2. To: (Receiving Organization)  
Characterization Plant Engineering

3. From: (Originating Organization)  
Characterization Equipment Improvement

4. Related EDT No.:  
N/A

5. Proj./Prog./dept./Div.:  
Core Sampling Aux. Equipment

6. Cog. Engr.:  
J.L. Smalley

7. Purchase Order No.:  
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

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15. KEY

16. SIGNATURE/DISTRIBUTION

17. DOE APPROVAL (if required)

20. Significant Manager Date

BD-7400-172-2 (04/94) G6F097
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: Z070
Org Code: 75230    Charge Code: N4H2B
B&R Code: EW3.20071    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.

TRADEMARK DISCLAIMER. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors.

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Approved for Public Release

A-6400-073 (10/95) GER321
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<td>APPENDIX B (ATP results for Trailer VIN 1G9FS2726RA065102)</td>
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<td>APPENDIX C (Receipt Inspection Report)</td>
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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

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* * * * * * * * * * *

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

APPROVED FOR PUBLIC RELEASE

* * * * * * * * * * *

WHC Information Release Administration Specialist:

[Signature]

Kara Broz

October 4, 1994  
(Date)
To: (Receiving Organization)  | Core Sampling  | 4. Related EOT No.: N/A
---|---|---
From: (Originating Organization) | Characterization Equipment  | 7. Purchase Order No.: 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/Build./Facility: 200 General
11. Receiver Remarks:
12. Major Asst, Dwg. No.: N/A
13. Permit/Permit Application No.: N/A
14. Required Response Date: 10/4/94

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15. KEY

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- 2. Release
- 5. Post-Review
- 3. Information
- 6. Dist. (Receipt Acknowledged, Required)

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16. SIGNATURE/DISTRIBUTION

(See Approval Designator for required signatures)

19. AP Michael

Authorized Representative Date
for Receiving Organization

20. RJ Stambaugh

Significant Manager Date
# Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply

## 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

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TEST EXCEPTIONS .................................................... 11
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

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.

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

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.

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 80 psig range is acceptable because operation is at 120 psig flow demonstrated.

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.

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.

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<th>TRAILER</th>
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<td>Model# HLD-153D-55-250</td>
<td>Model# F08R 6X6 21/Propane</td>
<td>Model# Traimax</td>
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<td>Serial# 149</td>
<td>Serial# x940421-2</td>
<td>Vehicle# 169F527248AD651D</td>
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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.

4.2.1 Nitrogen Tank

4.2.2 Propane Tank

4.2.3 Heat Exchanger/Vaporizer

4.2.4 Other

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

4.3.1 Pressure building

4.3.2 Pressure relief

4.3.3 Liquid level indication

4.3.4 Pressure indication

4.3.5 Other Fill capability

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

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.

4.6.1 Water temperature indication

4.6.2 Nitrogen outlet temperature indication
4.6.3 Pressure indication

4.6.4 Water flow indication: Internal DP automatic shutdown

4.6.5 Emergency shutdown

4.6.6 Outlet pressure regulator

4.6.7 Vent valve

4.6.8 Other Pressure Relief Valves on Vaporizer

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

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.

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.

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.

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.

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

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.

4.14.1 All valves (automatic, manual, or check)

4.14.2 All pressure indicators
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

4.15.1 Mainframe and platform are manufacturer's standard

4.15.2 Crossmembers - 20 inch center maximum

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

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

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

4.15.6 Safety chains with hooks.

4.15.7 2 Axles - 15,000 pound each.

4.15.8 Brakes - 4 wheel air brakes.

4.15.9 Hubs - Oil bath type 10 on 8.75 BC.

4.15.10 Suspension - 3 point slipper spring type.

4.15.11 Wheels - Dual Disc 17.5 x 5.75 10 on 8.75 BC.

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

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

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

4.15.15 Paint - Unit is painted with White enamel.

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

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

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

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 11/8/79

6.2 All portions of this test have been completed.

TEST COMPLETED BY:

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<td>Norco</td>
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September 22, 1994

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

Re: Functional Test Procedures
P.O. & MDW-XV-406870

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 SCFH.
6) Check temperature of gas exiting the system and assure the range is between 35°F to 100°F.

Thank you,

[Signature]

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".

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<td>WATER FLOW REGULATOR</td>
<td>DELIVERY HOSE RELIEF</td>
<td>WATER EXCHANGER RELIEF</td>
</tr>
<tr>
<td>WATER PUMP OFF ON</td>
<td>V-27</td>
<td>V-26</td>
</tr>
<tr>
<td>V-28</td>
<td>V-27</td>
<td>ANTIFREEZE FILL</td>
</tr>
<tr>
<td>GENERATOR PROPANE GAS</td>
<td>ANTIFREEZE DRAIN</td>
<td>ANTIFREEZE FILL</td>
</tr>
<tr>
<td>NITROGEN GAS TEMP LOW CUTOFF (°F)</td>
<td>WATER TEMP LOW CUTOFF (°F)</td>
<td>EMERGENCY SHUTDOWN</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>LEFT HEATER POWER ON</td>
<td>RIGHT HEATER WATER PUMP ON</td>
<td>CONTROL PANEL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FAULT</td>
</tr>
</tbody>
</table>
## TEST EXCEPTIONS

<table>
<thead>
<tr>
<th>Step #</th>
<th>Description of exception and resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.3</td>
<td>No ASME stamp. Noreco shall document compliance with ASME Boiler &amp; Pressure Vessel Code Section 8 as required.</td>
</tr>
<tr>
<td>4.6.3</td>
<td>No N2 Outlet Pressure Indicator. Noreco shall install pressure indication at N2 feed supply valve (upstream).</td>
</tr>
<tr>
<td>4.6.8</td>
<td>No Pressure Relief on N2 Vaporizer. Noreco shall install safety pressure relief on vaporizer as per vessel pressure requirements.</td>
</tr>
<tr>
<td>4.11</td>
<td>Propane Relief line unsupported. Noreco to add support.</td>
</tr>
<tr>
<td>4.15/18</td>
<td>Plates not installed. Noreco to install per DOT requirements.</td>
</tr>
<tr>
<td>4.14</td>
<td>Labeling not complete. Noreco not supplied with label scheme prior to 10-11-94. To be completed and verified at a later date.</td>
</tr>
<tr>
<td>4.13/4</td>
<td>4/15.5 cant verify w/out records. Noreco to supply vendor information to show work capacity.</td>
</tr>
<tr>
<td>4.13</td>
<td>4 bolts on the 2 #4 supports are suspect. Bolts shall be replaced by Noreco.</td>
</tr>
<tr>
<td>3.5-3.6</td>
<td>Documentation not available. Noreco shall provide the documentation for propane consumption rates and tank capacities for generator and heaters.</td>
</tr>
</tbody>
</table>

### EXCEPTION AND RESOLUTION CONCURRENCE:

<table>
<thead>
<tr>
<th>PRINT NAME</th>
<th>COMPANY</th>
<th>SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alisa Kontelev</td>
<td>WHC</td>
<td>Alisa Kontelev</td>
<td>10-12-94</td>
</tr>
<tr>
<td>Bradley M. K. Hodge</td>
<td>Noreco</td>
<td>Bradley M. K. Hodge</td>
<td>10-12-94</td>
</tr>
</tbody>
</table>

* Make additional copies as required.
TEST EXCEPTIONS

<table>
<thead>
<tr>
<th>Step #</th>
<th>Description of exception and resolution.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Inspection.</td>
</tr>
<tr>
<td></td>
<td>N₂ skid and vaporizer bolted to 3/4 inch steel diamond plate deck. Notice to install a 1/4&quot; minimum thickness C-channel to span 2 ribs beneath the trailer deck as mounting reinforcement.</td>
</tr>
<tr>
<td></td>
<td>Control panel (Cexi) lists power requirements as 29 amps at 120 volt AC. The generator is broke at 20 amps (120 volt AC). Check power requirements and correct data plate on control panel.</td>
</tr>
<tr>
<td>5.1</td>
<td>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.</td>
</tr>
</tbody>
</table>

EXCEPTION AND RESOLUTION CONCURRENCE:

<table>
<thead>
<tr>
<th>PRINT NAME</th>
<th>COMPANY</th>
<th>SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alois Kosteliki</td>
<td>WHC</td>
<td>Alois Kosteliki</td>
<td>10-12-94</td>
</tr>
<tr>
<td>Bradley M. Kittredge</td>
<td>Nordic</td>
<td>Bradley M. Kittredge</td>
<td>10-12-94</td>
</tr>
</tbody>
</table>

* Make additional copies as required.
N₂ Pressure = 60 psig  Actual = 60 PSI
N₂ Flow = 10 scf/min  Actual = N/A
N₂ Temperature = 82°F  Actual = 80 @ 71°F
Water Temperature = 108°

N₂ Pressure = 80 psig  Actual =
N₂ Flow = 10 scf/min  Actual =
N₂ Temperature =
Water Temperature =

N₂ Pressure = 100 psig  Actual = 100 psi
N₂ Flow = 10 scf/min  Actual = N/A
N₂ Temperature = 84 @ 80 scf/min
Water Temperature = 102 @ 80 scf/min

N₂ Pressure = 120 psig  Actual = 120 psi
N₂ Flow = 10 scf/min  Actual = N/A
N₂ Temperature = 86 @ 80 scf/min
Water Temperature = 100 @ 80 scf/min

End Temperature = 63°F

Test w/ Hadland Flowmeter
40 - 280 scf/min
## 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

<table>
<thead>
<tr>
<th>TANK</th>
<th>VAPORIZER</th>
<th>TRAILER</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLD-1530-SS-250</td>
<td>FCWBLX6X21/Propane</td>
<td>Trail Max</td>
</tr>
<tr>
<td>#149</td>
<td>X940421-2</td>
<td>169FS2724RA065101</td>
</tr>
</tbody>
</table>

**STEP #**

- **4.2.3** ASME Stamp Supplied
- **4.6.3** N2 Outlet Pressure Indicator Installed
- **4.6.8** N2 Safety Relief Mounted
- **4.11** Additional Support Added to Propane Vent Line
- **4.15.18** DOT Placards Installed on Propane Tank
- **4.14** Labeling Complete as per Appendix B page 9 & 10
- **4.15.4** Documentation Complete / See Attached
- **4.13** All Suspect Fasteners We Charged According to Spec.
- **3.5** Documentation Complete / See Attached
- **3.6** Documentation Completes / See Attached

- **23”** Channel Are Spanned on Cross Member and Welded to support N2 Skis and Vaporizers.

---

Bradley M K. Hridge

IDAHO • MONTANA • OREGON • NEVADA • WASHINGTON • CALIFORNIA
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 ccf

- Generator Set 4.3 Kilowatts continuous
  - Propane flow: 27.7 ccf

- Propane Vaporization Requirement
  - Total Flow: 196.79 ccf

The power requirements for the system are as follows:

- Controls Including Water Heaters: 3 amps, 120 vac
- Water Pump: 15.8 amps at 120 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
PERFORMER II 3/8 IN. (9.5MM) I.D. 2BR 300 P.S.I. W.P.

<table>
<thead>
<tr>
<th>TUBE REINFORCEMENT</th>
<th>Working Pressure</th>
<th>Type of Coupling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blended Nitrile</td>
<td>225-300 PSI</td>
<td>Barbed Inserts, Quick Acting, or Long Shank</td>
</tr>
<tr>
<td>1 or 2 Textile Braids</td>
<td>Barbed Inserts, Quick Acting, or Long Shank</td>
<td></td>
</tr>
<tr>
<td>Neoprene</td>
<td>Neoprene</td>
<td>Clamps—Interlocking, Single Bolt, Band, or Wire.</td>
</tr>
<tr>
<td>Red</td>
<td>Neoprene</td>
<td>Clamps—Interlocking, Single Bolt, Band, or Wire.</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>-40°F to +180°F</td>
<td>Neoprene</td>
</tr>
<tr>
<td>Type of Branding</td>
<td>Ink Print</td>
<td>Neoprene</td>
</tr>
</tbody>
</table>

Features
- Neoprene cover
- Blended nitrite 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
- Assembly/Manufacturers
- Construction Industry
- Forest Industry
- Metal Working
- Mining
- Ship Building
- Plastic Molding

Applications
- Pneumatic tools on production line
- Provide power to air operated equipment
- Convey air and water

<table>
<thead>
<tr>
<th>Size</th>
<th>Nominal Size</th>
<th>Nominal Lead</th>
<th>Approx Min Weight</th>
<th>Approx Max Weight</th>
<th>Length</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>55-1661-04</td>
<td>1/4</td>
<td>6.3</td>
<td>1</td>
<td>1/2</td>
<td>12.7</td>
<td>10</td>
</tr>
<tr>
<td>55-1661-08</td>
<td>1/4</td>
<td>6.3</td>
<td>1</td>
<td>1/2</td>
<td>12.7</td>
<td>10</td>
</tr>
<tr>
<td>55-1661-10</td>
<td>1/8</td>
<td>7.9</td>
<td>1</td>
<td>1/2</td>
<td>15.9</td>
<td>14</td>
</tr>
<tr>
<td>55-1661-12</td>
<td>1/8</td>
<td>7.9</td>
<td>1</td>
<td>1/2</td>
<td>15.9</td>
<td>14</td>
</tr>
<tr>
<td>55-1661-16</td>
<td>1/8</td>
<td>9.5</td>
<td>2</td>
<td>1/2</td>
<td>18.3</td>
<td>19</td>
</tr>
<tr>
<td>55-1661-19</td>
<td>1/8</td>
<td>9.5</td>
<td>2</td>
<td>1/2</td>
<td>18.3</td>
<td>19</td>
</tr>
<tr>
<td>55-1661-20</td>
<td>1/8</td>
<td>12.7</td>
<td>2</td>
<td>1/2</td>
<td>22.2</td>
<td>27</td>
</tr>
<tr>
<td>55-1661-22</td>
<td>1/8</td>
<td>12.7</td>
<td>2</td>
<td>1/2</td>
<td>22.2</td>
<td>27</td>
</tr>
<tr>
<td>55-1661-36</td>
<td>3/4</td>
<td>19.1</td>
<td>2</td>
<td>1/2</td>
<td>29.4</td>
<td>41</td>
</tr>
<tr>
<td>55-1661-40</td>
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<td>2</td>
<td>1/2</td>
<td>32.5</td>
<td>41</td>
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<td>55-1661-44</td>
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<td>31.8</td>
<td>2</td>
<td>1 1/2</td>
<td>44.5</td>
<td>101</td>
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<tr>
<td>55-1661-46</td>
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<td>31.8</td>
<td>2</td>
<td>1 1/2</td>
<td>44.5</td>
<td>101</td>
</tr>
</tbody>
</table>

BEST COPY AVAILABLE
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 CEKI
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:

[Signature]

[Date]

October 4, 1994
2. To: (Receiving Organization)  
Core Sampling  

3. From: (Originating Organization)  
Characterization Equipment  

5. Proj./Prog./Dept./Div.:  
Core Sampling Aux. Equipment  

6. Cog. Engr.:  
J.L. Smalley  

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 Seller's location. The ATP will  
show compliance with specification WHC-S-0249 Rev.1.  

10. System/Bldg./Facility:  
200 General  

11. Receiver Remarks:  

15. DATA TRANSMITTED  

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Document/Drawing No.</th>
<th>Sheet No.</th>
<th>Rev. No.</th>
<th>Title or Description of Data Transmitted</th>
<th>Approval Designator</th>
<th>Reason for Transmittal</th>
<th>Original Disposition</th>
<th>Receiver Disposition</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0</td>
<td>Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply</td>
<td>Q</td>
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</table>

16. KEY  

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<th>Reason</th>
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<th>Name</th>
<th>Signature</th>
<th>Date</th>
<th>Reason</th>
<th>Disp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Cog. Eng. J.L. Smalley</td>
<td>Alois Kosteunik</td>
<td>9/21/97</td>
<td>Approved</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Cog. Mgr. R.J. Blanchard</td>
<td>OSTI (2)</td>
<td>7/15/94</td>
<td>Approved w/Comment</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>QA J.J. Verderber</td>
<td>Central Files</td>
<td>9/9/94</td>
<td>Disapproved w/Comment</td>
<td></td>
</tr>
</tbody>
</table>

17. SIGNATURE/DISTRIBUTION  

18. Signature of EDT  
Authorized Representative Date for Receiving Organization

19. Signature of EDT  
Authorized Representative Date for Receiving Organization

20. Signature of EDT  
Authorized Representative Date for Receiving Organization

21. DOE APPROVAL (if required)  

☐ Approved  
☐ Approved w/comments  
☐ Disapproved w/comments
Acceptance Test Procedure for a Portable, Self-Contained Nitrogen Supply

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

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.
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4.0 INSPECTION ......................................................... 4
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6.0 ACCEPTANCE TEST COMPLETION ................................. 7
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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

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

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

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.

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. The 0 to 150 psig range is acceptable because operation is at 120 psig. Flow capacity demonstrated.

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.

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.

<table>
<thead>
<tr>
<th>TANK</th>
<th>VAPORIZER</th>
<th>TRAILER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model: HCD-1500-55-250</td>
<td>Model: FRKH-5031/Propane</td>
<td>Model: Trailmax</td>
</tr>
<tr>
<td>Serial: 148</td>
<td>Serial: 940421-1</td>
<td>Vehicles: T69F32726RA065102</td>
</tr>
</tbody>
</table>

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.

4.2.1 Nitrogen Tank

4.2.2 Propane Tank

SEE Exception 4.2.3 Heat Exchanger/Vaporizer

4.2.4 Other

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

4.3.1 Pressure building

4.3.2 Pressure relief

4.3.3 Liquid level indication

4.3.4 Pressure indication

SEE Exception 4.3.5 Other Fill Capability

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

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.

4.6.1 Water temperature indication

4.6.2 Nitrogen outlet temperature indication
4.6.3 Pressure indication

4.6.4 Water flow indication

4.6.5 Emergency shutdown

4.6.6 Outlet pressure regulator

4.6.7 Vent valve

See exception 4.6.8 Other pressure relief of N on vaporizer

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

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.

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.

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.

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.

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

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.

4.14.1 All valves (automatic, manual, or check)

4.14.2 All pressure indicators
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

4.15.1 Mainframe and platform are manufacturer's standard

4.15.2 Crossmembers - 20 inch center maximum

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

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

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

4.15.6 Safety chains with hooks.

4.15.7 2 Axles - 15,000 pound each.

4.15.8 Brakes - 4 wheel air brakes.

4.15.9 Hubs - Oil bath type 10 on 8.75 BC.

4.15.10 Suspension - 3 point slipper spring type.

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

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

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

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

4.15.15 Paint - Unit is painted with White enamel.

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

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

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

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.

6.2 All portions of this test have been completed.

TEST COMPLETED BY:

<table>
<thead>
<tr>
<th>PRINT NAME</th>
<th>COMPANY</th>
<th>SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alanis Kostelnik</td>
<td>WHC</td>
<td>Alanis Kostelnik</td>
<td>10-12-94</td>
</tr>
<tr>
<td>Bradley M. Kittredge</td>
<td>Norco</td>
<td>Bradley M. Kittredge</td>
<td>10-12-94</td>
</tr>
</tbody>
</table>
September 22, 1994

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

Re: Functional Test Procedures
P.O. # MDW-XYV-404670

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,

[Signature]
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".

<table>
<thead>
<tr>
<th>V-6 NITROGEN SUPPLY</th>
<th>RV-4 SUPPLY LINE RELIEF</th>
<th>V-5 PRESSURE BUILDING</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-1 TOP FILL</td>
<td>V-2 BOTTOM FILL</td>
<td>V-3 VENT TANK</td>
</tr>
<tr>
<td>V-4 LIQUID DELIVERY</td>
<td>V-12 ROAD RELIEF</td>
<td>V-8 FULL TRYCOCK</td>
</tr>
<tr>
<td>R-1 PRESSURE BUILDING REGULATOR</td>
<td>V-13 ANNULUS EVACUATION</td>
<td>V-7 DELIVERY HOSE DRAIN</td>
</tr>
<tr>
<td>SOV-1 NITROGEN SUPPLY SOLENOID</td>
<td>R-2 NITROGEN SUPPLY REGULATOR</td>
<td>PG-2 NITROGEN SUPPLY PRESSURE</td>
</tr>
<tr>
<td>V-16 VENT NITROGEN</td>
<td>V-14 TRUCK NITROGEN</td>
<td>V-15 EXHAUSTER NITROGEN</td>
</tr>
<tr>
<td>R-3 INSTRUMENT AIR REGULATOR</td>
<td>V-17 TANK LIQUID PROPAINE</td>
<td>V-18 EXCHANGER LIQUID PROPANE</td>
</tr>
<tr>
<td>V-21 LEFT HEATER PROPANE</td>
<td>V-20 EXCHANGER PROPANE GAS</td>
<td>V-19 TANK PROPANE GAS</td>
</tr>
<tr>
<td>V-22 RIGHT HEATER PROPANE</td>
<td>R-4 HEATER PROPANE REGULATOR</td>
<td>TC-1 NITROGEN TEMP CONTROLLER</td>
</tr>
<tr>
<td>RV-6 PROPANE RELIEF</td>
<td>FS-1 WATER FLOW SENSOR</td>
<td>TS-1 WATER TEMP SENSOR</td>
</tr>
<tr>
<td>V-23 WATER VENT</td>
<td>V-24 WATER VENT</td>
<td>V-25 WATER VENT</td>
</tr>
<tr>
<td>FR-1 WATER FLOW REGULATOR</td>
<td>RV-5 DELIVERY HOSE RELIEF</td>
<td>RV-7 WATER EXCHANGER RELIEF</td>
</tr>
<tr>
<td>WATER PUMP OFF ON</td>
<td>V-27 ANTIFREEZE DRAIN</td>
<td>V-26 ANTIFREEZE FILL</td>
</tr>
<tr>
<td>V-28 GENERATOR PROPANE GAS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NITROGEN GAS TEMP LOW CUTOFF (°F)</td>
<td>WATER TEMP LOW CUTOFF (°F)</td>
<td>EMERGENCY SHUTDOWN</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>LEFT HEATER POWER ON</td>
<td>RIGHT HEATER WATER PUMP ON</td>
<td>CONTROL PANEL FAULT</td>
</tr>
</tbody>
</table>
## TEST EXCEPTIONS

<table>
<thead>
<tr>
<th>Step #</th>
<th>Description of exception and resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.2.3</td>
<td>No ASME Stamp. Norco shall document compliance with ASME Boiler-Pressure Vessel Code Section 8 as required.</td>
</tr>
<tr>
<td>4.3.5</td>
<td>Fill hose disconnected. Norco to install hose and will be verified upon receipt by WHC.</td>
</tr>
<tr>
<td>4.6.3</td>
<td>No N₂ Outlet Pressure Indication. Norco shall install Safety Pressure Relief as required by Pressure indication at same reel supply valve (upstream).</td>
</tr>
<tr>
<td>4.6.8</td>
<td>No Vaporizer N₂ Safety Relief. Norco shall install Safety Pressure Relief on Vaporizer per vessel requirements.</td>
</tr>
<tr>
<td>4.11</td>
<td>Propane Relief vent line unsupported. Norco shall provide additional support.</td>
</tr>
<tr>
<td>4.15.18</td>
<td>Placards not installed. Norco shall install Flammable gas placards as required by DOT.</td>
</tr>
<tr>
<td>4.14</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Closed off** 4.13.4 - 4.15.3 Can’t verify w/o test records. Norco shall provide necessary documentation.

**Subject Fasteners:** Left - Front, Heater outside anchor bolts? Norco shall replace.

### Exception and Resolution Concurrence:

<table>
<thead>
<tr>
<th>PRINT NAME</th>
<th>COMPANY</th>
<th>SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alois Kostelnik</td>
<td>WHC</td>
<td>Chief Kostelnik</td>
<td>10-12-94</td>
</tr>
<tr>
<td>Bradley M. Kittredge</td>
<td>Norco</td>
<td>Bradley M. Kittredge</td>
<td>10-12-94</td>
</tr>
</tbody>
</table>

* Make additional copies as required.
Step # | Description of exception and resolution.
---|---
3.5+3.6 | Documentation not available. Alorno 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 made necessary.

---

**EXCEPTION AND RESOLUTION CONCURRENCE:**

<table>
<thead>
<tr>
<th>PRINT NAME</th>
<th>COMPANY</th>
<th>SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alois Kostelnik</td>
<td>Whc</td>
<td>C. J. Kotell</td>
<td>10-12-94</td>
</tr>
<tr>
<td>Bradley M. Kittredge</td>
<td>Alorno</td>
<td>Bradley M. Kittredge</td>
<td>10-12-94</td>
</tr>
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</table>

* Make additional copies as required.
TEST EXCEPTIONS

<table>
<thead>
<tr>
<th>Step #</th>
<th>Description of exception and resolution.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Inspection.</td>
</tr>
<tr>
<td></td>
<td>N₂ skid and Vaporizer bolted to 3/16 steel diamond plate deck. Norco to install a ⁷/₁₆&quot; minimum thickness C-channel to span 2 ribs beneath the trailer deck as mounting reinforcement.</td>
</tr>
<tr>
<td></td>
<td>Control panel (Cesi) lists power requirements as 29 amps at 120 volts AC. The generator is branded at 20 amps (120 volts AC). Check power requirements and correct data plate on control panel.</td>
</tr>
</tbody>
</table>

EXCEPTION AND RESOLUTION CONCURRENCE:

<table>
<thead>
<tr>
<th>PRINT NAME</th>
<th>COMPANY</th>
<th>SIGNATURE</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alois Kostelnik</td>
<td>WHC</td>
<td>Alois Kostelnik</td>
<td>10-22-94</td>
</tr>
<tr>
<td>Bradley M. Kittredge</td>
<td>NERC</td>
<td>Bradley M. Kittredge</td>
<td>10-22-94</td>
</tr>
</tbody>
</table>

* Make additional copies as required.
Unit II  Run Test  Tank Serial # 148  
Start Temp. 70°F WHC-SD-WM-ATR-108  
Rev. 0  
Appendix B-16 of B-20

\[ \text{N}_2 \text{ Pressure} = 60 \text{ psig Actual: 60} \]
\[ \text{N}_2 \text{ Flow} = 10 \text{ scf/min Actual: 50, 120} \]
\[ \text{N}_2 \text{ Temperature} = 86°F @50 \text{ scf/min Max: 185°F @74°F} \]
\[ \text{Water Temperature} = 108°F @50 \text{ scf/min} \]

\[ \text{N}_2 \text{ Pressure} = 80 \text{ psig Actual: } \] 
\[ \text{N}_2 \text{ Flow} = 10 \text{ scf/min Actual: 50, 120} \]
\[ = 50 \text{ scf/min} \]
\[ = 120 \text{ scf/min} \]

\[ \text{N}_2 \text{ Temperature} = \] 
\[ \text{Water Temperature} = \]

\[ \text{N}_2 \text{ Pressure} = 100 \text{ psig Actual: 100 psig} \]
\[ \text{N}_2 \text{ Flow} = 10 \text{ scf/min Actual: 50 scf/min, 240 scf/min @80°F} \]
\[ = 50 \text{ scf/min} \]
\[ = 240 \text{ scf/min @88°F} \]

\[ \text{N}_2 \text{ Temperature} = 86°F @50 \text{ scf/min} \]
\[ = 88°F @240 \]
\[ \text{Water Temperature} = 102°F @50 \text{ scf/min} \]
\[ = 96°F @240 \]

\[ \text{N}_2 \text{ Pressure} = 120 \text{ psig Actual: 120 psig} \]
\[ \text{N}_2 \text{ Flow} = 10 \text{ scf/min Actual: 50 scf/min @83°F} \]
\[ = 50 \text{ scf/min} \]
\[ = 265 \text{ scf/min @91°F} \]

\[ \text{N}_2 \text{ Temperature} = 88°F @50 \text{ scf/min} \]
\[ = 90°F @265 \text{ scf/min} \]
\[ \text{Water Temperature} = 110°F @50 \text{ scf/min} \]
\[ = 98°F @265 \text{ scf/min} \]

End Temperature: 70°F

Recorded by Alois J. Kostelnič  10-4-94
WELDING, SAFETY, MEDICAL GASES AND SUPPLIES

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

<table>
<thead>
<tr>
<th>TANK</th>
<th>VAPORIZER</th>
<th>TRAILER</th>
</tr>
</thead>
<tbody>
<tr>
<td>HLD-1530-SS-250</td>
<td>FCWBLX6X21/Propane</td>
<td>Trail Max</td>
</tr>
<tr>
<td># 148</td>
<td># X940421-1</td>
<td>#T69FS2726RA065102</td>
</tr>
</tbody>
</table>

STEP #

4.2.3  ASME Stamp Supplied
4.6.3  N2 Outlet Pressure Indicator Installed
4.3.5  Fill Hose Connected
4.6.8  N2 Safety Relief Mounted
4.11  Additional Support Added to Propane Vent Line
4.15.18  DOT Placards Installed on Propane Tank
4.14  Labeling complete as per Appendix B page 9 & 10
4.15.4  Documentation Complete / See Attached
4.13  All Suspect Fasteners We Charged According to Spec.
3.5  Documentation Complete / See Attached
3.6  Documentation Complete / See Attached
4K  23" channel Are Spanned on Cross Member and Welded to support N2 Skid and Vaporizers.

Bradley M. Kittredge  Bradley M. Kittredge
IDAHO • MONTANA • OREGON • NEVADA • WASHINGTON • CALIFORNIA
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 follows.

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

TUBE REINFORCEMENT Blended Nitrile.
COVER 1 or 2 Textile Braids.
COLOR Neoprene.
TEMPERATURE RANGE -40°F to +180°F.
TYPE OF BRANDING Ink Print.

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
Assembly/Manufacturers Pneumatic tools on production line.
Construction Industry Provide power to air operated equipment.
Forest Industry Convey air and water.

Applications
- Metal Working
- Mining
- Ship Building
- Plastic Molding

<table>
<thead>
<tr>
<th>TUBE CODE</th>
<th>NOMINAL I.D.</th>
<th>NOMINAL O.D.</th>
<th>NOMINAL WALL THICKNESS</th>
<th>APPROXIMATE WEIGHT</th>
<th>LENGTH</th>
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<td>12.7</td>
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<td>2</td>
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<td>29.4</td>
<td>41</td>
<td>650</td>
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<td>55-1861-46</td>
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<td>55-1861-51</td>
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<td>25</td>
<td>225</td>
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<td>55-1861-56</td>
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<td>55-1861-63</td>
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<td>No.</td>
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<td>INSPECTION STATUS</td>
<td>Remarks</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Inspection Characteristics</td>
<td>INSPECTION STATUS</td>
<td>Remarks</td>
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<td>-----</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>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.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Verify a red, diamond shaped, hazard placard has been installed on two sides of the liquid propane tank. Placards indicate flammability with a &quot;flame&quot; symbol and the number &quot;1075&quot; or the words &quot;FLAMMABLE GAS&quot; appear in bold black letters beneath the flame. Additional information which could be included on the label is the number &quot;2&quot;, however it is not required.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Verify there are no Suspect Fasteners on the trailer or mounted equipment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### QUALITY ASSURANCE INSPECTION PLAN

**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

**Drawing/Spec. No.**: WHC-S-0249

**Revised**: Rev. 1

**Inspected by**: [Signature]

**Date**: 2-8-95

**Reference**:

### 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 100X, if the lot size is less than 8.

### INSPECTION STATUS

<table>
<thead>
<tr>
<th>No.</th>
<th>Inspection Characteristics</th>
<th>Inspection Status</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Verify there are no Suspct Fasteners on the trailer or mounted equipment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Verify there are two pneumatic door supports installed to support the door on the rear of the trailer. Verify the supports are functional.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## QUALITY ASSURANCE INSPECTION PLAN

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

**Supplier:** Norco

**Inspection No.:** 404870

### Inspection Characteristics

<table>
<thead>
<tr>
<th>Sample Size Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>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:</td>
</tr>
<tr>
<td>- 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).</td>
</tr>
<tr>
<td>- 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.</td>
</tr>
<tr>
<td>- 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.</td>
</tr>
</tbody>
</table>

**NOTE:** If any samples are found nonconforming, the entire lot shall be placed on HOLD pending engineering evaluation and NCR disposition.

### Inspection Status

<table>
<thead>
<tr>
<th>Inspect No.</th>
<th>Qty.</th>
<th>Item Mo.</th>
<th>Inspection Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>2</td>
<td>WHC-S-0249</td>
<td>2-6-95</td>
</tr>
</tbody>
</table>

### Remarks

- **Generator Shipped Earlier:** Direct to [Field Site] by [CC Mail] From: [CogEng (Attached)]

- **Partial Shipment:** 2nd Hose will be shipped at a later date.

- **Verify:**
  1. 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.
  2. There are no Suspect Fasteners on the trailer or mounted equipment.
  3. There are two pneumatic door supports installed to support the door on the rear of the trailer. Verify the supports are functional.

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**A-6700-119.1 (12/92) WEF205**