Vibration and Medium Weight Shock Test Report
on
1.25” x 1” x 7 Pump with Motor
for
Sims Pump Valve Company
Hoboken, NJ

NU LABORATORIES, INC.
312 Old Allerton Road, Annandale, NJ
(908) 713-9300
WWW.NULABS.COM
E-Mail: sales@nulabs.com

07 April 2008

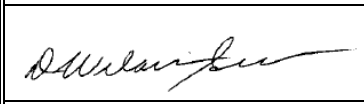
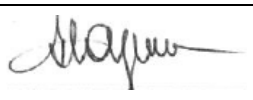
Prepared By	Checked By	Approved By
D. Welaish Sutphen	Constantin Geangu	R.D. McAdoo
		
07 April 2008	07 April 2008	07 April 2008

TABLE OF CONTENTS

1. PURPOSE OF TEST

The purpose of this test was to demonstrate that the 1.25" x 1" x 7 Pump with Motor, hereinafter referred to as the "Pump," complied with the requirements of MIL-S-901D for a Grade A, Class I, Type A, nine (9) blow medium weight shock test and with the requirements of MIL-STD-167-1 when subjected to vibration through the frequency range of 4 Hz through 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.

1.25' x 1" x 7 Pump with Motor
Drawing No. NS17896-2C5-pump

4. SPECIFICATIONS

4.1 MILITARY

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

MIL-STD-167-1 (SHIPS) Military Standards Mechanical Vibrations of Shipboard Equipment, dated 19 June 1987

MIL-P-17840C(SH) Military Specification, Pumps, Centrifugal, Close-Coupled, Navy Standard (for Surface Ship Application), dated 10 March 1986

4.2 SIMS PUMP VALVE COMPANY, INC.

Purchase Order Number: 7206

5. NUMBER OF ITEMS TESTED

One (1) Pump with Motor

6. SECURITY CLASSIFICATION OF ITEMS

Unclassified

7. DATE TESTING COMPLETED

03 April 2008

8. TEST CONDUCTED BY

NU Laboratories, Inc.
312 Old Allerton Road
Annandale, NJ 08801
(NAVY Certified Shock Test Facility by NAVSEA INST 9491.1C)

9. TEST WITNESSES

Vladimir Spektor, Sims Pump representative
Robert Coseano, NSWCCD representative

10. DISPOSITION OF TEST ITEM

The Pump was returned to Sims Pump Company, Inc.

11. ABSTRACT

The Pump was subjected to vibration through the frequency range of 4 Hz to 50 Hz in each of the three (3) major axes. Visual inspections, performed after each major axis of vibration, revealed no obvious physical damage, loss in pressure, or leakage. Refer to Section 12 for details.

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 obvious physical damage, loss in pressure, or leakage. Refer to Section 13 for details.

12. VIBRATION TEST DESCRIPTION

12.1 TEST SETUP

Upon receipt a visual inspection performed on the Pump revealed no obvious physical damage or discrepancy.

The Pump was weighed using a portable platform scale and the weight was recorded in the test log. The weight of the Pump was 267 pounds. The Pump was attached to the vibration machine oriented in the first major axis of test. Refer to Figure 1 for photographs of the test setups. Flanges were attached to the suction and discharge ports; a 14.3 pound load was attached to the suction port and a 10 pound load was attached to the discharge port.

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

12.2 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 65 psig throughout vibration testing.

12.3 FIRST MAJOR AXIS OF VIBRATION (SIDE TO SIDE)

12.3.1 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 Sheet, Figure 2.

12.3.2 Variable Frequency Vibration

The Pump was vibrated from 4 Hz to 50 Hz with input amplitudes as shown in Table 1. 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, Figure 2.

12.3.3 Endurance Vibration

The endurance vibration was performed at the frequency of 50 Hz for a period of two (2) hours. Upon the completion of the two (2) hour dwell, an external visual inspection revealed no obvious physical damage, leakage or loss in pressure.

Table 1: 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

12.4 SECOND MAJOR AXIS OF VIBRATION (END TO END AXIS)

12.4.1 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 Sheet, Figure 3.

12.4.2 Variable Frequency Vibration

The Pump was vibrated from 4 Hz to 50 Hz with input amplitudes as shown in Table 1. 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 Sheet, Figure 3.

12.4.3 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 external visual inspection revealed no obvious physical damage, leakage or loss in pressure.

12.5 THIRD MAJOR AXIS OF VIBRATION (SIDE TO SIDE)

12.5.1 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 Sheet, Figure 4.

12.5.2 Variable Frequency Vibration

The Pump was vibrated from 4 Hz to 50 Hz with input amplitudes as shown in Table 1. 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 Sheet, Figure 4.

12.5.3 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 external visual inspection revealed no obvious physical damage, leakage or loss in pressure.

Refer to the Vibration Test Data Sheets, Figures 2 through 4, for additional information.

13. MEDIUM WEIGHT SHOCK TEST DESCRIPTION

13.1 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.

13.2 TEST SETUP

The Pump was removed from the vibration machine and was attached to a 48″ x 48″ x 1” steel plate using four (4) 5/8”-11 Grade 5 bolts. The Sims Pump representative provided torque values; the mounting bolts torqued to 70 lbs-ft. The entire assembly was then secured to fixture Figure 13 of MIL-S-901D on the medium weight shock machine, oriented in the first major axis of test. A 14.3 pound dummy mass was attached to the suction side of the Pump and a 10 pound dummy mass was attached to the discharge side of the Pump. The total weight on the anvil table was 1670.3 pounds. Refer to Table 2 for the medium weight shock test weights and Figure 5 for photographs of the test setup.

Table 2: Medium Weight Shock Test Weights

Pump	**267 lbs.**
48” x 48” x 1”Steel Plate	**651 lbs.**
Two (2) Ship and Car Channels	**79 lbs.**
Dummy Load - Suction	**14.3 lbs.**
Dummy Load - Discharge	**10 lbs.**
Hardware and Clamps	**38 lbs.**
Two (2) Half Rails	**166 lbs.**
Eight (8) Half Rail Shoes	**32 lbs.**
Six (6) T-Blocks	**24 lbs.**
Six (6) Spacers	**9 lbs.**
Fixture Figure 13	**380 lbs.**
Fixture Figure 16	**1470 lbs.**
Total Weight Fixture Figure 13	**1670.3 lbs.**
Total Weight Fixture Figure 16	**2760.3 lbs.**

13.3 TEST CONDITIONS

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

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 65 psig.

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

13.4 BLOW #1 - CONDITION A

13.4.1 Conditions: Vertical Axis, 1.0' hammer height, Group #I, 3.0" anvil table travel, fixture Figure 13 of the referenced specifications.

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

13.4.3 Action: The bolts were retorqued and testing was continued.

13.5 BLOW #2 - CONDITION B

13.5.1 Conditions: Vertical Axis, 2.0' hammer height, Group #II, 3.0" anvil table travel, fixture Figure 13 of the referenced specifications.

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

13.5.3 Action: Testing was continued

13.6 BLOW #3 - CONDITION A

13.6.1 Conditions: Vertical Axis, 2.0’ hammer height, Group #III, 1.5" anvil table travel, fixture Figure 13 of the referenced specifications.

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

13.6.3 Action: Testing was continued.

The entire assembly was removed from fixture Figure 13 of MIL-S-901D, and attached to fixture Figure 16 of MIL-S-901D of the referenced specifications, oriented with the side of the Pump facing down. The total weight on the anvil table was 2760.3 pounds. Refer to Figure 5 for a photograph of the test setup and Table 2 for a breakdown of the test weights.

13.7 BLOW #4 - CONDITION A

13.7.1 Conditions: 30° Side Down, 1.25’ hammer height, Group #I, 3.0" anvil table travel, fixture Figure 16 of the referenced specifications.

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

13.7.3 Action: Testing was continued.

13.8 BLOW #5 - CONDITION B

13.8.1 Conditions: 30° Side Down, 2.25' hammer height, Group #II, 3.0" anvil table travel, fixture Figure 16 of the referenced specifications.

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

13.8.3 Action: Testing was continued.

13.9 BLOW #6 - CONDITION A

13.9.1 Conditions: 30° Side Down, 2.25' hammer height, Group #III, 1.5″ anvil table travel, fixture Figure 16 of the referenced specifications.

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

13.9.3 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. Refer to Figure 5. The total weight on the anvil table remained at 2760.3 pounds.

13.10 BLOW #7 - CONDITION A

13.10.1 Conditions: 30° Pump Down, 1.25' hammer height, Group #I, 3.0" anvil table travel, fixture Figure 16 of the referenced specifications.

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

13.10.3 Action: Testing was continued.

13.11 BLOW #8 - CONDITION B

13.11.1 Conditions: 30° Pump Down, 2.25' hammer height, Group #II, 3.0" anvil table travel, fixture Figure 16 of the referenced specifications.

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

13.11.3 Action: Testing was continued.

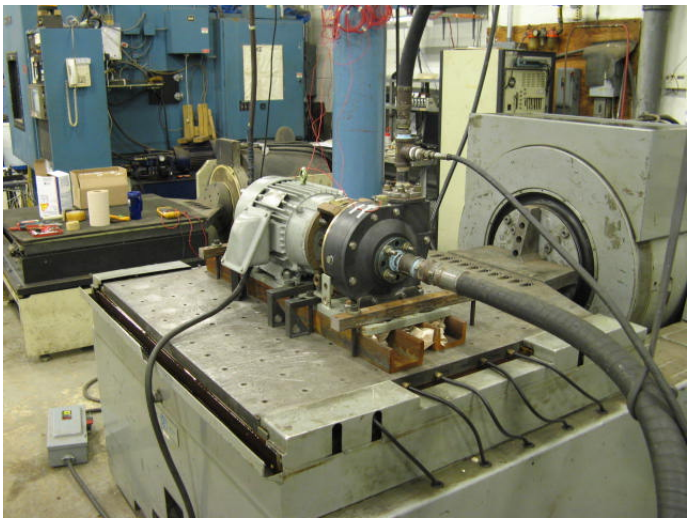
13.12 BLOW #9 - CONDITION A

13.12.1 Conditions: 30° Pump Down, 2.25' hammer height, Group #III, 1.5" anvil table travel, fixture Figure 16 of the referenced specifications.

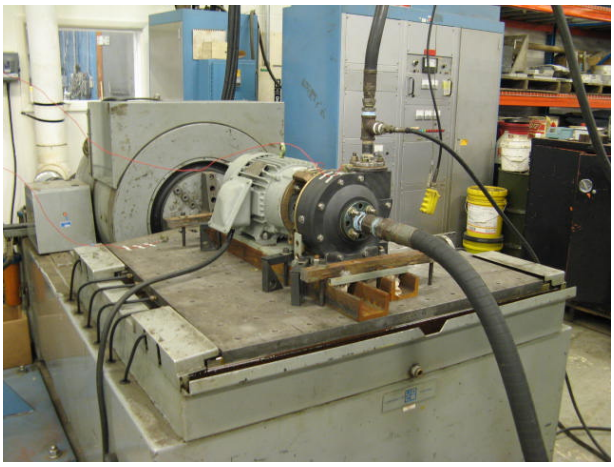
13.12.2 Observations: A post-blow visual inspection revealed no obvious physical damage. No leakage or loss in pressure was reported.

13.12.3 Action: Testing was complete.

Refer to the Factory Test Record, Figure 6, and the Shock Acceptance Form, Figure 7, for additional information.



Side to Side



End to End

Vertical

Vibration Test Setup Photographs
Figure 1

	EXPLORATORY FREQUENCY			VARIABLE FREQUENCY		
Hz	INPUT	CH. 1	CH. 2	INPUT	CH. 1	CH. 2
4	.020	.020		.060	.062	
5	.020	.020		.060	.062	
6	.020	.020		.060	.062	
7	.020	.020		.060	.062	
8	.020	.020		.060	.062	
9	.020	.020		.060	.062	
10	.020	.020		.060	.062	
11	.020	.020		.060	.062	
12	.020	.020		.060	.062	
13	.020	.020		.060	.062	
14	.020	.020		.060	.063	
15	.020	.020		.060	.063	
16	.020	.020		.040	.042	
17	.020	.020		.040	.042	
18	.020	.020		.040	.042	
19	.020	.020		.040	.042	
20	.020	.020		.040	.042	
21	.020	.021		.040	.042	
22	.020	.021		.040	.042	
23	.020	.021		.040	.042	
24	.020	.021		.040	.042	
25	.020	.021		.040	.043	
26	.020	.021		.020	.021	
27	.020	.021		.020	.021	
28	.020	.021		.020	.021	
29	.020	.021		.020	.021	
30	.020	.021		.020	.021	
31	.020	.021		.020	.021	
32	.020	.021		.020	.022	
33	.020	.021		.020	.022	
34	.006	.006		.010	.011	
35	.006	.006		.010	.011	
36	.006	.006		.010	.011	
37	.006	.006		.010	.011	
38	.006	.006		.010	.011	
39	.006	.006		.010	.011	
40	.006	.006		.010	.011	
41	.006	.006		.006	.006	
42	.006	.006		.006	.006	
43	.006	.006		.006	.006	
44	.006	.006		.006	.006	
45	.006	.006		.006	.006	
46	.006	.006		.006	.006	
47	.006	.006		.006	.007	
48	.006	.006		.006	.007	
49	.006	.006		.006	.007	
50	.006	.006		.006	.007	
	Res. NONE Hz					

VIBRATION TEST DATA SHEET

JOB NO. 10934
DATE 3-28-08
AXIS S10C TO S10C

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

NOTE: RECORDED DATA IS DOUBLE AMPLITUDE

ENDURANCE

Hz	INPUT	DURATION
50	.006	2 HRS

TEST ARTICLE IDENTIFICATION:
1.25X1X7 PUMP
NS17896-2C5

TESTED FOR:
SIMS PUMP CO.

ACCELEROMETER LOCATIONS

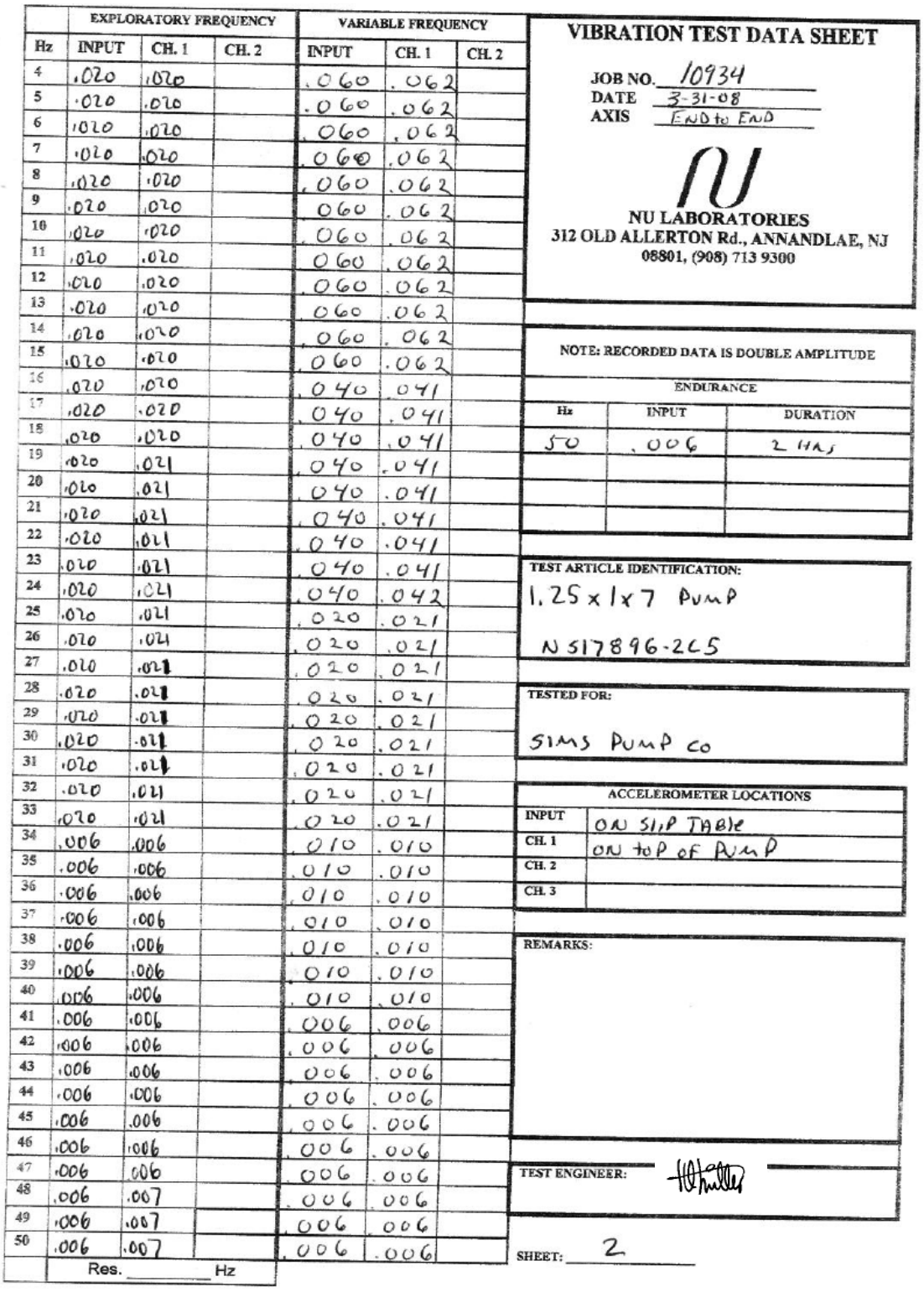
INPUT	ON SLIP-TABLE
CH. 1	ON TOP OF PUMP
CH. 2	
CH. 3	

REMARKS:

TEST ENGINEER:

SHEET: 1

Vibration Test Data Sheet
Figure 2



	EXPLORATORY FREQUENCY			VARIABLE FREQUENCY		
Hz	INPUT	CH. 1	CH. 2	INPUT	CH. 1	CH. 2
4	.020	.020		.060	.062	
5	.020	.020		.060	.062	
6	.020	.020		.060	.062	
7	.020	.020		.060	.062	
8	.020	.020		.060	.062	
9	.020	.020		.060	.062	
10	.020	.020		.060	.062	
11	.020	.020		.060	.062	
12	.020	.020		.060	.062	
13	.020	.020		.060	.062	
14	.020	.020		.060	.062	
15	.020	.020		.060	.062	
16	.020	.020		.040	.041	
17	.020	.020		.040	.041	
18	.020	.020		.040	.041	
19	.020	.021		.040	.041	
20	.020	.021		.040	.041	
21	.020	.021		.040	.041	
22	.020	.021		.040	.041	
23	.020	.021		.040	.041	
24	.020	.021		.040	.042	
25	.020	.021		.020	.021	
26	.020	.021		.020	.021	
27	.020	.021		.020	.021	
28	.020	.021		.020	.021	
29	.020	.021		.020	.021	
30	.020	.021		.020	.021	
31	.020	.021		.020	.021	
32	.020	.021		.020	.021	
33	.020	.021		.020	.021	
34	.006	.006		.010	.010	
35	.006	.006		.010	.010	
36	.006	.006		.010	.010	
37	.006	.006		.010	.010	
38	.006	.006		.010	.010	
39	.006	.006		.010	.010	
40	.006	.006		.010	.010	
41	.006	.006		.006	.006	
42	.006	.006		.006	.006	
43	.006	.006		.006	.006	
44	.006	.006		.006	.006	
45	.006	.006		.006	.006	
46	.006	.006		.006	.006	
47	.006	.006		.006	.006	
48	.006	.007		.006	.006	
49	.006	.007		.006	.006	
50	.006	.007		.006	.006	
	Res. _____ Hz					

VIBRATION TEST DATA SHEET

JOB NO. 10934
DATE 3-31-08
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	.006	2 HRS

TEST ARTICLE IDENTIFICATION:
1.25 x 1 x 7 PUMP
N517896-2C5

TESTED FOR:
SIMS PUMP CO

ACCELEROMETER LOCATIONS

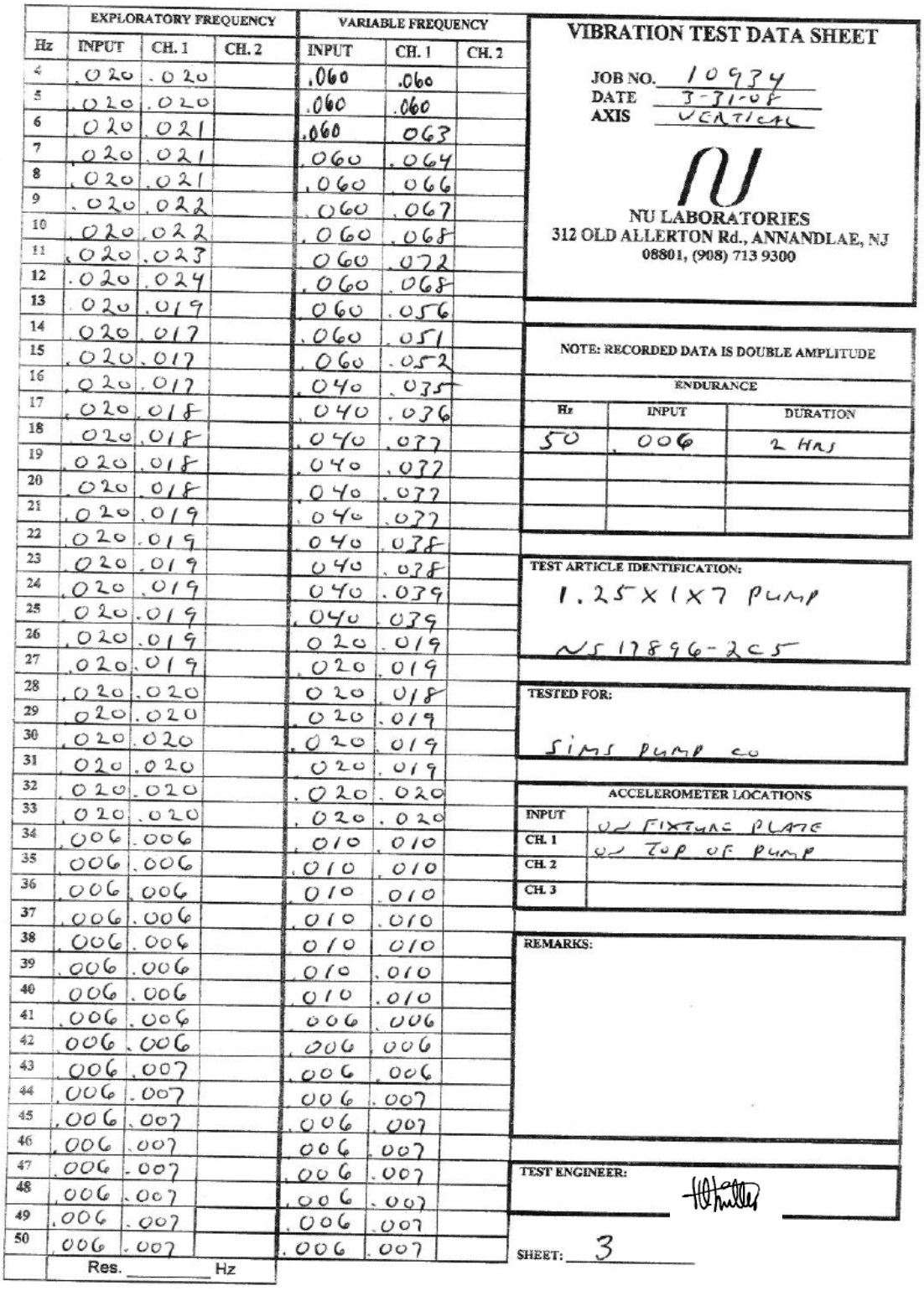
INPUT	ON SLIP TABLE
CH. 1	ON TOP OF PUMP
CH. 2	
CH. 3	

REMARKS:

TEST ENGINEER:

SHEET: 2

Vibration Test Data Sheet
Figure 3



	EXPLORATORY FREQUENCY			VARIABLE FREQUENCY		
Hz	INPUT	CH. 1	CH. 2	INPUT	CH. 1	CH. 2
4	.020	.020		.060	.060	
5	.020	.020		.060	.060	
6	.020	.021		.060	.063	
7	.020	.021		.060	.064	
8	.020	.021		.060	.066	
9	.020	.022		.060	.067	
10	.020	.022		.060	.068	
11	.020	.023		060	.072	
12	.020	.024		.060	.068	
13	.020	.019		060	.056	
14	.020	.017		.060	.051	
15	.020	.017		.060	.052	
16	.020	.017		.040	.035	
17	.020	.018		.040	.036	
18	.020	.018		.040	.037	
19	.020	.018		.040	.037	
20	.020	.018		.040	.037	
21	.020	.019		.040	.037	
22	.020	.019		.040	.038	
23	.020	.019		.040	.038	
24	.020	.019		.040	.039	
25	.020	.019		.040	.039	
26	.020	.019		.020	.019	
27	.020	.019		.020	.019	
28	.020	.020		.020	.018	
29	.020	.020		.020	.019	
30	.020	.020		.020	.019	
31	.020	.020		.020	.019	
32	.020	.020		.020	.020	
33	.020	.020		.020	.020	
34	.006	.006		.010	.010	
35	.006	.006		.010	.010	
36	.006	.006		.010	.010	
37	.006	.006		.010	.010	
38	.006	.006		.010	.010	
39	.006	.006		.010	.010	
40	.006	.006		.010	.010	
41	.006	.006		.006	.006	
42	.006	.006		.006	.006	
43	.006	.007		.006	.006	
44	.006	.007		.006	.007	
45	.006	.007		.006	.007	
46	.006	.007		.006	.007	
47	.006	.007		.006	.007	
48	.006	.007		.006	.007	
49	.006	.007		.006	.007	
50	.006	.007		.006	.007	
	Res. _____ Hz					

VIBRATION TEST DATA SHEET

JOB NO. 10934
DATE 3-31-05
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	.006	2 HRS

TEST ARTICLE IDENTIFICATION:
1.25 X 1 X 7 PUMP
NS 17896-2C5

TESTED FOR:
SIMS PUMP CO

ACCELEROMETER LOCATIONS

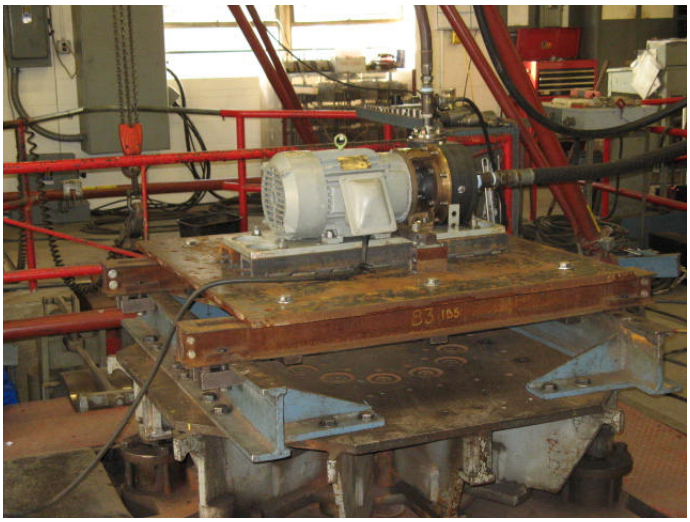
INPUT	@ FIXTURE PLATE
CH. 1	@ TOP OF PUMP
CH. 2	
CH. 3	

REMARKS:

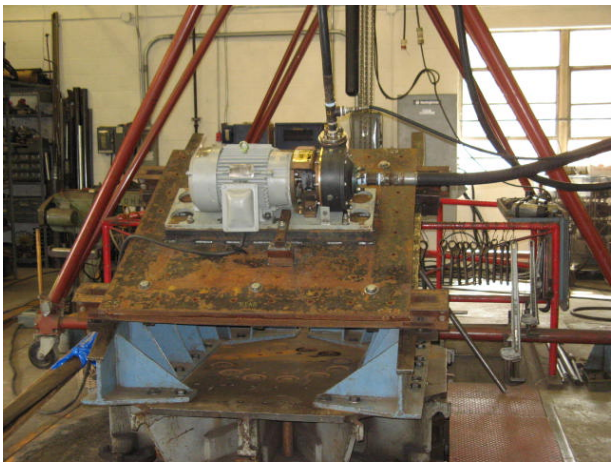
TEST ENGINEER: HHatter

SHEET: 3

Vibration Test Data Sheet
Figure 4



Vertical



30° Side Down

30° Pump Down

Shock Test Setups
Figure 5

FACTORY TEST RECORD: CLASS HI SHOCK

FACTORY TEST RECORD: CLASS HI SHOCK			DATE: 03 April 2008	TEST # 10934.1
1. ITEM NAME OF EQUIPMENT SHOCK TESTED 1.25" x 1" x 7 Pump with Motor		2. RATING (KW, VOLTS, GPM, CFM, ETC.)		
3. MAJOR PARTS				
PUMP, ETC.	MANUFACTURER Sims Pump Valve Co.	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	WEIGHT OF INDIVIDUAL MOTOR PARTS	MOTOR	STARTER	
7. WEIGHT CLASSIFICATION OF ITEM ☐ LIGHT ☒ MEDIUM	8. APPLICABLE MOUNTING FIXTURE IN SPECIFICATION MIL-S-901 ☐ Fig 7, FIX 4A ☐ Fig 8, FIX 4C ☒ FIX 13 ☐ FIX 15 ☒ FIG 16 ☐ OTHER			

9. FOR LIGHTWEIGHT ITEMS

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

ITEMS SUBECT TO ABOVE TWO CONDITIONS WERE ☐ SAME ☐ DIFFERENT | REMARKS

10. FOR MEDIUM WEIGHT ITEMS

BLOW	GROUP	HAMMER DROP	DAMAGE INCURRED	BLOW	GROUP	HAMMER DROP	DAMAGE INCURRED
1	I	1.0'	No damage noted	4	I	1.25'	No damage noted
2	II	2.0'	No damage noted	5	II	2.25'	No damage noted
3	III	3.0'	No damage noted	6	III	2.25'	No damage noted
				7	I	1.25'	No damage noted
				8	II	2.25'	No damage noted
				9	III	2.25'	No damage noted

TOTAL WEIGHT ON ANVIL TABLE Fig. 13: 1670.3 lbs.; Fig. 16: 2760.3 lbs.	REMARKS	
TEST LABORATORY **NU Laboratories, Inc.**	ADDRESS **312 Old Allerton Road, Annandale, NJ 08801**	TEST ENGINEER [signature]

Factory Test Record
Figure 6

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) 1.25" x 1" x 7 Pump with Motor
4. Tested For Sims Pump Valve Co.
5. M/N: _____ 6. S/N: _____
7. Dwg. Number NS17896-2C5-pump 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. 10934.1
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. _____

		03 April 2008
Authorized Signature	**Approval Activity**	**Date**

Shock Acceptance Form
Figure 7

LIST OF APPARATUS

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL DATE	DUE DATE
Vibration Machine	LAB	72-5000	51401	Functional	
Vibration Controller	Data Physics	DP560	5256	09/24/07	09/24/08
Power Supply	Endevco	4222	AB89	11/05/07	11/05/08
Charge Amplifier	Endevco	2721B	DF08	11/08/07	11/08/08
Charge Amplifier	Endevco	2721B	DF02	11/08/07	11/08/08
Accelerometer	Endevco	2221D	EY55	03/05/08	03/05/09
Accelerometer	Endevco	2221D	EY59	03/05/08	03/05/09
Platform Scale	Fairbanks Morse	1124A	G-511379	10/10/07	10/10/08
Digital Scale	Industrial Commercial	TI500SSB-5K	5D190110000188	10/10/07	10/10/08
Medium Weight Shock Machine	New England Trawler	10-T-3351-C	N/A	Functional	
Torque Wrench	CDI	752MFRMH	1002602828	01/24/07	01/24/08
Torque Wrench	Utica	TCI-150FRN	MD6973	01/30/08	01/30/09
Pressure Gauge	Weksler	GP2-16-3	1003	10/29/07	10/29/08

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)