

TEST REPORT NO. 54402-6



TEST, ENGINEERING AND RESEARCH GROUP, SAN BERNARDINO

Pelican Products, Inc.
23215 Early Avenue
Torrance, CA 90505

Our Job No. T54402
Contract —
Your P.O. No. 46273
Date April 2, 2007

This report contains true and correct data obtained in the performance of the test program set forth in your purchase order. Test methods, results, and equipment used are recorded on these data sheets.

Where applicable, instrumentation used in obtaining this data has been calibrated using standards which are traceable to the National Institute of Standards and Technology.

SUMMARY:

One Case, Part No. 1690 (no serial number), was subjected to Vibration, Low Temperature, Dry Heat, and Impact Testing in accordance with DEF STAN 81-41 (Part 3)/Issue 4 and the following paragraphs:

- Vibration Test K Paragraph 24
- Low Temperature Test G Paragraph 21
- Dry Heat Test C Paragraph 17
- Impact (Vertical) Test E Paragraph 19

Complete test details, including photos and equipment lists, and test results are contained in this report.

Test Dates: 3/7/07-3/16/07

STATE OF CALIFORNIA }
COUNTY OF SAN BERNARDINO } ss.

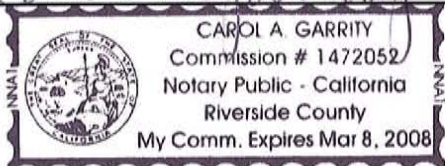
Phillip Knoll

being duly sworn, deposes and says: That 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.

Phillip Knoll

SUBSCRIBED and sworn to before me this 3 day of Apr, 2007 by Phillip Knoll personally known to me or proved to me on the basis of satisfactory evidence to be the person who appeared before me.

Carol A. Garrity



TEST OPERATIONS

TEST ENGINEER *M. Bovard* 4/3/07
M. Bovard

DEPT. MANAGER *Phillip Knoll* 4/3/07
P. Knoll

QUALITY ASSURANCE *J.S. Flappoldt*
For G. Montgomery



DATA SHEET

Test Title Vibration

Customer	<u>Pelican Products, Inc.</u>	Job No.	<u>T54402</u>
Specimen	<u>Case</u>	Date Started	<u>3/8/2007</u>
Part No.	<u>1690</u>	Serial No.	<u>See Recv. Insp.</u>
Spec.	<u>DEF STAN 81-41 Part3/4</u>	Par.	<u>14 and 24</u>
		Photo	<u>Yes</u>
		Amb. Temp.	<u>25 ± 10°C</u>
		Date Comp.	<u>3/8/2007</u>

Requirements:

Pre-Conditioning:
 Temperature: 25± 10 °C
 Humidity: 45% to 75%
 Duration: 16 hours or until specimen has reached temperature stabilization (whichever is the shortest period)

Vibration:
 Test Level: ± 0.23" (± 6 mm) peak (0.46" DA) from 5 to 9 Hz and ±2g peak from 9 to 350 Hz
 Sweep Rate: 0.75 ± 0.25 octave per minute
 Test Duration: Depending on test specimen weight, see below
 Orientation: Depending on test specimen weight see below

Test Method:

Weigh the test specimen.

Place the test specimen in a test chamber on the face on which it normally is expected to be transported or stored. Install a thermocouple on the test specimen. Maintain the chamber at 25± 10 °C and 45% to 75% relative humidity for 16 hours or until the specimen has reached temperature stabilization (i.e. test specimen temperature stable with chamber temperature).

After pre-conditioning:

Immediately after removal from the conditioning chamber strap the test specimens to a vibration machine. Subject the test specimens to the following vibration test. Axis designations are to be Top to Bottom, Side to Side, and Front to Back.

For each test specimen whose weight is up to and including 154.3 pounds (0-70 kg), vibrate each test specimen for 2 hours in each of the three mutually perpendicular axis at a vibration amplitude of ± 0.23" (± 6 mm) peak (0.46" DA) from 5 to 9 Hz and ±2g peak from 9 to 350 Hz and a sweep rate of 0.75±0.25 octave per minute.

NOTE: If because of the geometry of the test specimen, it is considered impractical or unnecessary to vibrate the test specimen in a particular axis, the test specimen shall be vibrated for 3 hours in each of the two remaining axis.

(Continued)

Tested By Skip Buckler 3/8/2007
 Engineer Michael Hunt 3/30/07



DATA SHEET

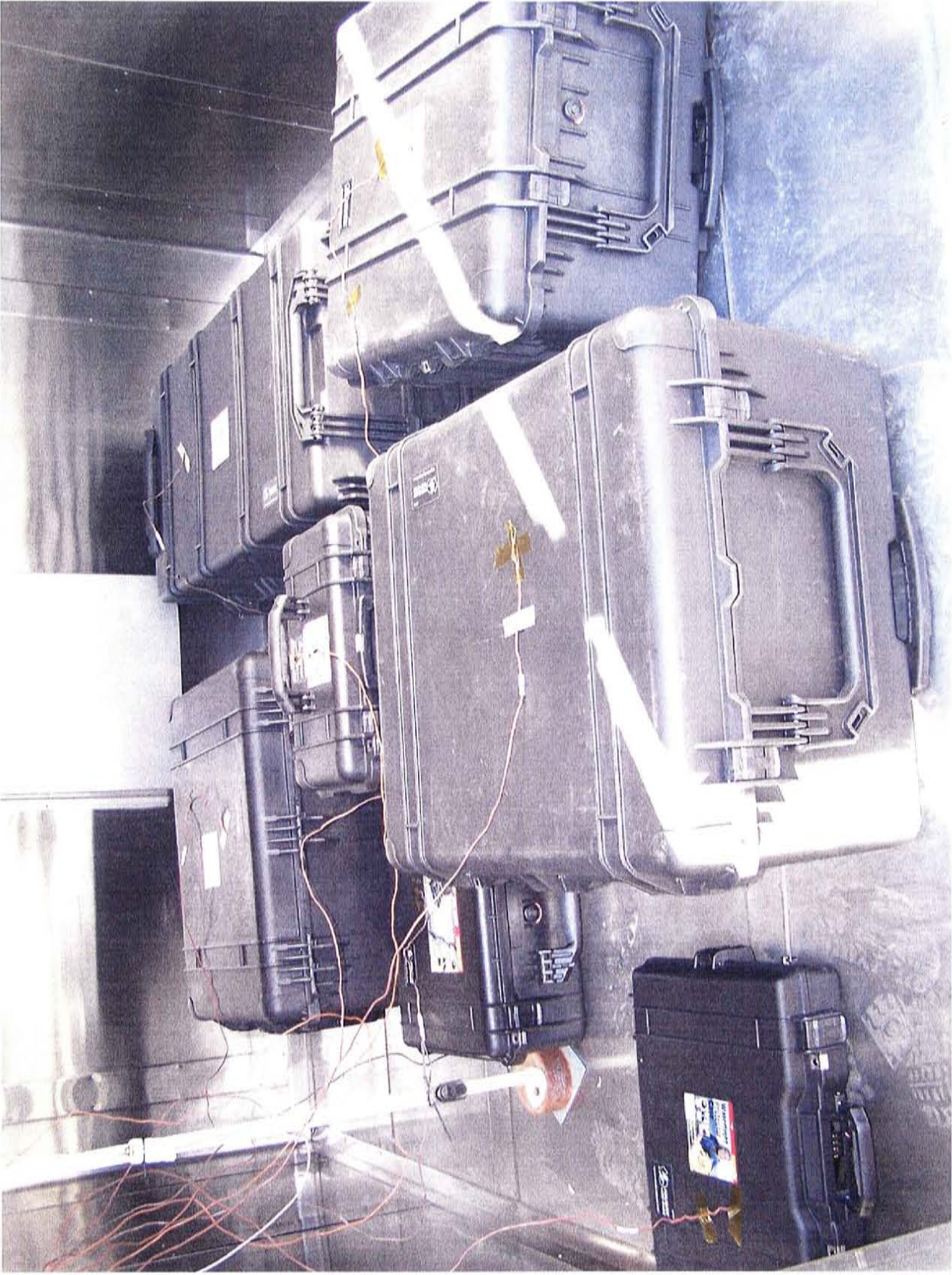
Test Title Vibration **Date** 3/8/2007
Customer Pelican Products, Inc. **Job No.** T54402
Specimen Case **Technician** S. Buckler S.B.
Part No. 1690 **Serial No.** See Recv. Insp. **Engineer** M. Bovard MB 3/30/07

(Continued)

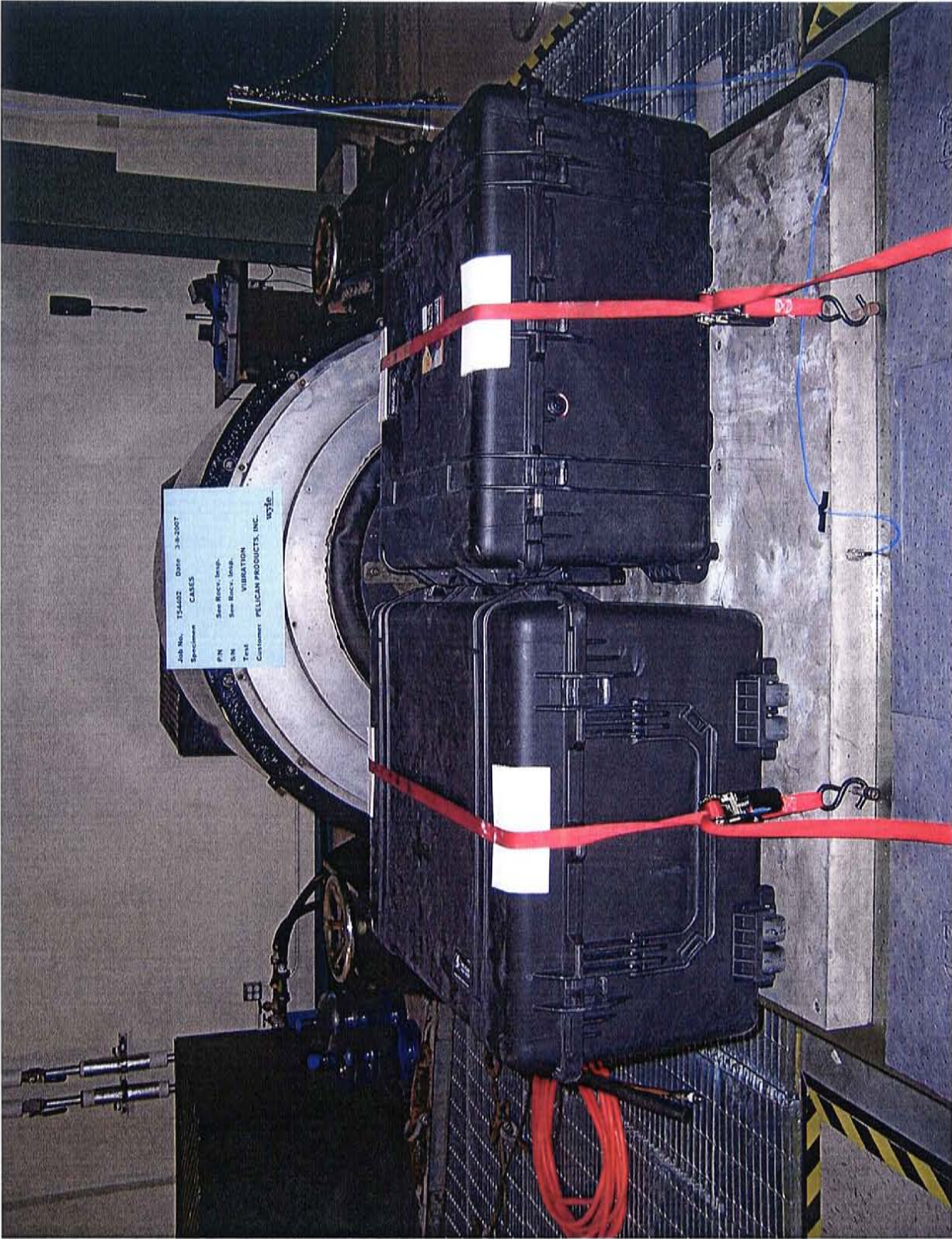
Perform a visual examination. Any malfunction of the fittings and hardware (seals, closures, hinges, handles, etc.) and any damage to or spillage of the package contents shall constitute a failure of the specimen. Minor visible deterioration of the test specimen shall be noted but does not necessarily constitute failure of the test specimen.

Test Results:

All testing was performed per the Test Method and Requirements stated above. No visual evidence of damage was observed upon completion of testing in each axis.



Photograph 1
Vibration Test - Typical Pre-Conditioning Setup



Photograph 2
Vibration Test Setup (Front to Back Axis)



Photograph 4
Vibration Test Setup (Top to Bottom Axis)

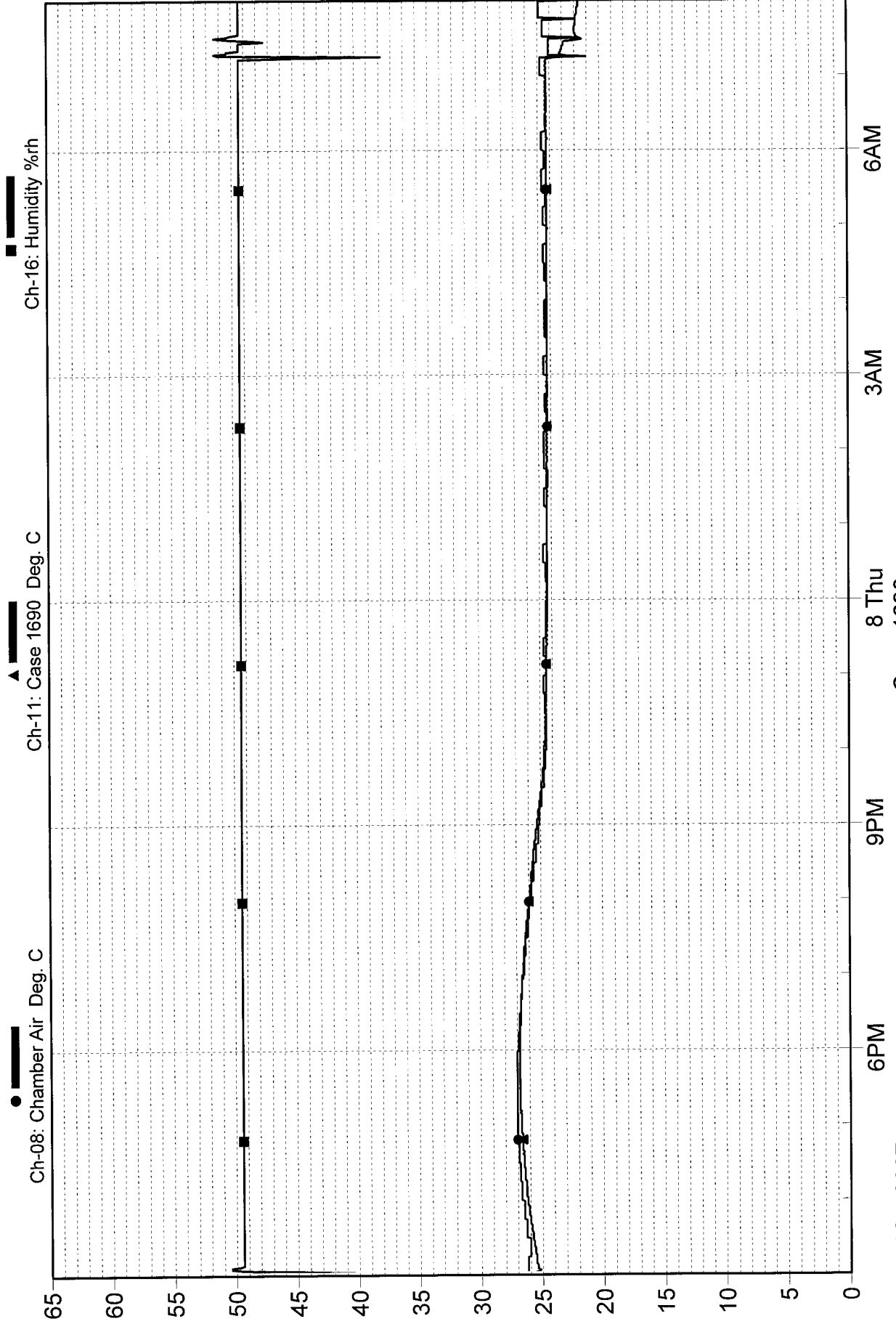
Pelican Products J/N-T54402

Vibration (Pre-Conditioning)



03-23-2007 11:27:29 DL2k5

Files: D:\WyleDL\54402A100.prm - 54402A102.prm



7 Wed Mar 2007

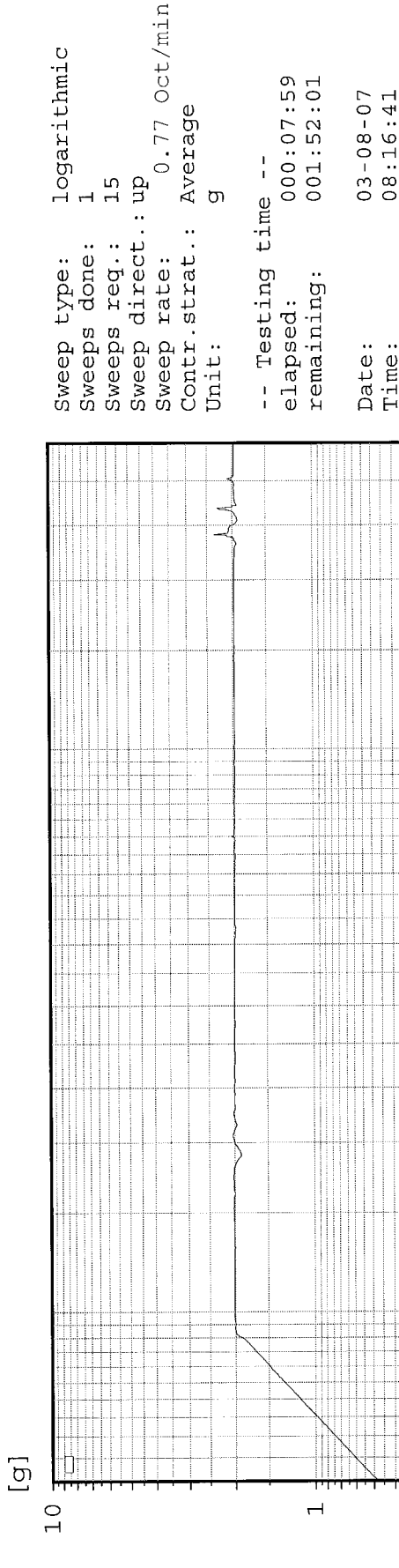


Control channel

Sine

Pelican Products, Inc. JN-T54402

Case 1690



Top to Bottom Axis Sine Vibration



Control channel

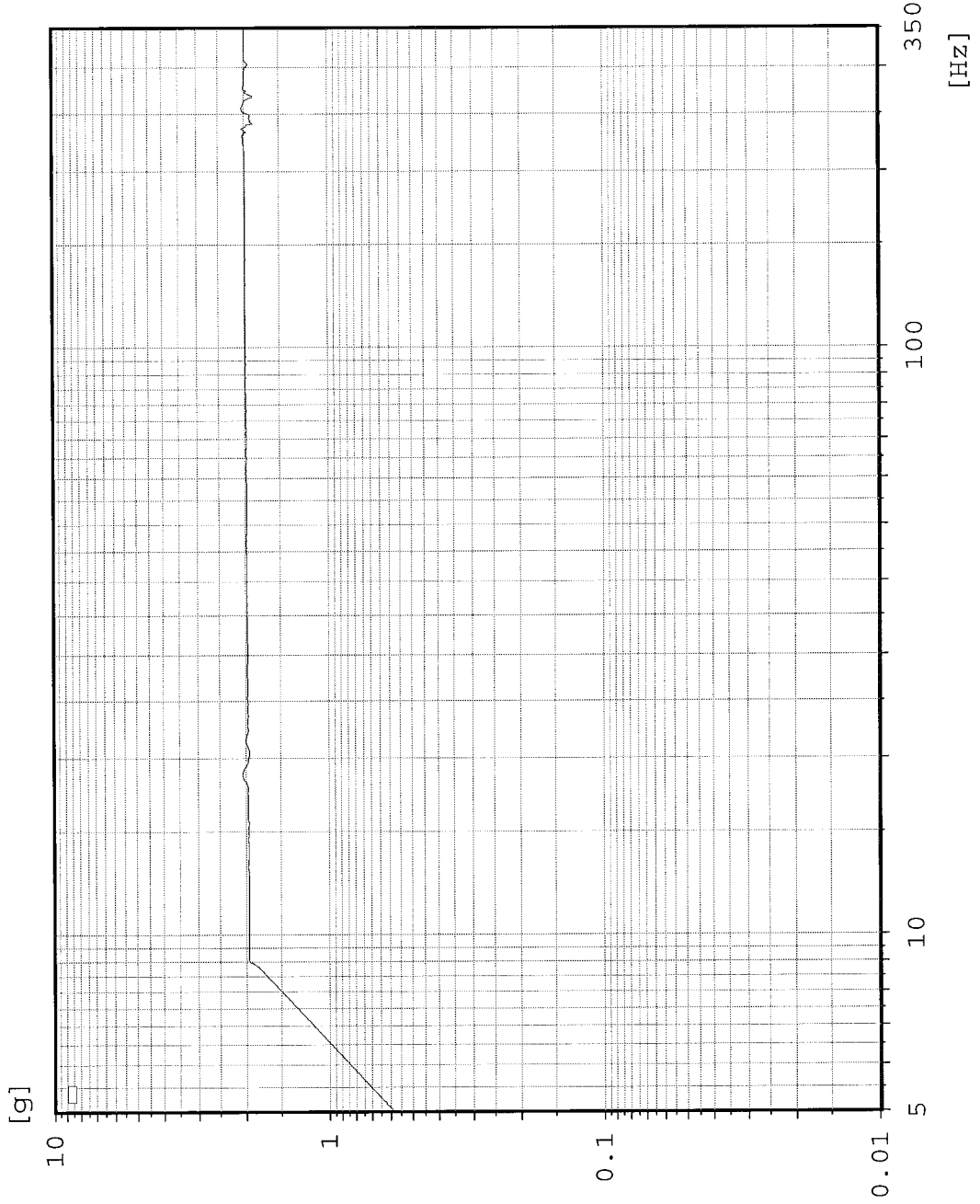
Sine

Pelican Products, Inc. JN-T54402
Case 1690

Sweep type: logarithmic
Sweeps done: 8
Sweeps req.: 15
Sweep direct.: down
Sweep rate: 0.77 Oct/min
Contr.strat.: Average
Unit: g

-- Testing time --
elapsed: 001:04:01
remaining: 000:56:00

Date: 03-08-07
Time: 09:12:44

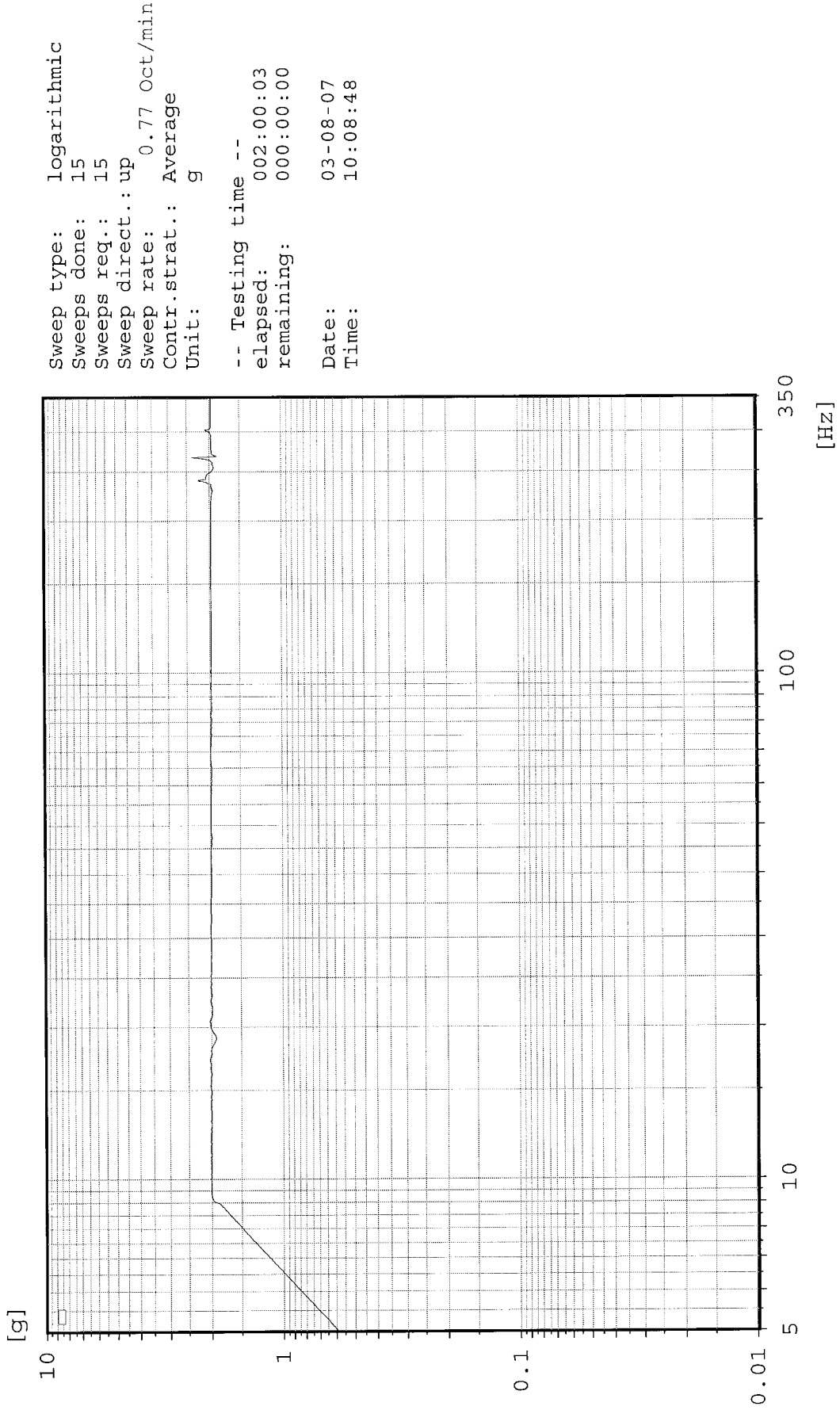


Top to Bottom Axis Sine Vibration



Sine Control channel

Pelican Products, Inc. JN-T54402
Case 1690



Sweep type: logarithmic
Sweeps done: 15
Sweeps req.: 15
Sweep direct.: up
Sweep rate: 0.77 Oct/min
Contr.strat.: Average
Unit: g

-- Testing time --
elapsed: 002:00:03
remaining: 000:00:00

Date: 03-08-07
Time: 10:08:48

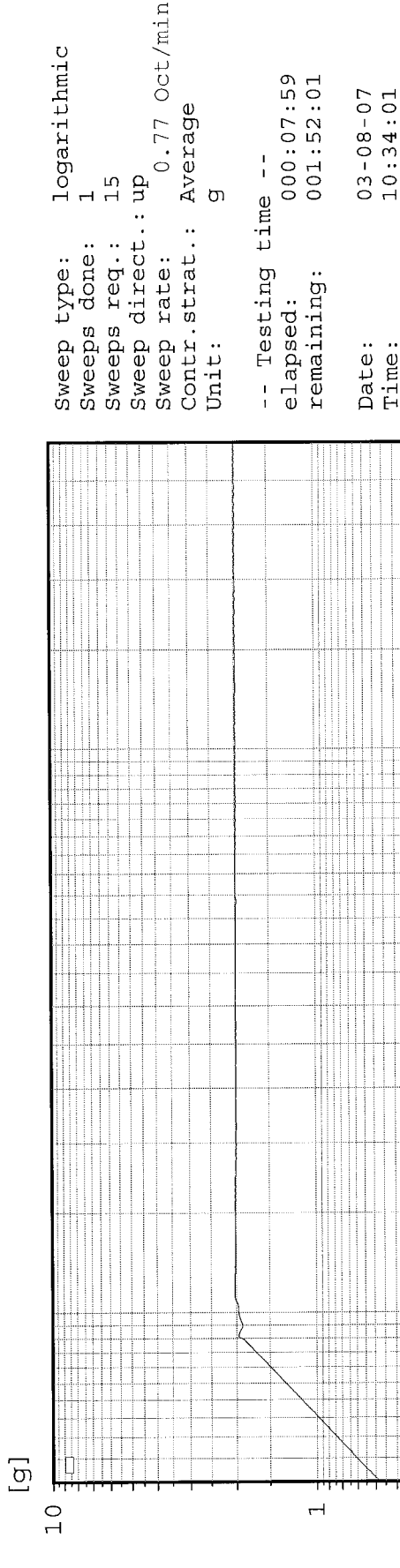


Control channel

Sine

Pelican Products, Inc. JN-T54402

Case 1690



Sweep type: logarithmic
Sweeps done: 1
Sweeps req.: 15
Sweep direct.: up
Sweep rate: 0.77 Oct/min
Contr.strat.: Average
Unit: g

-- Testing time --
elapsed: 000:07:59
remaining: 001:52:01

Date: 03-08-07
Time: 10:34:01

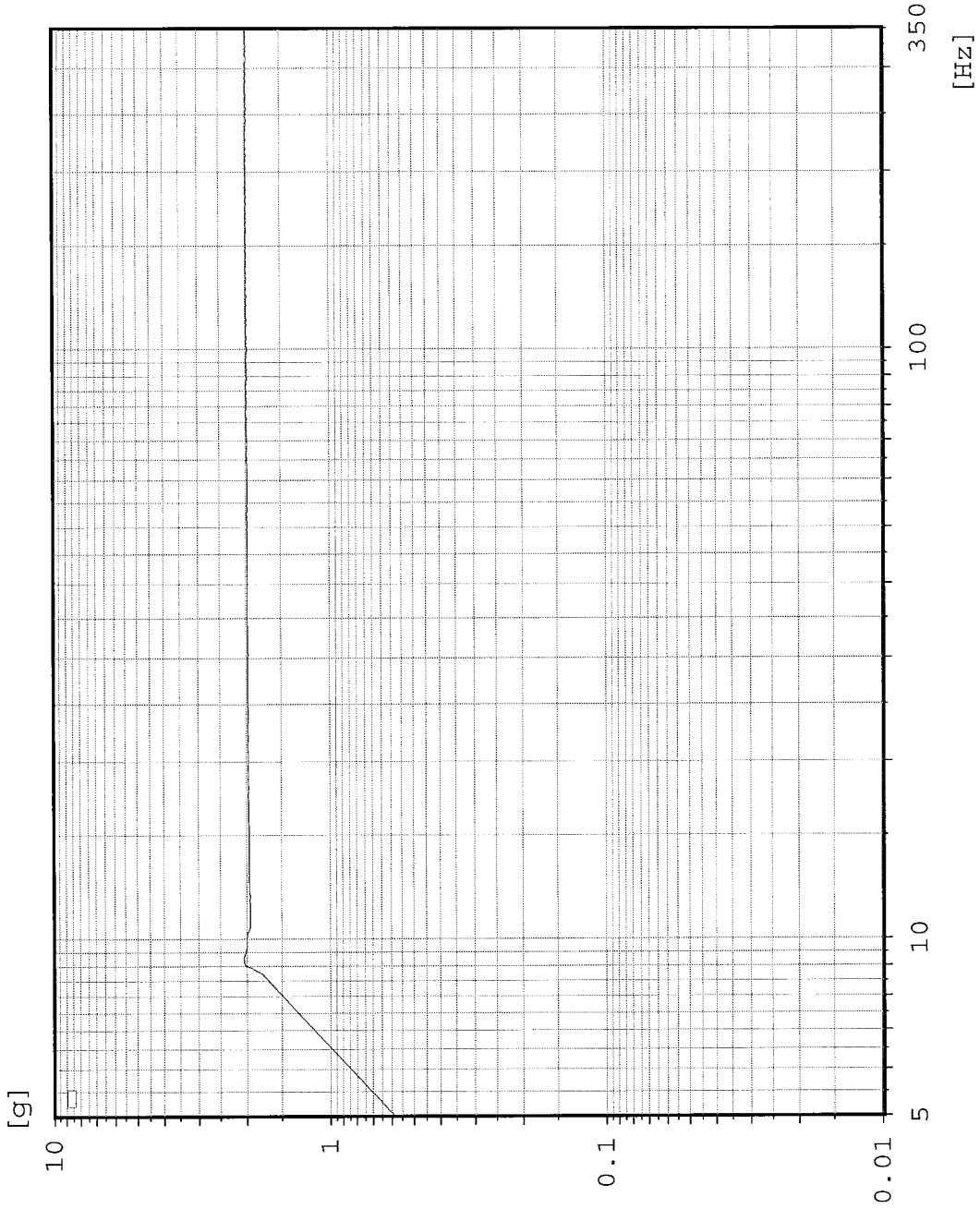
Side to Side Axis Sine Vibration



Control channel

Sine

Pelican Products, Inc. JN-T54402
Case 1690



Sweep type: logarithmic
Sweeps done: 8
Sweeps req.: 15
Sweep direct.: down
Sweep rate: 0.77 Oct/min
Contr.strat.: Average
Unit: g

-- Testing time --
elapsed: 001:04:01
remaining: 000:56:00

Date: 03-08-07
Time: 11:30:03

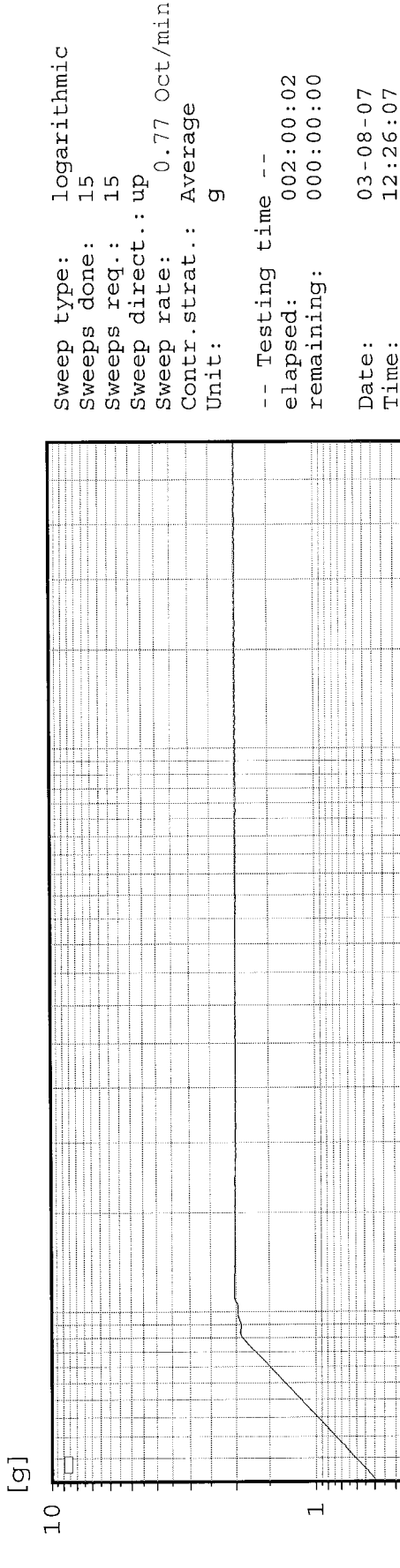
Side to Side Axis Sine Vibration



Control channel

Sine

Pelican Products, Inc. JN-T54402
Case I690

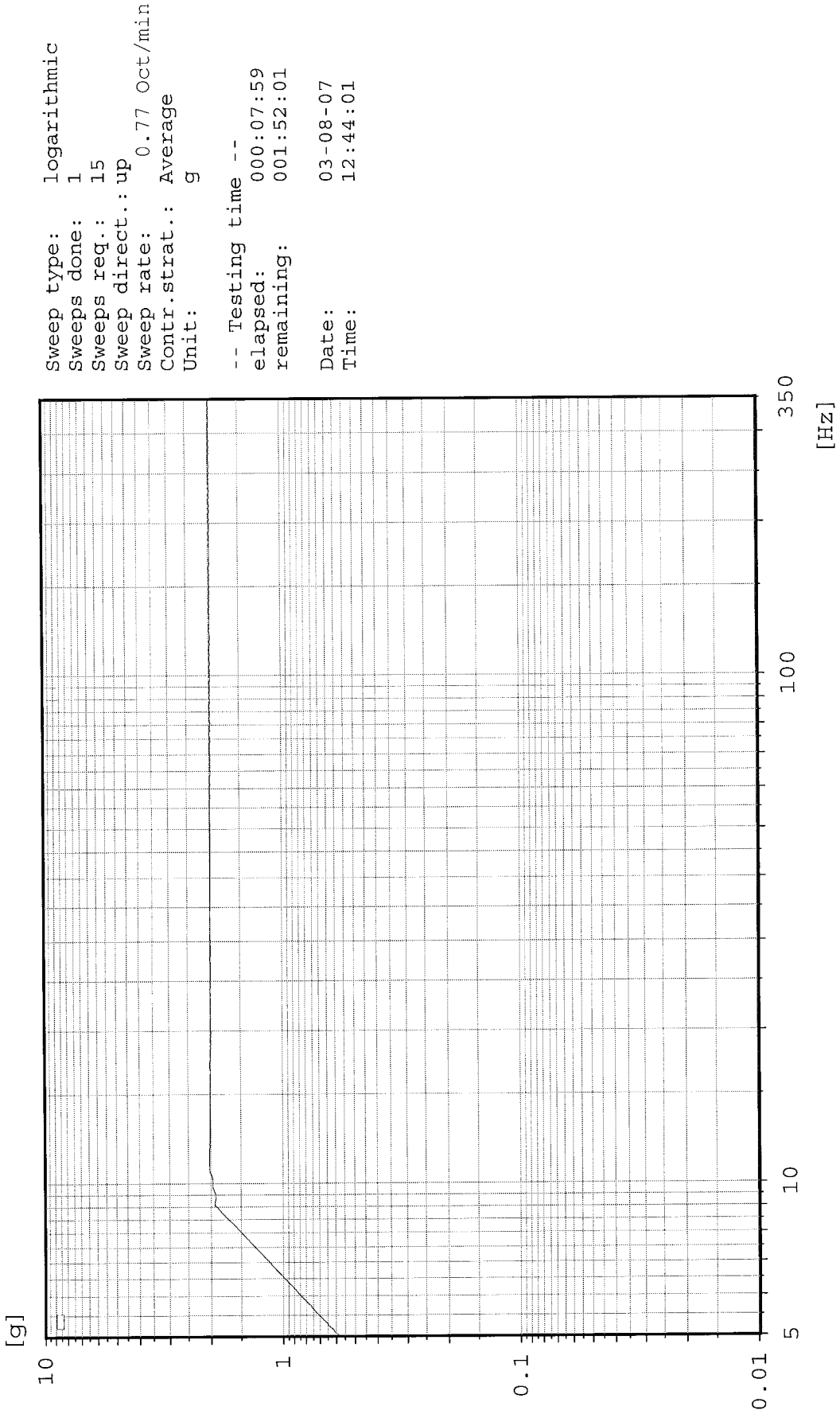


Side to Side Axis Sine Vibration



Sine Control channel

Pelican Products, Inc. JN-T54402
Case 1690



Sweep type: logarithmic
Sweeps done: 1
Sweeps req.: 15
Sweep direct.: up
Sweep rate: 0.77 Oct/min
Contr.strat.: Average
Unit: g

-- Testing time --
elapsed: 000:07:59
remaining: 001:52:01

Date: 03-08-07
Time: 12:44:01

Front to Back Axis Sine Vibration



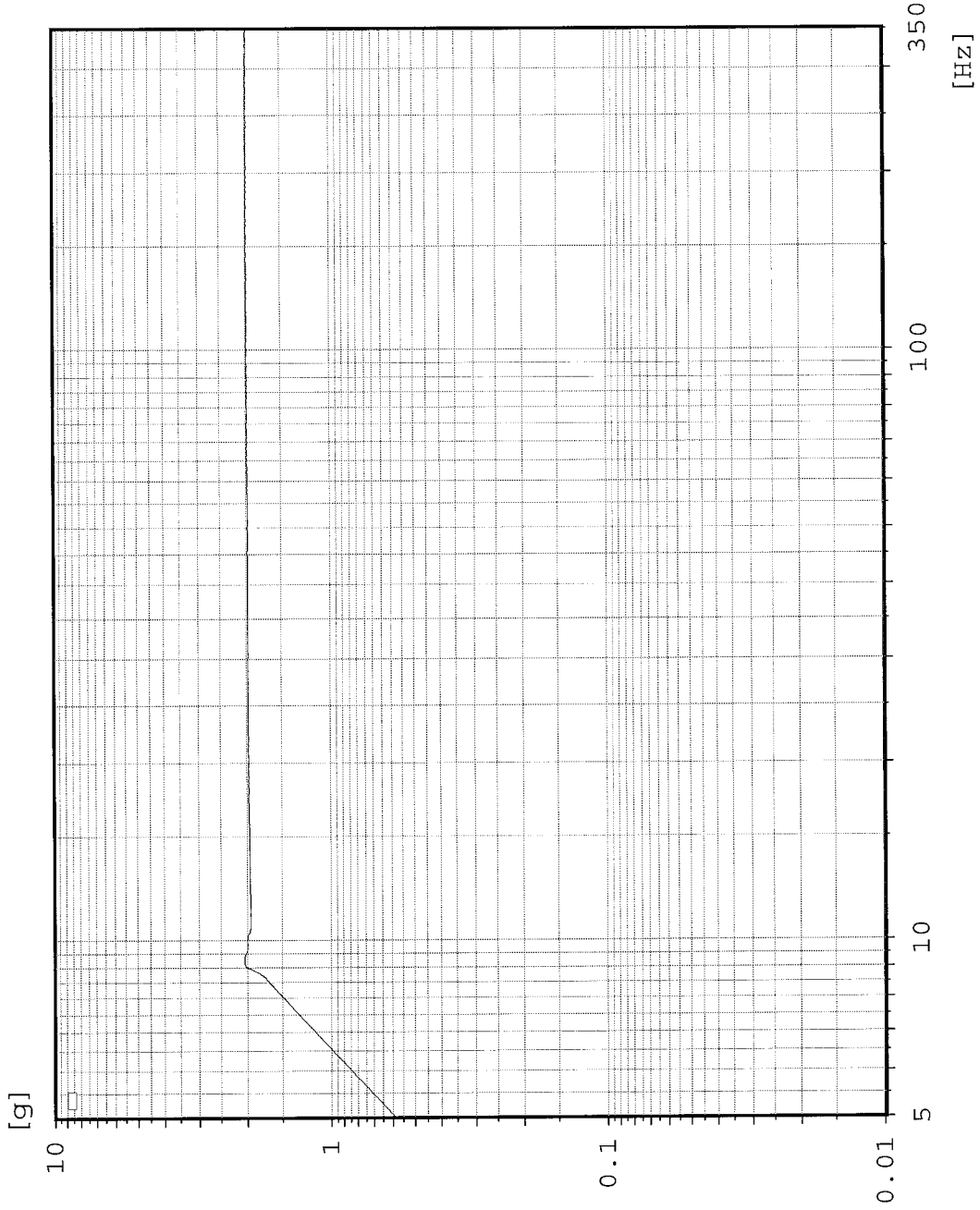
Sine Control channel

Pelican Products, Inc. JN-T54402
Case 1690

Sweep type: logarithmic
Sweeps done: 8
Sweeps req.: 15
Sweep direct.: down
Sweep rate: 0.77 Oct/min
Contr.strat.: Average
Unit: g

-- Testing time --
elapsed: 001:04:01
remaining: 000:56:00

Date: 03-08-07
Time: 13:40:03



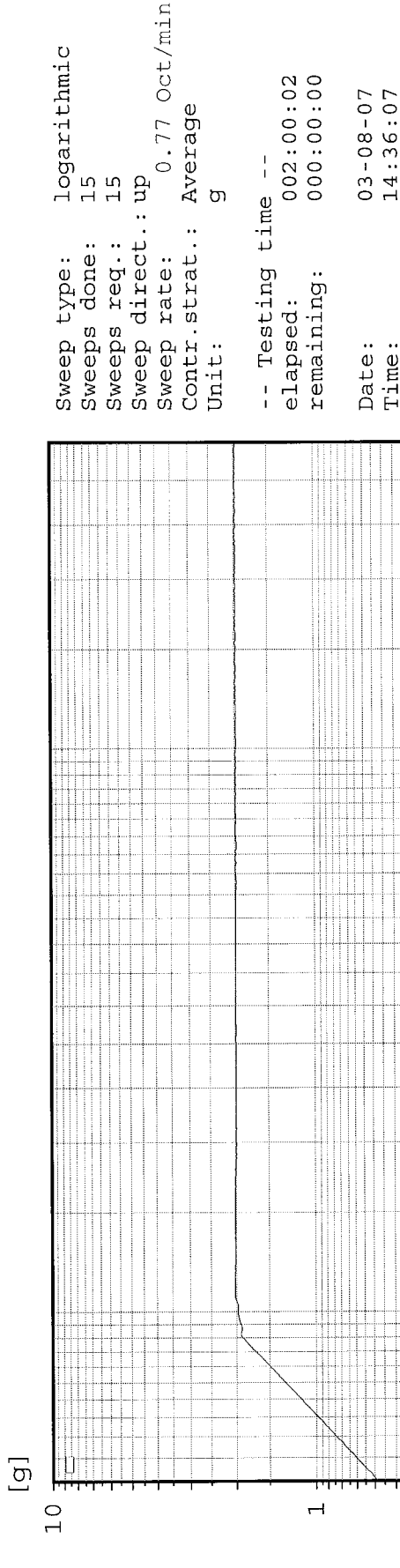
Front to Back Axis Sine Vibration



Control channel

Sine

Pelican Products, Inc. JN-T54402
Case 1690



Front to Back Axis Sine Vibration

Sweep type: logarithmic
Sweeps done: 15
Sweeps req.: 15
Sweep direct.: up
Sweep rate: 0.77 Oct/min
Contr.strat.: Average
Unit: g

-- Testing time --
elapsed: 002:00:02
remaining: 000:00:00

Date: 03-08-07
Time: 14:36:07

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	WYLE #	CALIBRATION		ACCY.
					LAST	DUE	
Accelerometer	Endevco	7704-50	0 to 1,000 g's	W10446	10/10/2006	04/10/2007	5%
Amplifier - Charge	Unholtz-Dickie	D22PM	0 to 1,000 g's	W10673	12/13/2006	06/13/2007	2%
Amplifier - Power	Unholtz-Dickie	SA180	180 KW	W13570	* System	Calibration *	Mfg. Spec.
Chamber - Environmental	Bally	Chamber 3	-80 to +240°F & Rh / 8' x 8' x 7'10" / CO2 & LN2	W50714	* System	Calibration *	Mfg. Spec.
Controller - Chamber	Watlow / Omega	922 / CN9000	-100° to 240°F / 0-100%Rh	W50704	* System	Calibration *	Mfg. Spec.
DMM	Hewlett-Packard	34401A	DATA	W12445	06/22/2006	06/22/2007	Mfg. Spec.
Exciter Electro-Dynamic	Ling	249	1" 5-2KHz 30K F/Lbs	W06702	* System	Calibration *	Mfg. Spec.
Exciter Electro-Dynamic	Ling	249	1" 5-2KHz 30K F/Lbs	W12493	* System	Calibration *	Mfg. Spec.
Multimeter/DAS	Keithley	2700	10VDC & Type T TC's	W13690	11/13/2006	11/13/2007	±2%
Multiplexer Module	Keithley	7700	20 Channels Volts or TC's	W14903	11/13/2006	11/13/2007	Mfg. Spec.
Oscillator	Tektronix	TDS2002	2 Ch, 60Mhz, 1GS/s	W50749	10/03/2006	10/03/2007	±3%

Where applicable, the listed test equipment has been calibrated using standards which are traceable to the National Institute of Science & Technology. Certificates and reports of all calibrations are retained in the Wyle Laboratories QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.

TEST TITLE: Vibration

CUSTOMER: Pelican Products, Inc. Job No.: T54402 Date: 03/07/2007

Specimen: Case Technician: S. Buckler *S.B.*

Part No.: See Recv. Insp. Serial No.: See Recv. Insp. Engineer: M. Bovard *MB 3/30/07*

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	WYLE #	CALIBRATION		ACCY.
					LAST	DUE	
Rh Probe	Vaisala	HMP13	0 - 100% rH	W11874	11/13/2006	05/13/2007	3%
Scale	Certified Scale	TR-1-NK	1000 lbs.	W13126	05/08/2006	05/08/2007	.2 lbs.
Vibration Controller - Arbitrary Source	M + P / Agilent	E1434A	2 Channels	W12441	03/30/2006	03/30/2008	Mfg. Spec.
Vibration Controller - Digitizer	M + P / Agilent	E1432A	16 Channels	W12440	03/28/2006	03/28/2008	Mfg. Spec.

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DATA SHEET

Test Title Low Temperature

Customer	<u>Pelican Products, Inc.</u>	Job No.	<u>T54402</u>
Specimen	<u>Case</u>	Date Started	<u>3/12/2007</u>
Part No.	<u>1690</u>	Serial No.	<u>See Recv. Insp.</u>
Spec.	<u>DEF STAN 81-41 Part3/4</u>	Par.	<u>21</u>
		Photo	<u>Yes</u>
		Amb. Temp.	<u>25 ± 10°C</u>

Requirements:

Temperature: $-40 \pm 2 \text{ }^\circ\text{C}$
 Duration: 16 ± 0.5 hours after specimen has reached test temperature or 7 days ± 1 hour if time required for the complete package to attain the temperature cannot be assessed

Test Method:

Place the test specimen in a test chamber on the face on which it normally is expected to be transported or stored. Install a thermocouple on the test specimen. Decrease the chamber temperature to $-40 \pm 2 \text{ }^\circ\text{C}$ at a rate not to exceed $3 \text{ }^\circ\text{C}$ per minute. Maintain the chamber at $-40 \pm 2 \text{ }^\circ\text{C}$ for either:

- 1) 16 ± 0.5 hours after specimen has reached test temperature or
- 2) 7 days ± 1 hour if time required for the complete package to attain the temperature cannot be assessed.

Return the chamber temperature to $20 \pm 10 \text{ }^\circ\text{C}$ at a rate not to exceed $3 \text{ }^\circ\text{C}$ per minute.

Perform a visual examination. The package is considered to have failed if it is unserviceable or is affected in any way which would potentially cause the test specimen to become unserviceable.

Test Results:

All testing was performed according to the Test Method and Requirements stated above. No visual evidence of damage was observed upon completion of the test.

Tested By *Shawn Ryan* 3/13/07
 Engineer *Michelle Bond* 3/30/07



Photograph 5
Low Temperature Test Setup

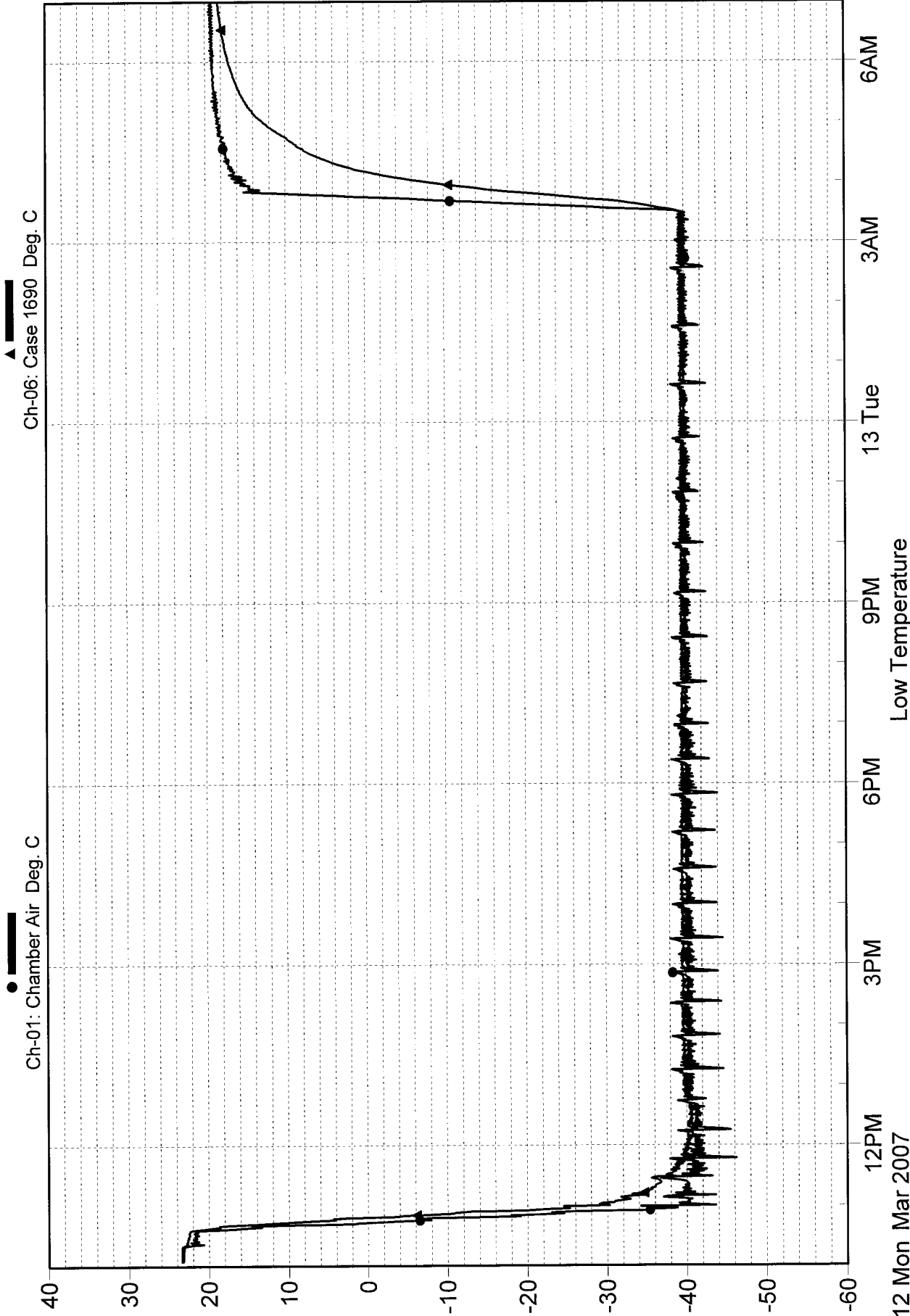


Pelican Products J/N-T54402

Case

Files: D:\WyleDL\54402A104.prn - 54402A105.prn

03-20-2007 07:37:28 DL2k5



TEST TITLE: Low Temperature

CUSTOMER: Pelican Products, Inc.

Job No.: T54402

Date: 3/12/2007

Specimen: Case

Technician: S. Paysen

SP
3/12/07

Part No.: See Recv. Insp.

Serial No.: See Recv. Insp.

Engineer: M. Bovard

MBS
3/19/07

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	WYLE #	CALIBRATION		ACCY.
					LAST	DUE	
Chamber - Environmental	Bally	Chamber 3	-80 to +240°F & Rh / 8' x 8' x 7'10" / CO2 & LN2	W50714	* System	Calibration *	Mfg. Spec.
Controller - Chamber	Watlow / Omega	922 / CN9000	-100° to 240°F / 0-100%Rh	W50704	* System	Calibration *	Mfg. Spec.
Multimeter/DAS	Keithley	2700	10VDC & Type T TC's	W13690	11/13/2006	11/13/2007	±2%
Multiplexer Module	Keithley	7700	20 Channels Volts or TC's	W14903	11/13/2006	11/13/2007	Mfg. Spec.
Rh Probe	Vaisala	HMP13	0 - 100% rH	W11874	11/13/2006	05/13/2007	3%

Where applicable, the listed test equipment has been calibrated using standards which are traceable to the National Institute of Science & Technology. Certificates and reports of all calibrations are retained in the Wyle Laboratories QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.



DATA SHEET

Test Title Dry Heat

Customer	<u>Pelican Products, Inc.</u>	Job No.	<u>T54402</u>
Specimen	<u>Case</u>	Date Started	<u>3/13/2007</u>
Part No.	<u>1690</u>	Serial No.	<u>See Recv. Insp.</u>
Spec.	<u>DEF STAN 81-41 Part3/4</u>	Par.	<u>14 and 17</u>
		Photo	<u>Yes</u>
		Amb. Temp.	<u>25 ± 10°C</u>
		Date Comp.	<u>3/15/2007</u>

Requirements:

Pre-Conditioning:

Temperature: 25 ± 10 °C
 Humidity: 45% to 75%
 Duration: 16 hours or until specimen has reached temperature stabilization (whichever is the shortest period)

Dry Heat Test:

Temperature: 55 ± 2 °C
 Humidity: Not to exceed 75%
 Duration: 48 ± 1 hours

Test Method:

Place the test specimen in a test chamber on the face on which it normally is expected to be transported or stored. Install a thermocouple on the test specimen. Maintain the chamber at 25 ± 10 °C and 45% to 75% relative humidity for 16 hours or until the specimen has reached temperature stabilization (i.e. test specimen temperature stable with chamber temperature).

Increase the chamber temperature to 55 ± 2 °C at a rate not to exceed 3 °C per minute. Humidity is not to exceed 75%. Maintain the chamber at these conditions for 48 ± 1 hours.

Return the chamber temperature to 25 ± 10 °C at a rate not to exceed 3 °C per minute. Perform a visual examination. The package is considered to have failed if it is unserviceable or is affected in any way which would potentially cause the test specimen to become unserviceable.

Test Results:

All testing was performed according to the Test Method and Requirements stated above. No visual evidence of damage was observed upon completion of the test.

Tested By *Shawn Ryan* 3/15/07
 Engineer *Michael Bond* 3/30/07



Photograph 6
Dry Heat Test Setup

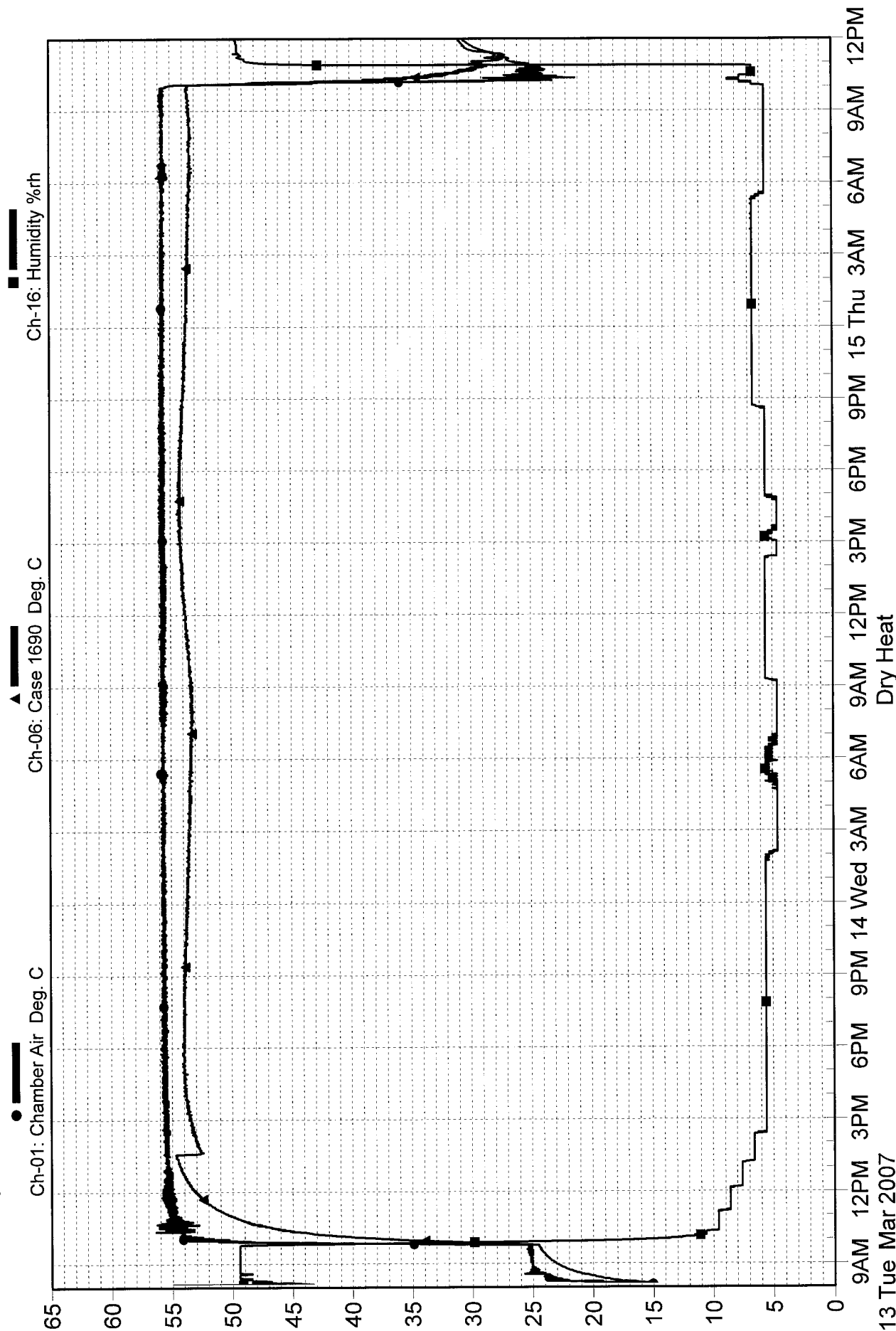
Pelican Products J/N-T54402

Case



03-20-2007 08:06:28 DL2k5

Files: D:\WyleDL\54402A106.prn - 54402A108.prn



TEST TITLE: Dry Heat

CUSTOMER: Pelican Products, Inc.

Job No.: T54402

Date: 03/13/2007

Specimen: Case

Technician: S. Paysen *SPD* 3/13/07

Part No.: See Recv. Insp.

Serial No.: See Recv. Insp.

Engineer: M. Bovard *MB* 3/30/07

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	WYLE #	CALIBRATION		ACCY.
					LAST	DUE	
Chamber - Environmental	Bally	Chamber 3	-80 to +240°F & Rh / 8' x 8' x 7'10" / CO2 & LN2	W50714	* System	Calibration *	Mfg. Spec.
Controller - Chamber	Watlow / Omega	922 / CN9000	-100° to 240°F / 0-100%Rh	W50704	* System	Calibration *	Mfg. Spec.
Multimeter/DAS	Keithley	2700	10VDC & Type T TC's	W13690	11/13/2006	11/13/2007	±2%
Multiplexer Module	Keithley	7700	20 Channels Volts or TC's	W14903	11/13/2006	11/13/2007	Mfg. Spec.
Rh Probe	Vaisala	HMP13	0 - 100% RH	W11874	11/13/2006	05/13/2007	3%

Where applicable, the listed test equipment has been calibrated using standards which are traceable to the National Institute of Science & Technology. Certificates and reports of all calibrations are retained in the Wyle Laboratories QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.



DATA SHEET

Test Title Impact (Vertical)

Customer	<u>Pelican Products, Inc.</u>	Job No.	<u>T54402</u>
Specimen	<u>Case</u>	Date Started	<u>3/16/2007</u>
Part No.	<u>1690</u>	Serial No.	<u>See Recv. Insp.</u>
Spec.	<u>DEF STAN 81-41 Part3/4</u>	Par.	<u>14 and 19</u>
		Photo	<u>Yes</u>
		Amb. Temp.	<u>25 ± 10°C</u>

Requirements:

Pre-Conditioning:

Temperature: 25± 10 °C
Humidity: 45% to 75%
Duration: 16 hours or until specimen has reached temperature stabilization (whichever is the shortest period)

Test Method:

Weigh the test specimen.

Place the test specimen in a test chamber on the face on which it normally is expected to be transported or stored. Install a thermocouple on the test specimen. Maintain the chamber at 25± 10 °C and 45% to 75% relative humidity for 16 hours or until the specimen has reached temperature stabilization (i.e. test specimen temperature stable with chamber temperature).

After pre-conditioning:

Immediately after removal from the conditioning chamber perform the following vertical impact test. Drop configurations, as applicable, shall be designated top (1), right side (2), base (3), left side (4), near end (5), and far end (6).

For each test specimen whose weight is up to and including 66 pounds (0-30 kg), drop each test specimen once onto its designated base and all perpendicular and parallel faces onto a non-deformable surface at a height of 39.4 ± 0.2" (1000 ± 5 mm).

Perform a visual examination. Any malfunction of the fittings and hardware (seals, closures, hinges, handles, etc.) and any damage to or spillage of the package contents shall constitute a failure of the specimen. Minor visible deterioration of the test specimen shall be noted but does not necessarily constitute failure of the test specimen.

Test Results:

All testing was performed according to the Test Method and Requirements stated above. No visible evidence of damage was observed following testing. Note that the two outside near end clips popped open during the top impact (see following data sheet and photographs for details).

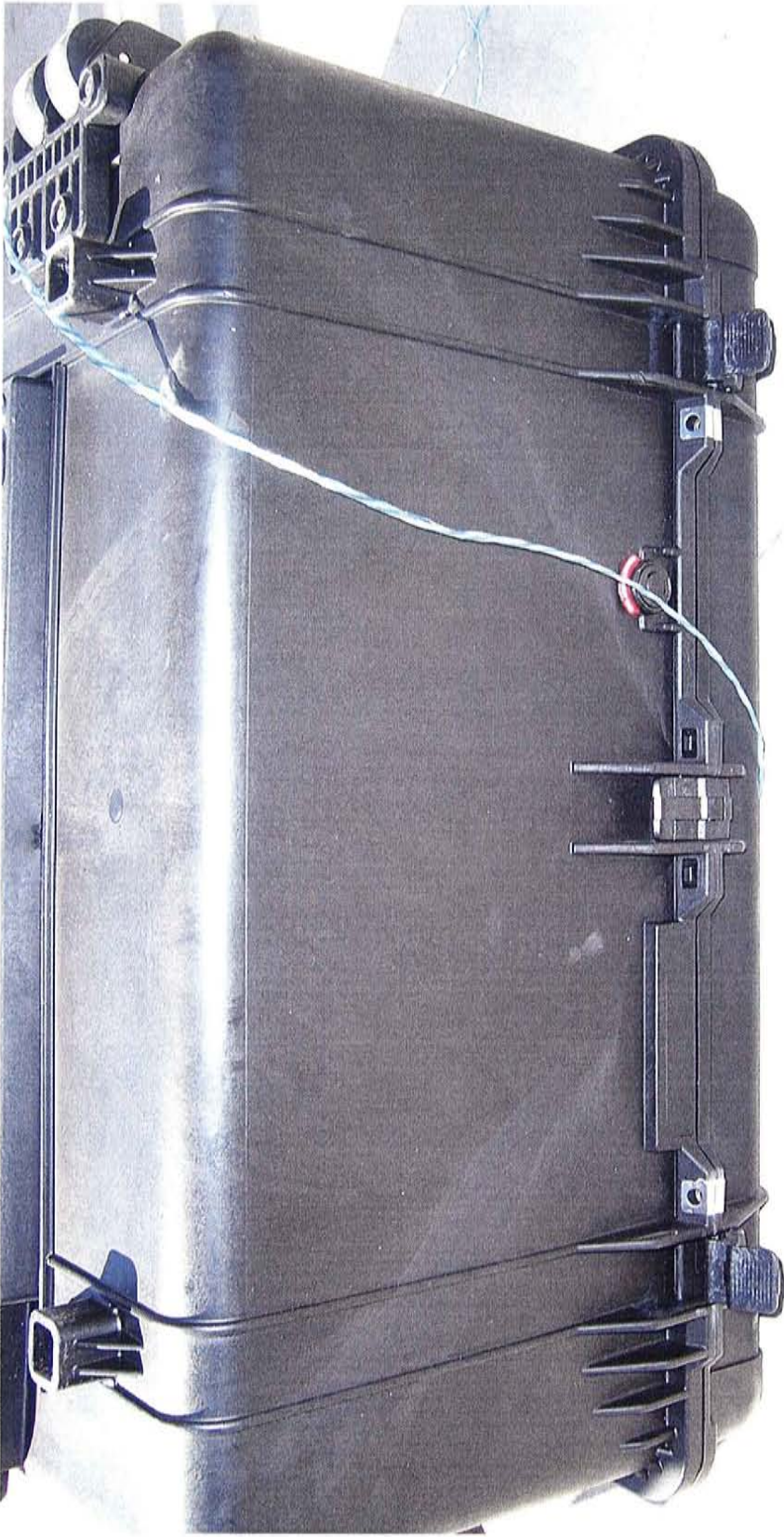
Tested By *Sham...* 3/16/07
Engineer *Michael...* 3/30/07



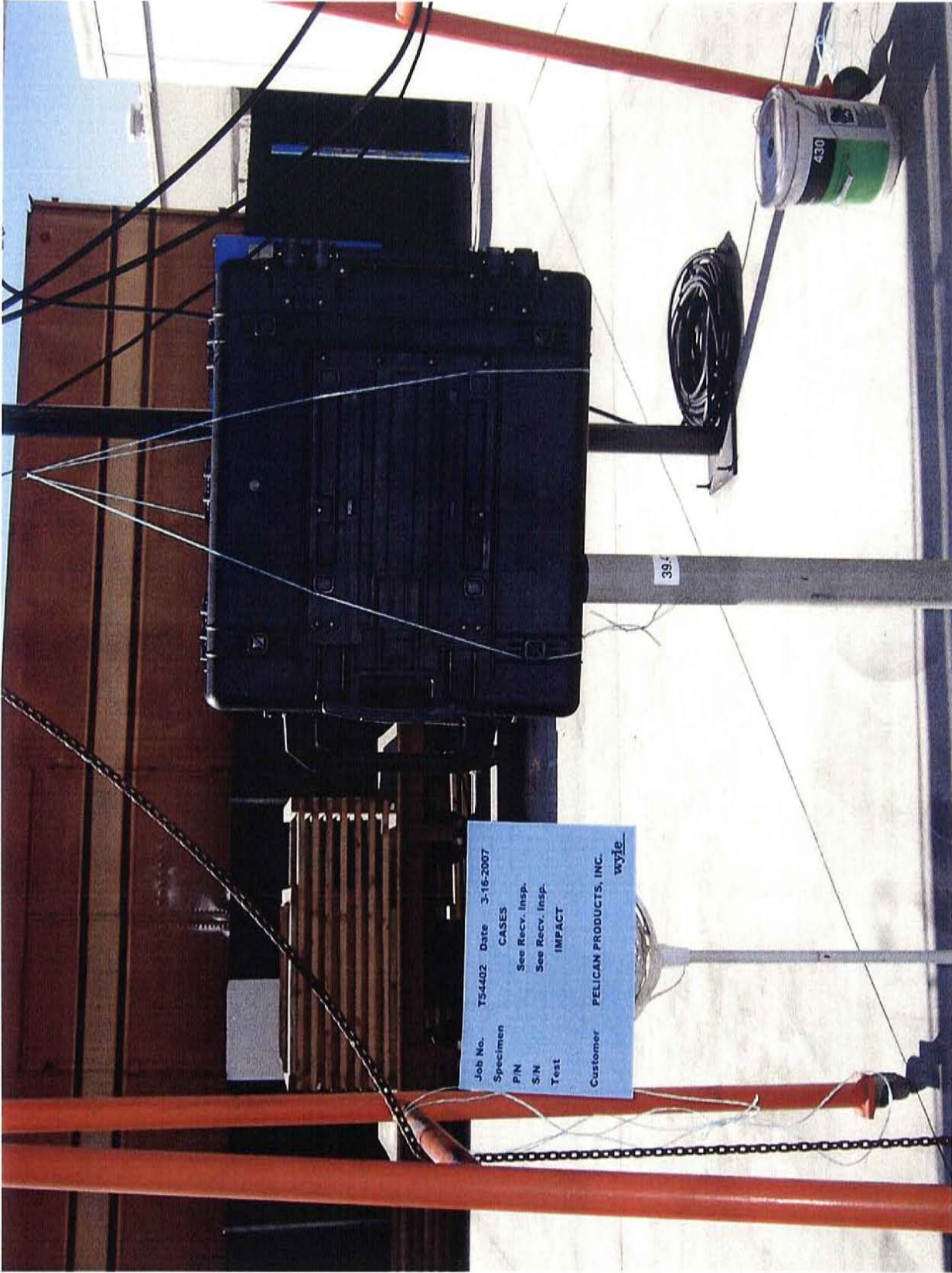
Photograph 7
Impact Test Setup and Side Labels (Base Impact)



Photograph 8
Impact Test Setup (Top Impact)



*Photograph 9
Post Top Impact – Two Outside Near End Clips Popped Open*



Job No. TS4402 Date 3-16-2007
Specimen CASES
P/N See Recv. Insp.
S/N See Recv. Insp.
Test IMPACT
Customer PELICAN PRODUCTS, INC. wyle

Photograph 10
Impact Test Setup (Near End Impact)

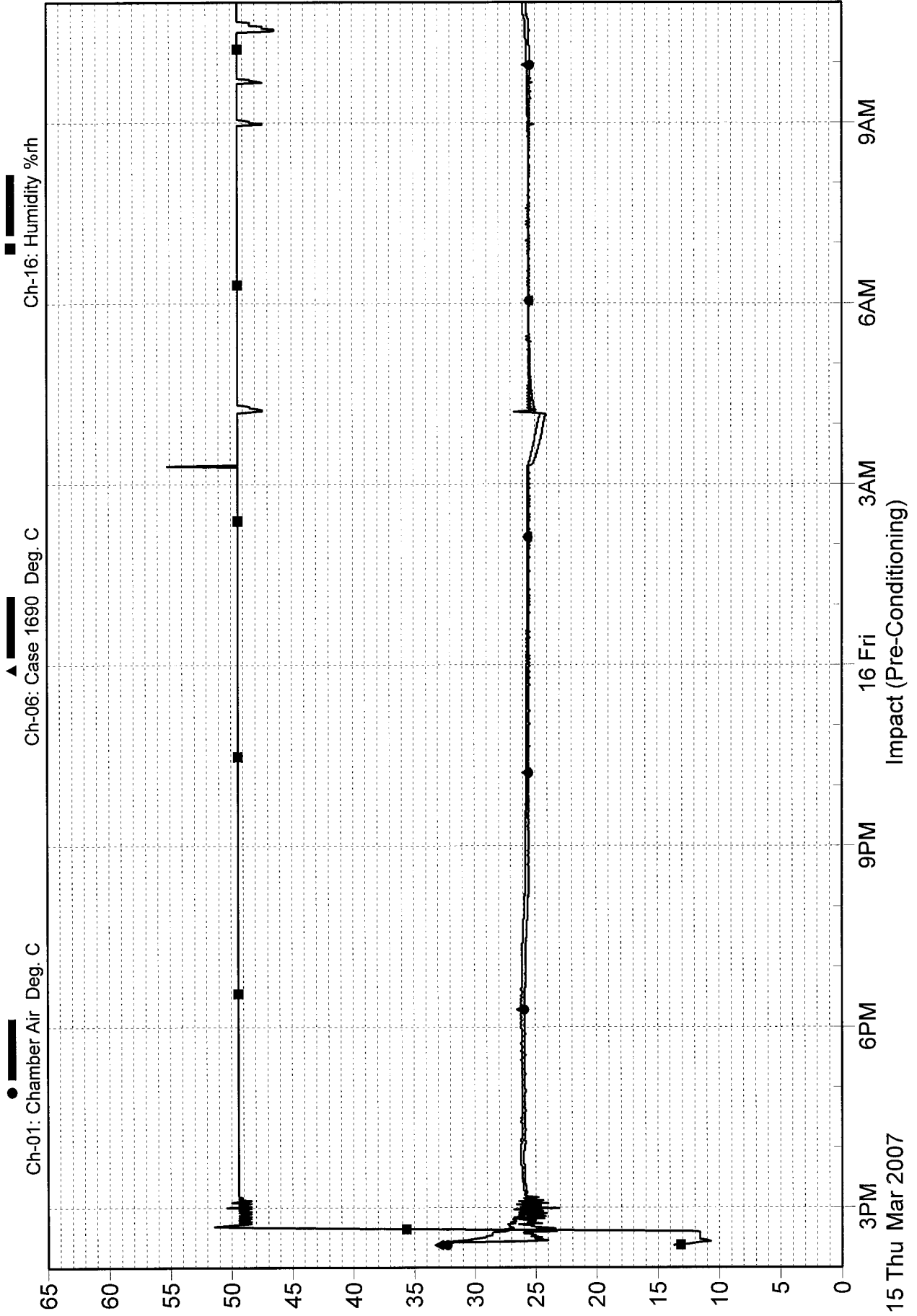
Pelican Products J/N-T54402

Case



Files: D:\WyleDL\54402A109.prn - 54402A110.prn

03-20-2007 09:04:06 DL2K5



TEST TITLE: Impact

CUSTOMER: Pelican Products, Inc.

Job No.: T54402

Date: 03/15/2007

Specimen: Case

Technician: S. Paysen ^{SP} 3/15/07

Part No.: See Recv. Insp.

Serial No.: See Recv. Insp.

Engineer: M. Bovard ^{MIB} 3/30/07

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	WYLE #	CALIBRATION		ACCY.
					LAST	DUE	
Steel Rule	Starrett	C416R	72 Inch	W31220	* System	Calibration *	Mfg. Spec.

Where applicable, the listed test equipment has been calibrated using standards which are traceable to the National Institute of Science & Technology. Certificates and reports of all calibrations are retained in the Wyle Laboratories QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.