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ENGINEERING DATA TRANSMITTAL

Page 1 of 1  
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				10. System/Bldg./Facility: 03/200G/ES	
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		Design Authority	G. P. JANICEK	7/12/97	S7-12	1	1	C. E. HANSON	7/13/97	S7-12	7/13/97
		Design Agent	B. R. JOHNS	7/11/97	S7-12						
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		Cog. Mgr.	J. S. SCHOFIELD	7/12/97	S7-12						
		QA	J. S. SPARKS	7/12/97	S7-12						
N/A		Safety	N/A								
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# GENERATOR ACCEPTANCE TEST AND INSPECTION REPORT

**B. R. JOHNS**

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

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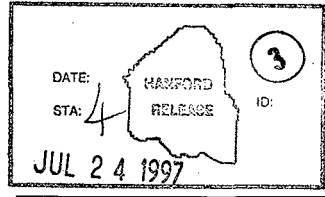
Key Words: GENERATORS, ELECTRICAL DISTRIBUTION, POWER, CORE SAMPLING, CHARACTERIZATION

Abstract: This Acceptance Test Report(ATR) is the completed testing and inspection of the new portable generator. The testing and inspection is to verify that the generator provided by the vendor meets the requirements of specification WHC-S-0252, Revision 2. Attached is various other documentation to support the inspection and testing.

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*Kara J. Bunn*  
Release Approval  
7/24/97  
Date



Approved for Public Release

HNF-SD-WM-ATR-190  
REVISION 0

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1.0 INTRODUCTION

The purpose of this test report is to document the inspection and testing of the new 150KW portable generator. A formal inspection and acceptance test plan (Johns, 1997) was performed at the vendor's location to verify that the generator met the required specification (Johns, 1996). Inspection and testing were completed on June 30, 1997. Engineering, quality control and maintenance representing the Characterization Project witnessed the performance of the test by the vendor. Inspections were performed by Characterization quality control, engineering and an National Electrical Code (NEC) inspector.

2.0 DESCRIPTION OF TEST

The acceptance test plan was performed on one portable 150KW generator at Cummins Northwest located in Renton, Washington. This generator is a model 150DGFA, with serial number K960624099. The test verified the proper functioning of the generator unit and correct voltage outputs required by the specification. Inspections were to verify that the unit was constructed per the procurement specification.

3.0 TEST METHOD AND TEST EQUIPMENT

The testing method was to verify that the diesel engine, load bank and generator functioned correctly by operating the unit. Gauges were monitored to verify the unit operated within the desired parameters. Voltage measurements were taken to verify correct outputs. The vendor performed the testing with calibrated digital voltmeters as identified on pages 15 and 20.

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4.0 TEST RESULTS

The test was successfully completed and all exceptions satisfactorily resolved to allow shipment of the generator site from the vendor. A copy of the completed and signed test is in the appendices. All the NEC discrepancies found on the initial inspection were resolved to the inspector's satisfaction and an NEC inspection sticker was placed on the generator unit.

Exceptions found during the inspection and acceptance testing are listed in the Appendix B of the original acceptance test plan, pages 17 and 18 of this report. Of the sixteen exceptions, fifteen were corrected and verified at the vendor's location. Exception #16 was required updating of the vendor's drawings showing the electrical layout of the trailer. The resolution of this exception was for the drawings to be revised and reviewed by the engineer when the generator was received on the Hanford site. This drawing review is part of the Receipt Inspection Plan and the engineer must approve the drawings prior to the generator being accepted by Quality Control and green tagged.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The 150KW generator unit is considered ready for field use when received from the vendor. No further testing is necessary on the unit before deploying to the field.

6.0 DISPOSITION OF TEST ITEM

The generator unit will receive an inspection when arriving on site to verify the correct serial number and no damage during shipping. Engineering will review the generator drawings from the vendor as part of the inspection plan. An "HO" number and licensing must be added to the unit when brought on site.

7.0 REFERENCES

Johns, B. R., 1996, "Specification for Trailer Mounted Diesel Generator," WHC-S-0252, REVISION 2, Westinghouse Hanford Company, Richland, Washington.

Johns, B. R., 1997, "Generator Acceptance Test and Inspection," HNF-SD-WM-ATP-190, REVISION 1, SGN Eurisys Services Corporation, Richland, Washington.

**APPENDICES: GENERATOR ACCEPTANCE TEST AND RELATED  
DOCUMENTATION**

GENERATOR ACCEPTANCE TEST: pages 4 through 20.

TEST LOG: pages 21 through 24.

RECEPTACLE EQUIVALENTS: page 25.

HANFORD 150KW TRAILER: pages 26 through 27.

TRAILER CERTIFICATION: pages 28 through 29.

TRAILER WEIGHT: page 30.

NEC INSPECTION REPORT: pages 31 through 32.

# RECORD COPY

## GENERATOR ACCEPTANCE TEST

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REVISION 0

### 1.0 Scope

This Acceptance Test Procedure (ATP) verifies that the trailer mounted 150KW Cummins/Onan Diesel Generator Set meets the requirements of Westinghouse Hanford specification WHC-S-0252, Revision 2.

### 2.0 Test Performance

Cummins Northwest will complete the following test in the order deemed best by Cummins personnel. Westinghouse Hanford Company (WHC) personnel shall witness all testing and shall perform the inspection portion of the test. All steps shall be accomplished and exceptions shall be noted on the attached exception sheet along with the resolution. Cummins Northwest shall resolve all exceptions with the concurrence of WHC.

### 3.0 Inspection Plan

3.1 Record the model and serial numbers of the engine, generator set and trailer.

ITEM	MODEL NO.	SERIAL NO.
ENGINE	6CTA8.3-G	45431258
GENERATOR SET	150-DGFA	K960624099
TRAILER	N-2431	VIN#1D9U51525V5151482

3.2 A National Electrical Code (NEC) inspection is to be performed by an inspector of WHC's choosing. Inspection is to include, but is not limited to correct wire sizes, proper grounding, proper mounting of electrical panels and breakers, proper clearances for electrical equipment, and proper conduit sizes.

EXCEPTION #1 ✓

Exceptions  
completed  
6/30/97  
BRJ

3.2.1 An NEC inspection sticker is placed on the unit upon completion of the inspection and all discrepancies resolved to the inspector's satisfaction.

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## GENERATOR ACCEPTANCE TEST

HNF-SD-WM-ATR-190  
REVISION 0

3.3 Verify by record and/or physical review that the generator is capable of the following:

Exception #16

- 3.3.1 3-phase, 4-wire, 277/480 VAC and single-phase 240/120 VAC.
- 3.3.2 Nominal operating frequency is 60 Hertz  $\pm$  0.5%.
- 3.3.3 Standby Rating Range is 150KW @ 0.8 power factor.

EXCEPTION #12

- 3.3.4 Prime Rating Range is 135KW @ 0.8 power factor.
- 3.3.5 Voltage dip does not exceed 20% of rated voltage upon application of rated load at rated power factor. 17%
- 3.3.6 Voltage regulation under load from no load to 100% load is within  $\pm$  2% of rated voltage, ( $\pm$ 10 V). 1%
- 3.3.7 Frequency regulation under varying loads from no load to 100% load is within  $\pm$  3 Hz.

Items in section 3.3 verified.

Bruce R. Johns  
BUYER'S ENGINEER

5/28/97  
DATE

3.4 Verify the control panel contains the following:

- 3.4.1 Run-Stop-Remote switch: (Run: manually start engine) (Stop: stop engine) (Remote: start engine by closing of a remote contact)
- 3.4.2 Accessible remote start-stop terminals.

3.5 Verify controls are provided to shutdown and lock out the engine under the following abnormal operating conditions:

- 3.5.1 Engine failure to start after a specified cranking time as recommended by the vendor of 3 cycles of 16 seconds on and 16 seconds off.
- 3.5.2 Engine over-speed.
- 3.5.3 Engine low lube oil pressure.
- 3.5.4 Engine high operating temperature.

EXCEPTION #2

- 3.5.5 Remote manual stop activated.



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## GENERATOR ACCEPTANCE TEST

HNF-SD-WM-ATR-190  
REVISION 0

3.6 Verify the following instrumentation is provided as a minimum:

3.6.1 Engine lube oil pressure gauge.

3.6.2 Coolant temperature gauge.

3.6.3 Cranking time meter.

3.6.4 Hour meter.

3.6.5 Battery charge-rate ammeter.

3.6.6 Fuel gauge for day tank.

3.6.7 Other instruments normally provided by the manufacturer for the proper operation and maintenance of their particular engine-generator set.

1. Pre High engine operating temperature.

2. Pre Low lube oil pressure.

3.7 Verify battery-powered visual alarms for the following condition as a minimum are provided. Verify lamp test switch and alarm reset switch and contacts for each alarm for remote signaling are provided:

3.7.1 Over-crank shutdown.

3.7.2 High engine temperature shutdown.

3.7.3 Low engine lube oil pressure shutdown.

3.7.4 Over-speed of engine shutdown.

3.8 Verify the generator AC power output monitoring and controls include the following as a minimum:

3.8.1 AC voltmeter with a phase selector switch with an OFF position.

3.8.2 AC ammeter with a phase selector switch with an OFF position.

3.8.3 Frequency meter.

3.8.4 AC voltage adjust rheostat.

3.8.5 Generator output circuit breaker with manual reset.

EXCEPTION #3

No

METER

EXCEPTION #4

VOLT-

METER

# RECORD COPY

## GENERATOR ACCEPTANCE TEST

HNF-SD-WM-ATR-190  
REVISION 0

Items in sections 3.4, 3.5, 3.6, 3.7, and 3.8 verified.

Bruce R. Johns 5/28/97  
Buyer's Engineer Date

P.J. Comandor\* 9.28.97  
QC Inspector \*WITH EXCEPTIONS #2, 3, 4 AS NOTED. Date

3.9 Verify the following equipment has been installed:

EXCEPTION #5

✓ 3.9.1 The basic trailer is provided with an electrical equipment rack located on the rear of the engine-generator set enclosure that does not increase the total width dimension of the unit. The equipment rack is located for easy access but allows accessibility to the engine-generator set for maintenance and operation. All receptacles are on the same side of the generator and labels are mechanically fasten to the equipment with screws.

Completed 6/30/97  
by

EXCEPTION #1

✓ 3.9.2 The distribution and wiring system have been installed per NFPA 70, National Electrical Code and an NEC inspection sticker is on the unit. *STICKER #8072*

BRJ RJE  
5/28/97 6/28/97

✓ 3.9.3 There is a 25KVA transformer on the unit to provide single phase power of 240/120 volt. The transformer shall has fault protection on the primary side.

Completed  
6/30/97  
by

EXCEPTION #6

✓ 3.9.4 A 100KW load bank is on the unit. The load bank is divided into 2 sections, 2 (two) 50KW sections, which have an automatic, off and manual switch positions. The load bank is wired for operation in parallel with the normal load.

✓ 3.9.5 The electrical equipment furnished by the engine-generator set Supplier, mounted on the equipment rack outside of the engine-generator set enclosure, and wired to the generator output terminals via a 3-phase, 4-wire bus is as follows: (Rated current capacity of components shall not be less than the rating requested.)

EXCEPTION #7

✓ 3.9.5.1 One (1), 3-pole, 3-wire, 150 amp rated, 80 amp trip, 600 VAC, lockable circuit breaker. A 100 amp. receptacle is on the load side of the circuit breaker and is labeled as "SERVICE TRAILER, 240 VAC 80 AMPS". The receptacle is an Appleton Cat. # ADR1034.

Exception accepted  
by

<sup>1</sup> Appleton is a register name for Appleton Electric Company, Chicago, Illinois

# RECORD COPY

## GENERATOR ACCEPTANCE TEST

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REVISION 0

EXCEPTION #8

✓ 3.9.5.2  
*Exception accepted B.E.J.*

One (1), 3-pole, 3-wire, 150 amp rated, 50 amp trip, 600 VAC, time delay lockable circuit breaker. A 60 amp. receptacle is on load side of the circuit breaker and is labeled as "BREATHING AIR COMPRESSOR 480 VAC 50 AMPS". The receptacle is an Appleton Cat. # ADR6034.

EXCEPTION #9

✓ 3.9.5.3

One (1), 3-pole, 3-wire, 200 amp rated, 110 amp trip, 600 VAC, lockable circuit breaker. A 200 amp. receptacle to the load side of the circuit breaker and label receptacle as "UTILITY 480 VAC 110 AMPS". The receptacle is an Appleton Cat. # AR20044.

EXCEPTION #10

✓ 3.9.5.4  
*Exception accepted B.E.J.*

One (1), 20 amp, 240 VAC, single locking receptacle, wired from a two pole, 20 amp breaker to be used for hookup of temporary power boxes. Labeled as "240 VAC 20 AMPS".

*BRJ 5/28/97* *ME 6/28/97*

✓ 3.9.5.5

One (1), 20 amp, 120 VAC, duplex receptacle, wired from a single pole, 20 amp breaker with ground fault protection, to be used for hookup of temporary tools and lighting. Labeled as "120 VAC 20 AMPS".

EXCEPTION #11

✓ 3.9.5.6

One (1), 30 amp, 120 VAC, single locking receptacle, wired from a single pole, 30 amp breaker. Labeled as "PURGE GAS TRAILER 120 VAC 30 AMPS".

✓ 3.9.6 The unit has 5/8" diameter by 10' long grounding rods and a 100 foot of #6AWG (minimum) cable to allow grounding to a ground grid. (*Is #4 AWG cable*)

Items in section 3.9 verified.

*BRJ*  
Buyer's Engineer

*6/30/97*  
Date

*P.J. Cummings*  
QC Inspector

*6/30/97*  
Date

# RECORD COPY,

GENERATOR ACCEPTANCE TEST

HNF-SD-WM-ATR-190

REVISION 0

3.10 Verify the following engine-generator trailer requirements are satisfied:

✓ 3.10.1 The engine-generator set including all accessories are mounted on a heavy-duty type trailer designed for use in construction, communications, and utility applications.

*Received copy of letter from Cummins BELY 6/30/97*

✓ 3.10.2 The trailer meets Department of Transportation (DOT) requirements for highway travel. (DOT Certification)

✓ 3.10.3 Vibration isolators are used between the engine-generator set base and the trailer.

✓ 3.10.4 The trailer is equipped with running lights, brake lights; safety brake, stabilizer jack on each corner; a front wheel jack with wheel; and hitches.

✓ 3.10.5 The trailer has a 2 3/4 inch Lunette hitch 3" eye with vertical adjustment.

✓ 3.10.6 The underside of the trailer is undercoated for rust protection. *REF. DWG. N-2431 SH.1*

✓ 3.10.7 The trailer has hydraulic surge type brakes.

✓ 3.10.8 The generator is within an enclosure.

✓ 3.10.9 The instruments and controls are vibration isolated to prevent gauge and control malfunction.

✓ 3.10.10 Verify gross weight of unit is below the maximum gross weight limit of the trailer.

*Weighed existing generator HO-74-4984 (G-B) on the scales at 1163 building (downtown) with generator full of fuel, weight was 10,700 lbs. Gross weight limit is 12,000 lbs. Therefore, unit weight is below gross weight limit and acceptable. B. Johns 6/6/97*

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## GENERATOR ACCEPTANCE TEST

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REVISION 0

3.11 Verify the following engine requirements are satisfied:

- 3.11.1 Diesel fuel engine.
- 3.11.2 Engine shall be electric start from negative grounded battery supplied.
- 3.11.3 Battery shall be charged with alternator having automatic voltage regulation supplied with engine.
- 3.11.4 A fuel tank is on the unit that will supply fuel for the engine to operate at full load for at least 24 hours. (Capacity 250 gal, Consumption rate 9.7 GAL/HR. gal/hr)
- 3.11.5 Two (2) stage dry type air cleaner with a restriction gauge.
- 3.11.6 Furnished with the capability for cold weather starting such as electric glow plugs. Engine hot start 1500 watt, 110 volt heater.
- 3.11.7 Drip pan to catch fuel or oil leaks.
- 3.11.8 Painted inside and out. Exterior is White.
- 3.11.9 Verify there are no Suspect Fasteners as identified on the U.S. Custom's Fasteners Headmark List.
- 3.11.10 ~~Check the general appearance of all welds that are visible for good workmanship.~~

Items in sections 3.10 and 3.11 are verified.

BR Johnson  
Buyer's Engineer

6/30/97  
Date

PJ G... ..  
QC Inspector

6-30-97  
Date

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## GENERATOR ACCEPTANCE TEST

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REVISION 0

### 4.0 Run Test

4.1 No Load Cold start: Verify that the engine starts and comes to 1800 rpm in the specified time. (Manufactures Recommendation (MFR) 0 - 10 sec.)

✓ 4.1.1 Switch Run-Stop-Remote switch to Run.  
(Time from close of contacts to 1800 rpm 3.5 sec.)

4.1.2 Verify the following instrumentation is functional and the value indicated is within the range specified by the manufacturer:

✓ 4.1.2.1 Engine lube oil pressure gauge.  
(80 psi, MFR 10 - 75 psi)

✓ 4.1.2.2 Coolant temperature gauge.  
(110 °F, MFR 80 - 230 °F)

✓ 4.1.2.3 Hour meter.  
(1.2 hrs)

✓ 4.1.2.4 Battery charge-rate voltmeter.  
(28 volts, MFR 24 - 30 volts)

✓ 4.1.2.5 Fuel gauge for day tank.  
(~ 1/2 FULL level)

4.1.3 Measure and record with a sound meter the noise level around the generator set. (This check is for information only)

4.1.3.1 90 decibels near control panel.

4.1.3.2 90 decibels near left side of unit. (WAIN EXZ SIDE)

4.1.3.3 102 decibels near right side of unit.

4.1.3.4 104 decibels near front(hitch end) of unit.  
READINGS TAKEN WITH ALL DOORS SHUT.  
Verify Section 4.1 completed.

PJ Clummond  
QC Inspector

5.29.97  
Date

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GENERATOR ACCEPTANCE TEST

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REVISION 0

*EXCEPTION #14* 4.2 Loaded Cold start with Remote/Auto start: Verify, with the 100 KW load bank on line, that the engine starts, comes to 1800 rpm, and the load is automatically switched on-line in the specified time. (MFR 0 - 10 sec.)

*(FOLLOWING TEST CONDUCTED AFTER RESOLUTION OF EXCEPTION #14)*

- 4.2.1 Switch Run-Stop-Remote switch to Remote.
- 4.2.2 Close contacts on a temporarily installed switch. (Time from close of contacts to load on-line. 4 sec.)
- 4.2.3 Switch Run-Stop-Remote switch to Stop. (Remove temporary switch.)

Verify Section 4.2 completed.

P.J. Clements\* 5.29.97  
QC Inspector 0 # WITH EXCEPTION #14 AS NOTED. Date

4.3 Verify controls shutdown and lock out the engine under the following simulated abnormal operating conditions. (Temporarily install contacts and jumpers as required to simulate conditions. Attempt to restart engine after each alarm is activated to verify that the engine is locked out and will not restart. Restart the generator after each alarm is cleared.) Verify alarms, lamp test switch and alarm reset switch are operational:

- 4.3.1 Engine failure to start after a specified cranking time, with alarm light. (Cranking time is 3 cycles of 16 seconds of cranking followed by a 16 seconds wait.)
- 4.3.2 Engine over-speed, with alarm light.
- 4.3.3 Engine low lube oil pressure, with alarm light.
- 4.3.4 Engine high operating temperature, with alarm light.
- 4.3.5 Remote manual stop activated. (Temporary switch).

Verify section 4.3 completed.

P.J. Clements 5.29.97  
QC Inspector \_\_\_\_\_ Date

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## GENERATOR ACCEPTANCE TEST

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- 4.4 Verify proper operation of the generator, power distribution components and load bank according to the manufacturer's supplied information. (For load bank test operate for 15 minutes at each step prior to recording information.) (Generator to be located for highest possible ambient temperature, but not to exceed 110°F.)

4.4.1 Step 1 (50KW Resistive Load for 15 min.)

✓ 4.4.1.1 Amperage 160, 260, 360 amps

EXCEPTION #13

✓ 4.4.1.2 Voltage 1-2412, 2-3412, 1-3412 (480V AFTER

✓ 4.4.1.3 Frequency 60 Hz

METER REPLACED)

✓ 4.4.1.4 Oil Pressure 70 psi

✓ 4.4.1.5 Water Temperature 165°F

4.4.2 Step 2 (Second 50KW Resistive Load for a total of 100KW Resistive Load for 15 min.)

✓ 4.4.2.1 Amperage 1120, 2117, 3117 amps

EXCEPTION #13

✓ 4.4.2.2 Voltage 1-2425, 2-3422, 1-3422 (480V AFTER

✓ 4.4.2.3 Frequency 59 Hz

METER REPLACED)

✓ 4.4.2.4 Oil Pressure 70 psi

✓ 4.4.2.5 Water Temperature 165°F

EXCEPTION #15

- 4.4.3 Continue run with Resistive Load at full power for 5 hours to verify proper operation of unit.

✓ 4.4.3.1 Start time. 11:35

✓ 4.4.3.2 Environmental conditions: 75 Ambient Temperature °F

Describe location and weather conditions:

CLOUDY, LIGHT RAIN AT TIMES, COOL,

HUMID.



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## GENERATOR ACCEPTANCE TEST

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- ✓ 4.4.3.3 Stop time. 15:35
- ✓ 4.4.3.4 No overheating of Resistive Load Bank.
- ✓ 4.4.3.5 No overheating of diesel engine.
- 4.4.4 Verify voltage and clockwise phase rotation as noted for the following:
  - ✓ 4.4.4.1 UTILITY 480 VAC 110 AMPS outlet
    - 4.4.4.1.1 Phase rotation CW (to be clockwise)
    - 4.4.4.1.2 Voltage 1-2 484, 2-3 484, 1-3 484
  - ✓ 4.4.4.2 SERVICE TRAILER 240 VAC 80 AMPS outlet
    - 4.4.4.2.1 Voltage 1-2 240.3
  - ✓ 4.4.4.3 BREATHING AIR COMPRESSOR 480 VAC 50 AMPS outlet
    - 4.4.4.3.1 Phase rotation CW
    - 4.4.4.3.2 Voltage 1-2 484, 2-3 484, 1-3 484
  - ✓ 4.4.4.4 240 VAC 20 Amp Single Receptacle
    - 4.4.4.4.1 Voltage 240.3
  - ✓ 4.4.4.5 120 VAC 20 Amp Duplex Receptacle
    - 4.4.4.5.1 Voltage 120.5
  - ✓ 4.4.4.6 PURGE GAS TRAILER 120 VAC 30 Amp Single Receptacle
    - 4.4.4.6.1 Voltage 120.5
- 4.4.5 Switch Run-Stop-Remote switch to Stop.
- 4.5 No load hot (near normal run temperature) start: Verify that the engine starts and comes to 1800 rpm in the specified time. (MFR 0 - 10 sec.)
  - ✓ 4.5.1 Switch Run-Stop-Remote switch to Run. Time 3.5 sec.
  - 4.5.2 Switch Run-Stop-Remote switch to Stop.

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GENERATOR ACCEPTANCE TEST

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4.6 Loaded hot (near normal run temperature) start: Verify, with the 100 KW load bank on line, that the engine starts, comes to 1800 rpm, and the load is automatically switched on-line in the specified time.  
(MFR 0 - 10 sec.)

✓ 4.6.1 Switch Run-Stop-Remote switch to Run.  
(Time from close of contacts to load on-line. 3.5 sec.)

4.6.2 Switch Run-Stop-Remote switch Stop.

Verify sections 4.4 and 4.5 completed.

P.J. Clements\*  
QC Inspector 5-29-97  
Date  
\*WITH EXCEPTIONS #13 & #15 AS NOTED.

## 5.0 Inspection and Test Completion:

Inspections and tests on the portable generator unit are completed. All exceptions have been resolved. (It is acceptable for exceptions to be verified upon receipt of the unit at the buyers location provided WHC engineer and QC agree.) The generator is ready for shipment.

All exceptions resolved except #16. Engineer to receive corrected electrical drawings and verify drawings are correct. BRJ  
BRJ  
Buyer's Engineer 6/30/97  
Date

PJ Clements  
QC Inspector 6-30-97  
Date  
ITEM ADDED TO RECEIVING INSPECTION  
PLAN TO CHECK WITH ENGINEER FOR RESOLUTION OF  
EXCEPTION #16.

## INSTRUMENTS USED :

PHASE SEQUENCE INDICATOR  
KNOPP MODEL K3

FLUKE 87  
WSL # 819-45-08-003  
CAL. DUE 9-9-98

# RECORD COPY

## GENERATOR ACCEPTANCE TEST

HNF-SD-WM-ATR-190  
REVISION 0

### Appendix A

## Help Stamp Out Suspects/Counterfeits



### Suspect Fastener Headmark List

All Grade 5 and Grade 8 fasteners of foreign origin which do not bear any manufacturers' headmarks:



Grade 5



Grade 8

Grade 5 fasteners with the following Manufacturers' headmarks:

Mark	Manufacturer	Mark	Manufacturer
	J Jinn Her (TW)		KS Kosaka Kogyo (JP)

Grade 8 fasteners with the following Manufacturers' headmarks:

Mark	Manufacturer	Mark	Manufacturer
	A Asahi Mfg (JP)		KS Kosaka Kogyo (JP)
	NF Nippon Fasteners (JP)		RT Takai Ltd (JP)
	H Hinomoto Metal (JP)		FM Fastener Co. of Japan (JP)
	M Minamide Sleybo (JP)		KY Kyoel Mfg (JP)
	MS Minato Kogyo (JP)		J Jinn Her (TW)
	Hollow Triangle Infasco (CA, TW, JP, YU) (Greater than 1/2-inch diameter)		UNY Unyttle (JP)
	E Dalei (JP)		

Grade 8.2 fasteners with the following headmarks:



Mark	Manufacturer
KS	Kosaka Kogyo (JP)

Grade A325 fasteners (Bennett Denver target only) with the following headmarks:

Type	Mark	Manufacturer
Type 1		A325 KS Kosaka Kogyo (JP)
Type 2		
Type 3		

Key: CA-Canada, JP-Japan, TW-Taiwan, YU-Yugoslavia

Any bolt on this list should be treated as defective without further testing.

If any of these fasteners are located, contact your  
QA representative \_\_\_\_\_ for instructions  
or J. N. Nansen or C.R. Hoover.

39212029.1

GENERATOR ACCEPTANCE TEST

HNF-SD-WM-ATR-190  
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Appendix B  
Test Exceptions

Step#	Description of Exception	Exception Resolution	Eng Int.	QA Int.
1	3.2 Items need correcting per NEC. Replace gray wires. Reel brkr termination.	* Brkr terminations done. Gray wires replaced. Color code labels on wood bushing on node. Brkr ID corrected.	BRJ	RE 10-30-97
2	3.5.5 No remote stop indicator.	No separate indicator. Run light goes out when engine stops. Accept as is.	BRJ	gpo
3	3.6.3 No cranktime meter	No cranktime meter on two existing gen sets. Accept as is.	BRJ	gpo
4	3.6.5 Is voltmeter rather than ammeter	Is voltmeter as normally supplied and as on two existing gen sets. Accept as is.	BRJ	gpo
5	3.9.1 Blockheater label needs to be fastened with screws.	Screws installed in label.	BRJ	gpo
6	3.9.4 Loadbank has four 25KW. Spec requires two 50KW switches.	Changed to two 50KW switches.	BRJ	RE 6-30-97
7	3.9.5.1 Brkr is 100 amp frame, 480 volts. Is Crouse-Hinds AR1042	Neutral wire relocated. 100 amp frame is greater than 80 trip, 480 volt	BRJ	gpo
	Neutral wire, located on wrong pin of receptacle	Is greater than the 240 volts on system for receptacle. Exception completed.	Recept. compat. to Appleton.	gpo
8	3.9.5.2 Brkr is 60 amp frame. Is Crouse-Hinds AR 642.	Brkr frame is equal to trip setting. Recept. compatible to Appleton. Accept as is.	BRJ	gpo
9	3.9.5.3 Brkr rating is 250 volts	Brkr carries 240 volts. 250 volts is acceptable.	BRJ	gpo
10	3.9.5.4 Recept rating is 250 volts.	Recept carries 240 volts. 250 volts is acceptable.	BRJ	gpo
11	3.9.5.6 Recept rating is 125 volts	Recept carries nominally 110 to 120 volts. 125 volts is acceptable.	BRJ	gpo
12	3.3.4 Power factor of 0.8 not listed on records.	Power factor of 0.8 listed on stand by power and is same for the prime. Accept as is.	BRJ	gpo
13	4.4.1.2 Defective voltmeter on control panel.	Voltmeter replaced. Voltages were rechecked.	BRJ	gpo

\* cont. exception #1: New ground bushing on transform. Wood color code label on panel board. BRJ

Continued on attached page. BRJ

RECORD COPY

Appendix B  
Test Exceptions

Step#	Description of Exception	Exception Resolution	Eng Int.	QA Int.
14	4.2 Load bank brkr (150amp) failed. Trips on partial load.	Brkr. replaced. New brkr functions correctly.	BRJ	JSS
15	4.4.3 Test ran for 4 hours instead of 5 hours.	The initial four hours during highest temp of day. Engine/loadbank parameters steady. Engineer decided no value to run for additional hour.	BRJ	JSS
16	3.3.1 Electrical diagrams have errors. Need correcting.	Drawings need to be sent to engineer when corrected. Part of Receiving Inspection Plan. BRJ	BRJ	JSS

RECORD COPY

<u>INT.</u>	<u>NAME</u>	<u>SIG.</u>
JSS	Jon Sparks	<i>J.P. Sparks</i>
BRJ	Bruce R Johns	<i>BR Johns</i>
PJE	Phillip J. Emenhoff	<i>PJ Emenhoff</i>

RETEST FOR RESOLUTIONS TO EXCEPTIONS #1 & #6.

GENERATOR ACCEPTANCE TEST

HNF-SD-WM-ATR-190  
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4.4 Verify proper operation of the generator, power distribution components and load bank according to the manufacturer's supplied information. (For load bank test operate for 15 minutes at each step prior to recording information.) (Generator to be located for highest possible ambient temperature, but not to exceed 110°F.)

4.4.1 Step 1 (50KW Resistive Load for 15 min.)

Retest performed on 6/30/97  
BRI

- ✓ 4.4.1.1 Amperage 160, 260, 360 amps
- ✓ 4.4.1.2 Voltage 1-2480, 2-3480, 1-3480
- ✓ 4.4.1.3 Frequency 60.5 Hz
- ✓ 4.4.1.4 Oil Pressure 90 psi <sup>75 BRG</sup>
- ✓ 4.4.1.5 Water Temperature 110 °F

4.4.2 Step 2 (Second 50KW Resistive Load for a total of 100KW Resistive Load for 15 min.)

- ✓ 4.4.2.1 Amperage 1117, 2117, 3117 amps
- ✓ 4.4.2.2 Voltage 1-2480, 2-3480, 1-3480
- ✓ 4.4.2.3 Frequency 59.5 Hz
- ✓ 4.4.2.4 Oil Pressure 70 psi
- ✓ 4.4.2.5 Water Temperature 110 °F

4.4.3 Continue run with Resistive Load at full power for 5 hours to verify proper operation of unit.

- N/A 4.4.3.1 Start time. N/A
- N/A 4.4.3.2 Environmental conditions: N/A Ambient Temperature °F

Describe location and weather conditions:

N/A

PJ Edmunds 6/30/97

GENERATOR ACCEPTANCE TEST

HNF-SD-WM-ATR-190  
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N/A 4.4.3.3 Stop time. \_\_\_\_\_

N/A 4.4.3.4 No overheating of Resistive Load Bank.

N/A 4.4.3.5 No overheating of diesel engine.

4.4.4 Verify voltage and clockwise phase rotation as noted for the following:

N/A 4.4.4.1 UTILITY 480 VAC 110 AMPS outlet

4.4.4.1.1 Phase rotation \_\_\_\_\_ (to be clockwise)

4.4.4.1.2 Voltage 1-2 \_\_\_\_, 2-3 \_\_\_\_, 1-3 \_\_\_\_

N/A 4.4.4.2 SERVICE TRAILER 240 VAC 80 AMPS outlet

4.4.4.2.1 Voltage 1-2 \_\_\_\_

N/A 4.4.4.3 BREATHING AIR COMPRESSOR 480 VAC 50 AMPS outlet

4.4.4.3.1 Phase rotation \_\_\_\_\_

4.4.4.3.2 Voltage 1-2 \_\_\_\_, 2-3 \_\_\_\_, 1-3 \_\_\_\_

✓ 4.4.4.4 240 VAC 20 Amp Single Receptacle

4.4.4.4.1 Voltage 238.3

✓ 4.4.4.5 120 VAC 20 Amp Duplex Receptacle

4.4.4.5.1 Voltage 119.5 / 119.5 V

✓ 4.4.4.6 PURGE GAS TRAILER 120 VAC 30 Amp Single Receptacle

*PJ Elmendorf 4/30/97* 4.4.4.6.1 Voltage 119.4

4.4.5 Switch Run-Stop-Remote switch to Stop.

4.5. No load hot (near normal run temperature) start: Verify that the engine starts and comes to 1800 rpm in the specified time. (MFR 0 - 10 sec.)

N/A 4.5.1 Switch Run-Stop-Remote switch to Run. Time \_\_\_\_ sec.

4.5.2 Switch Run-Stop-Remote switch to Stop.

*FLUKE 87 - CALIBRATED BY GTE ELECTRONIC REPAIR SERVICE  
RPT. # 96M10850 (994)*

WHC-SD-WM-ATP-190  
TEST LOG

The following test log entries were made during acceptance testing of a newly procured 150KW diesel generator set at the Onan/Cummins Northwest Service Center in Renton, Washington on May 28 and May 29. Personnel present for testing: James E. Daniels/Numatec Hanford Company, Bruce Johns/SESC, Bill Bresina/Pacific Northwest Laboratory, Janie Elmendorf/Lockheed Martin Hanford Company, John Rudick/Fluor Daniel Hanford Company, Jim Woodcock/Cummins Northwest Inc.

5/29/97-0820

Arrived at Onan/Cummins Northwest Service Center shop for test. Prepared paperwork to perform testing and recapped the previous days activity. Redid list for discrepancies not noted on the original Test Exception List. That new list is as follows:

- 1) The generator grounding wire at the main generator breaker needs rework because of excessive scoring created during fabrication.
- 2) The weatherproof gasket for the 480VAC Utility power distribution receptacle needs to be installed. It is missing.
- 3) The covers for the duplex 120VAC receptacles needs replacing since the presently installed ones do not meet the minimum NEC 1996 requirements.
- 4) The gray SIS wire that is installed on the line and load side of the 240/120 convenience receptacles needs to be replaced with correctly color coded THHN or THWN wire.
- 5) The ground electrode conductor needs to be installed from the transformer to the ground electrode conductor lug attached to the frame. This wire is continuous with no breaks.
- 6) A phase color coding label detailing the phase color code used by Onan/Cummins needs to be installed on the power distribution panelboard.

5/29/97- 0850

Bruce and Janie have a question about the air cleaner being two stage since there are no markings on it for identification. Jim Woodcock disassembled the air cleaner and demonstrated that it was actually two stage. Both Bruce and Janie were satisfied that the air cleaner is two stage.

5/29/97- 0900

Performed a cold start with no load in accordance with step 4.1. Unit came up to speed of 1800 RPM and 60 Hertz in 3.5 seconds. All parameters indicate normal as listed in step 4.1.2.



- 5/29/97- 0905 Chuck Salotti informed me that D.T.S (company that supplied Cummins with the trailer bed) will send him the DOT certification in a couple of days. Chuck will send this certification to me or Bruce. This will complete step 3.10.2. We will need this completed prior to transport to Hanford.
- 5/29/97- 0920 Performed loaded remote cold start test per step 4.2. Load bank breaker does not stay closed. Keeps tripping. Will not stay closed with any load bank configuration, 25KW, 50KW, 75KW, or 100KW. Suspect load bank breaker is defective. Installed amp probes and found that the breaker will trip on any phase current above 50 Amps. This is a 150 Amp breaker and appears defective. Instructed Jim Woodcock to replace the breaker with a new one. Chuck Salotti found a new one in their stock.
- 5/29/97- 1019 Jim Woodcock installed the new load bank breaker. Restarted the test with amp probes installed on load side phase wiring and breaker remained closed with full load of 100KW @ 121 amps. Reperformed test satisfactorily per step 4.2. Jim Woodcock used two wires (jumper) connected to the remote start terminals to simulate a switch. Steps 4.2.1, 4.2.3, and 4.2.2 performed satisfactorily.
- 5/29/97- 1030 Started test at step 4.3.
- 4.3.1 OK- Jim W. disconnected the control wire to the fuel solenoid to stop fuel supply to the engine in order to test re-cranking feature and alarm light. The re-cranking feature performed as specified - 3 cycles of 16 seconds cranking and 16 seconds of wait and then engine recrank lockout.
  - 4.3.2 OK- Jim W. started the engine and then adjusted the overspeed high potentiometer on the engine control module to simulate an overspeed condition and engine shutdown with overspeed feature and then engine recrank lockout.
  - 4.3.3 OK- Jim W. started the engine and then disconnected the control wire to the fuel solenoid to stop fuel supply to force the engine to shutdown in order to test the low oil pressure shutdown feature and engine recrank lockout.
  - 4.3.4 OK- Jim W. started the engine and then shorted the coolant temperature sensor wire to ground. This simulated a high coolant temperature condition. Engine shutdown with locked in alarm and engine recheck

lockout. Jim W. also shorted to ground the radiator coolant level alarm and engine shutdown with engine re crank lockout.

4.3.5 OK- Remote manual stop activated.

- 5/29/97- 1115 Started load test at step 4.4. Loaded generator to 50KW per step 4.4.1. Recorded data.
- 5/29/97- 1135 Continued load test by adding remaining 50KW resistive load (100KW Total) banks. Recorded data. This is the start time for the five hour load test.
- 5/29/97- 1135 Continued load test run and recorded environmental data in accordance with step 4.4.3. Checked full load current with an amp probe on one of the 480VAC phases and read 120 amps.
- 5/29/97- 1145 Lunch and wait time during load test run.
- 5/29/97- 1430 Discussed with the test group the re-evaluation of terminating the load test early. Phoned Bruce Johns at Hanford and received his concurrence to decrease the run time to four hours. The basis for this decreased time is the hottest part of the day was past and any further testing would not yield any discrepancies.
- 5/29/97- 1435 Jim W. informed us that he just discovered that the voltmeter installed on the generator control panel appears to be defective. It intermittently sticks midscale but it is not very apparent since midscale is near the voltages that we were recording. The voltages recorded at steps 4.4.1.2 and 4.4.2.2 are suspect and should be disregarded. Jim W. replaced the analog voltmeter with a new spare that came from their stock. A quick retest verified the meter was now reading the correct voltage of 480VAC.
- 5/29/97- 1445 Performed phase rotation steps per steps 4.4.4.1.1 and 4.4.4.3.1. Checked OK. Clockwise rotation observed in both cases.
- Note: The electrician from Hanford has been very busy helping perform testing along with Jim Woodcock. We are happy to have him with us since he has assisted greatly in our troubleshooting along with test measurements and equipment setup.
- Performed voltage checks in accordance with steps 4.4.4.1.2, 4.4.4.2.1, 4.4.4.3.2, 4.4.4.4.1, 4.4.4.5.1, and 4.4.4.6.1. Recorded data as required.
- 5/29/97- 1530 Five more minutes remaining prior to four hour load test termination. The following reading were taken prior to test

termination. L1-L2 120 AMPS L2-L3 118 AMPS L1-L3 118 AMPS  
Frequency 58.5 HZ Oil Press 70 PSI Eng Temp. 115 F

- 5/29/97- 1535 Commenced shutdown at 4 hours run time. Recorded shutdown time at step 4.4.3.3.
- 5/29/97- 1540 Performed testing at step 4.5 and 4.6. Tested OK.
- 5/29/97- 1550 Performed an additional test recommended by Jim W. Tested the loadbank overtemperature shutdown by shorting the thermoswitch on the loadbank. Test shutdown loadbank as required.
- 5/29/97- 1600 Departed the Onan/Cummins Service Center for Richland, Wa.

GENERATOR  
ACCEPTANCE TEST REPORT

HNF-SD-WM-ATR-190  
REVISION 0

RECEPTACLES EQUIVALENTS

**Powerlite® Series Intermateable  
Equivalents**

Appleton Powerlite and Crouse-Hinds Arkrite Plugs, Receptacles, Cord Connectors and Mounting Boxes listed here are Equivalent and Completely Intermateable.

*Test section  
3.9.5.2  
brg*

*Test section  
3.9.5.1  
brg*

Crouse-Hinds Catalog No.	Appleton Catalog No.	Crouse-Hinds Catalog No.	Appleton Catalog No.
AR641	ADR6044	ARE3333	ACRE3033-100
<del>AR642</del>	<del>ADR6034</del>	ARE3342	ACRE3023-75
AR643	ACR6044	ARE3343	ACRE3023-100
AR644	ACR6034	ARE3372	ACRE3033-75
AR647	ACR6044	ARE3373	ACRE3033-100
AR648	ACR6034	ARE3382	ACRE3023-75
AR1021	ADR1022	ARE3383	ACRE3023-100
AR1023	ACR1022	ARE3412	ADRE3044-75
AR1027	ACR1022	ARE3413	ADRE3044-100
AR1031	ADR1033	ARE3422	ADRE3034-75
AR1032	ADR1023	ARE3423	ADRE3034-100
AR1033	ACR1033	ARE3432	ACRE3044-75
AR1034	ACR1023	ARE3433	ACRE3044-100
AR1037	ACR1033	ARE3442	ACRE3034-75
AR1038	ACR1023	ARE3443	ACRE3034-100
AR1041	ADR1044	ARE3472	ACRE3044-75
<del>AR1042</del>	<del>ADR1034</del>	ARE3473	ACRE3044-100
AR1043	ACR1044	ARE3482	ACRE3034-75
AR1044	ACR1034	ARE3483	ACRE3034-100
AR1047	ACR1044	ARE6213	ADRE6022-100
AR1048	ACR1034	ARE6214	ADRE6022-125
AR2031	AR20033	ARE6233	ACRE6022-100
AR2032	AR20023	ARE6234	ACRE6022-125
AR2041	AR20044	ARE6273	ACRE6022-100
AR2042	AR20034	ARE6274	ACRE6022-125
AR4031	AR40033	ARE6313	ADRE6033-100
AR4032	AR40023	ARE6314	ADRE6033-125
AR4041	AR40044	ARE6323	ADRE6023-100
AR4042	AR40034	ARE6324	ADRE6023-125
AR40312	AR40133	ARE6333	ACRE6033-100
AR40322	AR40123	ARE6334	ACRE6033-125
AR40412	AR40144	ARE6343	ACRE6023-100
ARE13	AREE13	ARE6344	ACRE6023-125
ARE23	AREE23	ARE6373	ACRE6033-100
		ARE6374	ACRE6033-125
ARE33	AREE33	ARE6383	ACRE6023-100
ARE36	AREE36	ARE6384	ACRE6023-125
ARE46	AREE46	ARE6414	ADRE6044-125
ARE56	AREE56	ARE6415	ADRE6044-150
ARE3211	ADRE3022-50	ARE6424	ADRE6034-125
ARE3212	ADRE3022-75	ARE6425	ADRE6034-150
ARE3231	ACRE3022-50	ARE6434	ACRE6044-125
ARE3232	ACRE3022-75	ARE6435	ACRE6044-150
ARE3271	ACRE3022-50	ARE6444	ACRE6034-125
ARE3272	ACRE3022-75	ARE6445	ACRE6034-150
ARE3312	ADRE3033-75	ARE6474	ACRE6044-125
ARE3313	ADRE3033-100	ARE6475	ACRE6044-150
ARE3322	ADRE3023-75	ARE6484	ACRE6034-125
ARE3323	ADRE3023-100	ARE6485	ACRE6034-150
ARE3332	ACRE3033-75	ARE6213	ADJA6022-100



**Cummins  
Northwest, Inc.**

HNF-SD-WM-ATR-190  
REVISION 0

811 S.W. Grady Way (98055)  
P.O. Box 9811  
Renton, WA 98057-3000  
(206) 235-3400, FAX 235-8202

**HANFORD  
150KW TRAILER**



**Generator Set Requirements:**

GenSets in parallel (step load requirements calculated on a per-genset basis):	Duty:	Standby
Max Starting Voltage Dip, %:	1	Diesel
Max Running Surge Voltage Dip, %:	35	3 Phase
Max Frequency Dip, %:	10	Frequency, Hz: 60
Site Altitude, ft (m):	500 (152)	Voltage: 277/480, Series Wye
Site Ambient Temperature, °F (°C):	77 (25)	

**Load Running and Surge Requirements:**

RkW:	150	Max SkW:	150	In step 1	Max SkW Req:	150	GkW:	150
RkVA:	150	Max SkVA:	150	In step 1	Max SkVA Req:	150		
RPF:	1.00	RSkW:	none		RSkW Req:	none		
		RSkVA:	none		RSkVA Req:	none		

**Step 1 START 150KW STEP LOAD**

RkW:	150	SkW:	150	SkW Req:	150	GkW:	150
RkVA:	150	SkVA:	150	SkVA Req:	150		
RPF:	1.00	SPF:	1.00				

**150KW RESISTIVE LOAD STEP**

Category:	Resistive			3 Phase	Quantity:	1	
RkW:	150.00	SkW:	150.00	RSkW:	none	GkW:	150.00
RkVA:	150.00	SkVA:	150.00	RSkVA:	none		
RPF:	1.00	SPF:	1.00				



# Cummins Northwest, Inc.

HNF-SD-WM-ATR-190  
REVISION 0

811 S.W. Grady Way (98055)  
P.O. Box 9811  
Renton, WA 98057-3000  
(206) 235-3400, FAX 235-8202

## HANFORD 150KW TRAILER



### Generator Set Requirements:

GenSets in parallel (step load requirements calculated on a per-genset basis):	1	Duty:	Standby
Max Starting Voltage Dip, %:	35	Fuel:	Diesel
Max Running Surge Voltage Dip, %:	35	Max Frequency Dip, %:	10
Max Frequency Dip, %:	10	Frequency, Hz:	60
Site Altitude, ft (m):	500 (152)	Voltage:	277/480, Series Wye
Site Ambient Temperature, °F (°C):	77 (25)		

### Load Running and Surge Requirements:

RkW:	150	Max SkW:	150	In step 1	Max SkW Req:	150	GkW:	150
RkVA:	150	Max SkVA:	150	In step 1	Max SkVA Req:	150		
RF:	1.00	RSkW:	none		RSkW Req:	none		
		RSkVA:	none		RSkVA Req:	none		

Model:	150DGFA	Engine Model:	6CTA8.3-G	Engine Displacement, cu in:	504
Running at:	100% Rated Load			Engine cylinders:	6

Recommended by Onan	Alternator:	UC3F		
Fuel:	Diesel	Feature Code:	B255	Number Leads: 12
Temperature Rise at full rated load, °C:	125	Reconnectable		
Excitation:	PMG			
Voltage Range:	208-240/416-480 BR			

Starting Voltage Dip, %:	17	Max Starting Voltage Dip, %:	35
Running Surge Voltage Dip, %:	none	Max Running Surge Voltage Dip, %:	35
Frequency Dip, %:	7	Max Frequency Dip, %:	10
Site Rated Standby kW:	150	Load RkW:	150
Site Rated Alternator Max kW at 125°C and 480 volts:	165	Load GkW:	150
Site Rated Alternator Max kVA at 125°C and 480 volts:	206	Load RkVA:	150
Site Rated Max SkW:	186	Reduced Load Max SkW Requirement:	128
Max SkVA:	607	Reduced Load Max SkVA Requirement:	150

HNF-SD-WM-ATR-190  
REVISION 0



**D.T.S. Inc.**

27135 PARKLANE DR.  
P.O. BOX 1068 (ZIP 57101)  
SIOUX FALLS, SD. 57106

Telephone (605) 368-5306  
Fax (605) 368-2142 Engineering

CUMMINS NOTHWEST  
811 S W Grady Way  
Renton Wash. 98055

Attn: Chuck Salotti

Chuck,

This letter is to certify that the trailer DTS manufactured on our N-2431 does meet DOT certifications.

Thanks  
D.T.S. Inc.

Larry Will

**MANUFACTURER'S  
STATEMENT OF ORIGIN  
TO A MOTOR VEHICLE**

The undersigned corporation hereby certifies that the new trailer described below, the property of said corporation, has been transferred this:

15 day of January 1997 on invoice No. 70745

to Hanford Corporation

(Distributor, Dealer, User, Etc.)

whose address is P.O. Box 1300

City Richland State Washington 99352

Trade Name D.T.S. Inc. Year 1997 Model Standard

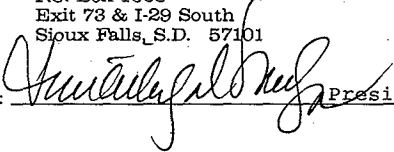
Body Type Trailer No. Axles Two (2)

Price \$9,975.00 Serial No. 1D9US1525VS151482

Color Body White Weight 6,229 lbs.

The corporation further certifies that this was the first transfer of such new vehicle in ordinary trade and commerce.

**D.T.S., INC.**  
P.O. Box 1068  
Exit 73 & I-29 South  
Sioux Falls, S.D. 57101

By:  President  
Title



GENERATOR  
ACCEPTANCE TEST REPORT

HNF-SD-WM-ATR-190  
REVISION 0

TRAILER WEIGHT

ON SCALE	OFF SCALE	WEIGHT
Truck and generator	n/a	25,080
Truck attached	Generator	15,020
Generator attached	Truck	10,140
Generator	n/a	10,700

WEIGHT PRINTOUT FROM SCALE

WESTINGHOUSE HANFORD COMPANY  
RICHLAND, WA 99352

G-C-97 9:32AM 25080 lb  
G-C-97 9:33AM 10140 lb  
G-C-97 9:34AM 15020 lb  
G-C-97 9:38AM 10700 lb

CONTRACT NUMBER OR INVOICE \_\_\_\_\_

TRUCK \_\_\_\_\_ WEIGHED BY \_\_\_\_\_

COMMENTS \_\_\_\_\_

\_\_\_\_\_

BC-6001-340 (04/94)

Send to:

HNF-SD-WM-ATR-190  
REVISION 0

## NEC INSPECTION REPORT

Project/W.O. No. F3GE4D		Building No. Offsite		Code Edition NEC, 1996 Edition		Report No. 8072			
Inspection Requested By Bruce Johns		Phone 373-3429		Inspector Bresina WL		Phone 372-2459			
Page 1 of 2									
Item Inspected: Generator and equipment built by Cummins Northwest at Renton, WA									
Condition Found: <input type="checkbox"/> Acceptable <input checked="" type="checkbox"/> Unacceptable (see description below)									
Inspector Signature: WL Bresina <i>W.L. Bresina</i>				Original Inspection Date Mar. 26, 1997		Closure Date 5/28/97			
	Description of NEC Violation					Cause Code	Days to Correct	Violation Corrected	Date
1	The 240/120 volt panelboard, by definition, is a branch-circuit panelboard requiring a main breaker to be installed. Article 384-14 and 384-16.						30	<i>WLB</i>	5/28/97
2	The #2 conductors on the secondary side of transformer must be size #1/0 because the total breaker ampacity in panelboard is 150 amps. Article 240-21(b) and 240-3.						30	<i>WLB</i>	5/28/97
3	Install a main bonding jumper from transformer X-0 terminal to the transformer frame. Must be a size #4 conductor. Article 250-79(d)						30	<i>WLB</i>	5/28/97
4	Not all ungrounded conductors have phase tape to identify the two voltage system conductors. The panelboards also must have phase color code posted on front. Article 210-4(d)						30	<i>WLB</i>	5/28/97
5	All thread nipples no longer have a coating of corrosion resistant material for outside use. Replace with approved galvanized nipple. Article 300-6(a)						30	<i>WLB</i>	5/28/97
6	Neutral coming from transformer must be floated inside panelboard. Article 250-26						30	<i>WLB</i>	5/28/97
7	80 amp receptacle needs neutral conductor. Article 110-3(b)						30	<i>WLB</i>	5/28/97

Electrical service will be discontinued for the equipment or facility identified if violations are not corrected within time allowed by the "Days to Correct" column. "Days to Correct" starts with the original inspection date. For concerns regarding this, call the Chief Electrical Engineer at 376-6347.

## NEC INSPECTION REPORT

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Project/W.O. No. F3GE4D	Building No. Offsite	Code Edition NEC, 1996 Edition	Report No. 8072			
Description of NEC Violation		Cause Code	Days to Correct	Violation Corrected	Date	
1	Equipment grounding conductors and grounded conductors under size #4 must have a continuous outer finish of green or white when used for equipment grounds or neutrals. Cannot be just taped. Article 310-12(a) (b) and 200-6		30	WLB	5/28/97	
2	Panelboard must have circuit directory installed to identify purpose of breakers. Article 384-13		30	WLB	5/28/97	
3	The #6 neutral conductor from transformer to panelboard must be increased in size to handle maximum calculated load. Article 220-22		30	WLB	5/28/97	
4	The neutral conductor must be bonded to the generator frame (now floating) and then floated in the panelboard. (now bonded to the panel enclosure.) Since a grounded conductor is not needed at panelboard, make existing conductor the equipment grounding conductor and bond to generator frame and panelboard enclosure. Plus remove white tape and install green tape.		30	WLB	5/28/97	
5	Article 250-6(c) and 250-26.					
6	Install a #6 grounding electrode conductor to the grounded conductor at generator and transformer. Article 250-26 and 250-91(a)		30	WLB	5/28/97	
7	A weatherproof cover must be installed at all receptacles to be used in a wet location. Article 410-57(b)		30	WLB	5/28/97	
8	A 150 amp overcurrent device must be installed in panelboard for the load bank circuit. Conductors do not meet the 10' tape rule, only the 25' tape rule, which requires conductors to terminate at a single overcurrent device. Article 240-21(c)		30	WLB	5/28/97	
9	Equipment grounding conductors needed from panelboard to load bank and transformer, size #6, green in color conductors. Article 310-12(b) and Table 250-95 DOE requirement, 6430.1A - 1639-1		30	WLB	5/28/97	
10	The grounded conductor (4/0 in size) from generator to panelboard is not terminated all the way into terminal. Article 110-14(a)		30	WLB	5/28/97	