Medium Weight Shock and Vibration Test Report
on
3 x 1.5 x 8 Pump with 30 HP Motor
for
Sims Pump Valve Company, Inc.
Hoboken, NJ

NU LABORATORIES, INC.

312 Old Allerton Road, Annandale, NJ
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20 April 2006

Prepared By	Checked By	Approved By
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20 April 2006	20 April 2006	20 April 2006

TABLE OF CONTENTS

1. PURPOSE OF TEST

The purpose of this test was to demonstrate that the 3 x 1.5 x 8 Pump with 30 HP Motor, hereinafter referred to as the "Pump", complies with the requirements of MIL-S-901D for a Grade A, Type A, Class I, nine (9) blow medium weight shock test and with the requirements of MIL-STD-167-1 Type I vibration test when vibrated through the frequency range of 4 Hz to 50 Hz in each of the three (3) major axes.

2. MANUFACTURER

Sims Pump Valve Company, Inc.
1314 Park Avenue
Hoboken, NJ 07030

3. MANUFACTURER'S TYPE OR MODEL NO.

3 x 1.5 x 8, 30 HP, CR16831_1 Pump

4. SPECIFICATION

4.1 MILITARY

MIL-S-901D (NAVY) Military Specification, Shock Tests, H.I. (High Impact); Shipboard Machinery, Equipment and Systems, Requirements for MIL-S-901D, dated 17 March 1989.

MIL-STD-167-1 (SHIPS) Military Standards Mechanical Vibrations of Shipboard Equipment, dated 1 May 1974.

4.2 SIMS PUMP VALVE COMPANY, INC.

Purchase Order No. 4666

5. NUMBER OF ITEMS TESTED

One (1) Pump with Motor

6. SECURITY CLASSIFICATION OF ITEMS

Unclassified

7. DATE TESTING COMPLETED

11 April 2006

8. TEST CONDUCTED BY

NU Laboratories, Inc.
312 Old Allerton Road
Annandale, NJ 08801
(NSWCCD approved shock testing facility per NAVSEA Instruction 9491.1C dated 21 March 1996.)

9. WITNESSES

Erik Burachinsky, Sims Pump Valve Company, Inc. representative – shock only.
John Kuzel, Sims Pump Valve Company, Inc. representative – shock only.
Vladamir Spektor, Sims Pump Valve Company, Inc. representative – shock only.
Robert Coseano, NSWCCD representative – shock only.
James Doughty, NSWCCD representative – shock only.

10. DISPOSITION OF TEST ITEMS

The Pump was returned to Sims Pump Valve Company, Inc.

11. ABSTRACT

The Pump was subjected to a total of nine (9) medium weight shock blows in accordance with the referenced test specifications. Visual inspections, performed after each shock blow, revealed no physical damage, leakage, or loss in pressure. Refer to Section 12 for details.

The Pump was subjected to vibration through the frequency range of 4 Hz through 50 Hz in accordance with the referenced test specifications. Visual inspections, performed after each axis of vibration, revealed no obvious physical damage, leakage, or loss in pressure. Refer to Section 13 for additional information.

12. MEDIUM WEIGHT SHOCK TEST DESCRIPTION

12.1 ACCEPTANCE CRITERIA

The Pump shall be considered to have failed the shock test if any portion of the equipment comes adrift or otherwise becomes a hazard to personnel, or equipment is not able to perform its Grade A specified function due to performance degradation in accordance with MIL-S-901D Section 3.1.10.1.

12.2 TEST SETUP

Upon receipt, an external visual inspection was performed that revealed no obvious physical damage or discrepancy.

The Pump was weighed using a platform scale and the weight was recorded in the test log. The weight of the Pump was 722 pounds.

The Pump was bolted to a 48" x 48" x 1" plate using four (4) 7/8"-9 Grade 5 bolts torqued to 100 lbs-ft. Three (3) ½ rails were attached to the plate and the entire assembly was mounted on the medium weight shock machine orientated in the first major axis of test. A 54 pound dummy mass was attached to the suction side of the Pump using six (6) 1/2"-13 B7 threaded rod, nuts and washers torqued to 45 lbs-ft. An 18.5 pound dummy mass was attached to the discharge side of the Pump using six (6) 1/2"-13 B7 threaded rod, washers, and nuts torqued to 45 lbs-ft. The total weight on the anvil table was 2497 pounds. Refer to Table 1 for the medium weight shock test weights and Figure 1 for photographs of the shock test setups.

Table 1: Medium Weight Shock Test Weights

Pump with Motor	**722 lbs.**
48" x 48" x 1" Plate	**970 lbs.**
Four (4) 7/8" Bolts with Hardware	**6 lbs.**
Suction Load	**54 lbs.**
Discharge Load	**18.5 lbs.**
Three (3) Half Rails	**249 lbs.**
Twelve (12) ½ Rail Shoes	**48 lbs.**
Nine (9) T-Blocks	**36 lbs.**
Nine (9) ½" Spacers	**13.5 lbs.**
Figure 13	**380 lbs.**
Figure 16	**1470 lbs.**
Total Figure 13	**2497 lbs.**
Total Figure 16	**3587 lbs.**

12.3 TEST CONDITIONS

Throughout the shock test the Pump was monitored for any leaks or loss in pressure.

Observations were made by Sims Pump, NSWC, and NU Laboratories, Inc. representatives.

During blows marked as "**CONDITION A**" the Pump was flooded with water, energized with 440 VAC, three (3) phase, 60 Hz power and operating with the discharge pressure adjusted to 135 psig.

During blows marked as "**CONDITION B**" the Pump flooded with water, and de-energized.

12.4 BLOW #1 - "CONDITION A"

12.4.1 Conditions: Vertical axis, 1.25' hammer height, Group #I, 3.0" anvil table travel, Figure 13 of the referenced specifications.

12.4.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.

12.4.3 Action: Testing was continued.

12.5 BLOW #2 - "CONDITION B"

12.5.1 Conditions: Vertical axis, 2.25' hammer height, Group #II, 3.0" anvil table travel, Figure 13 of the referenced specifications.

12.5.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.

12.5.3 Action: Testing was continued

12.6 BLOW #3 - "CONDITION A"

12.6.1 Conditions: Vertical axis, 2.25' hammer height, Group #III, 1.5" anvil table travel, Figure 13 of the referenced specifications.

12.6.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.

12.6.3 Action: Testing was continued.

The entire assembly was then removed from fixture Figure 13 of MIL-S-901D, and reattached to fixture Figure 16 of MIL-S-901D of the referenced specifications, orientated with the side of the Pump facing down. The total weight on the anvil table was 3587 pounds. Refer to Figure 1 for a photograph of the test setup and Table 1 for a breakdown of the test weights.

12.7 BLOW #4 - "CONDITION A"

12.7.1 Conditions: 30° Side Down, 1.75' hammer height, Group #I, 3.0" anvil table travel, Figure 16 of the referenced specifications.

12.7.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.

12.7.3 Action: Testing was continued.

12.8 BLOW #5 - "CONDITION B"

12.8.1 Conditions: 30° Side Down, 2.75' hammer height, Group #II, 3.0" anvil table travel, Figure 16 of the referenced specifications.

12.8.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.

12.8.3 Action: Testing was continued.

12.9 BLOW #6 - "CONDITION A"

12.9.1 Conditions: 30° Side Down, 2.75' hammer height, Group #III, 1.5″ anvil table travel, Figure 16 of the referenced specifications.

12.9.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.

12.9.3 Action: Testing was continued.

The entire assembly was removed from fixture Figure 16 of MIL-S-901D, rotated 90° and reattached to MIL-S-901D Figure 16 with the Pump facing down; see Figure 1. The total weight on the anvil table remained at 3587 pounds.

12.10 BLOW #7 - "CONDITION A"

12.10.1 Conditions: 30° Pump Down, 1.75' hammer height, Group #I, 3.0" anvil table travel, Figure 16 of the referenced specifications.
12.10.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.
12.10.3 Action: Testing was continued.

12.11 BLOW #8 - "CONDITION B"

12.11.1 Conditions: 30° Pump Down, 2.75' hammer height, Group #II, 3.0" anvil table travel, Figure 16 of the referenced specifications.
12.11.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.
12.11.3 Action: Testing was continued.

12.12 BLOW #9 - "CONDITION A"

12.12.1 Conditions: 30° Pump Down, 2.75' hammer height, Group #III, 1.5″ anvil table travel, Figure 16 of the referenced specifications.
12.12.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.
12.12.3 Action: Testing was completed.

Refer to the Factory Test Record, Figure 2, and the Shock Acceptance Form, Figure 3, for additional information.

13. VIBRATION TEST DESCRIPTION

13.1 TEST SETUP

Upon completion of the shock test the Pump assembly was removed from Figure 16 of MIL-S-901D and attached to the vibration machine. Refer to Figure 4 for the photographs of the test setups.

One (1) accelerometer was attached to the plate and one (1) accelerometer was attached to the top of the Pump housing, orientated in the direction of vibration, to aid in the detection of response prominences.

13.2 TEST CONDITIONS

The Pump was flooded with water, energized with 440 VAC, three (3) phase, 60 Hz power and operating with the discharge pressure adjusted to 135 psig throughout the vibration test.

13.3 FIRST MAJOR AXIS OF VIBRATION (VERTICAL AXIS)

13.3.1 Exploratory Vibration

The Pump was vibrated from 4 Hz through 33 Hz with a vibration input of 0.020 ± 0.004 inches (double amplitude) to determine response prominences and from 34 Hz through 50 Hz with a vibration input of 0.006 + 0.000/-0.002 (double amplitude) to determine response prominences. The change in frequency was made in discrete intervals of 1 Hz and the vibration was maintained at each frequency for approximately 15 seconds. No response prominences were noted.

The table input vibration levels and the accelerometer output vibration levels at each frequency were recorded on the Vibration Test Data Sheets.

13.3.2 Variable Frequency Vibration

The Pump was vibrated from 4 Hz to 50 Hz with input amplitudes as shown in Table 2. The change in frequency was made in discrete intervals of 1 Hz and the vibration was maintained at each frequency for a period of five (5) minutes. No obvious physical damage, leakage or loss in pressure was noted.

The table input vibration levels and the accelerometer output vibration levels at each frequency were recorded on the Vibration Test Data Sheets.

Table 2: Variable Frequency Test Amplitudes

FREQUENCY (Hz)	INPUT INCHES (DOUBLE AMPLITUDE)
4 – 15 Hz	0.060 ± 0.012
16 – 25 Hz	0.040 ± 0.008
26 – 33 Hz	0.020 ± 0.004
34 – 40 Hz	0.010 ± 0.002
41 – 50 Hz	0.006 + 0.000 -0.002

13.3.3 Endurance Vibration

Since no response prominences were noted, the endurance vibration was performed at the specified upper frequency of 50 Hz for a period of two (2) hours. Upon the completion of the two (2) hour dwell an inspection was performed that revealed no obvious physical damage, leakage or loss in pressure.

The frequency, table input vibration levels, accelerometer output vibration levels and the duration of dwell were recorded on the Vibration Test Data Sheets.

13.4 SECOND MAJOR AXIS OF VIBRATION (END TO END)

13.4.1 Exploratory Vibration

The Pump was vibrated from 4 Hz through 33 Hz with a vibration input of 0.020 ± 0.004 inches (double amplitude) to determine response prominences and from 34 Hz through 50 Hz with a vibration input of 0.006 + 0.000/-0.002 (double amplitude) to determine response prominences. The change in frequency was made in discrete intervals of 1 Hz and the vibration was maintained at each frequency for approximately 15 seconds. No response prominences were noted.

The table input vibration levels and the accelerometer output vibration levels at each frequency were recorded on the Vibration Test Data Sheets.

13.4.2 Variable Frequency Vibration

The Pump was vibrated from 4 Hz to 50 Hz with input amplitudes as shown in Table 2. The change in frequency was made in discrete intervals of 1 Hz and the vibration was maintained at each frequency for a period of five (5) minutes. No obvious physical damage, leakage or loss in pressure was noted.

The table input vibration levels and the accelerometer output vibration levels at each frequency were recorded on the Vibration Test Data Sheets.

13.4.3 Endurance Vibration

Since no response prominences were noted the endurance vibration was performed at the specified upper frequency of 50 Hz for a period of two (2) hours. Upon the completion of the two (2) hour dwell an inspection was performed which revealed no obvious physical damage, leakage or loss in pressure.

The frequency, table input vibration levels, accelerometer output vibration levels and the duration of dwell were recorded on the Vibration Test Data Sheets.

13.5 THIRD MAJOR AXIS OF VIBRATION (SIDE TO SIDE)

13.5.1 Exploratory Vibration

The Pump was vibrated from 4 Hz through 33 Hz with a vibration input of 0.020 ± 0.004 inches (double amplitude) to determine response prominences and from 34 Hz through 50 Hz with a vibration input of 0.006 + 0.000/-0.002 (double amplitude) to determine response prominences. The change in frequency was made in discrete intervals of 1 Hz and the vibration was maintained at each frequency for approximately 15 seconds. No response prominences were noted.

The table input vibration levels and the accelerometer output vibration levels at each frequency were recorded on the Vibration Test Data Sheets.

13.5.2 Variable Frequency Vibration

The Pump was vibrated from 4 Hz to 50 Hz with input amplitudes as shown in Table 2. The change in frequency was made in discrete intervals of 1 Hz and the vibration was maintained at each frequency for a period of five (5) minutes. No obvious physical damage, leakage or loss in pressure was noted.

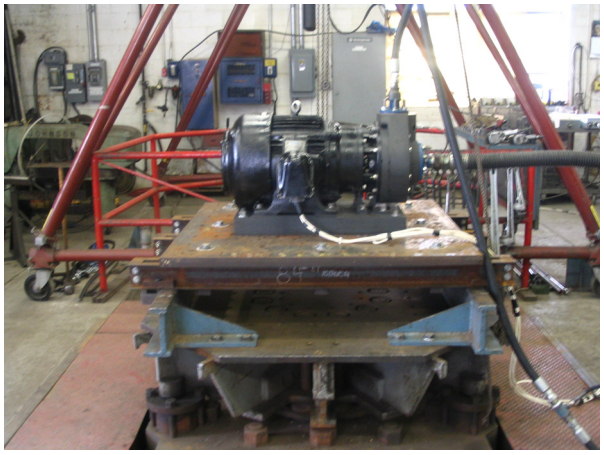
The table input vibration levels and the accelerometer output vibration levels at each frequency were recorded on the Vibration Test Data Sheets.

13.5.3 Endurance Vibration

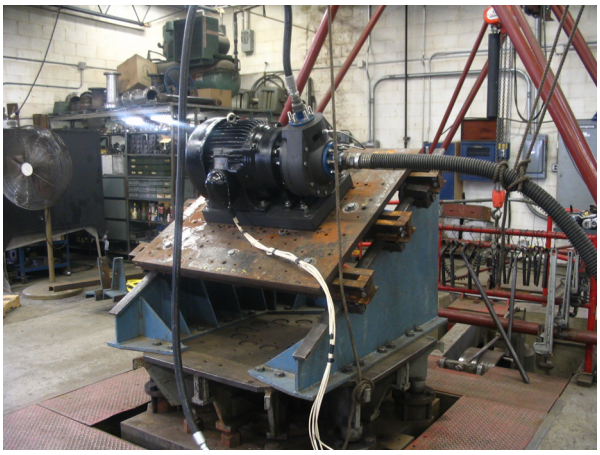
Since no response prominences were noted the endurance vibration was performed at the specified upper frequency of 50 Hz for a period of two (2) hours. Upon the completion of the two (2) hour dwell an inspection was performed which revealed no obvious physical damage, leakage or loss in pressure.

The frequency, table input vibration levels, accelerometer output vibration levels and the duration of dwell were recorded on the Vibration Test Data Sheets. Refer to the Vibration Test Data Sheets, Figures 5 through 7, for additional information.

Upon completion of the vibration test, a visual inspection revealed no obvious physical damage or discrepancy.



Vertical Axis



30° Side Down

30° Pump Down

Shock Test Setup Photographs
Figure 1

FACTORY TEST RECORD: CLASS HI SHOCK			DATE 11 April 2006	TEST # 10490.1
1. ITEM NAME OF EQUIPMENT SHOCK-TESTED 3" x 1 ½" x 8" 30 HP Pump		2. RATING (KW, VOLTS, GPM, CFM, ETC.)		
3. MAJOR PARTS				
PUMP, ETC.	TESTED FOR Sims Pump Valve Company, Inc.	ADDRESS 1314 Park Avenue Hoboken, NJ 07030	GOV DWG NO	IDENTIFYING #
MOTOR, ETC.	MANUFACTURER	ADDRESS	GOV DWG NO	IDENTIFYING #
STARTER, ETC.	MANUFACTURER	ADDRESS	GOV DWG NO	IDENTIFYING #
4. CONTRACT NO.	CONTRACTOR	ADDRESS		
5. TYPE OF SHOCK TEST ☒ ASSEMBLY ☐ SUB-ASSEMBLY ☐ PART				
6. TOTAL WEIGHT OF ASSEMBLY TESTED 722 lbs.	WEIGHT OF INDIVIDUAL MAJOR PARTS LBS.	MOTOR LBS.	STARTER LBS.	
7. WEIGHT CLASSIFICATION OF ITEM ☐ LIGHT ☒ MEDIUM	8. APPLICABLE MOUNTING FIGURE IN SPECIFICATION MIL-S-901 ☐ FIX 4A, FIG 5 ☐ FIX 4C, FIG 8 ☒ FIG 13 ☒ FIG 16 ☐ FIG 10-2 ☐ OTHER			

9. FOR LIGHTWEIGHT ITEMS

FIRST CONDITION				SECOND CONDITION			
BLOW	DROP	AXIS	DAMAGE INCURRED	BLOW	DROP	AXIS	DAMAGE INCURRED

ITEMS SUBJECT TO ABOVE TWO CONDITIONS WERE SAME ☐ DIFFERENT ☐

REMARKS

10. FOR MEDIUM-WEIGHT ITEMS

Fig. 13 Fig. 16,				Fig. 16,			
BLOWS	GRP #	HAMMER DROP	DAMAGE INCURRED	BLOWS	GRP #	HAMMER DROP	DAMAGE INCURRED
1	I	1.25	No damage noted	7	I	1.75'	No damage noted
2	II	2.25'	No damage noted	8	II	2.75'	No damage noted
3	III	2.25'	No damage noted	9	III	2.75'	No damage noted
4	I	1.75'	No damage noted				
5	II	2.75'	No damage noted				
6	III	2.75'	No damage noted				

TOTAL WEIGHT ON ANVIL TABLE Figure 13- 2497, Figure 16- 3587 lbs	REMARKS	
TEST LABORATORY NU Laboratories, Inc.	ADDRESS 312 Old Allerton Road, Annandale, NJ 08801	TEST ENGINEER

Factory Test Record
Figure 2

MIL-S-901D: SHOCK ACCEPTANCE FORM

1. The item identified below has met the requirements of Military Specification MIL-S-901, based upon:
   - ☒ Shock testing of the item identified below
   - ❑ Previous shock testing of an item similar to the item identified below (shock test extension)
   - ❑ Previous shock testing of an item identical to the item identified below (shock test extension)
2. Item (Nomenclature) Pump
3. Item (Description) 3" x 1 1/2" x 8 30 HP Pump
4. Tested For Sims Pump Company
5. Model N/A 6. Size/Capacity _____
7. Serial Number N/A 8. Revision and Date -
9. Military Specification MIL-S-901D
10. Ship _____ 11. Service _____
12. Contract No. _____
13. Shock Test Facility NU Laboratories, Inc.
14. Report No. 10490.1
15. Previous Shock test approval reference (if this form conveys shock test Extension approval) _____

16.	Test Category	☐ Lightweight	☒ Medium weight	☐ Heavyweight	
17.	Shock Grade	☒ A	☐ B		
18.	Equipment Class	☒ I	☐ II	☐ III	
19.	Shock Test Type	☒ A	☐ B	☐ C	
20.	Mounting Location	☒ Deck	☐ Hull	☐ Shell	☐ Wetted-Surface

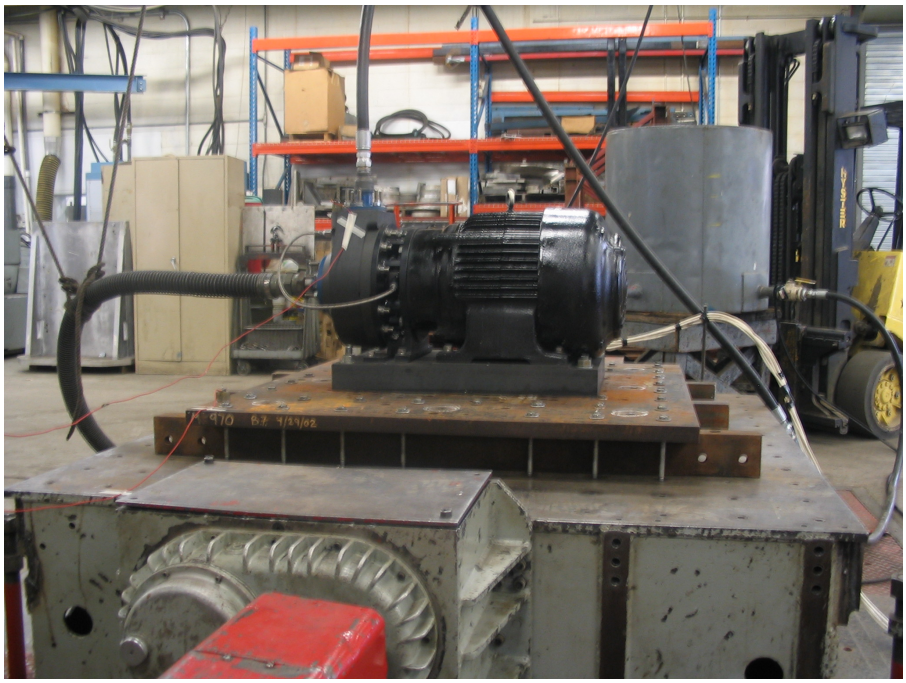
21. Shipboard mounting plane represented during shock test:

☒ Base	☐ Front or Face	☐ Back
☐ Top	☐ Combination	☐ Other ____

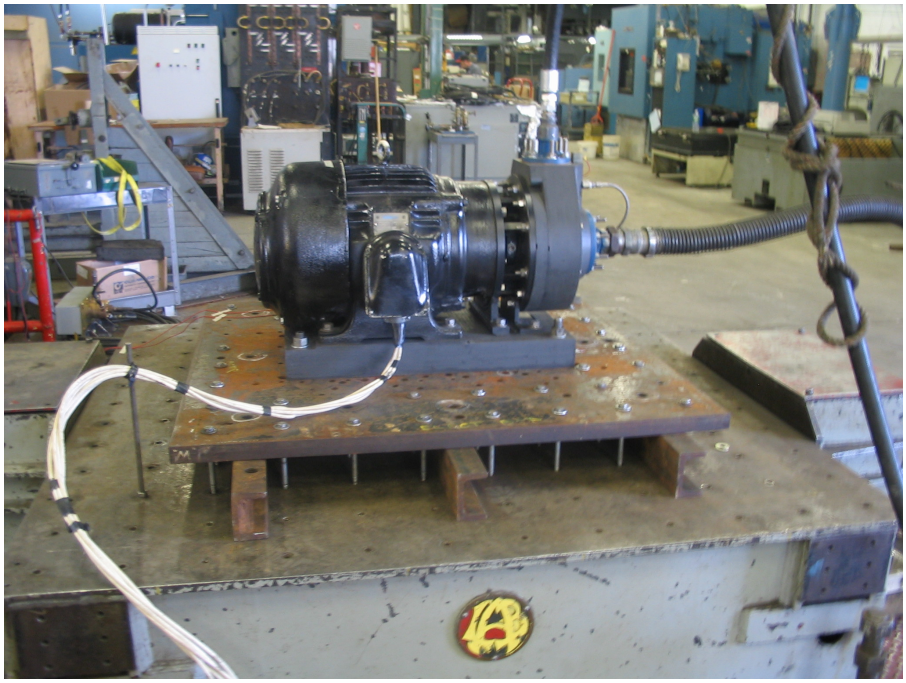
22. Mounting orientation of item relative to ship's fore-and-aft axis (for medium weight and heavyweight test items only): Unrestricted
23. Approval Limitations: _____
24. Approved. _____

Authorized Signature	Approval Activity	Date
		20 April 2006

Shock Acceptance Form
Figure 3



Vertical and End to End Axes



Side to Side Axis

Vibration Test Setup
Figure 4

	EXPLORATORY FREQUENCY			VARIABLE FREQUENCY		
Hz	INPUT	CH. 1	CH. 2	INPUT	CH. 1	CH. 2
4	.024	.024		.064	.066	
5	.024	.024		.064	.066	
6	.024	.024		.063	.065	
7	.024	.024		.061	.062	
8	.023	.023		.060	.060	
9	.023	.023		.059	.059	
10	.023	.023		.058	.058	
11	.022	.022		.057	.058	
12	.022	.022		.057	.057	
13	.022	.022		.057	.057	
14	.022	.022		.056	.057	
15	.022	.022		.056	.057	
16	.022	.022		.040	.040	
17	.022	.022		.039	.040	
18	.022	.022		.039	.040	
19	.022	.022		.039	.040	
20	.022	.022		.039	.040	
21	.022	.022		.039	.040	
22	.022	.022		.039	.040	
23	.022	.022		.039	.040	
24	.022	.022		.039	.040	
25	.022	.022		.039	.040	
26	.022	.022		.020	.021	
27	.022	.022		.020	.021	
28	.022	.022		.020	.021	
29	.022	.022		.020	.021	
30	.022	.022		.020	.021	
31	.022	.022		.020	.021	
32	.022	.022		.020	.021	
33	.022	.022		.021	.021	
34	.006	.006		.011	.011	
35	.006	.006		.011	.011	
36	.006	.006		.011	.011	
37	.006	.006		.011	.011	
38	.006	.006		.011	.011	
39	.005	.006		.011	.011	
40	.006	.006		.011	.011	
41	.005	.006		.005	.005	
42	.005	.006		.005	.005	
43	.005	.005		.005	.005	
44	.005	.005		.005	.005	
45	.005	.005		.005	.005	
46	.005	.005		.005	.005	
47	.005	.005		.005	.005	
48	.005	.005		.005	.005	
49	.005	.005		.005	.005	
50	.005	.005		.005	.005	
	Res. _____ Hz					

VIBRATION TEST DATA SHEET

JOB NO. 10490
DATE 4.7.06
AXIS VERTICAL

NU LABORATORIES
312 OLD ALLERTON Rd., ANNANDLAE, NJ
08801, (908) 713 9300

NOTE: RECORDED DATA IS DOUBLE AMPLITUDE

ENDURANCE

Hz	INPUT	DURATION
50	.005	2 HRS

TEST ARTICLE IDENTIFICATION:

3x1.5x8 PUMP 30HP MOTOR

TESTED FOR:

SIMS PUMP

ACCELEROMETER LOCATIONS

INPUT	TOP OF FIXTURE PLATE
CH. 1	TOP OF PUMP HOUSING
CH. 2	
CH. 3	

REMARKS:

COND A : POWERED 135 PSI

TEST ENGINEER: H Fuller

SHEET: 1

Vibration Test Data Sheet
Figure 5

	EXPLORATORY FREQUENCY			VARIABLE FREQUENCY		
Hz	INPUT	CH. 1	CH. 2	INPUT	CH. 1	CH. 2
4	.023	.024		.065	.066	
5	.023	.024		.065	.066	
6	.024	.024		.064	.065	
7	.024	.023		.065	.066	
8	.024	.023		.065	.066	
9	.023	.023		.064	.067	
10	.022	.023		.064	.063	
11	.022	.022		.064	.063	
12	.022	.022		.063	.063	
13	.021	.022		.063	.063	
14	.021	.021		.063	.063	
15	.021	.021		.063	.063	
16	.021	.021		.041	.041	
17	.021	.021		.041	.041	
18	.021	.021		.041	.041	
19	.020	.021		.040	.041	
20	.020	.020		.041	.041	
21	.020	.020		.041	.041	
22	.020	.020		.041	.041	
23	.020	.020		.041	.041	
24	.020	.019		.040	.041	
25	.020	.019		.040	.042	
26	.020	.019		.021	.022	
27	.020	.019		.021	.022	
28	.020	.019		.021	.022	
29	.020	.019		.021	.022	
30	.019	.018		.021	.022	
31	.019	.019		.021	.022	
32	.019	.019		.021	.022	
33	.019	.019		.021	.023	
34	.006	.005		.012	.012	
35	.006	.005		.012	.012	
36	.006	.005		.012	.012	
37	.006	.005		.012	.012	
38	.006	.005		.012	.012	
39	.006	.005		.012	.012	
40	.006	.005		.012	.012	
41	.006	.005		.005	.005	
42	.006	.005		.005	.005	
43	.006	.005		.005	.005	
44	.006	.005		.005	.005	
45	.006	.005		.005	.005	
46	.006	.004		.005	.005	
47	.005	.004		.005	.005	
48	.005	.004		.005	.005	
49	.005	.004		.005	.006	
50	.005	.004		.005	.006	
	Res. None Hz					

VIBRATION TEST DATA SHEET

JOB NO. 10490
DATE 4/9/06
AXIS END TO END

NU LABORATORIES
312 OLD ALLERTON Rd., ANNANDLAE, NJ
08801, (908) 713 9300

NOTE: RECORDED DATA IS DOUBLE AMPLITUDE

ENDURANCE

Hz	INPUT	DURATION
50	.005	2 HR

TEST ARTICLE IDENTIFICATION:
3X1.5X8 PUMP W/30HP MOTOR

TESTED FOR:
SIMS PUMP

ACCELEROMETER LOCATIONS

INPUT	TOP OF FIXTURE
CH. 1	TOP OF PUMP HOUSING
CH. 2	
CH. 3	

REMARKS:
UNIT OPERATING
DISCHARGE 135 PSIG

TEST ENGINEER: H. Muller

SHEET: 2

Vibration Test Data Sheet
Figure 6

	EXPLORATORY FREQUENCY			VARIABLE FREQUENCY		
Hz	INPUT	CH. 1	CH. 2	INPUT	CH. 1	CH. 2
4	.022	.022		.060	.061	
5	.022	.022		.060	.061	
6	.022	.023		.060	.061	
7	.022	.023		.060	.061	
8	.022	.023		.060	.061	
9	.022	.023		.060	.061	
10	.022	.023		.060	.061	
11	.022	.023		.060	.060	
12	.022	.023		.060	.060	
13	.022	.023		.060	.060	
14	.022	.023		.059	.060	
15	.022	.023		.059	.061	
16	.022	.023		.038	.040	
17	.022	.023		.038	.040	
18	.022	.023		.038	.040	
19	.022	.023		.038	.040	
20	.022	.023		.038	.040	
21	.022	.023		.038	.041	
22	.022	.024		.038	.041	
23	.022	.024		.038	.041	
24	.022	.024		.038	.041	
25	.022	.024		.038	.041	
26	.022	.024		.022	.024	
27	.022	.024		.022	.024	
28	.022	.025		.022	.024	
29	.022	.025		.022	.024	
30	.022	.025		.022	.025	
31	.022	.026		.022	.025	
32	.022	.026		.022	.025	
33	.022	.026		.022	.025	
34	.004	.005		.011	.013	
35	.004	.005		.011	.013	
36	.004	.005		.011	.013	
37	.004	.005		.011	.013	
38	.004	.005		.011	.014	
39	.004	.005		.011	.014	
40	.004	.005		.011	.014	
41	.004	.005		.004	.005	
42	.004	.005		.004	.005	
43	.004	.005		.004	.005	
44	.004	.005		.004	.005	
45	.004	.006		.004	.006	
46	.004	.006		.004	.006	
47	.004	.006		.004	.006	
48	.004	.006		.004	.006	
49	.004	.006		.004	.006	
50	.004	.006		.004	.006	

Res. _____ Hz

VIBRATION TEST DATA SHEET

JOB NO. 10490
DATE 4/10/06
AXIS side to side

NU LABORATORIES
312 OLD ALLERTON Rd., ANNANDLAE, NJ
08801, (908) 713 9300

NOTE: RECORDED DATA IS DOUBLE AMPLITUDE

ENDURANCE

Hz	INPUT	DURATION
50	.004	2 HR

TEST ARTICLE IDENTIFICATION:

3x1.5x8 PUMP 30HP MOTOR

TESTED FOR:

SIMS PUMP

ACCELEROMETER LOCATIONS

INPUT	TOP OF FIXTURE PLATE
CH. 1	TOP of PUMP HOUSING
CH. 2	
CH. 3	

REMARKS:

COND A: POWERED 135 PSI

TEST ENGINEER: HHMiller

SHEET: 3

Vibration Test Data Sheet
Figure 7

LIST OF APPARATUS

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DATE	DUE DATE
Platform Scale	Fairbanks Morse	1124A	G-511379	09/21/05	09/21/06
Torque Wrench	Central Tools	96355	794037102	09/06/05	09/06/06
Torque Wrench	Utica	TCI-150 FRN	MD6973	08/23/05	08/23/06
Pressure Gauge	Span	4109566	MC001705	09/23/05	09/23/06
Medium Weight Shock Machine	New England Trawler	10-T-3351-C	N/A	Functional	
Vibration Machine	L.A.B.	RVH-72-5000	51401	Functional	
Charge Amplifier	Tri Tek	203M	224	08/25/05	08/25/06
Charge Amplifier	Tri Tek	203M	218	08/25/05	08/25/06
1 Hour Timer	Gra-Labs	165	739	03/10/06	03/10/07
Accelerometer	Endevco	2221D	EY62	01/31/06	01/31/07
Accelerometer	Endevco	2221D	EY60	01/31/06	01/31/07

All calibrations are traceable to the National Institute of Standards and Technology. Procedures satisfy the requirements set forth in MIL-STD-45662 or ANSI/NCSL Z540-1. Calibration records are on file at NU Laboratories, Inc.

All weights and scales are traceable to the State of NJ Office of Weights and Measures (NJSA 51:1-61; 75; NJAC 13:47E-1.2)