * * * * * * *

WHC Information Release Administration Specialist:

Kara Broz
(Signature)

October 4, 1994
(Date)

Sta # 2.

OCT 04 1994 **ENGINEERING DATA TRANSMITT**

WHC-SD-WM-ATR-108
Rev. 0
Appendix B-2 of B-20

1 of 1

608889

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Core Sampling	Characterization Equipment	N/A
5. Proj./Prog./Dept./Div.:	**6. Cog. Engr.:**	**7. Purchase Order No.:**
Core Sampling Aux. Equipment	J.L. Smalley	404870

8. Originator Remarks:
ETN-94-0023-F
This Acceptance Test Procedure is transmitted for approval. A portion of the procedure was prepared by the Seller and will be performed at the Sellers location. The ATP will show compliance with specification WHC-S-0249 Rev.1.

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

10. System/Bldg./Facility: 200 General

11. Receiver Remarks:

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

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

14. Required Response Date: 10/4/94

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-WM-ATP-108	N/A	0	Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply	Q	1	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 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	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog.Eng. J.L. Smalley		10/3/94	R1-17	Alois Kostelnik		9-28-94	R1-17	1	1
1	1	Cog. Mgr. R.J. Blanchard		9/29/94	R1-17	OSTI (2)			L8-07	3	
1	1	QA J.J. Verderber		9-29-94	S1-57	Central Files			L8-04	3	
		Safety N/A									
		Env. N/A									
1	1	Core Sampling Cog. A.P. Mousel		10/3/94	S7-12						

18. A.J. Kostelnik — Signature of EDT Originator — Date: 9-28-94

19. A.P. Mousel — Authorized Representative for Receiving Organization — Date: 10/3/94

20. R.J. Blanchard — Cognizant Manager — Date: 9/29/94

21. DOE APPROVAL (if required)
Ctrl. No.
- ☐ Approved
- ☐ Approved w/comments
- ☐ Disapproved w/comments

BD-7400-172-2 (04/94) GEF097

SUPPORTING DOCUMENT

2. Title		
Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply	WHC-SD-WM-ATP-108	0

5. Key Words

ETN-94-0023-F
Core Sampling, Nitrogen Trailer, Specification WHC-S-0249, Liquid Nitrogen, Norco, MVE, Minnesota Valley Engineering, Vaporizer, Cryogenic Experts Incorporated, CEXI, Purchase Order 404870, Core Sampling Auxiliary Equipment

6. Author

Name: Alois J Kostelnik

Signature

Organization/Charge Code 7EA40/N457D

APPROVED FOR PUBLIC RELEASE
KMB 10/4/94

7. Abstract

This Acceptance Test Procedure (ATP) will document compliance with the requirements of WHC-S-0249 Rev.1 and ECN 606112. The equipment being tested is a Portable, Self-Contained Nitrogen Supply. The unit was purchased as a Design and Fabrication procurement activity. The Functional Test was written by the Seller and is contained in Appendix A. The Functional test will be performed by the Seller with representatives of the Westinghouse Hanford Company performing inspection and witnessing the functional test at the Seller's location.

9. Impact Level Q

10. RELEASE STAMP

OFFICIAL RELEASE (2)
BY WHC
DATE OCT 04 1994

TABLE OF CONTENTS

1.0 SCOPE and PURPOSE

This acceptance test verifies the requirements specified in WHC-S-0249 Rev. 1 and ECN 606112 for a Portable, Self-Contained Nitrogen Supply are satisfied.

Because of the latest operating requirement changes, modifications which are necessary to comply with the requirements contained in ECN 613531 shall be tested at a later date and the results shall be included in the Acceptance Test Report.

2.0 TEST PERFORMANCE

Norco will complete the following test in the order deemed best by Norco personnel at Norco's facility. Westinghouse Hanford Company, (WHC) personnel shall witness all testing and shall perform the inspection portion of this procedure. All steps shall be completed and any exception noted on the attached exception sheet along with the resolution. Norco shall resolve all exceptions with the concurrence of WHC.

3.0 RECORDS REVIEW

a/k 3.1 The nitrogen storage tank is be a Portable Liquid Nitrogen Tank, Minnesota Valley Engineering (MVE) Liquid Delivery System, Model HLD-153ON with skid mounted hardware.

a/k 3.2 The liquid nitrogen tank is DOT approved for transporting liquid nitrogen under normal working pressure on public roads.

a/k 3.3 The liquid nitrogen tank was designed and built to the American Society of Mechanical Engineers (ASME) Section 8, Division 1, Boiler and Pressure Vessel Code.

a/k 3.4 The vaporizing system is equipped with a pressure regulator. The pressure regulator controls the pressure of the nitrogen gas exiting the vaporizing system. The pressure regulator has a pressure delivery range from 0 to 120 psig, when the flow rates range from 0 to 60 scfm. 50 to 150 psig range is acceptable because operation is at 120 ~~psig~~ psig. Flow capacity demonstrated. a/k

See exception 3.5 The vaporizing system will operate under maximum flow, when severe ambient conditions occur, for a minimum of 16 hours before refueling or servicing is required.

See exception 3.6 The fuel used to operate the vaporizing system is propane and a suitably sized tank is supplied and attached to the trailer. Minimum of 16 hours of continuous operation.

4.0 INSPECTION

4.1 Record the model and serial numbers of the Nitrogen Storage Tank, Vaporizer, and Trailer.

TANK	VAPORIZER	TRAILER
Model# HLD-1530-SS-250	Model# FCWB6X6X21/Propane	Model# Trailmax
Serial# 148	Serial # X940421-1	Vehicle# TG9FS2726RA065102

4.2 The liquid nitrogen tank and all other pressure vessels have been stamped to indicate conformance with the American Society of Mechanical Engineers (ASME) Section 8, Division 1, Boiler and Pressure Vessel Code.

a/k 4.2.1 Nitrogen Tank

a/k 4.2.2 Propane Tank

SEE Exception 4.2.3 Heat Exchanger/Vaporizer

N/A 4.2.4 Other _____

4.3 The Nitrogen Tank has sufficient operating controls and instrumentation to insure safe operation and transportation.

a/k 4.3.1 Pressure building

a/k 4.3.2 Pressure relief

a/k 4.3.3 Liquid level indication

a/k 4.3.4 Pressure indication

See Exception 4.3.5 Other Fill Capability

a/k 4.4 The Nitrogen Tank's controls and operations are fully self-contained (requiring no auxiliary power or auxiliary support vehicles.)

a/k 4.5 The power required to operate the vaporizer is supplied by a propane powered, 4 KW generator. The capability of being either powered from an external source or the propane generator is available through a suitable receptacle/plug arrangement.

4.6 The vaporizer has sufficient operating controls and instrumentation to ensure safe operation including but not limited to the following.

a/k 4.6.1 Water temperature indication

a/k 4.6.2 Nitrogen outlet temperature indication

See exception 4.6.3 Pressure indication

a/k 4.6.4 Water flow ~~indication~~ Internal flow DP sensors provide automatic shutdown. a/k

a/k 4.6.5 Emergency shutdown

a/k 4.6.6 Outlet pressure regulator

a/k 4.6.7 Vent valve

See exception 4.6.8 Other Pressure Relief of N_2 on Vaporizer

a/k 4.7 The vaporizing system's propane fueled water heaters have automatic lighting starters.

Verify during receipt Inspection. 4.8 A 1 inch inside diameter, 100 foot long, flexible hose is connected to the outlet of the Nitrogen pressure regulator. The flexible hose is rated for pressures of at least 250 psig and temperatures from -40°F to 150°F. The free end of the hose is equipped with a Hansen LL12-H46 socket. The hose is on a manually operated hand crank hose reel which is mounted on the tongue assembly. 250 psig.

Verify during receipt Inspection 4.9 Two additional 50 foot sections of 1 inch inside diameter flexible hose are supplied. The 50 foot sections of hose are equipped with a Hansen LL12-K46 plug on one end and a Hansen LL12-H46 socket on the other end. The hose is rated for pressures of at least 250 psig and temperatures from -40°F to 150°F.

a/k (To be verified upon Receipt Inspection.)

a/k 4.10 The trailer is a flatbed, 36,000 pound rating, with a load capacity of 30,000 pounds, (See nameplate attached.) Trail Max Model TD-30-F.

See Exception 4.11 Grating is provided for the trailer mounted hoses and piping to prevent damage from personnel climbing on the unit for operation and maintenance. The grating is bolted in place so that it may be removed for maintenance.

a/k 4.12 All major components are bolted to the trailer for ease of removal and maintenance.

See Exception 4.13 There are no suspect fasteners on the trailer, vaporizer or components. Refer to the Suspect Fasteners Headmark List included in the specification, WHC-S-0249.

4.14 All components and controls necessary for operation or safety are uniquely identified with a high impact plastic label with 1/8 inch tall characters, Black on a White background.

See Exception

____ 4.14.1 All valves (automatic, manual, or check)

____ 4.14.2 All pressure indicators

See Exception

____ 4.14.3 All temperature indicators

____ 4.14.4 All switches and alarms/lights.

____ 4.14.5 Walk through WHC Plant Operating Procedure TO-020-453 Rev. A-2 and verify labeling matches the procedure for operation. See label list contained in Appendix B.

4.15 Trailer Requirements

GJK 4.15.1 Mainframe and platform are manufacturer's standard

GJK 4.15.2 Crossmembers - 20 inch center maximum

GJK 4.15.3 Hitch - Pintle type, adjustable, minimum 2-3/4 inch.

See Exception 4.15.4 Main Jack - Screw type w/drop foot, 12,000 pound capacity.

See Exception 4.15.5 Leveling Jacks - Screw type w/drop foot, 12,000 pound capacity (all four corners).

GJK 4.15.6 Safety chains with hooks.

GJK 4.15.7 2 Axles - 15,000 pound each.

GJK 4.15.8 Brakes - 4 wheel air brakes.

GJK 4.15.9 Hubs - Oil bath type 10 on 8.75 BC.

GJK 4.15.10 Suspension - 3 point slipper spring type.

GJK 4.15.11 Wheels - Dual Disc 17.5 x 6.75 10 on 8.75 BC.

GJK 4.15.12 8 Tires - 215/75R 17.5 radial load range "H".

GJK 4.15.13 Electrical - ICC/DOT approved, sealed system - rubber isolated.

GJK 4.15.14 Decking - 3/16 inch minimum diamond plate deck.

GJK 4.15.15 Paint - Unit is painted with White enamel.

GJK 4.15.16 The bottom of the trailer is undercoated for rust protection.

GJK 4.15.17 The equipment is arranged on the trailer for weight distribution and ease of operation.

See Exception 4.15.18 Verify Flammable Gas placard is on the trailer as required by DOT for the Propane.

5.0 RUN TEST

Norco personnel shall perform this portion of the Acceptance test per their submitted Functional Test Procedure included as Appendix A. WHC personnel shall witness the Functional Test. A minimum of 50 feet of hose shall be connected to the outlet of the flowmeter during testing to simulate WHC operational conditions.

The following data as a minimum shall be recorded to document compliance with the requirements. Recommended to record data on intervals of approximate 5 minutes until relatively steady state conditions are achieved. System stability indicates the equipment will operate continuously at each setting.

5.1 Actual pressures of the Nitrogen exiting system with the regulator set at approximately 60, 80, 100 and 120 psig. (Final set point of 120 psig is desired.)

5.2 Nitrogen flow rates of 10 scfm, 50 scfm and the maximum achievable at each pressure setting.

5.3 Temperature of the Nitrogen at the flowmeter installed for testing purposes for each flow rate.

5.4 Vaporizer water temperature.

5.5 Ambient Temperature at the start and end of testing.

6.0 ACCEPTANCE TEST COMPLETION

AK 6.1 The results of the Run Test indicate compliance with specification WHC-S-0249. The vaporizing system controls the temperature of the gas exiting the system to between 35°F and 100°F after steady state is achieved.
85°F to 90°F Temperatures recorded. AK

AK 6.2 All portions of this test have been completed.

TEST COMPLETED BY:

PRINT NAME	COMPANY	SIGNATURE	DATE
Alois Kostelnik	WHC	Alois A. Kostelnik	10-12-94
Bradley M Kittridge	Norco	Bradley M Kittridge	10-12-94

APPENDIX A

Norco

WELDING, SAFETY, MEDICAL GASES AND SUPPLIES

102 East Columbia Drive • Kennewick, WA 99336 • (509) 582-6404 • FAX (509) 586-0573

September 22, 1994

Westinghouse Hanford
P.O. Box 1970
Richland, WA 99352

Re: Functional Test Procedures
P.O. # MDW-XVV-404870

Mr. Dale Whitworth,
Following will be the procedure for testing the Nitrogen Unit and Vaporizer at our Boise location.

1) Fill unit with all required consumables, nitrogen, propane and fuel for generator.
2) Turn propane system on and start power generator.
3) Start vaporizer allowing water to circulate.
4) Turn pressure building assembly on to build pressure in the nitrogen tank, and start liquid nitrogen flow.
5) Adjust pressure regulator on vaporizer from 0 - 120 PSIG. Check flow rates from 0 - 60 SCFM.
6) Check temperature of gas exiting the system and assure the range is between 35°F to 100°F.

Thank you,

Greg Stanley

Greg Stanley
Area Mgr.

APPENDIX B

LABELS ON NITROGEN TRAILER HO-74-5170. ADDITIONAL UNITS TO HAVE IDENTICAL LABELING TO EXTENT POSSIBLE. LABELING SHOULD BE ON 1" x 2" OR 1" x 3" PLASTIC WITH BLACK LETTERS ON A WHITE BACKGROUND. MINIMUM LETTER SIZE 1/8".

V-6 NITROGEN SUPPLY	RV-4 SUPPLY LINE RELIEF	V-5 PRESSURE BUILDING
V-1 TOP FILL	V-2 BOTTOM FILL	V-3 VENT TANK
V-4 LIQUID DELIVERY	V-12 ROAD RELIEF	V-8 FULL TRYCOCK
R-1 PRESSURE BUILDING REGULATOR	V-13 ANNULUS EVACUATION	V-7 DELIVERY HOSE DRAIN
SOV-1 NITROGEN SUPPLY SOLENOID	R-2 NITROGEN SUPPLY REGULATOR	PG-2 NITROGEN SUPPLY PRESSURE
V-16 VENT NITROGEN	V-14 TRUCK NITROGEN	V-15 EXHAUSTER NITROGEN
R-3 INSTRUMENT AIR REGULATOR	V-17 TANK LIQUID PROPANE	V-18 EXCHANGER LIQUID PROPANE
V-21 LEFT HEATER PROPANE	V-20 EXCHANGER PROPANE GAS	V-19 TANK PROPANE GAS
V-22 RIGHT HEATER PROPANE	R-4 HEATER PROPANE REGULATOR	TC-1 NITROGEN TEMP CONTROLLER
RV-6 PROPANE RELIEF	FS-1 WATER FLOW SENSOR	TS-1 WATER TEMP SENSOR
V-23 WATER VENT	V-24 WATER VENT	V-25 WATER VENT
FR-1 WATER FLOW REGULATOR	RV-5 DELIVERY HOSE RELIEF	RV-7 WATER EXCHANGER RELIEF
WATER PUMP OFF ON	V-27 ANTIFREEZE DRAIN	V-26 ANTIFREEZE FILL
V-28 GENERATOR PROPANE GAS		

NITROGEN GAS TEMP LOW CUTOFF (°F)	WATER TEMP LOW CUTOFF (°F)	EMERGENCY SHUTDOWN
LEFT HEATER	RIGHT HEATER	CONTROL PANEL
POWER ON	WATER PUMP ON	FAULT

TEST EXCEPTIONS

Exceptions 1 of 3

Step #	Description of exception and resolution.
4.2.3	No ASME Stamp. Norco shall document compliance with ASME Boiler + Pressure Vessel Code Section 8 as required.
4.3.5	Fill hose disconnected. Norco to install hose and will be verified upon receipt by WHC.
4.6.3	No N_2 Outlet Pressure Indication. Norco shall install ~~Safety Pressure Relief as required by~~ pressure indication at ~~cable~~ hose reel supply valve. (upstream)
4.6.8	No Vaporizer N_2 Safety Relief. Norco shall install Safety Pressure Relief on Vaporizer per vessel requirements.
4.11	Propane Relief vent line unsupported. Norco shall provide additional support.
4.15.18	Placards Not installed. Norco shall install Flammable Gas placards as required by DOT.
4.14	Labeling not completed. Norco was not supplied with the label scheme prior to 10-11-94. To be completed and verified at a later date.
Closed ark 4.15.4 + 4.15.5	Can't verify w/out Records. Norco shall provide necessary documentation.
4.13	Suspect Fastener = Left ~~Front~~ Heater outside anchor Bolts & Norco shall replace Suspect Fasteners all 4 on HX support Frame. Suspect Fasteners.

EXCEPTION AND RESOLUTION CONCURRENCE:

PRINT NAME	COMPANY	SIGNATURE	DATE
Alois Kostelnik	WHC	Alois Kostelnik	10-12-94
Bradley M. Kittridge	Norco	Bradley M Kittridge	10-12-94

* Make additional copies as required.

Exceptions 2.43

TEST EXCEPTIONS

Step #	Description of exception and resolution.
3.5+3.6	Documentation not available. Norco shall provide the documentation for propane consumption rates and tank capacities for generator and heaters.
5.1	Testing at 80 psig was not performed to save time. Testing at higher pressures requires the equipment to work harder. Testing was performed at 100 and 120 psig and the equipment performed adequately so 80 psig testing is not ~~needed~~ necessary.

EXCEPTION AND RESOLUTION CONCURRENCE:

PRINT NAME	COMPANY	SIGNATURE	DATE
Alois Kostelnik	WHC	Alois Kostelnik	10-12-94
Bradley M Kittredge	Norco	Bradley M Kittredge	10-12-94

* Make additional copies as required.

TEST EXCEPTIONS

Exceptions 3.

Step #	Description of exception and resolution.
	General Inspection.
	N_2 skid and Vaporizer bolted to 3/16 steel diamond plate deck. Norco to install a 1/4" minimum thickness C-channel to span 2 ribs beneath the trailer deck as mounting reinforcement.
	Control panel (Cexi) lists power requirements as 29 amps at 120 volts AC. The generator is breaker at 20 amps (120 volts AC). Check power requirements and correct data plate on control panel.

EXCEPTION AND RESOLUTION CONCURRENCE:

PRINT NAME	COMPANY	SIGNATURE	DATE
Alois Kostelnik	WHC	Alois J. Kostelnik	10-12-94
Bradley M. Kittridge	Norco	Bradley M Kittridge	10-12-94

* Make additional copies as required.

Unit II Run Test Tank Serial # 148
Start Temp. 70°

N_2 Pressure = 60 psig Actual 60

N_2 Flow = ~~10~~ SCFM Actual
50, 120
50 @ 77°F

N_2 Temperature 86 F @ 50 SCFM Max 185 @ 76°F
85 °F @ 185 SCFM

Water Temperature 106 °F @ 50 SCFM
108 °F @ 185 SCFM

N_2 Pressure = 80 psig Actual

N_2 Flow = 10 SCFM Actual
= 50 SCFM
= 120 SCFM

N_2 Temperature =

Water Temperature =

N_2 Pressure = 100 psig Actual 100 psig

N_2 Flow = ~~10 SCFM~~ Actual N/A
= 50 SCFM 50 SCFM @ 80°F
= 120 SCFM 240 SCFM @ 88°F

N_2 Temperature = 86°F @ 50 SCFM
88°F @ 240

Water Temperature: 102°F @ 50 SCFM
96°F @ 240

N_2 Pressure = 120 psig Actual 120 psig

N_2 Flow = ~~10 SCFM~~ Actual 50 SCFM @ 83°F
= 50 SCFM 265 SCFM @ 91°F
= 120 SCFM N/A

N_2 Temperature = 88°F @ 50 SCFM
90°F @ 265 SCFM

Water Temperature: 110°F @ 50 SCFM
98°F @ 265 SCFM

End Temperature 70°F

Recorded by Alois J. Kostelnik 10-11-94

Norco

WELDING, SAFETY, MEDICAL GASES AND SUPPLIES

1121 West Amity Road • Boise, Idaho 83705 • (208) 336-1643 • FAX (208) 384-1720

Reference: WHC-SD-WM-ATP-108
Norco Revise Exception Lists

TANK	VAPORIZER	TRAILER
HLD-1530-SS-250	FCWBLX6X21/Propane	Trail Max
# 148	# X940421-1	#T69FS2726RA065102

STEP #		
BK	4.2.3	ASME Stamp Supplied
BK	4.6.3	N_2 Outlet Pressure Indicator Installed
BK	4.3.5	Fill Hose Connected
BK	4.6.8	N_2 Safety Relief Mounted
BK	4.11	Additional Support Added to Propane Vent Line
BK	4.15.18	DOT Placards Installed on Propane Tank
BK	4.14	Labeling complete as per Appendix B page 9 & 10
~~BK~~ NA	4.15.4	Documentation Complete / See Attached
BK	4.13	All Suspect Fasteners We Charged According to Spec.
BK	3.5	Documentation Complete / See Attached
BK	3.6	Documentation Complete / See Attached
BK		23" channel Are Spannnedon Cross Member and Welded to support N_2 Skid and Vaporizers.

Bradley M Kittridge Bradley M Kittridge

CRYOGENIC EXPERTS INC.

100 West Easy Street, Simi Valley, CA 93065 Phone (805) 520-8631
Toll Free 1-800-FOR-CEXI Facsimile (805) 520-8640

Norco
1121 West Amity Road
Boise, Idaho, 83705

Attn: Brad Kittridge

Re: CEXI Job No 940421 - Norco P.O. 28765

Brad;

This letter is to confirm that the total propane flow with the unit vaporizing 25,000 scfh of nitrogen and 325 scfh of propane will be 197 cubic feet of propane per hour. That equates to 5.78 gallons per hour of propane. For the unit to operate at full flow for 16 hours, the fuel tank would have to be approximately 95 gallons.

The consumption is as follows

Nitrogen vaporization - 25,000 scfh - Propane flow	167.5 cfh
Generator Set 4.3 Kilowatts continuous Propane flow	27.7 cfh
Propane Vaporization Requirement -	1.59 cfh
Total Flow	196.79 cfh

The power requirements for the system are as flows.

Controls Including Water Heaters	3 amps, 120 vac
Water Pump	15.8 amps at 120 vac 7.9 amps at 240 vac
Total Power Required	18.3 amps at full load

The generator set is capable of 35 amps at 120 vac full load continuous power generation. The question that Westinghouse raised may be based on the receptacle rating. At any rate we will be supplying a new nameplate to reflect the correct amperage rating.

On a more positive note, for you at least. It turns out that our purchasing department made a error and ordered water heaters that are double the required size. The units should have been the Model 255. Instead the model ordered was a 405. That means that for the most part, one of the units will be in the stand by mode almost all the time. The fuel consumption on the units will not be any higher because of this, you just have more water heating capacity than you will ever need. The only time the second water heater should come

on is during times of extremely cold (-20°F) ambient temperatures. During cold ambient temperatures, the second water heater should only come on for very short periods of time.

Sincerely,

Rob Worcester
President
CEXI

Post-It™ brand fax transmittal memo 7671 | # of pages ▸ 1

To Brad Kittridge	From Greg Stanley
Co. Norco	Co. Nalco
Dept. Service	Phone # Kennewick
Fax #	Fax #

Performer II

PERFORMER II 3/8 IN. (9.5MM) I.D. 2BR 300 P.S.I. W.P.

TUBE	Blended Nitrile.
REINFORCEMENT	1 or 2 Textile Braids.
COVER	Neoprene.
COLOR	Red.
TEMPERATURE RANGE	−40°F to +180°F.
TYPE OF BRANDING	Ink Print.
WORKING PRESSURE	225-300 PSI.
TYPE OF COUPLING	Barbed Inserts, Quick Acting, or Long Shank. Clamps—Interlocking, Single Bolt, Band, or Wire.

Features

- Neoprene cover
- Blended nitrile tube
- Continuous permanent brand
- Wide range of sizes
- Braid reinforcement

Benefits

- Abrasion, oil, and weather resistant
- Medium oil resistance
- Easy identification
- For many applications
- Better coupling retention for impulse applications

Markets / Applications

Markets	Applications
Assembly/Manufacturers	Pneumatic tools on production line.
Construction Industry	Provide power to air operated equipment.
Forest Industry	Convey air and water.
Metal Working	
Mining	
Ship Building	
Plastic Molding	

CODE	NOMINAL I.D.		BRAID	NOMINAL O.D.		APPROXIMATE WEIGHT POUNDS PER 100 FT.	MAXIMUM RECOMMENDED WORKING PRESSURE (PSI)	[illegible]
	(IN)	(MM)		(IN)	(MM)			
55-1861-04	¼	6.3	1	½	12.7	10	225	650
55-1861-07	¼	6.3	2	[illegible]	15.1	15	300	650
55-1861-10	5/16	7.9	1	⅝	15.9	14	225	650
55-1861-16	[illegible]	9.5	1	[illegible]	16.7	15	225	[illegible]
55-1861-19	⅜	9.5	2	23/32	18.3	19	300	650
55-1861-22	½	12.7	1	[illegible]	20.6	21	225	[illegible]
55-1861-25	½	12.7	2	⅞	22.2	27	300	650
55-1861-37	¾	[illegible]	2	[illegible]	29.4	41	300	[illegible]
55-1861-38	¾	19.1	2	15/32	29.4	41	300	5-50's Boxed
55-1861-43	[illegible]	25.4	2	[illegible]	36.5	62	250	[illegible]
55-1861-46	1¼	31.8	2	1¾	44.5	101	225	300
55-1861-49	1½	38	2	2	50.8	106	225	[illegible]

BEST COPY AVAILABLE

QUALITY ASSURANCE INSPECTION PLAN

Sheet 1 of 2
Safety Class 3

Title
rogen Supply Trailer

Drawing/Spec. No. WHC-S-0249 Rev. 1

Item Description Trailer mounted liquid nitrogen storage tank, propane powered nitrogen vaporizer and propane powered 4 KW generator.

Supplier Norco Inspection No. Source

P.O. Subcontract 404870

Item No. 1 Qty. 2 Inspected by [signature] Date 12-19-94

Reference

pred by Kostelnik / JD Verderber Date 12/12/94

No.	Inspection Characteristics	INSPECTION STATUS Acc	HM Tag	Rej	NCR	Cond. Acc	Remarks
	SAMPLE SIZE DETERMINATION Sample size (number of items to be inspected in a lot), shall be determined by using Table I and Table III-A of the latest edition of MIL-STD-105 as follows: • Select the Sample Size Code Letter from Table I, based on the lot size of material received and the General Inspection Level indicated by the QAIP (Level I, II, or III). • Select the sample size from Table III-A using the Sample Size Code Letter obtained from Table I and the AQL number specified by the QAIP. • The minimum sample size utilizing Level II, AQL 4.0, Table III-A shall be 8 or 100%, if the lot size is less than 8. NOTE: If any samples are found nonconforming, the entire lot shall be placed on HOLD pending engineering evaluation and NCR disposition.						
1	Verify that all components, valves, switches and gauges are labeled per Appendix A of specification WHC-S-0249 Rev. 1. Appendix A was added by ECN 613535.	12-19-94 RHC					
2	Verify two (2) 50 foot sections of 1 inch inside diameter flexible hose are supplied. The 50 foot sections of hose are equipped with a Hansen LL12-K46 plug on one end and a Hansen LL12-H46 socket on the other end. The hose is rated for a pressure of 250 psig.	12-19-94					

QUALITY ASSURANCE INSPECTION PLAN
(Continuation Sheet)

Safety Class 3

Item Title
Nitrogen Supply Trailer

Drawing/Spec. No. WHC-S-0249 Rev. 1
P.O. No. 404870
Item No. 1

Char. No.	Inspection Characteristics	INSPECTION STATUS					Remarks
		Acc	Hld Tag	Rej	NCR	Cond. Acc	
3	Verify two (2) 100 foot sections of 1 inch inside diameter flexible hose are supplied. The 100 foot sections of hose are equipped with a Hansen LL12-K46 plug on one end and a Hansen LL12-H46 socket on the other end. The hose is rated for a pressure of 250 psig.	WHC IQ 125 F.I.C. 12-19-94					
4	Verify the installation of steel cross members beneath the trailer deck to provide reinforced anchorage for the vaporizer and the liquid nitrogen storage tank. Verify the anchor bolts have nuts and washers installed with 1 full thread minimum extending through the nut.	12-19-94					
5	Verify a red, diamond shaped, hazard placard has been installed on two sides of the liquid propane tank. Placards indicate flammability with a "flame" symbol and the number "1075" or the words "FLAMMABLE GAS" appear in bold black letters beneath the flame. Additional information which could be included on the label is the number "2", however it is not required.	WHC IQ 125 F.I.C. 12-19-94					
6	Verify there are no Suspect Fasteners on the trailer or mounted equipment. 12-19-94	WHC IQ 125 F.I.C.					

QUALITY ASSURANCE INSPECTION PLAN

Sheet 1 of 1
Safety Class 3

.e
en Supply Trailer

Drawing/Spec. No. WHC-S-0249 Rev. 1

Item Description Trailer mounted liquid nitrogen storage tank, propane powered nitrogen vaporizer and propane powered 4 KW generator.

Supplier Norco Inspection No. 4219

P.O. Subcontract 404870

by telnik / JJ Verderber Date 2-8-95

Item No. 1 Qty. 2 Inspected by [signature] Date 2-1-95

Reference

No.	Inspection Characteristics	INSPECTION STATUS					Remarks
		Acc	Hld Tag	Rej	NCR	Cond. Acc	
	SAMPLE SIZE DETERMINATION Sample size (number of items to be inspected in a lot), shall be determined by using Table I and Table III-A of the latest edition of MIL-STD-105 as follows: • Select the Sample Size Code Letter from Table I, based on the lot size of material received and the General Inspection Level indicated by the QAIP (Level I, II, or III). • Select the sample size from Table III-A using the Sample Size Code Letter obtained from Table I and the AQL number specified by the QAIP. • The minimum sample size utilizing Level II, AQL 4.0, Table III-A shall be 8 or 100%, if the lot size is less than 8. NOTE: If any samples are found nonconforming, the entire lot shall be placed on HOLD pending engineering evaluation and NCR disposition.						
1	Verify two (2) 50 foot sections of 1 inch inside diameter flexible hose are supplied. The 50 foot sections of hose are equipped with a Hansen LL12-K46 plug on one end and a Hansen LL12-H46 socket on the other end.	[signature]					
2	Verify there are no Suspect Fasteners on the trailer or mounted equipment.	[signature]					
3	Verify there are two pneumatic door supports installed to support the door on the rear of the trailer. Verify the supports are functional.						

QUALITY ASSURANCE INSPECTION PLAN

Sheet 1 of 1
Safety Class 3

e
en Supply Trailer

Drawing/Spec. No. WHC-S-0249 Rev. 1

Item Description Trailer mounted liquid nitrogen storage tank, propane powered nitrogen vaporizer and propane powered 4 KW generator.

Supplier Norco Inspection No.

P.O. Subcontract 404870

by
elnik / JJ Verderber Date 2-8-95

Item No. 1 Qty. 2 Inspected by [signature] Date 2-22-95

Reference

	Inspection Characteristics	INSPECTION STATUS					Remarks
		Acc	Hld Tag	Rej	NCR	Cond. Acc	
	SAMPLE SIZE DETERMINATION Sample size (number of items to be inspected in a lot), shall be determined by using Table I and Table III-A of the latest edition of MIL-STD-105 as follows: • Select the Sample Size Code Letter from Table I, based on the lot size of material received and the General Inspection Level indicated by the QAIP (Level I, II, or III). • Select the sample size from Table III-A using the Sample Size Code Letter obtained from Table I and the AQL number specified by the QAIP. • The minimum sample size utilizing Level II, AQL 4.0, Table III-A shall be 8 or 100%, if the lot size is less than 8. NOTE: If any samples are found nonconforming, the entire lot shall be placed on HOLD pending engineering evaluation and NCR disposition.						Generator Shipped Earlier direct To The Field See CC Mail From Cog Eng (Attached)
1	Verify two (2) 50 foot sections of 1 inch inside diameter flexible hose are supplied. The 50 foot sections of hose are equipped with a Hansen LL12-K46 plug on one end and a Hansen LL12-H46 socket on the other end.	[signature]					Partial Shipment 2ND Hose will be shipped at a Later date
2	Verify there are no Suspect Fasteners on the trailer or mounted equipment.	[signature]					
3	Verify there are two pneumatic door supports installed to support the door on the rear of the trailer. Verify the supports are functional.	[signature]					