

INTERMODAL MATERIÉL
AND
NAUTICAL/NUCLEAR ANALYSIS
IMANNA
LABORATORY INC.

CERTIFICATION TEST REPORT

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TEST REPORT
17071-3
IGNITION PROTECTION TESTS
OF
GEN. 2 PME
FOR
DNA GROUP

CUSTOMER:

DNA Group, Inc.
P.O. BOX 31727
RALEIGH, NC 27622

**MANUFACTURER
OF TEST ARTICLE:** DNA Group, Inc

REPORT NO.: 17071-3

IMANNA JOB NO.: 17071

CUSTOMER P.O. NO.: 943

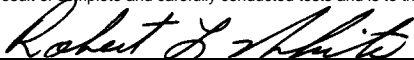
CONTRACT: N/A

DATE: June 21, 2006

PAGES IN REPORT: 11

STATE OF FLORIDA

ROBERT L. WHITE, being duly sworn, deposes and says: The information contained in this report is the result of complete and carefully conducted tests and is to the best of his knowledge true and correct in all respects.



SUBSCRIBED and sworn to before me this 21st day of June, 2006

Imanna shall have no liability for damages of any kind to person or property, including special or consequential damages resulting from Imanna's providing the service covered by the report.

IMANNA LABORATORY, Inc.
TEST BY

Robert L. White
PROJ. ENGINEER

1. TEST ARTICLE

A representative sample of a DNA Gen 2.0 solid state Power Management Enclosure was received for test. The assembly is intended for use in a marine environment and could be placed in a compartment where an explosive mixture of gasoline and air could exist.

2. PART NUMBERS

Gen 2.0 PME

3. REQUIREMENTS

The enclosure assembly is to be tested to determine compliance to the USCG/ABYC/SAE /ISO requirements for Ignition Protection.

The tests are to determine compliance of the enclosure to the Ignition Protection requirements for electrical components as stated in the Title 33 CFR, Part 183, Subpart I, Section 183.410, SAE J1171, ISO 8846 and the NMMA Certification Handbook.

4. PROCEDURE

The procedures used to accomplish the tests are ISO 8846, the United States Coast Guard Electrical System Standard Test Procedure, dated January 1978, and the SAE J1171, dated Jan86.

Upon receipt, the test specimen was inspected for damage and any obvious signs of noncompliance with the requirements of ISO 8846, SAE J1171, and the USCG.

The enclosure was subjected to an Explosive Atmosphere Exposure Test and an Induced Ignition Test per the USCG, ISO, and SAE requirements.

5. RESULTS

The results of the test performed indicate that the Gen. 2 Power Management Enclosure meets the Ignition Protection Test requirements of ISO 8846, the USCG, stated in Title 33 CFR 183.410 and the SAE J1171 Standard.

The enclosure contained 50 Induced Explosions without causing the surrounding explosive atmosphere to ignite. The assembly power was cycled (50 on-off-on cycles) while in an explosive atmosphere without igniting the atmosphere and contained 50 Induced Explosions without causing the surrounding explosive atmosphere to ignite.

6. OBSERVATIONS AND COMMENTS

The results presented herein apply only to the test specimen as prepared and as tested. All equipment used in the performance of these tests was calibrated to standards traceable to the N.I.S.T.



Figure 1 view of tested assembly

APPENDIX SUPPORTING DATA

DATA FORM NO. 1

TEST PROCEDURE _____ USCG _____

RECEIVING INSPECTION(Page 2 of 3)

12. Name of Component and/or System:

No. 1 : _____ Gen. 2 Power Management Enclosure _____

No. 2 : _____

No. 3 : _____

No. 4 : _____

No. 5 : _____

13. Explanations of Additional Data:

NONE _____

14. Receiving Inspection Results:

Appears sound and ready to test. _____

15. Nonconformance Items Noted But Not Tested by this Procedure:

NONE _____

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DATA FORM NO.1
TEST PROCEDURE _____ USCG _____
RECEIVING INSPECTION(Page 3 of 3)

Component or System : _____ Gen. 2 Power Management Enclosure _____

12(a). Manufacturer: _____ DNA Group, Inc _____

12(b). Date of Manufacture: _____ Unknown _____

12(c). Part No.: _____ Gen. 2 PME _____

12(d). Serial No.: _____ Not Identified _____

12(e). Capacity or Rating: _____ 12 VDC _____

12(f). Shipping or Transport damage: NONE _____

12(g). Quality of Workmanship: GOOD _____

12(h). Conformity to Manufacturer's Documentation: Unknown _____

12(i). Dents, Cracks, or Abrasions: NONE _____

12(j). Loose or Missing Screws, Clamps, Nuts, etc.: NONE _____

12(k). Other Defects: NONE _____

DATA FORM NO. 3
TEST PROCEDURE USCG and ISO and SAE
TEST DATA

PART A

1. Test Article I.D. No.: 17071-3
2. Is Component certified as ignition proof by an independent testing laboratory? NO

Requirement: A component certified by an approved testing lab as having passed an accepted industry test may be considered as having met the requirements of this procedure.

3. Is component obviously unacceptable? NO

Requirement: Components obviously unacceptable shall be rejected with no test.

PART I - HIGH TEMPERATURE OPERATING TEST

4. Component Specifications:

Voltage: 12 VDC
Amperage: various
RPM: N/A
Duty Factor: continuous
Other: 12 VDC nominal system voltage

Requirement: Component shall be operated for this test at its normal rated condition.

5. Ambient Temperature during test: 60 °C

Requirement: Ambient temperature surrounding the test specimen shall be 60°C throughout the test period.

6. Highest temperature indicated on any surface: 65°C

Requirement: If the highest component surface temperature exceeds 200°C, the component shall be required to undergo additional testing.

7. Percentage of Propane in Air surrounding component: 4.8%

Requirement: 4.75% +/- 0.5%

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DATA FORM NO. 3
TEST PROCEDURE USCG and ISO and SAE
TEST DATA

8. Are all readings within acceptable limits? YES
9. Did the explosive atmosphere ignite during component operation? NO
10. Was the mixture verified to be explosive? YES
11. Is the component acceptable according to the requirements of PART I? YES

PART II - WATER SUBMERGENCE TEST

12. What is the depth of the component beneath the surface of the water? N/A
Requirement: 14" minimum
13. What is the temperature of the water at the start of the test period? N/A
Requirement: 50°C +/- 2°C
14. Are bubbles observed coming from component? N/A
15. If component was disassembled after submergence, was water found inside component? N/A
16. Is the component acceptable according to PART II? not conducted under this effort

PART III - INDUCED IGNITION TEST

17. Test specimen I.D. No.: 17071-3
18. Percent of Propane in air: 4.8%
Requirement: 4.75% +/- 0.5%
19. Did explosive atmosphere surrounding component ignite during any of the internal atmosphere explosions? NO
20. Is component acceptable according to PART III? YES
21. Remarks:

PART IV - EXPLOSIVE ATMOSPHERE EXPOSURE TEST

22. Test Specimen ID Number: _____ 17071-3 _____

23. Component Specifications:

Voltage: _____ 12 VDC _____
Amperage: _____ Unknown _____
RPM: _____ N/A _____
Duty Factor: _____ Intermittent Device _____
Other: _____ 12 VDC nominal system voltage _____

Requirement: Component shall be operated for this test at its normal rated conditions and duty cycle.

24. Ambient Temperature during test: _____ 60°C _____

Requirement: Ambient temperature surrounding the test specimen shall be 60°C throughout the test period.

25. Percentage of Propane in Air surrounding component: _____ 4.8% _____

Requirement: 4.75% +/- 0.5%

26. Did the Explosive atmosphere ignite during 50 component cycles of operation? _____ NO _____

Requirement: The explosive atmosphere surrounding the component shall not ignite when the component is cycled 50 times.

27. Was the atmosphere verified to be explosive? _____ YES _____

28. Is the component acceptable according to the requirements of Part IV? _____ YES _____

29. Remarks: _____

