



TEST REPORT

Pelican Products
23215 Early Ave.
Torrance, CA 90505

Job No. 10443
Contract n/a
Purchase Order No. 4500117289
Date 6/3/16

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:

Cases, Part No. 1485 19.18 x 12.81 x 6.95", 1525 21.96 x 13.97 x 7.55", 1535 21.96 x 13.97 x 9.04", 1555 24.76 x 15.46 x 8.30", 1605 28.87 x 16.77 x 9.18" and 1615 32.58 x 18.40 x 11.08", were subjected to Environmental testing in accordance with Customers specification. Upon completion of the test, no visible evidence of damage to the test specimens was observed. Complete test details, including photos and equipment lists, are contained in this report.

Test Dates: 4/29/16 -5/20/16

Prepared by:


Sheila James, Test Operations Office Manager

Approved by:


Tom Valfre, Test Operations Manager

Approved by:


Jason Lee, Quality Assurance Manager

Kelly Space & Technology, Inc., 244 South Leland Norton Way, San Bernardino, CA 92408
Tel: (909) 382-2360 – Fax: (909) 382-2359

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DATA SHEET

Customer Pelican Products Inc. Job No. 10443
 Date 4/27/2016
 Specimen Case's

RECEIVING INSPECTION

No. of Specimens Received: Six (6)

Record identification information exactly as it appears on the tag or specimen:

Manufacturer: Pelican Products, Inc.

P/N's	<u>1485</u>	S/N's	<u>N/A</u>
	<u>1525</u>		<u>N/A</u>
	<u>1535</u>		<u>N/A</u>
	<u>1555</u>		<u>N/A</u>
	<u>1605</u>		<u>N/A</u>
	<u>1615</u>		<u>N/A</u>
	<u> </u>		<u> </u>
	<u> </u>		<u> </u>
	<u> </u>		<u> </u>

How does identification information appear: (name plate, tag, painted, imprinted, etc.)

Label on Case and Box.

Examination: Visual, for evidence of damage, poor workmanship, or other defects, and completeness of identification.

Inspection Results: There was no visible evidence of damage to the specimen(s) unless otherwise noted below.

Inspected By [Signature] 4-27-16
 Sheet No. 1 of 1
 Approved [Signature] Date 4/27/16



DATA SHEET

Test Title Vibration

Customer Pelican Products, Inc. **Job No.** 10443
Specimen Case Model 1485, 1525, 1535, 1555, 1605, 1615 **Date Started** 4/29/2016
Part No. See Recv. Insp. **Serial No.** See Recv. Insp. **Date Comp.** 5/3/2016
Spec. DEF STAN 81-41 Part3/4 **Par.** 24 **Photo** Yes **Amb. Temp.** 75° ±15F

Test Requirements:

Pre-Conditioning:

Temperature: $25 \pm 10^{\circ}\text{C}$
 Humidity: $60 \pm 15\%$
 Duration: 16 hours or until specimen has reached temperature stabilization (whichever is the shortest period)

No. of Specimens: Six (6)
 Test Freq.: 5 to 350 Hz
 Test Level: Noted Below
 Vibration Type: Sinusoidal
 Orientations: 3 (Front/Back, Side/Side, Top/Bottom)

Test Method:

Install the test specimen to the vibration test setup in the first orientation. Photograph the test setup.

The cases shall be vibrated for 2 hours in each of three mutually perpendicular axes at a vibration amplitude of (± 6 mm peak from 5 to 9 Hz) and (± 2 g peak from 9 to 350 Hz) and at a continuous logarithmic rate of 0.75 ± 0.25 octave per minute. Perform a visual examination and document all results.

Test Results:

All testing was performed per the Test Method and Requirements stated above. There was no visible evidence of damage or deformation to the test specimens upon completion of the Vibration Test.



Photograph 1
Vibration - Pre Conditioning



Photograph 2
Vibration - Side to Side - Cases 1485, 1525, 1615



Photograph 3
Vibration - Front to Back - Cases 1485, 1525, 1615



Photograph 4
Vibration - Front to Back - Cases 1535, 1555, 1605



Photograph 5
Vibration - Side to Side - Cases 1535, 1555, 1605



Photograph 6
Vibration - Top to Bottom - Cases 1485, 1525, 1615



Photograph 7
Vibration - Top to Bottom - Cases 1535, 1555, 1605



Dynamics Section Vibration Test Data Sheet

Job No. 10443

Customer	Specimen	P/N	S/N
Pelican Products, Inc.	Cases	See Recv. Insp.	See Recv. Insp.

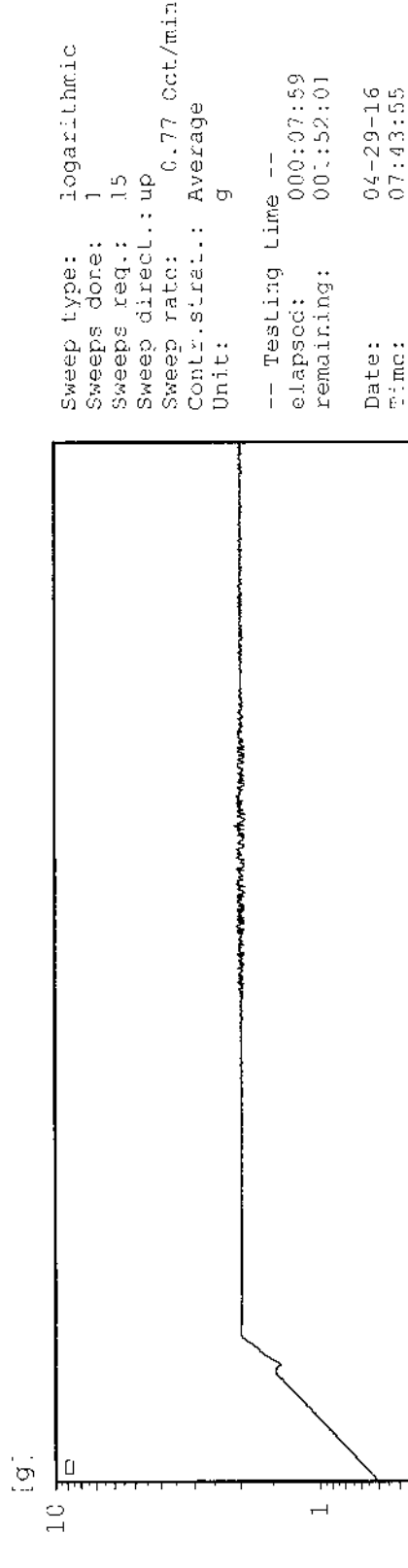
[illegible]

Signed:

KST-310-B Rev 1 – May 1, 2015

Sine Control channel

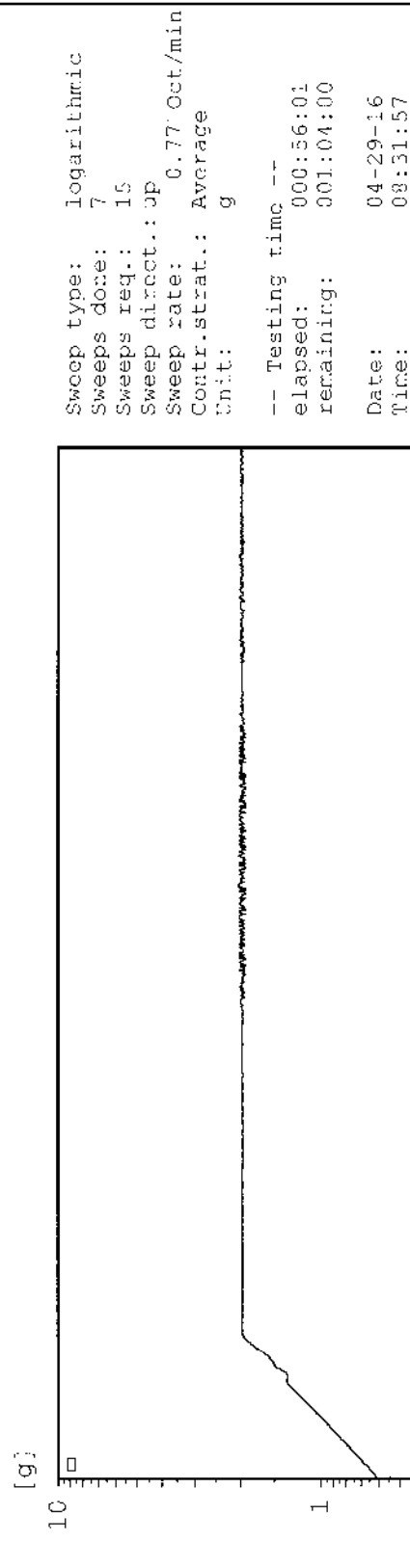
Pelican Products, Inc. JN: 10443
Case Model 1485, 1525, 1615



Sine

Control channel

Pelican Products, Inc. JN: 10443
 Case Model 1485, 1525, 1615



Side to Side Axis Sine Sweep

Control channel

Sine

Pelican Products, Inc. JN: 10443

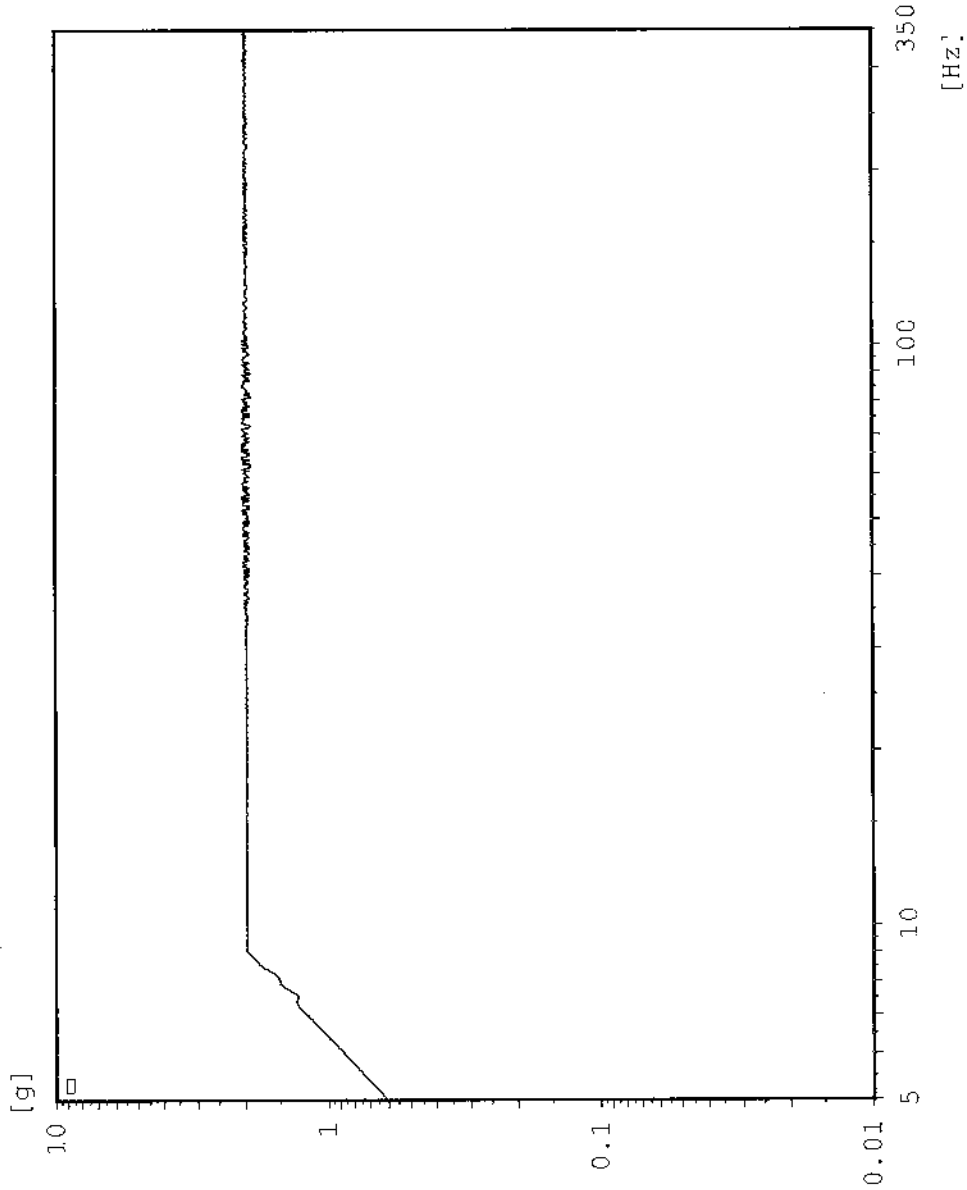
Case Model 1485, 1525, 1615



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: 04-29-16
 Time: 09:36:00



Side to Side Axis Sine Sweep

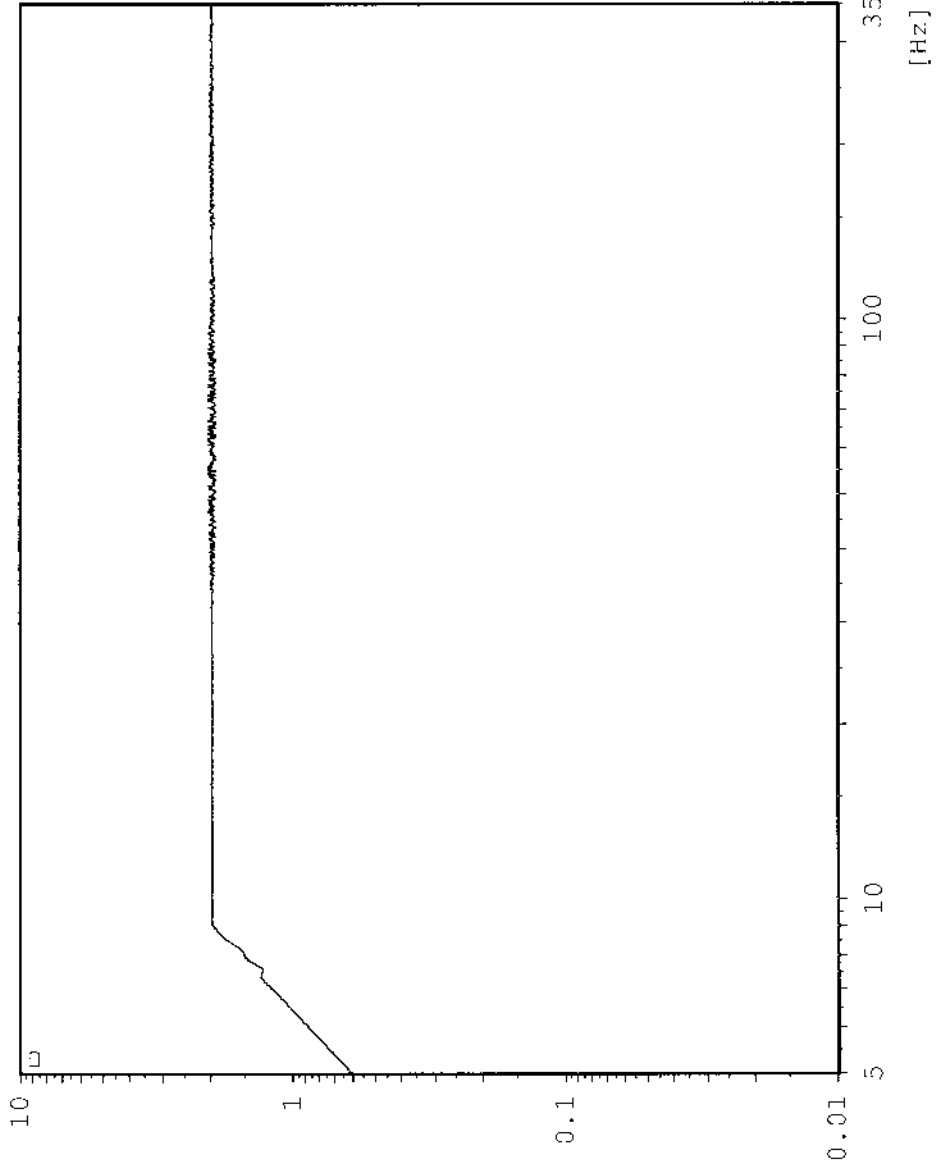


Control channel

Sine

Pelican Products, Inc. JN: 10443
Case Model 1485, 1525, 1615

[g]



Front to Back Axis Sine Sweep

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: 04-29-16
Time: 10:02:01

Sine Control channel

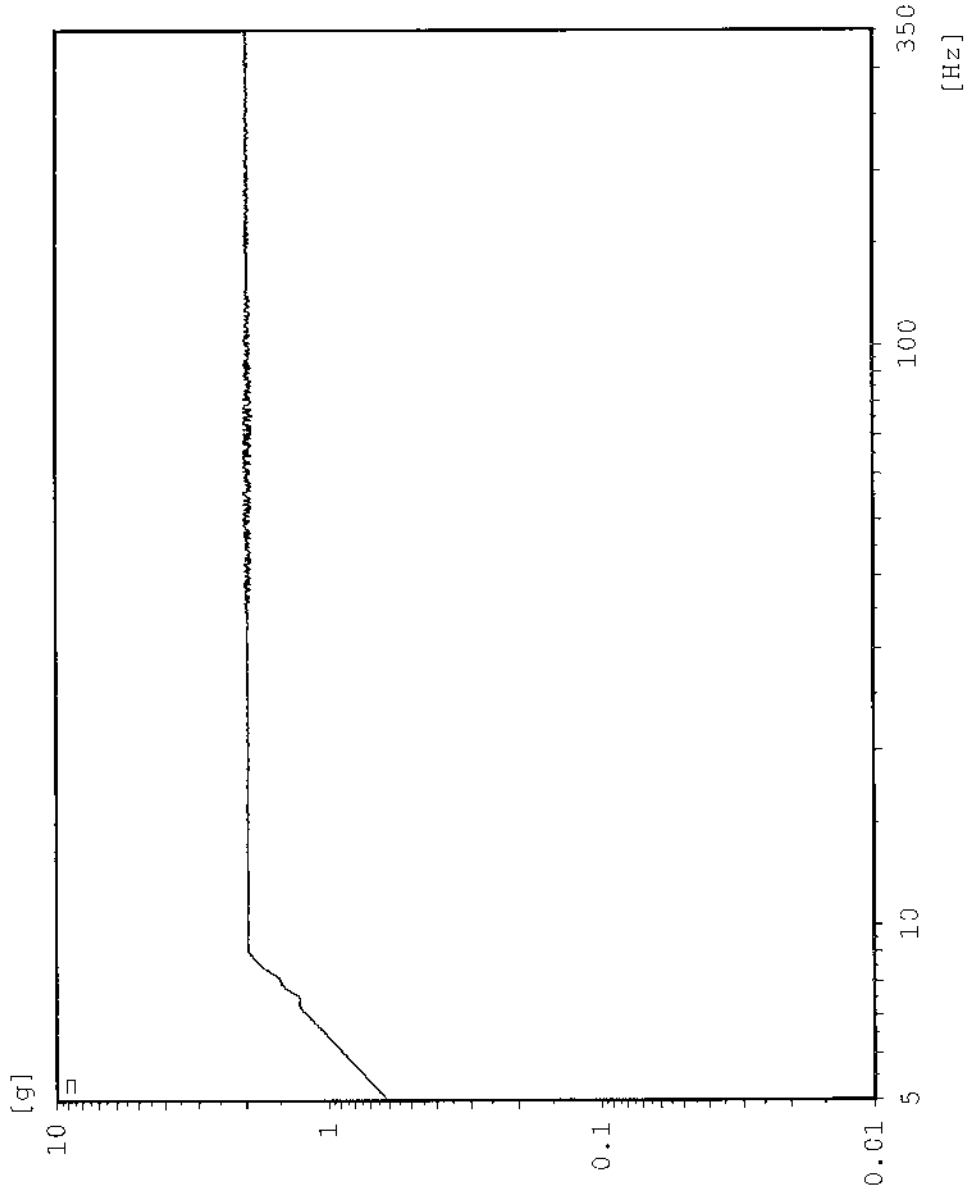
Sine

Pelican Products, Inc. JN: 10443
Case Model 1485, 1525, 1615



Sweep type: logarithmic
Sweeps done: 7
Sweeps req.: 15
Sweep direct.: up
Sweep rate: 0.77 Oct/min
Contr.strat.: Average
Unit: g

-- Testing time --
elapsed: 000:56:00
remaining: 001:04:00
Date: 04-29-16
Time: 10:50:02



Sine

Control channel

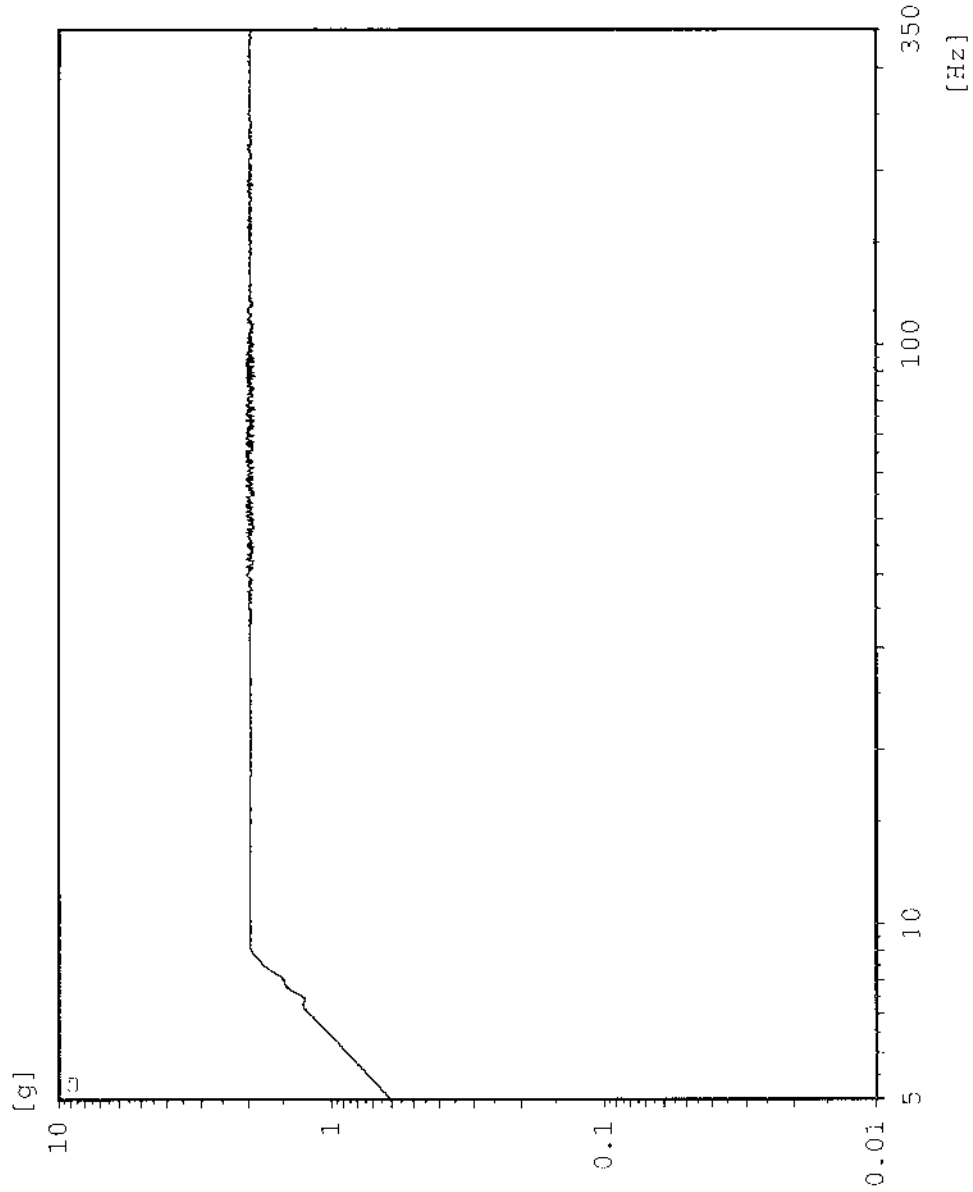
Pelican Products, Inc. JN: 10443
Case Model 1485, 1526, 1615



Sweep type: Logarithmic
Sweeps cone: 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: 04-29-16
Time: 11:54:05



Front to Back Axis Sine Sweep

Sine

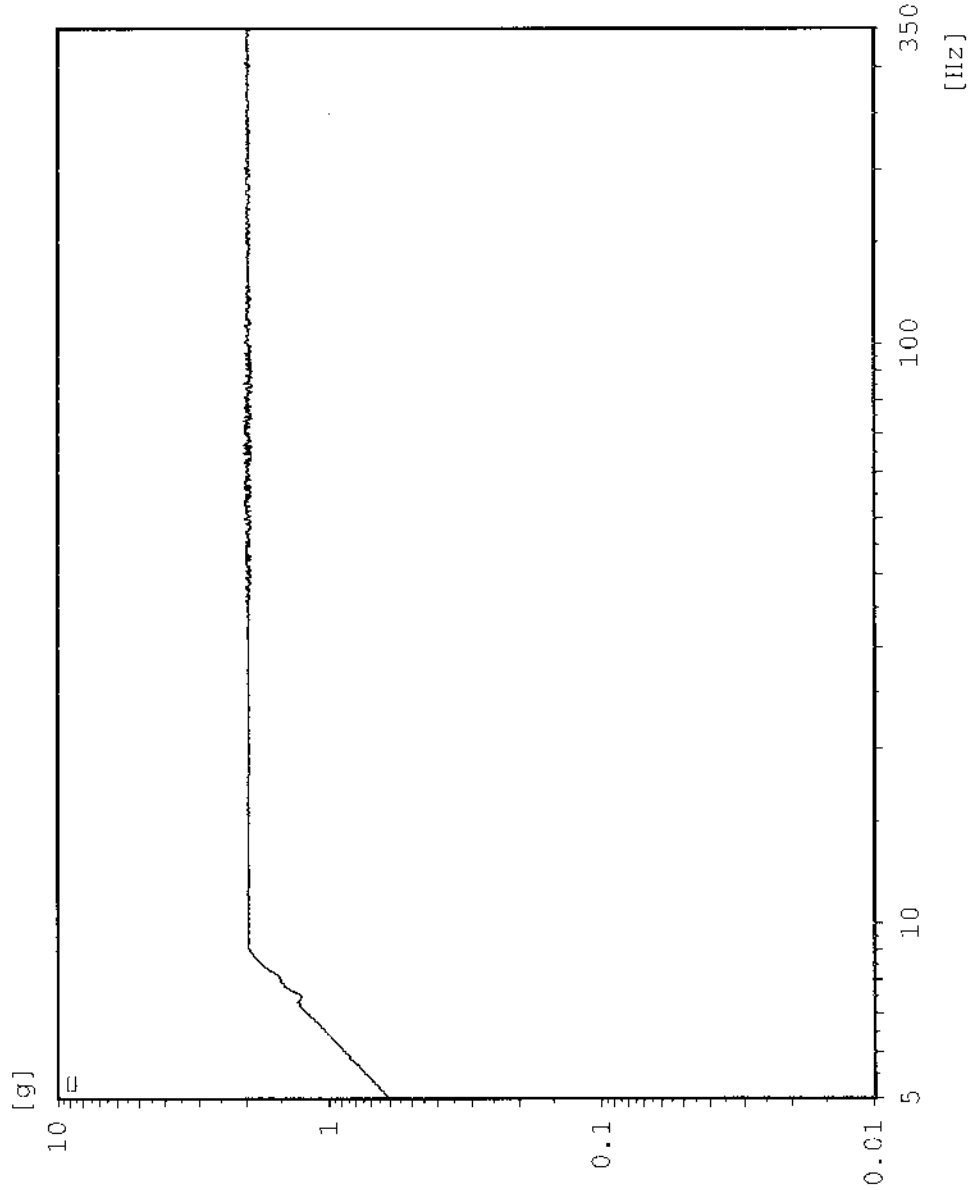
Control channel

Pelican Products, Inc. JN: 10443
Case Model 1535, 1555, 1605



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

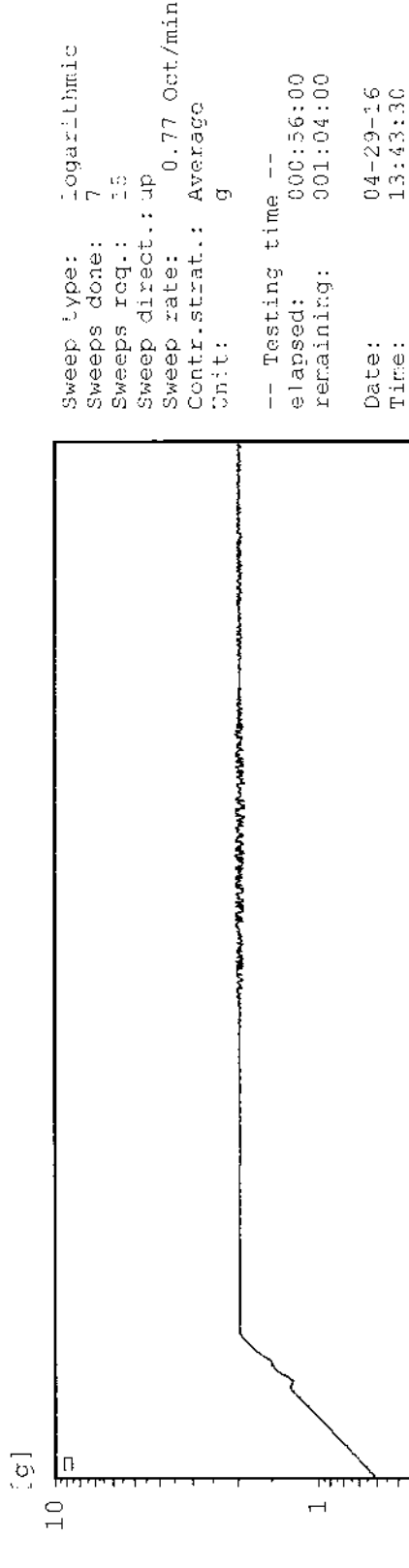
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elapsed: 000:07:59
remaining: 001:52:01
Date: 04-29-16
Time: 12:55:29





Sine Control channel

Pelican Products, Inc. JN: 10443
Case Model 1535, 1555, 1605

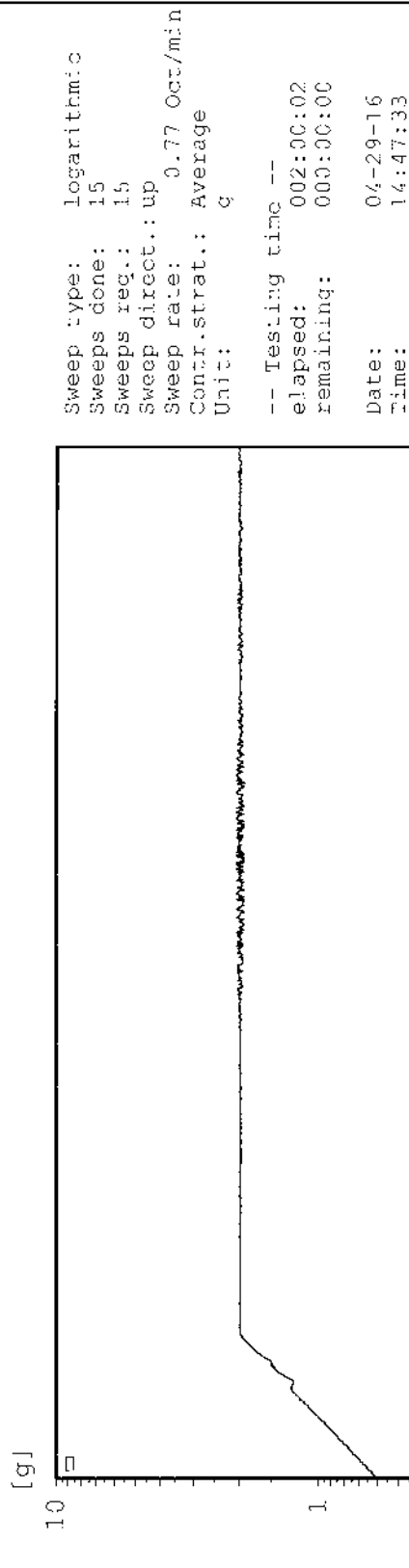


Front to Back Axis Sine Sweep

Sine

Control channel

Pelican Products, Inc. JN: 10443
Case Model 1535, 1555, 1605



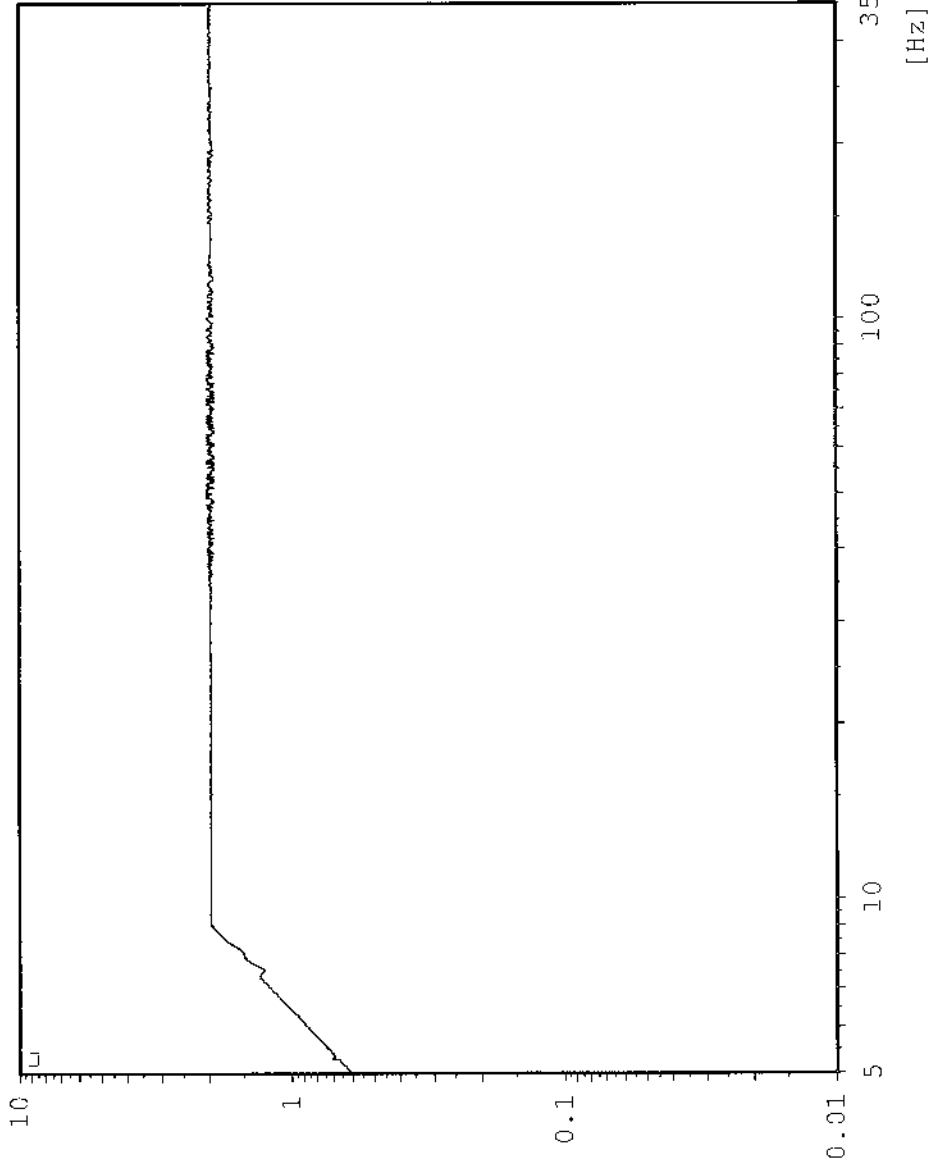
Front to Back Axis Sine Sweep

Sine Control channel

Pelican Products, Inc. JN: 10443
Case Model 1535, 1555, 1605



g



Side to Side Axis Sine Sweep

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

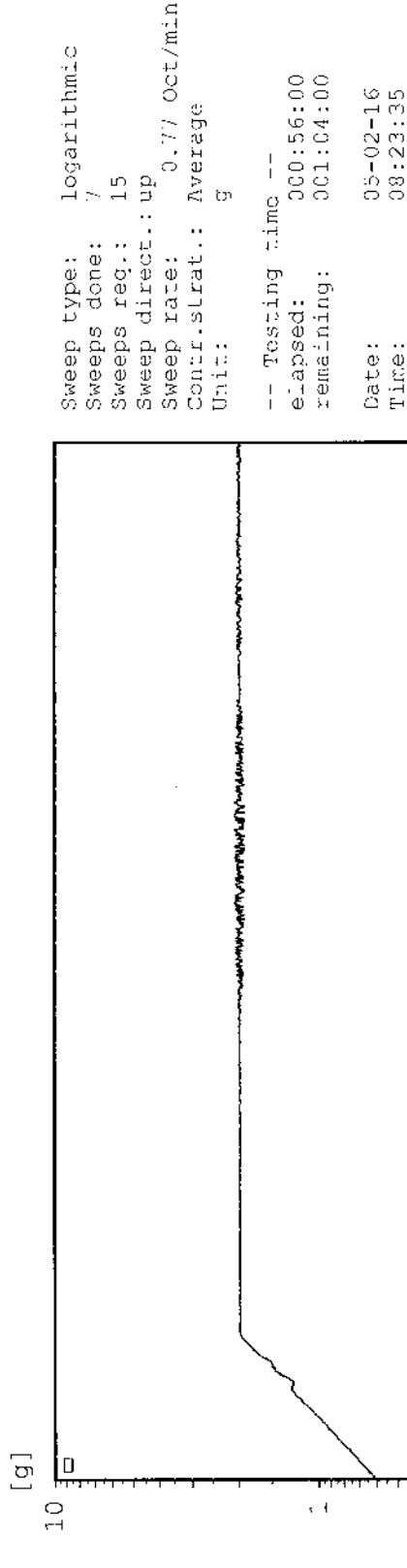
-- Testing time --
elapsed: 00:07:59
remaining: 00:52:01

Date: 05-02-16
Time: 07:35:34



Sine Control channel

Pelican Products, Inc. CN: 10443
Case Model 1535, 1555, 1605

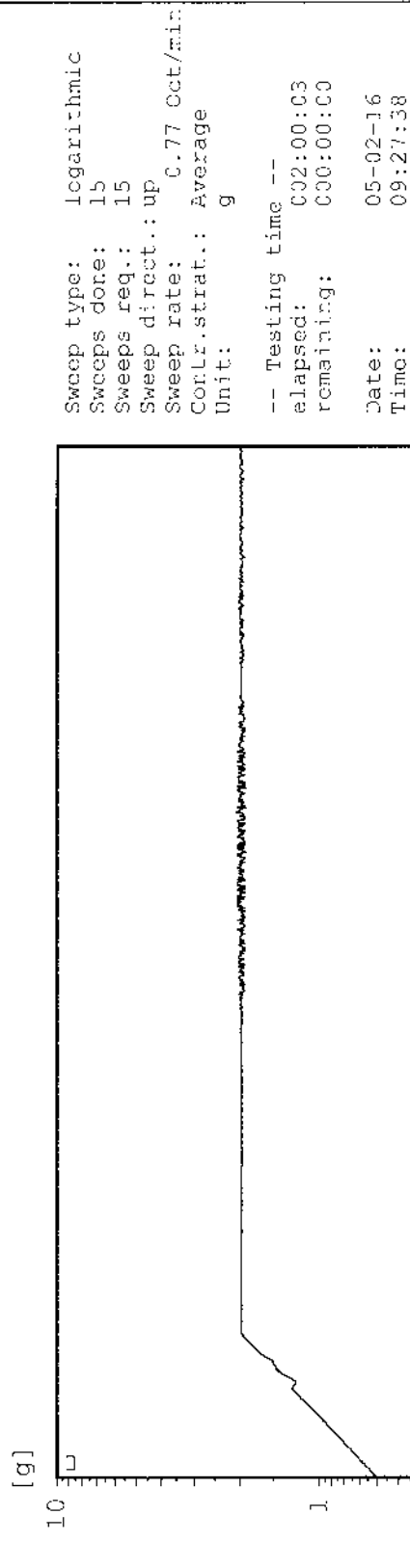


Side to Side Axis Sine Sweep

Sine

Control channel

Pelican Products, Inc. JN: 10443
Case Model 1535, 1555, 1605



Side to Side Axis Sine Sweep



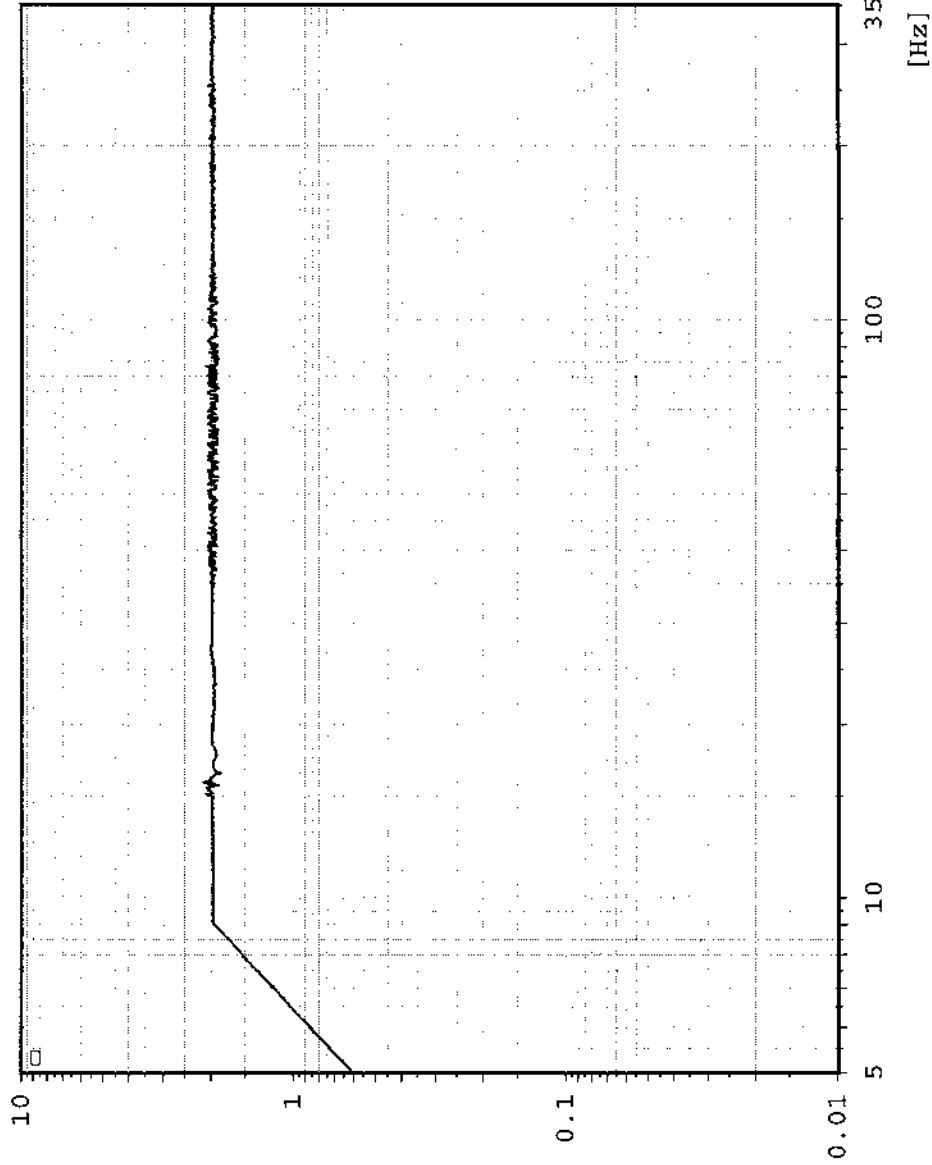
Control channel

Sine

Pelican Products, Inc. JN: 10443

Case Model 1485, 1525, 1615

[g]



Top to Bottom Axis Sine Sweep

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: 05-03-16
Time: 08:21:18



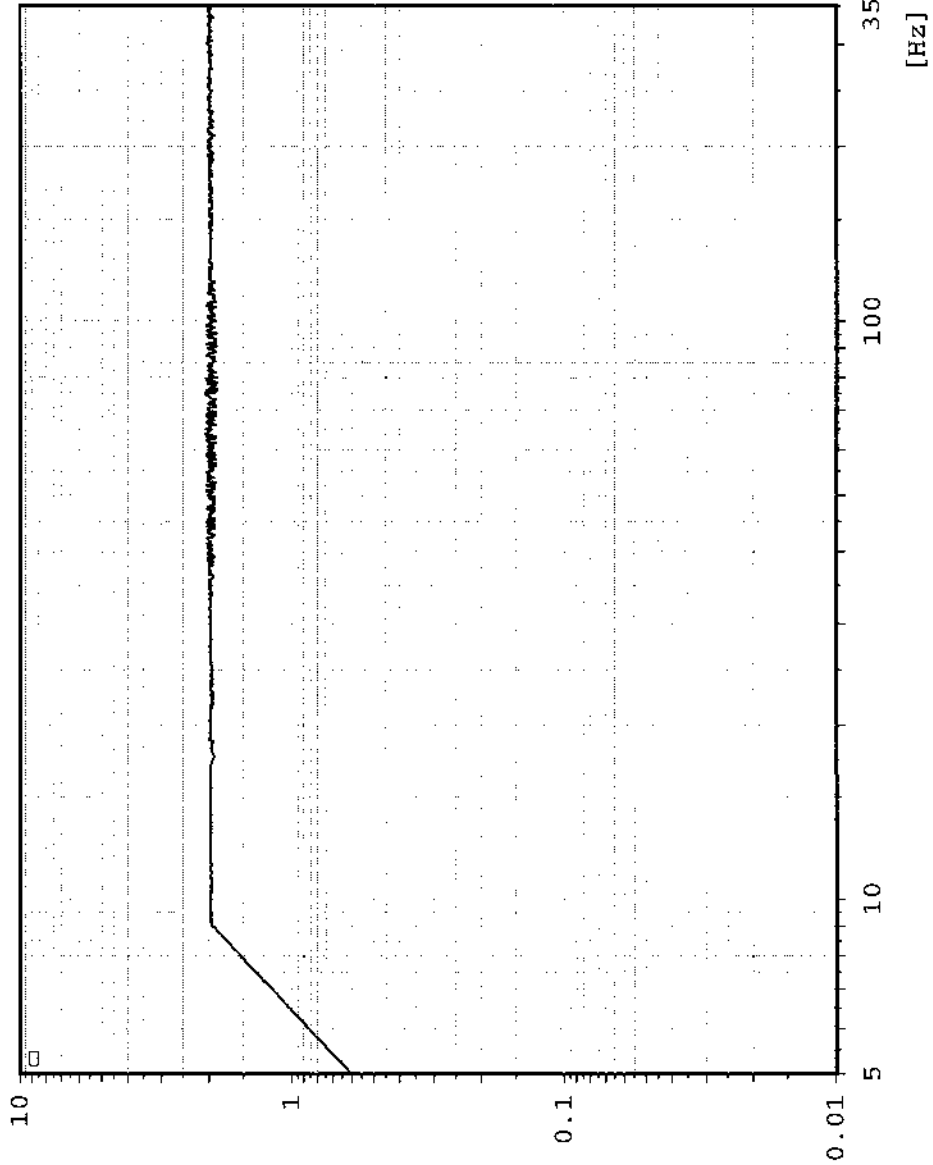
Control channel

Sine

Pelican Products, Inc. JN: 10443

Case Model 1485, 1525, 1615

[g]



Top to Bottom Axis Sine Sweep

Sweep type: logarithmic
Sweeps done: 7
Sweeps req.: 15
Sweep direct.: up
Sweep rate: 0.77 Oct/min
Contr. strat.: Average
Unit: g

-- Testing time --
elapsed: 000:56:01
remaining: 001:04:00
Date: 05-03-16
Time: 09:09:20

Control channel

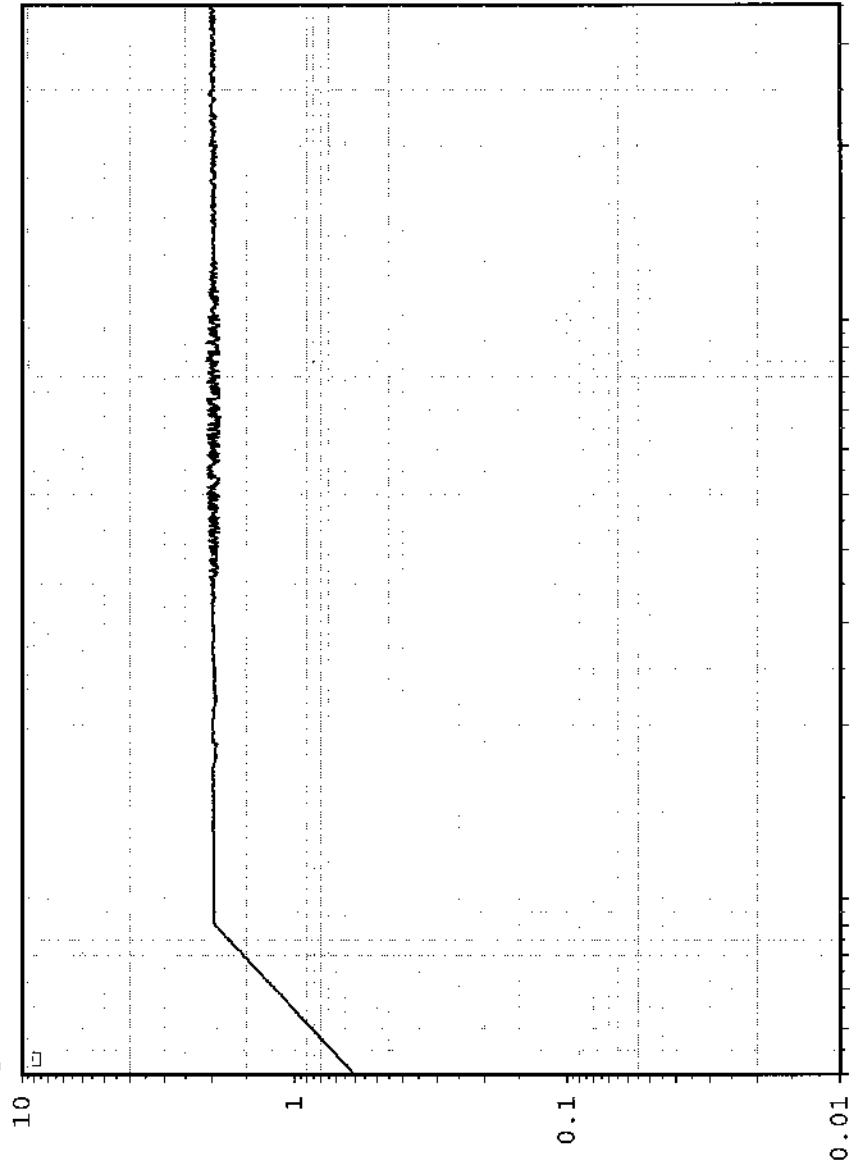
Sine

Pelican Products, Inc. JN: 10443

Case Model 1485, 1525, 1615



[g]



[Hz]

Top to Bottom Axis Sine Sweep

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: 05-03-16
Time: 10:13:23



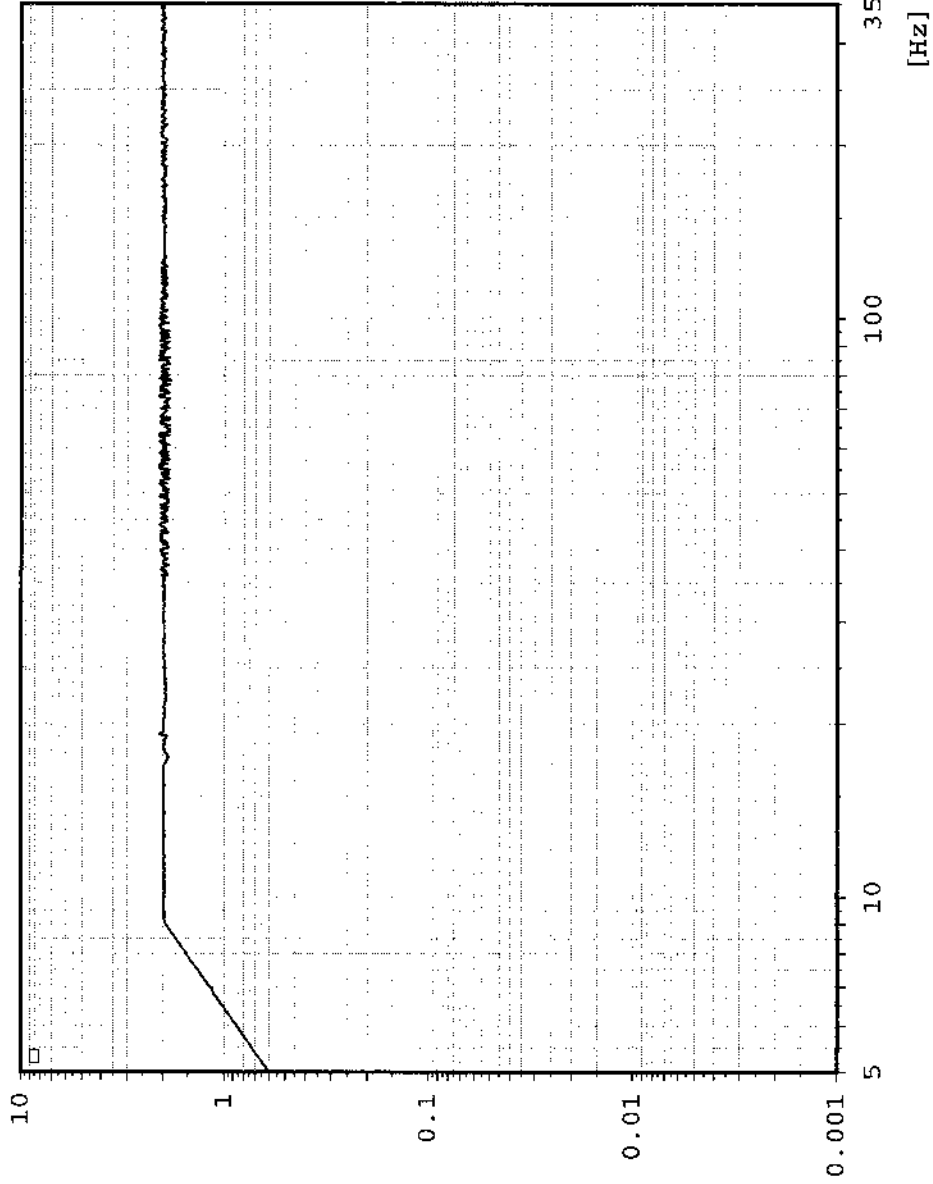
Control channel

Sine

Pelican Products, Inc. JN: 10443

Case Model 1535, 1555, 1605

[g]



Top to Bottom Axis Sine Sweep

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: 05-03-16
 Time: 11:03:56

Control channel

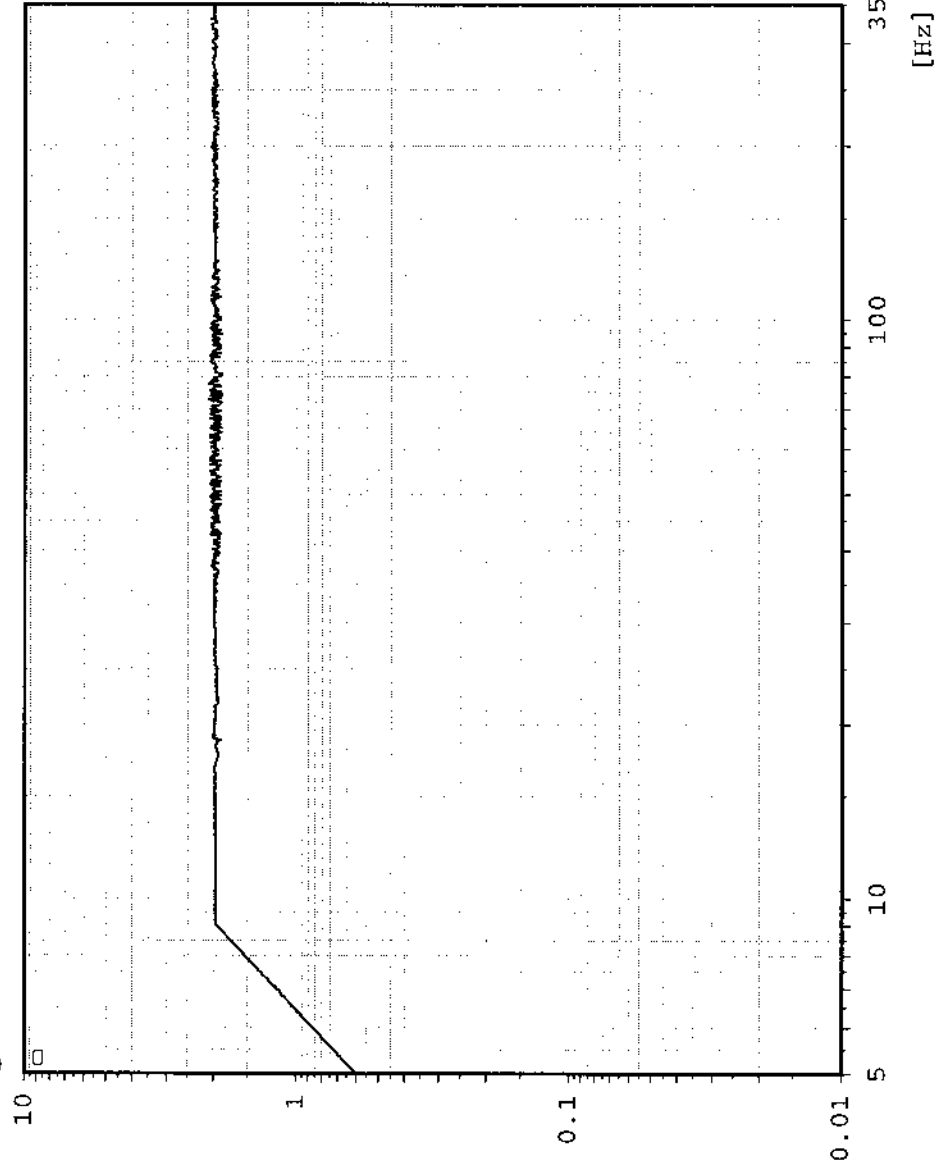
Sine

Pelican Products, Inc. JN: 10443

Case Model 1535, 1555, 1605



[g]



Top to Bottom Axis Sine Sweep

Sweep type: logarithmic
 Sweeps done: 7
 Sweeps req.: 15
 Sweep direct.: up
 Sweep rate: 0.77 Oct/min
 Contr.strat.: Average
 Unit: g

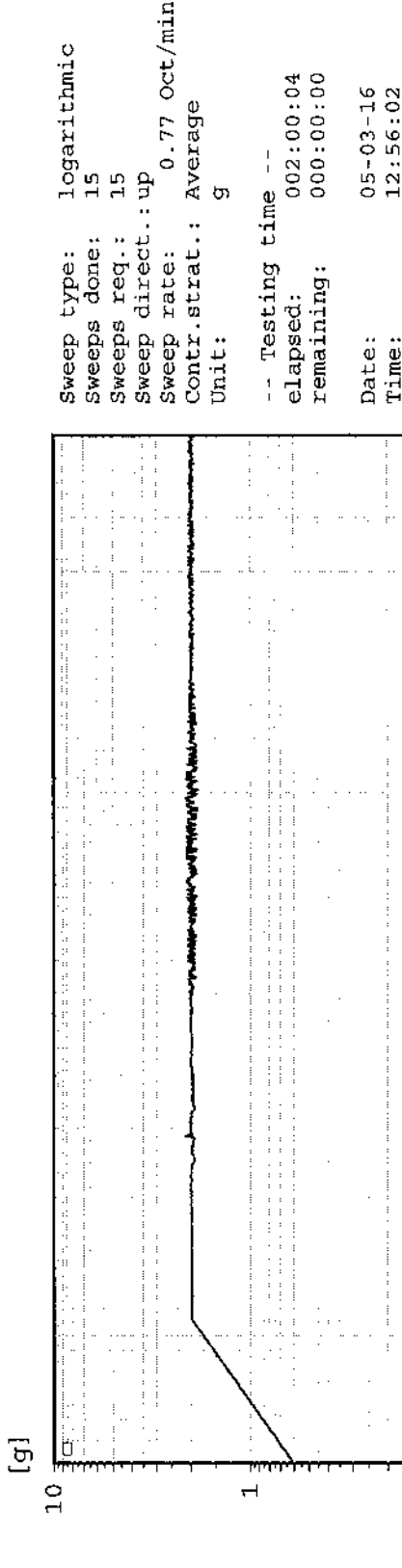
-- Testing time --
 elapsed: 000:56:01
 remaining: 001:04:00
 Date: 05-03-16
 Time: 11:51:58

Sine Control channel

Sine

Pelican Products, Inc. JN: 10443

Case Model 1535, 1555, 1605





TEST TITLE: Vibration

CUSTOMER: Pelican Products, Inc. Job No.: 10443 Date: 4/28/2016
 Specimen: Cases (Model 1485, 1525, 1535, 1555, 1605, 1615) Technician: I. Garcia *IS 4-28-16*
 Part No.: See Recv. Insp. Serial No.: See Recv. Insp. Engineer: T. Valfre *TV 5/3/16*

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Accelerometer	Endevco	7704A-50	0 - 1,000 g's (x5 shock)	K10023	4/11/2016 Date of First Use Item	10/11/2016	5%
Amplifier - Power	Uniholtz-Dickie	SA180	180 KW 5-2KHz	K10137	* System	Calibration *	N/A
Chamber - Environmental	Wyle / Bally	Chamber 3	-175°F to +240°F & Rh / 8x8x7'10" / CO2 LN2	K10146	* System	Calibration *	Mfg. Spec.
Control System - Vibration	M + P / Agilent	E1434A	2 Channels - Arbitrary Source	K10113	3/31/2016	3/31/2018	Mfg. Spec.
Control System - Vibration	M + P / Agilent	E1432A	16 Channel Digitizer	K10904	1/7/2016	1/7/2017	Mfg. Spec.
Controller - Chamber	Watlow	System #10 F4 / Ez-Zone	-100°F to 500°F & Rh	K10617	* System	Calibration *	Mfg. Spec.
Exciter - Electro-Dynamic	Ling	A249	1" 5-2KHz 30K F/Lbs	K10135	* System	Calibration *	N/A
Meter - DMM	Hewlett-Packard	34401A	Multi.	K10119	8/26/2015	8/26/2016	Mfg. Spec.
Module - Multiplexer	Keithley	7700	20 Chans. 10 VDC or TC's	K10692	8/12/2015	8/12/2016	±2% / ±2°F
Multimeter/DAS	Keithley	2700	10VDC & Type T TC's	K10170	8/12/2015	8/12/2016	±2% / ±2°F
Oscilloscope	Tektronix	TDS2002	2 Ch., 60Mhz, 1GS/s	K10123	7/21/2015	7/21/2016	±3% FS

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 Kelly Space & Technology, Inc. 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.: 10443 Date: 4/28/2016
 Specimen: Cases (Model 1485, 1525, 1535, 1555, 1605, 1615) Technician: I. Garcia IP 4-28-16
 Part No.: See Recv. Insp. Serial No.: See Recv. Insp. Engineer: T. Valfre 5/3/16

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Signal Conditioner	PCB	481M27	16 Channels	K10141	12/12/2015	12/12/2016	±1.0% FS
Transmitter - Humidity & Temperature	Vaisala	HMT337	0 to 100% RH / -40 to 356° F	K10593	1/12/2016	1/12/2017	±2% RH/±2° F

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 Kelly Space & Technology, Inc. QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.



DATA SHEET

Test Title Low Temperature

Customer Pelican Products, Inc. **Job No.** 10443
Specimen Case Model 1485, 1525, 1535, 1555, 1605, 1615 **Date Started** 5/3/2016
Part No. See Recv. Insp. **Serial No.** See Recv. Insp. **Date Comp.** 5/4/2016
Spec. DEF STAN 81-41 Part3/4 **Par.** 21 **Photo** Yes **Amb. Temp.** 75° ±15F

Requirements:

Temperature: -51 ± 2 °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 -51 ± 2 °C at a rate not to exceed 3 °C per minute. Maintain the chamber at -51 ± 2 °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 ambient conditions 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 per the Test Method and Requirements stated above. Upon completion of testing the cases were inspected and no visual evidence of damage was observed.



Photograph 1
Low Temperature - Setup



Photograph 2
Low Temperature - Post Test



Photograph 3
Low Temperature - Post Test



Photograph 4
Low Temperature - Post Test



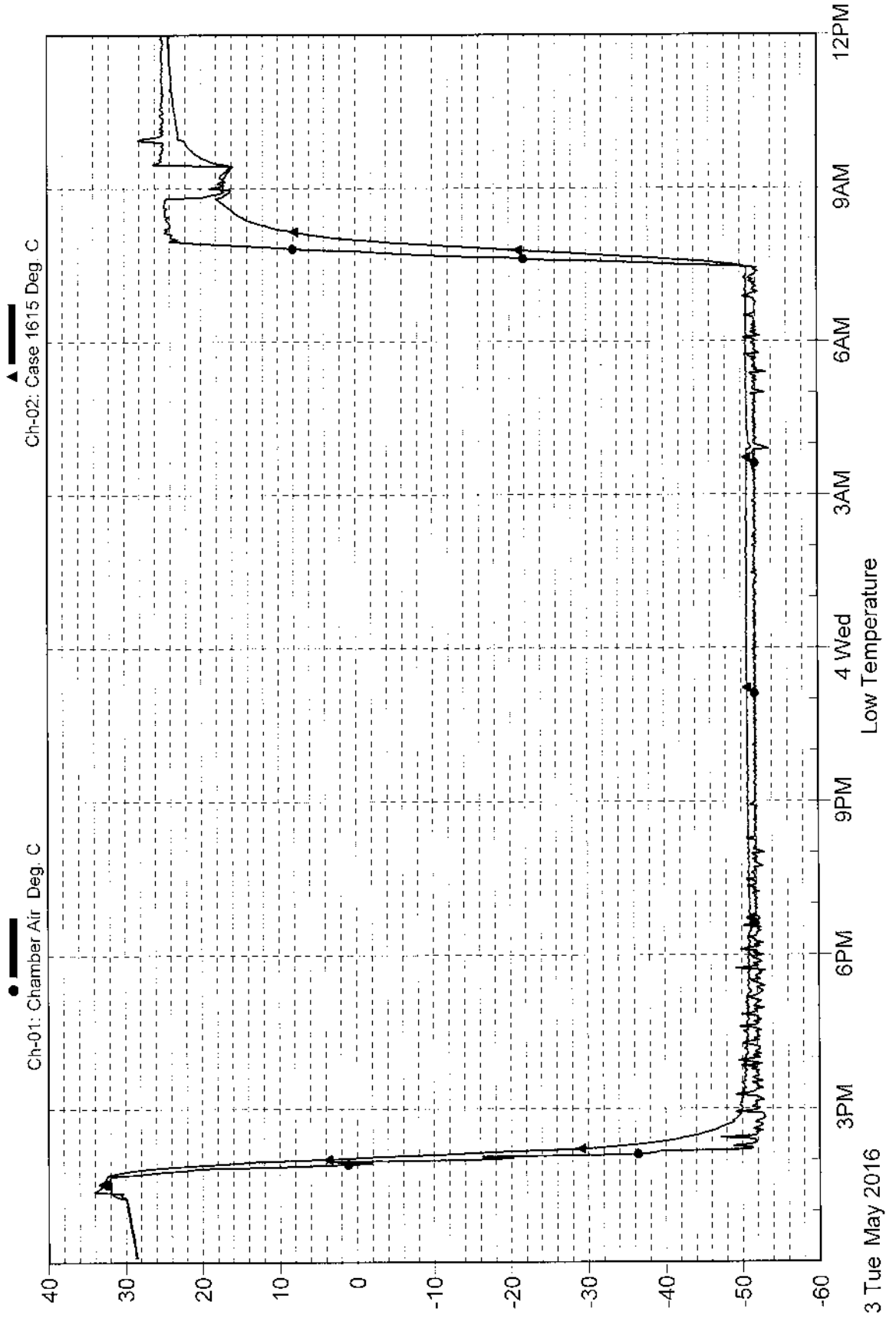
Photograph 5
Low Temperature - Post Test

Pelican Products JN: 10443

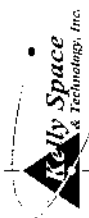
Cases (1485, 1525, 1535, 1555, 1605, 1615)

Files: D:\KST_DL\10443A107.prm - 10443A109.prm

05-06-2016 10:14:44 DL2k10



3 Tue May 2016

TEST TITLE: Low Temperature

CUSTOMER: Peelian Products, Inc. Job No.: 10443 Date: 5/3/2016
 Specimen: Cases (Model 1485, 1525, 1535, 1555, 1605, 1615) Technician: I. Garcia IS 5-3-16
 Part No.: See Recv. Insp. Serial No.: See Recv. Insp. Engineer: T. Valfre TS 5/4/16

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Chamber - Environmental	Wyle / Bally	Chamber 3	-175°F to +240°F & Rh / 8"x8"x7'10" / CO2 LN2	K10146	* System	Calibration *	Mfg. Spec.
Controller - Chamber	Watlow	System #10 F4 / Ez-Zone	-100°F to 500°F & Rh	K10617	* System	Calibration *	Mfg. Spec.
Module - Multiplexer	Keithley	7700	20 Chans. 10 VDC or TC's	K10692	8/12/2015	8/12/2016	±2% / ±2°F
Multimeter/DAS	Keithley	2700	10VDC & Type T TC's	K10170	8/12/2015	8/12/2016	±2% / ±2°F
Transmitter - Humidity & Temperature	Vaisala	HMT337	0 to 100% RH / -40 to 356° F	K10593	1/12/2016	1/12/2017	±2%RH/±2° F

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 Kelly Space & Technology, Inc. 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 Pelican Products, Inc. **Job No.** 10443
Specimen Case Model 1485, 1525, 1535, 1555, 1605, 1615 **Date Started** 5/4/2016
Part No. See Recv. Insp. **Serial No.** See Recv. Insp. **Date Comp.** 5/7/2016
Spec. DEF STAN 81-41 Part3/4 **Par.** 14 & 17 **Photo** Yes **Amb. Temp.** 75° ±15F

Requirements:

Pre-Conditioning:

Temperature: $25 \pm 10^{\circ}\text{C}$
 Humidity: $60 \pm 15\%$
 Duration: 16 hours or until specimen has reached temperature stabilization (whichever is the shortest period)

Dry Heat Test:

Temperature: $71 \pm 2^{\circ}\text{C}$
 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 $25 \pm 10^{\circ}\text{C}$ and $60 \pm 15\%$ relative humidity for 16 hours or until the specimen has reached temperature stabilization (test specimen temperature within tolerance of chamber temperature).

Increase the chamber temperature to $71 \pm 2^{\circ}\text{C}$ 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 ambient conditions at a rate not to exceed 3°C per minute. Perform a visual examination and document all results.

Test Results:

All testing was performed per the Test Method and Requirements stated above. There was no visible damage to the test specimens upon completion of testing.



Photograph 1
Dry Heat - Setup



Photograph 2
Dry Heat - Post Test



Photograph 3
Dry Heat - Post Test Case 1485



Photograph 4
Dry Heat - Post Test Case 1525



Photograph 5
Dry Heat - Post Test Case 1535



Photograph 6
Dry Heat - Post Test Case 1555



Photograph 7
Dry Heat - Post Test Case 1605



Photograph 8
Dry Heat - Post Test Case 1615

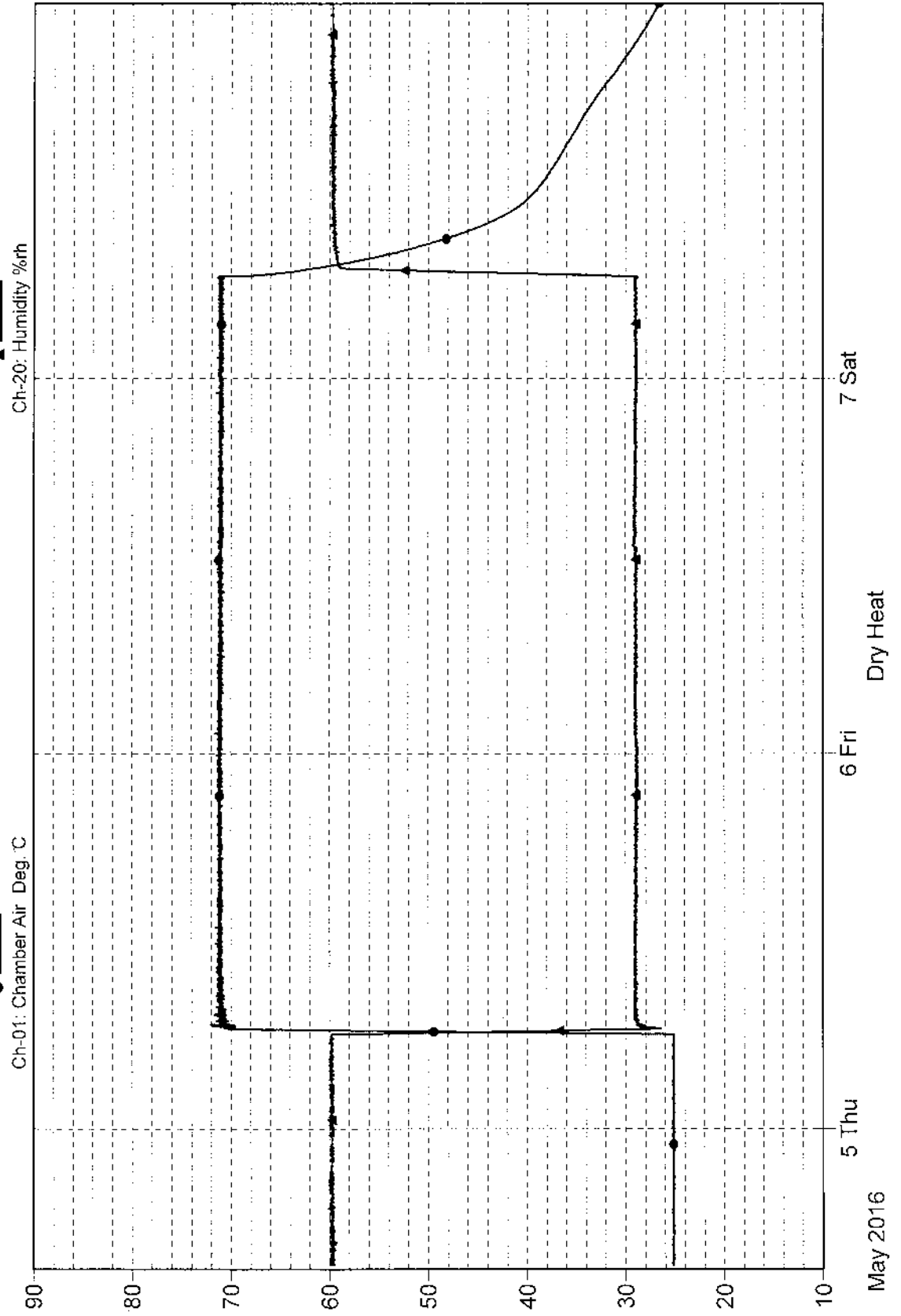


Pelican Products JN: 10443

Cases (1485, 1525, 1535, 1555, 1605, 1615)

Files: D:\KST_DL\10443A109.prm - 10443A114.prm

05-20-2016 09:14:45 DL2k10





TEST TITLE: Dry Heat

CUSTOMER: Pelican Products, Inc. Job No.: 10443 Date: 5/4/2016
 Specimen: Cases (Model 1485, 1525, 1535, 1555, 1605, 1615) Technician: I. Garcia *IS-4-16*
 Part No.: See Recv. Insp. Serial No.: See Recv. Insp. Engineer: T. Valfre *TV 5/7/16*

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Chamber - Environmental	Wyle / Bally	Chamber 3	-175°F to +240°F & Rh / 8"x8"x7"10" / CO2 LN2	K10146	* System	Calibration *	Mfg. Spec.
Controller - Chamber	Watlow	System #10 F4 / Ez-Zone	-100°F to 500°F & Rh	K10617	* System	Calibration *	Mfg. Spec.
Module - Multiplexer	Keithley	7700	20 Chans. 10 VDC or TC's	K10692	8/12/2015	8/12/2016	±2% / ±2°F
Multimeter/DAS	Keithley	2700	10VDC & Type T TC's	K10170	8/12/2015	8/12/2016	±2% / ±2°F
Transmitter - Humidity & Temperature	Vaisala	HMT337	0 to 100% RH / -40 to 356° F	K10593	1/12/2016	1/12/2017	±2%RH/±2° F

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 Kelly Space & Technology, Inc. QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.



DATA SHEET

Test Title Dust (IP6X)

Customer Pelican Products, Inc. **Job No.** 10443
Specimen Case Model 1485, 1525, 1535, 1555, 1605, 1615 **Date Started** 5/13/2016
Part No. See Recv. Insp. **Serial No.** See Recv. Insp. **Date Comp.** 5/13/2016
Spec. IEC 60529 (IP6X) **Par.** 13.4 & 13.6 **Photo** Yes **Amb. Temp.** 75° ±15F

Requirements:

Temperature:	15°C to 35°C
Relative Humidity:	25% to 75%
Dust:	Talcum powder
Dust Concentration:	2 Kg per cubic meter test chamber volume
Duration:	8 hours

Test Method:

Place the test specimens in a test chamber. Establish a dust concentration of 2 Kg per cubic meter of test chamber volume. Expose the test specimen to this dust environment for 8 hours.

Remove accumulated dust from the test specimens by brushing, wiping, or shaking, taking care to avoid introducing additional dust into the test item. Do not remove dust by either air blast or vacuum cleaning. Perform a visual examination for evidence of damage or deterioration.

Test Results:

All testing was performed per the Test Method and Requirements stated above. No visual evidence of dust penetration or damage was observed to the case.

Photograph 1
Dust - Setup



Photograph 2
Dust - Post Test



Photograph 23Dust - Post Test



Photograph 4
Dust - Post Test



Photograph 5
Dust -Case 1535 Post Test



Photograph 6
Dust - Case 1535 Post Test



Photograph 7
Dust -Case 1535 Post Test



Photograph 8
Dust -Case 1525 Post Test



Photograph 9
Dust -Case 1525 Post Test



*Photograph 10
Dust - Case 1525 Post Test*



Photograph 11
Dust -Case 1615 Post Test



Photograph 12
Dust - Case 1615 Post Test



Photograph 13
Dust - Case 1615 Post Test



Photograph 14
Dust -Case 1485 Post Test



*Photograph 15
Dust -Case 1485 Post Test*



Photograph 16
Dust - Case 1485 Post Test



Photograph 17
Dust -Case 1555 Post Test



Photograph 18
Dust - Case 1555 Post Test



*Photograph 19
Dust - Case 1555 Post Test*



Photograph 20
Dust - Case 1605 Post Test



Photograph 21
Dust - Case 1605 Post Test



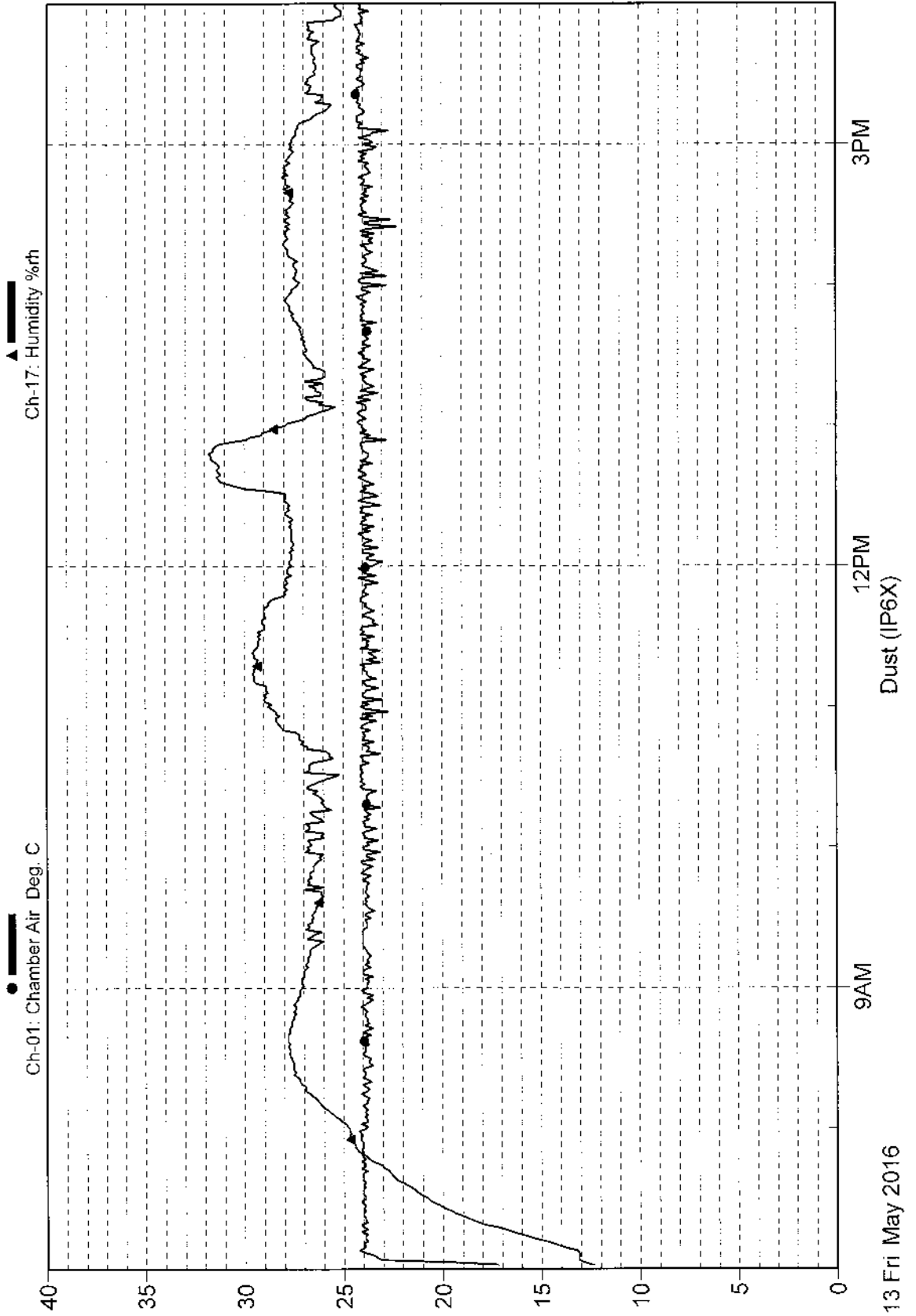
Photograph 22
Dust - Case 1605 Post Test

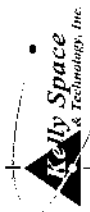


Pelican Products Inc JN: 10443
Cases (Model 1485, 1525, 1535, 1555, 1605, 1616)

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TEST TITLE: Dust (IP6X)

CUSTOMER: Pelican Products, Inc. Job No.: 10443 Date: 5/12/2016 *5-12-16*
 Specimen: Cases (Model 1485, 1525, 1535, 1555, 1605, 1615) Technician: J. Garcia

Part No.: See Recv. Insp. Serial No.: See Recv. Insp. Engineer: T. Valfre *5/12/16*

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Anemometer	TSI	8345	0 to 6,000 F/Min.	K10327	2/22/2016	8/22/2016	3% rdg
Chamber - Dust	Wyle	Dust	-60°F to +180°F / 11"x7"x7" / LN2	K10153	* System	Calibration *	Mfg. Spec.
Controller - Chamber	Watlow / Omega	System #8 922 / CN9000	-100°F to 500°F	K10166	* System	Calibration *	Mfg. Spec.
High Volume Air Sampler	Staplex	TFIA	70CFM	K10786	4/9/2015 * System	10/9/2016 Calibration *	±0.5% RDG
Module - Multiplexer	Keithley	7700	20 Chans. 10 VDC or TC's	K10173	8/9/2015	8/9/2016	±2% / ±2°F
Multimeter/DAS	Keithley	2700	10VDC & Type T TC's	K10172	8/9/2015	8/9/2016	±2% / ±2°F
Scale - Electronic	A&D	EK1200A	0 to 1200 Grams	K10184	9/29/2015	9/29/2016	±0.1 Gram
Stopwatch	Micronta	Null	60 Min.	K10205	7/21/2015	7/21/2016	0.1 Sec.
Tape Measure	Keson Industries	MC-18-100	100 ft.	K10238	8/28/2015	8/28/2016	Mfg. Spec.
Transmitter - Humidity	Vaisala	HMT120	0 to 100% RH	K10922	5/9/2016	11/9/2016	±3%RH

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 Kelly Space & Technology, Inc. QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.



DATA SHEET

Test Title Immersion (IPX7)

Customer	<u>Pelican Products, Inc.</u>	Job No.	<u>10443</u>
Specimen	<u>Case Model 1485, 1525, 1535, 1555, 1605, 1615</u>	Date Started	<u>5/16/2016</u>
Part No.	<u>See Recv. Insp.</u>	Serial No.	<u>See Recv. Insp.</u>
		Date Comp.	<u>5/17/2016</u>
Spec.	<u>IEC 60529 (IPX7)</u>	Par.	<u>14.2.7</u>
		Photo	<u>Yes</u>
		Amb. Temp.	<u>75° ±15F</u>

Requirements:

Water Level: Test specimens with a height less than 850 mm (33.46 inches) has the lowest point of the test specimen 1000 mm (39.37 inches) below the surface of the water. Test specimens with a height equal to or greater than 850 mm (33.46 inches) has the highest point of the test specimen 150 mm (3.9 inches) below the surface of the water

Water Temperature: Water temperature does not differ from that of the equipment by more than 5 K (9°F)

Soak Duration: 30 minutes

Test Method:

Visually inspect the test specimen. Place the test specimen in a submersion tank. Test specimens with a height less than 850 mm (33.46 inches) has the lowest point of the test specimen 1000 mm (39.37 inches) below the surface of the water. Test specimens with a height equal to or greater than 850 mm (33.46 inches) has the highest point of the test specimen 150 mm (3.9 inches) below the surface of the water.

Verify the water temperature does not differ from that of the test item by more than 5 K (9°F). Allow the test specimen to soak for 30 minutes.

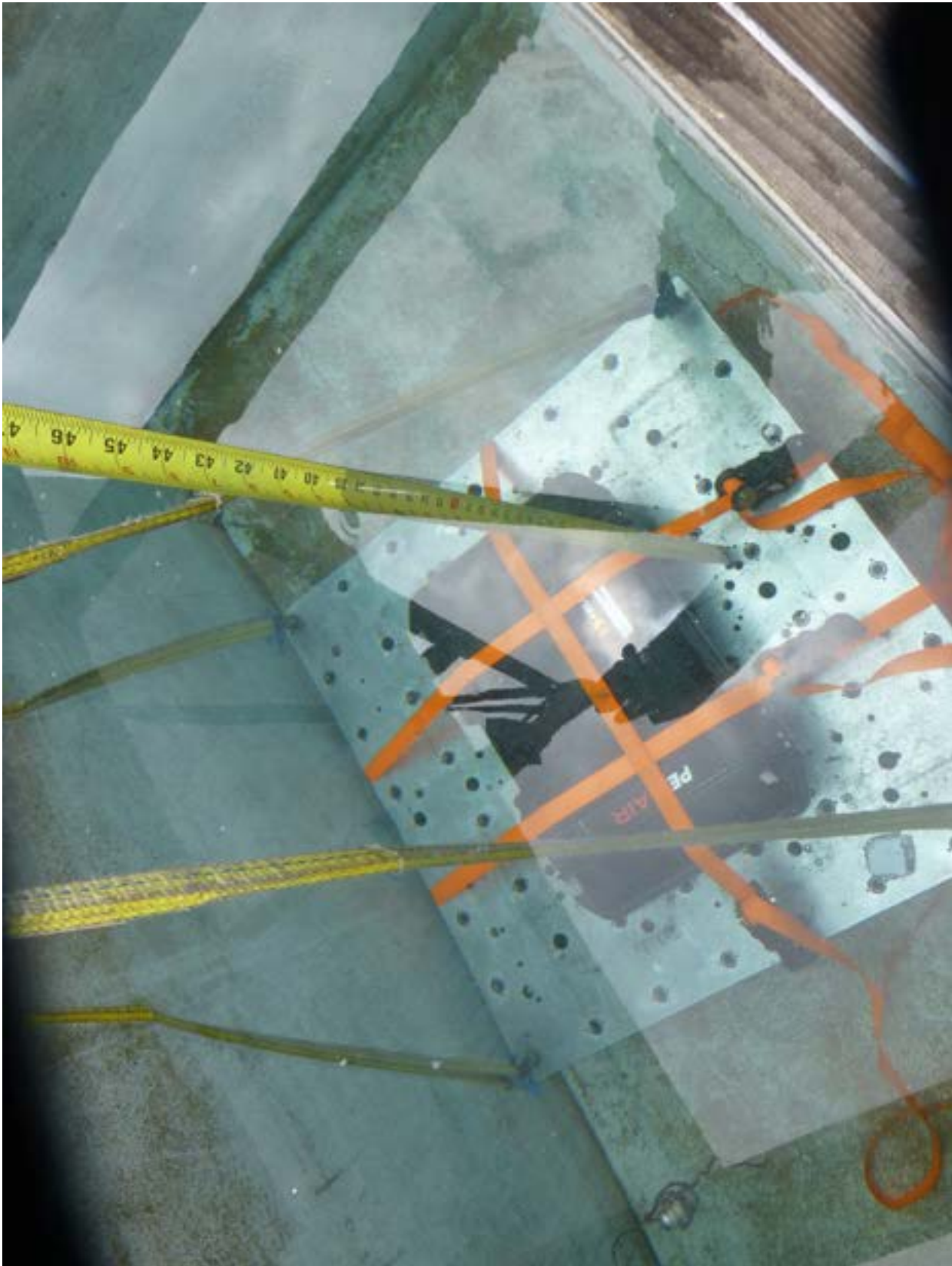
Remove the test specimen from the tank. Perform a visual inspection and check for the presence of water inside the test item. Document all results.

Test Results:

All testing was performed per the Test Method and Requirements stated above. The lowest point of the case was submerged 39.37" below the surface of the water. No visual evidence of water penetration or damage was observed to the case.



Photograph 1
Immersion - Case 1485 Setup



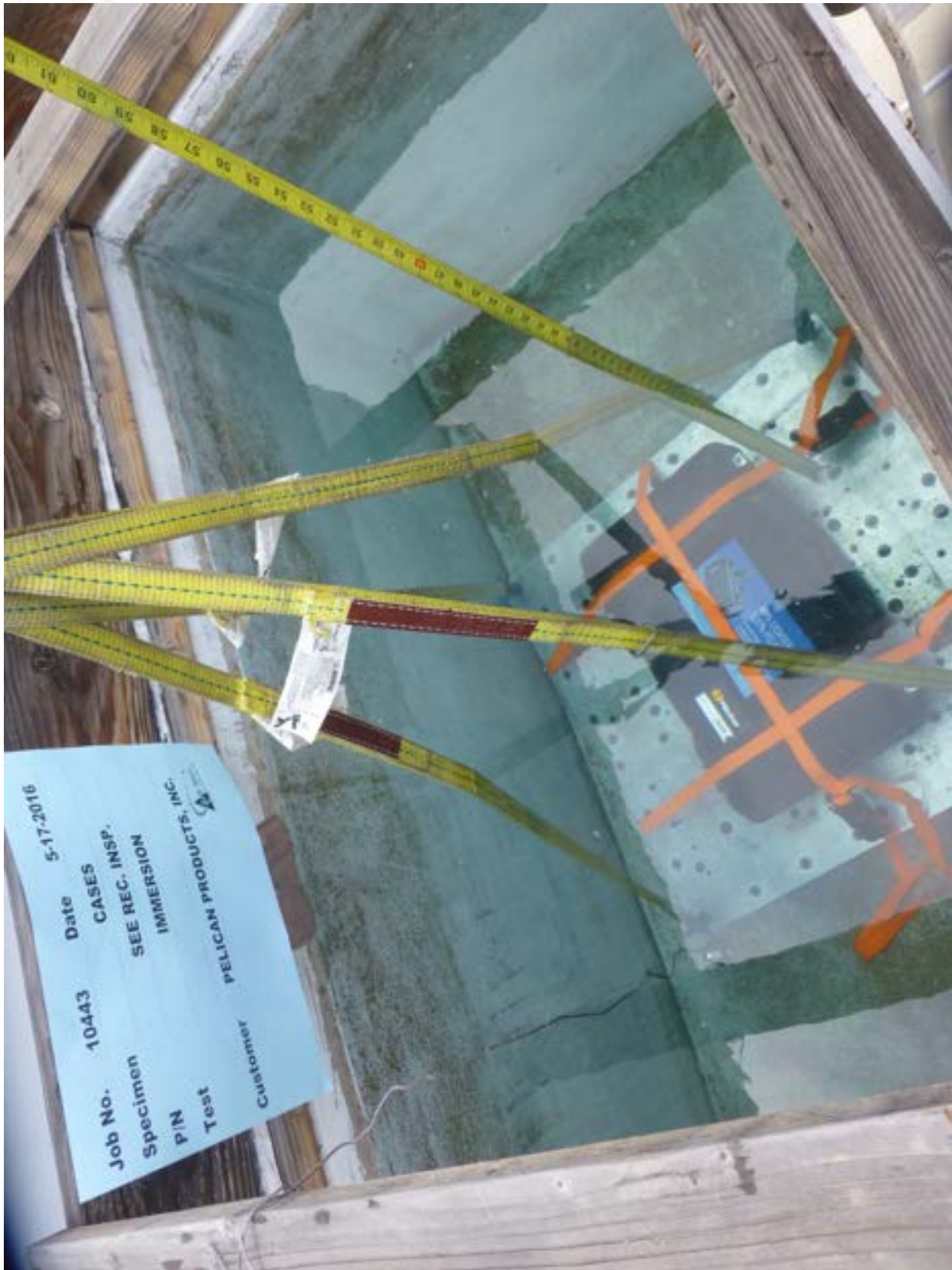
Photograph 2
Immersion - Case 1485 Test



Photograph 3
Immersion - Case 1485 Post Test



Photograph 4
Immersion - Case 1525 Setup



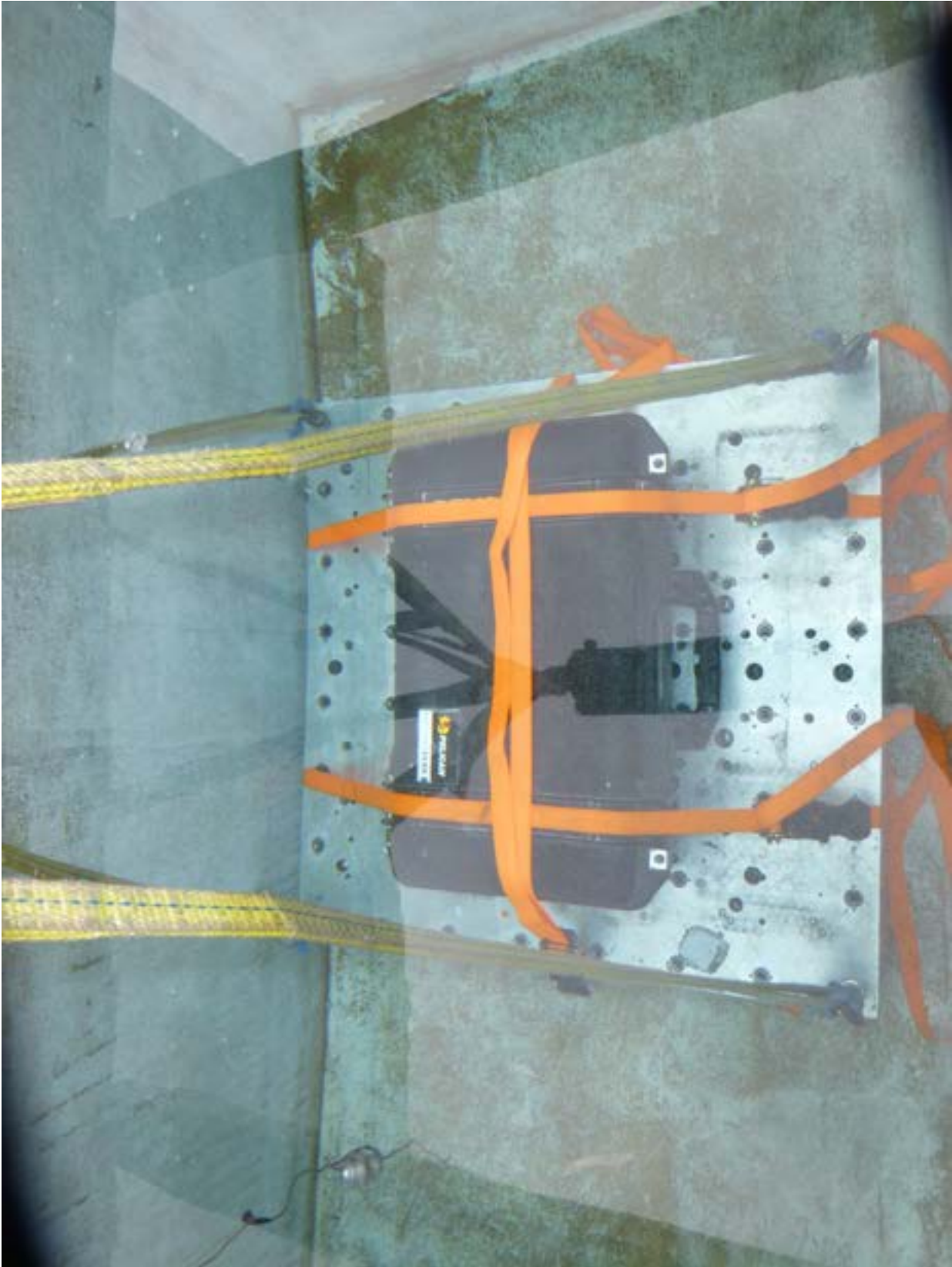
Photograph 5
Immersion - Case 1525 Test



Photograph 6
Immersion - Case 1525 Post Test



Photograph 7
Immersion - Case 1535 Setup



Photograph 8
Immersion - Case 1535 Test

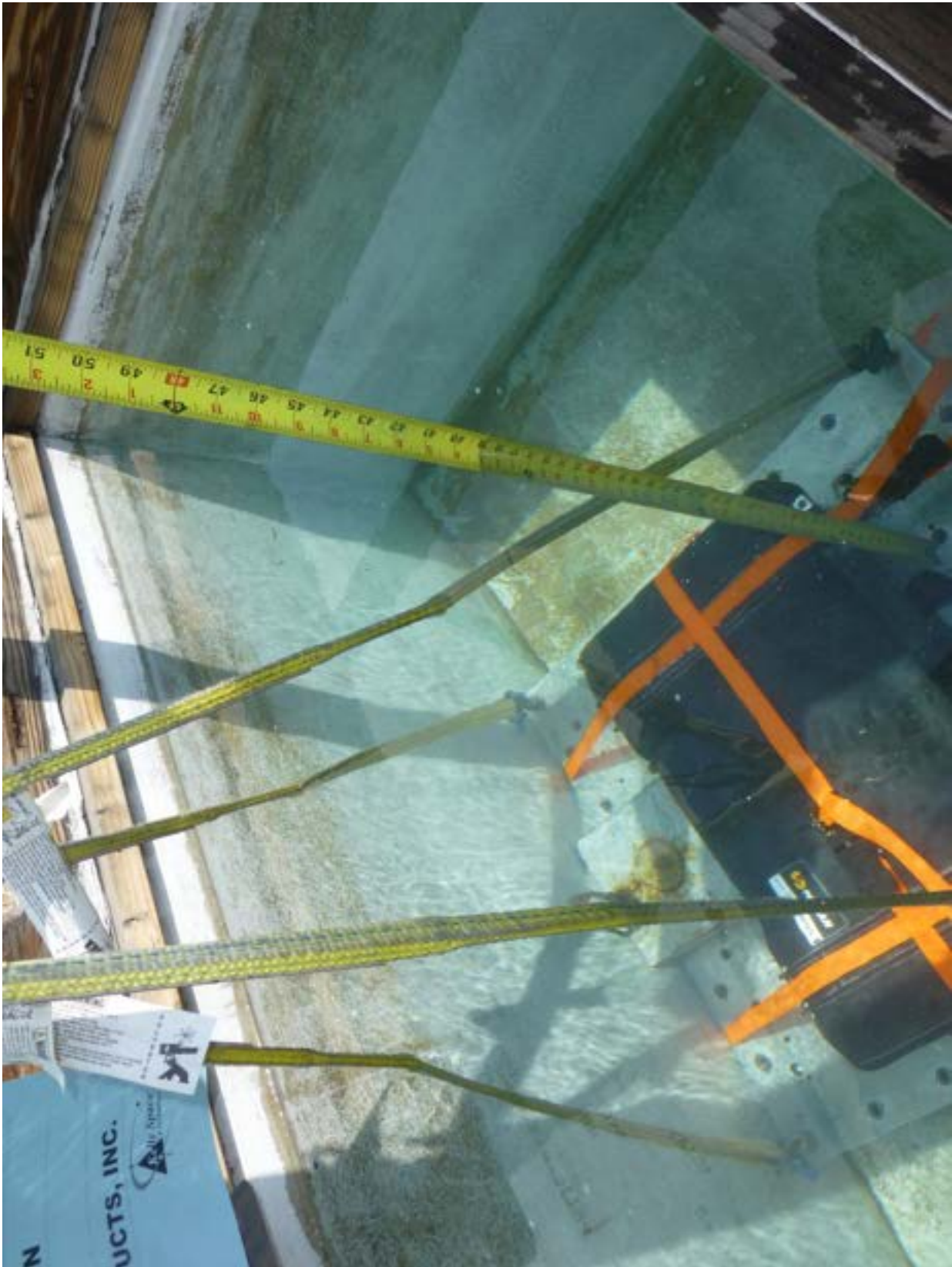


Photograph 9
Immersion - Case 1535 Post Test



Photograph 10
Immersion - Case 1555 Setup

Job No. 10443 Date 5-16-2016
Specimen CASES
P/N SEE REC. INSP.
Test IMMERSION
Customer PELICAN PRODUCTS, INC.



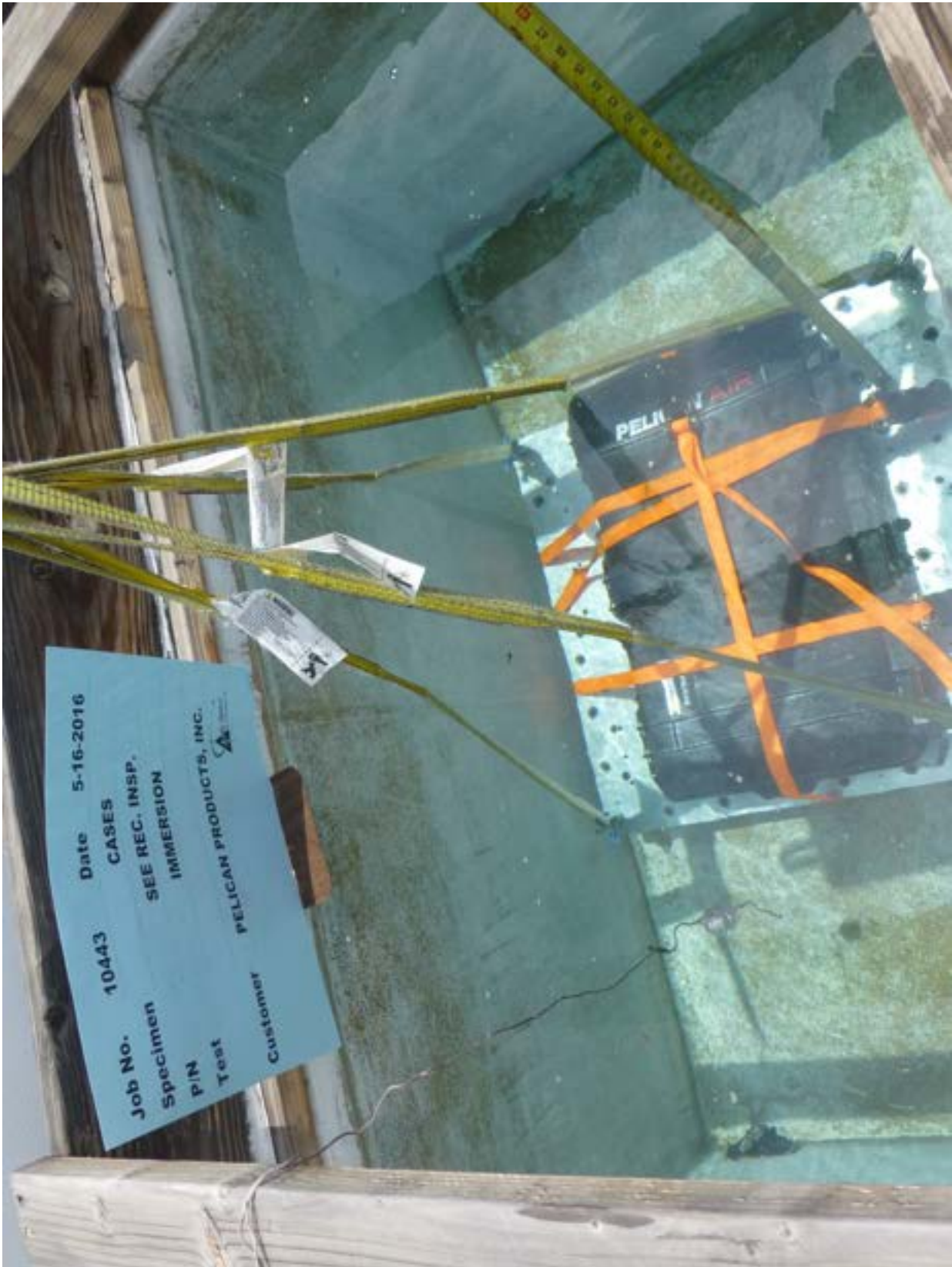
Photograph 11
Immersion - Case 1555 Test



*Photograph 12
Immersion - Case 1555 Post Test*



Photograph 13
Immersion - Case 1605 Setup



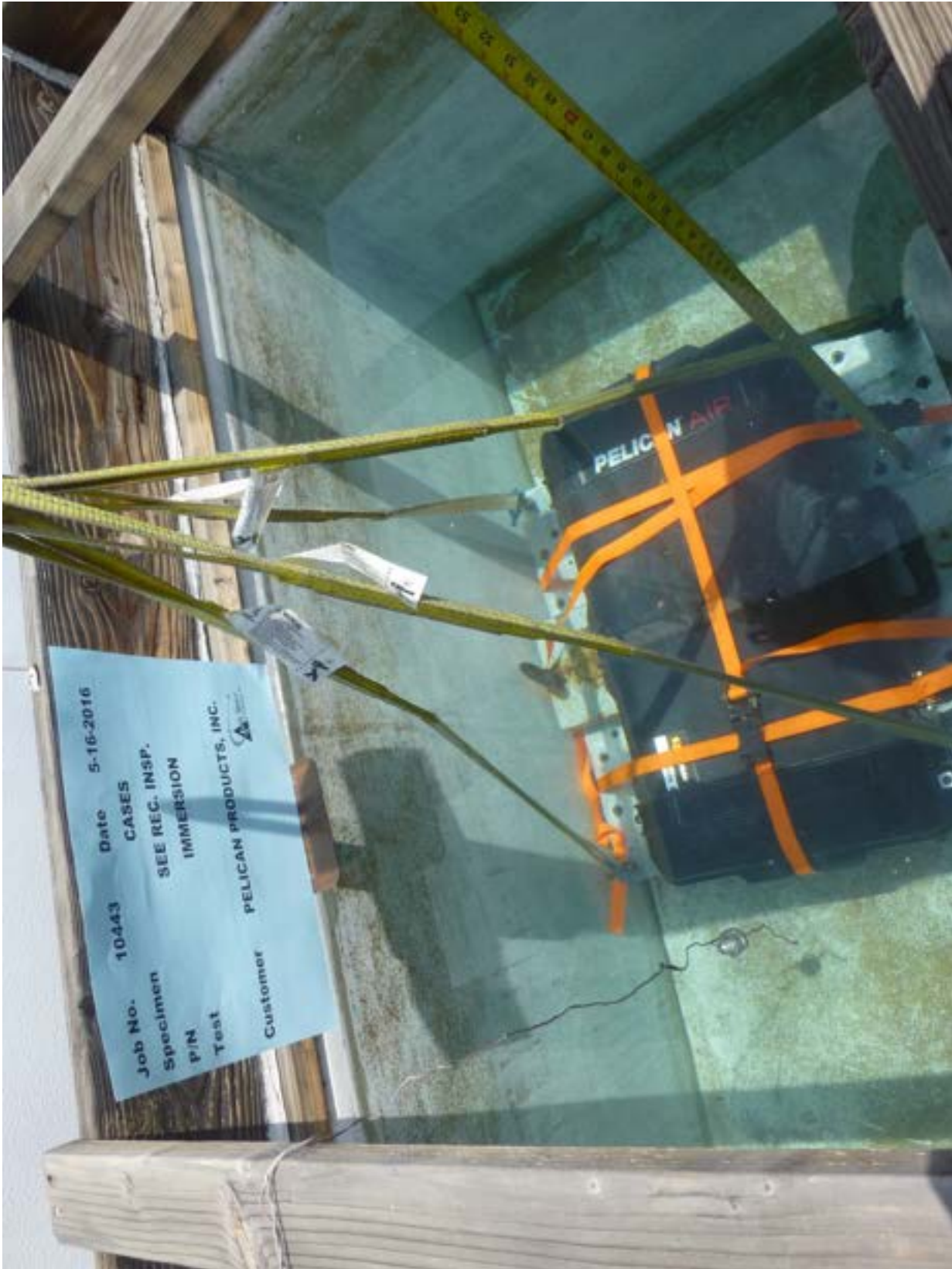
Photograph 14
Immersion - Case 1605 Test



Photograph 15
Immersion - Case 1605 Post Test



Photograph 16
Immersion - Case 1615 Setup



Photograph 17
Immersion - Case 1615 Test



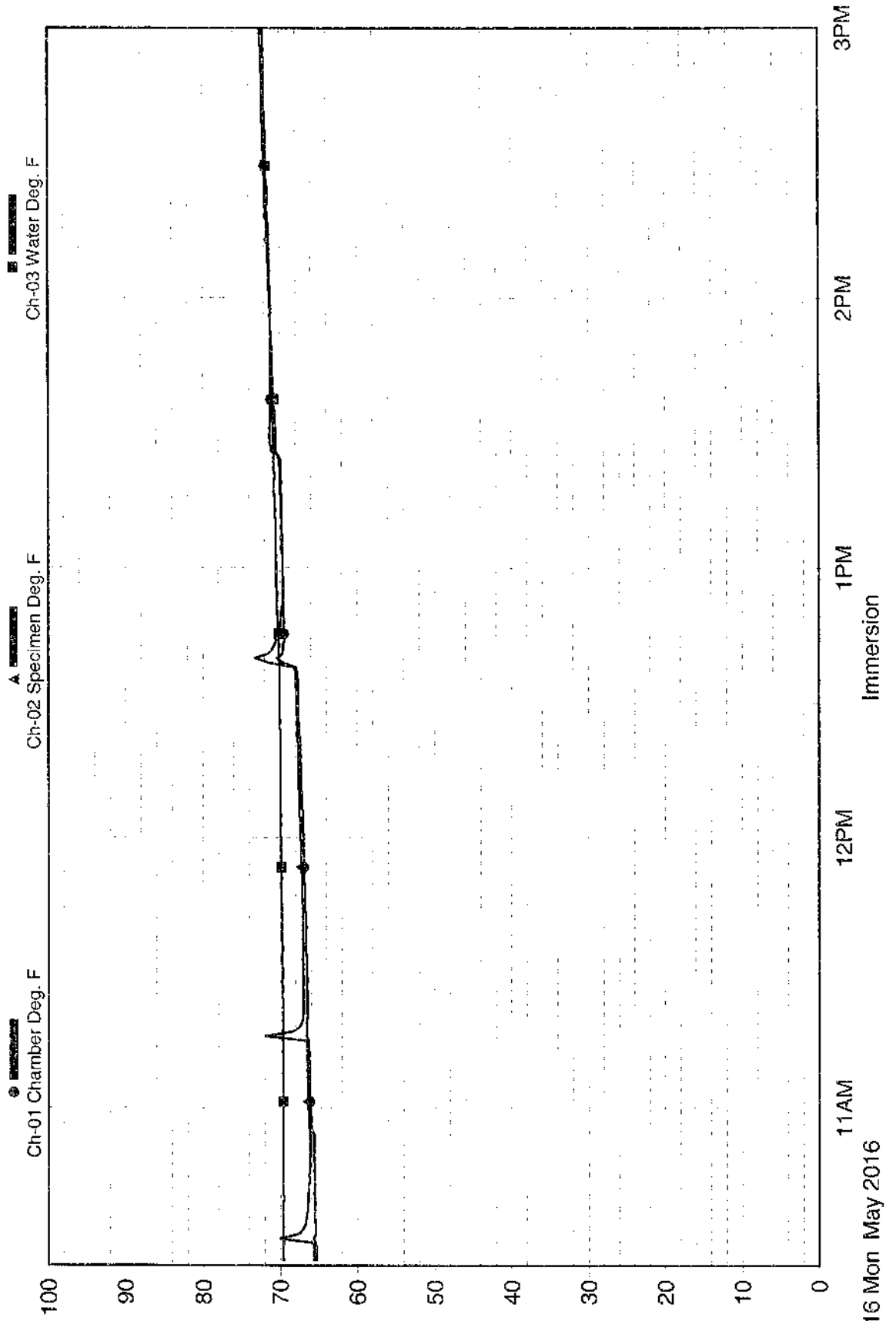
Photograph 18
Immersion - Case 1615 Post Test

Pelican Products JN: 10443

Cases

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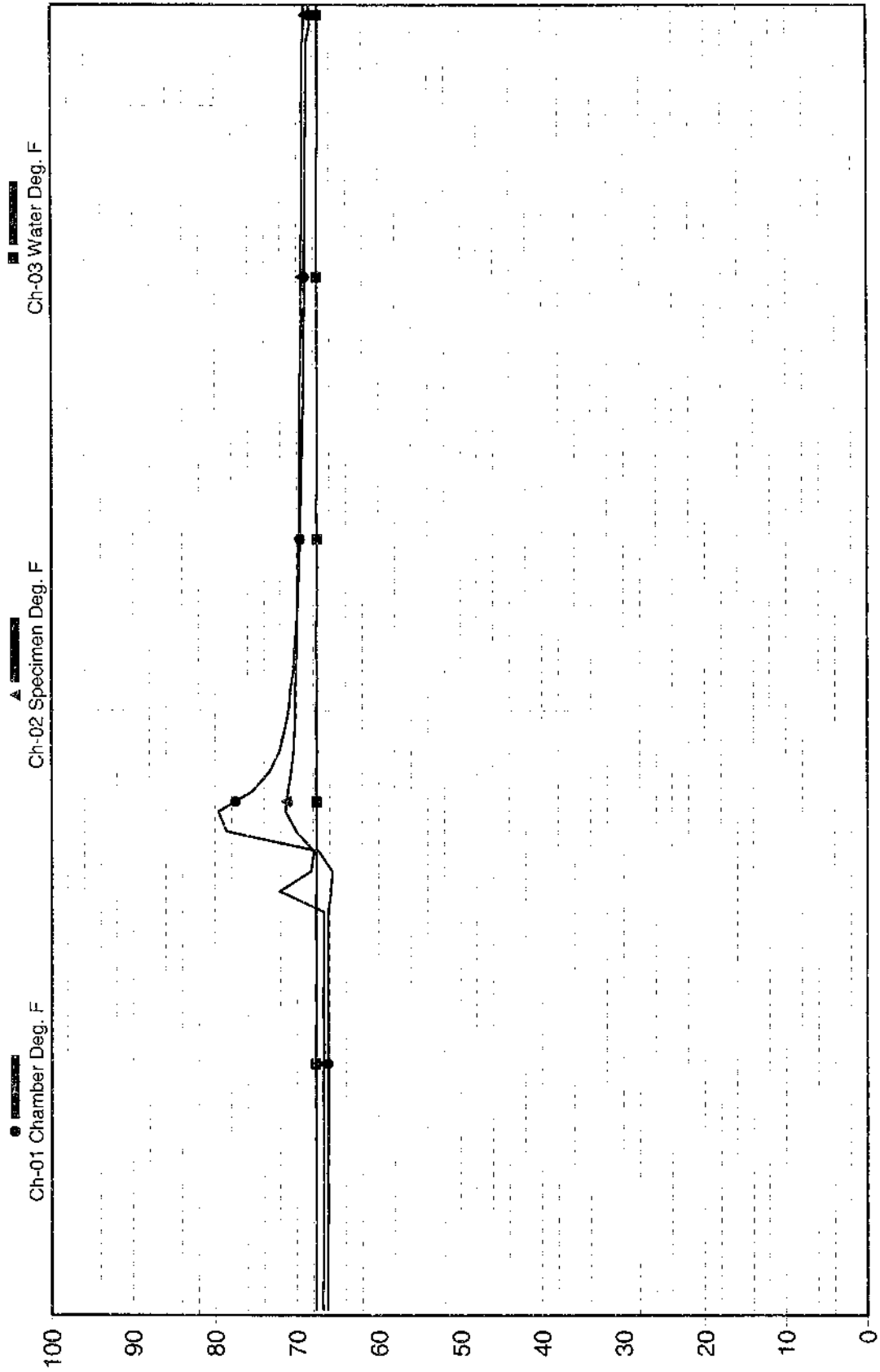


Pelican Products JN: 10443

Cases

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Immersion

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TEST TITLE: Immersion (IPX7)CUSTOMER: Pelican Products, Inc.Job No.: 10443Date: 5/16/2016Specimen: Cases (Model 1485, 1525, 1535, 1555, 1605, 1615)Technician: S. Buckler S.B. 5-16-16Part No.: See Recv. Insp.Serial No.: See Recv. Insp.Engineer: T. Valire72 5/17/16

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Chamber - Environmental	Wylye / Bally	Chamber 3	-175°F to +240°F & Rh / 8"x8"x7"10" / CO2 LN2	K10146	* System	Calibration *	Mfg. Spec.
Controller - Chamber	Wattlow	System #10 F4 / Ez-Zone	-100°F to 500°F & Rh	K10617	* System	Calibration *	Mfg. Spec.
Multimeter/DAS	Keithley	2700	10VDC & Type T TC's	K10170	8/12/2015	8/12/2016	+2% / ±2°F
Stopwatch	Micronta	Null	60 Min.	K10205	7/21/2015	7/21/2016	0.1 Sec.
Tape Measure	Keson Industries	MC-18-100	100 ft.	K10238	8/28/2015	8/28/2016	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 Kelly Space & Technology, Inc. QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.



DATA SHEET

Test Title Vertical Impact

Customer Pelican Products, Inc.

Job No. 10443

Specimen Case Model 1485, 1525, 1535, 1555, 1605, 1615

Date Started 5/17/2016

Part No. See Recv. Insp.

Serial No. See Recv. Insp.

Date Comp. 5/19/2016

Spec. DEF STAN 81-41 Part3/4

Par. 19

Photo Yes

Amb. Temp. 75° ±15F

Requirements:

Pre-Conditioning:

Temperature: $25 \pm 10^{\circ}\text{C}$
Humidity: $60 \pm 15\%$
Duration: 16 hours or until specimen has reached temperature stabilization (whichever is the shortest period)

Vertical Impact:

Drop Height: $39.4" \pm 0.79"$
Drops: One on each side
Impact Surface: A solid mass at least 20 times that of the heaviest case and an area sufficiently large to ensure that the case fall entirely upon the surface.

Test Method:

Lift the case and hold it at $39.4" \pm 0.79"$ between the lowest point of the case and at the time of release and the nearest point on the impact surface. Upon completion of drop perform a visual inspection and document the results. Repeat one drop for each additional case side. Reference Figure B-2-1 on the following page for surface identification.

Test Results:

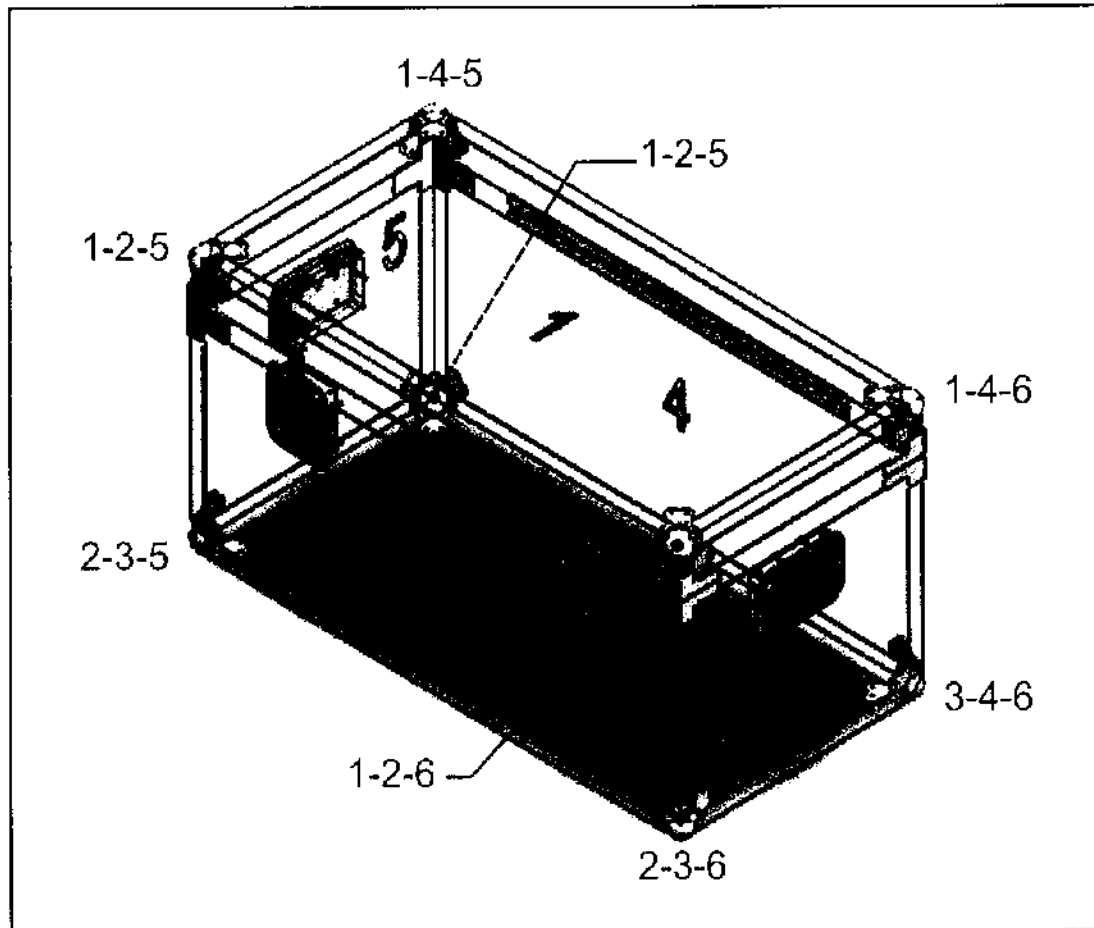
All testing was performed per the Test Method and Requirements stated above. No visual evidence of damage was observed to the cases following each impact.



DATA SHEET

Test Title	Vertical Impact	Date	5/17/2016
Customer	Pelican Products, Inc.	Job No.	10443
Specimen	Case Model 1485, 1525, 1535, 1555, 1605, 1615	Technician	S. Buckler <i>S.B. 5-17-16</i>
Part No.	See Recv. Insp.	Serial No.	See Recv. Insp.
		Engineer	T. Valfre <i>T.V. 5/17/16</i>

Figure B-2-1. Corner and Surface Identification (ref. ASTM D-5276)





Photograph 1
Vertical Impact - Case 1485 Face 3



Photograph 2
Vertical Impact - Case 1485 Face 1



Photograph 3
Vertical Impact - Case 1485 Face 4



Photograph 4
Vertical Impact - Case 1485 Face 2



Photograph 5
Vertical Impact - Case 1485 Face 5



Photograph 6
Vertical Impact - Case 1485 Face 6



Photograph 7
Vertical Impact - Case 1525 Face 3



Photograph 8
Vertical Impact - Case 1525 Face 1



Photograph 9
Vertical Impact - Case 1525 Face 4



Photograph 10
Vertical Impact - Case 1525 Face 2



Photograph 11
Vertical Impact - Case 1525 Face 5



Photograph 12
Vertical Impact - Case 1525 Face 6



Photograph 13
Vertical Impact - Case 1535 Face 3



Photograph 14
Vertical Impact - Case 1535 Face 1



Photograph 15
Vertical Impact - Case 1535 Face 4



NO IMAGE AVAILABLE

Photograph 16
Vertical Impact - Case 1535 Face 2



Photograph 17
Vertical Impact - Case 1535 Face 5



Photograph 18
Vertical Impact - Case 1535 Face 6



Photograph 19
Vertical Impact - Case 1555 Face 1



Photograph 20
Vertical Impact - Case 1555 Face 3



Photograph 21
Vertical Impact - Case 1555 Face 2



Photograph 22
Vertical Impact - Case 1555 Face 4



Photograph 23
Vertical Impact - Case 1555 Face 5



Photograph 24
Vertical Impact - Case 1555 Face 6



Photograph 25
Vertical Impact - Case 1605 Face 3



Photograph 26
Vertical Impact - Case 1605 Face 1



Photograph 27
Vertical Impact - Case 1605 Face 4



Photograph 28
Vertical Impact - Case 1605 Face 2



Photograph 29
Vertical Impact - Case 1605 Face 6



Photograph 30
Vertical Impact - Case 1605 Face 5



Photograph 31
Vertical Impact - Case 1615 Face 3



Photograph 32
Vertical Impact - Case 1615 Face 1



Photograph 33
Vertical Impact - Case 1615 Face 4



Photograph 34
Vertical Impact - Case 1615 Face 2



Photograph 35
Vertical Impact - Case 1615 Face 5



Photograph 36
Vertical Impact - Case 1615 Face 6



TEST TITLE: Vertical Impact

CUSTOMER: Pelican Products, Inc. Job No.: 10443 Date: 5/17/2016
 Specimen: Cases (Model 1485, 1525, 1535, 1555, 1605, 1615) Technician: S. Buckler S.B. 5-17-16
 Part No.: See Recv. Insp. Serial No.: See Recv. Insp. Engineer: T. Valfire TW 5/17/16

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Tape Measure	Keson Industries	MC-18-100	100 ft.	K10238	8/28/2015	8/28/2016	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 Kelly Space & Technology, Inc. QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.



DATA SHEET

Test Title Drop Test

Customer	<u>Pelican Products, Inc.</u>	Job No.	<u>10443</u>
Specimen	<u>Case Model 1535</u>	Date Started	<u>5/18/2016</u>
Part No.	<u>See Recv. Insp.</u>	Serial No.	<u>See Recv. Insp.</u>
Spec.	<u>ATA Spec. 300 CAT I</u>	Par.	<u>B-2-1</u>
		Photo	<u>Yes</u>
		Amb. Temp.	<u>75° ±15F</u>

Requirements:

Pre-Conditioning:

Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: $50 \pm 10\% \text{ RH}$
 Duration: 24 hours minimum

Drop:

Drop Height: $39.4" \pm 0.79"$
 Total Drops: Face (160), Edge (80), Corner (40)
 Impact Surface: A solid mass at least 50 times that of the heaviest case and an area sufficiently large to ensure that the case fall entirely upon the surface.

Test Method:

Lift the case and release the case at the required drop height and configuration listed below. Upon completion of the drop perform a visual inspection and document the results. Perform all drops in one configuration before continuing to the next.

Face Drops - 30" drop height. 160 total drops. 40 drops each on each face 1, 3, 4 & 5. per Figure B-2-1 on the next page.

Edge Drops - 36" drop height - 80 total drops. 20 drops each on each edge combination of 3-4, 3-5, 6-2, 1-2 per Figure B-2-1 on the next page.

Corner Drops - 36" drop height - 40 total drops. 10 drops each on each corner combination of 2-3-5, 3-4-6, 1-2-5 & 1-4-5 per Figure B-2-1 on the next page.

Test Results:

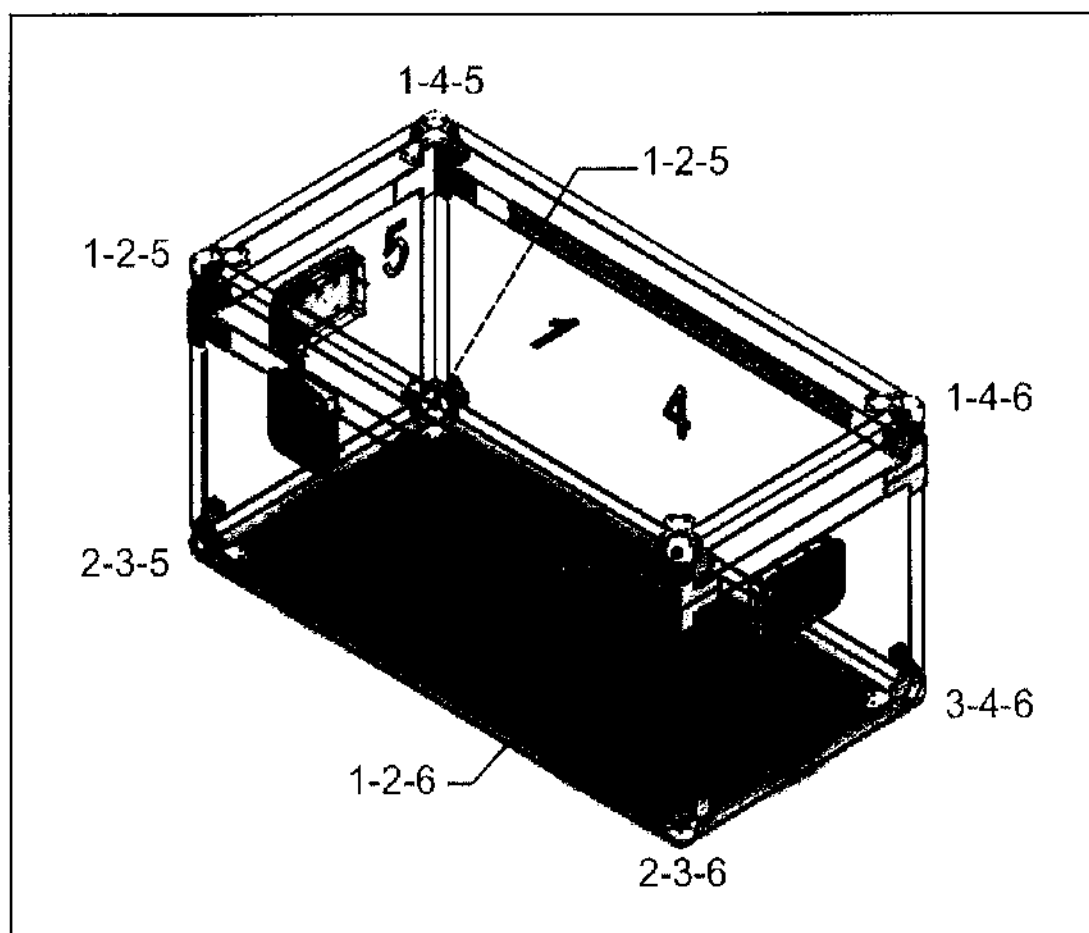
All testing was performed per the Test Method and Requirements stated above. No visual evidence of damage was observed to the case following each drop in each configuration.



DATA SHEET

Test Title	Drop Test	Date	5/18/2016
Customer	Pelican Products, Inc.	Job No.	10443
Specimen	Case Model 1535	Technician	S. Buckler <i>S.B. 5-18-16</i>
Part No.	See Recv. Insp.	Serial No.	See Recv. Insp.
		Engineer	T. Valfre <i>tw 5/18/16</i>

Figure B-2-1. Corner and Surface Identification (ref. ASTM D-5276)





Photograph 1
Drop Test - Case 1535 Corner 2-3-5 Typical



*Photograph 2
Drop Test - Case 1535 Corner 3-4-6 Typical*



Photograph 3
Drop Test - Case 1535 Corner 1-2-5 Typical



*Photograph 4
Drop Test - Case 1535 Corner 1-4-5 Typical*



Photograph 5
Drop Test - Case 1535 Edge 3-4 Typical



Photograph 6
Drop Test - Case 1535 Edge 3-5 Typical



Photograph 7
Drop Test - Case 1535 Edge 6-2 Typical



Photograph 8
Drop Test - Case 1535 Edge 1-2 Typical



Photograph 9
Drop Test - Case 1535 Face 3 Typical



Photograph 10
Drop Test - Case 1535 Face 1 Typical



Photograph 11
Drop Test - Case 1535 Face 4 Typical



Photograph 12
Drop Test - Case 1535 Face 5 Typical



TEST TITLE: Drop Test

CUSTOMER: Pelican Products, Inc.

Job No.: 10443

Date: 5/18/2016

Specimen: Case (Model 1535)

Technician: S. Buckler 3-18-16

Part No.: See Recv. Insp.

Serial No.: See Recv. Insp.

Engineer: T. Valfre *TS/9/16*

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Tape Measure	Keson Industries	MC-18-100	100 ft.	K10238	8/28/2015	8/28/2016	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 Kelly Space & Technology, Inc. QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.



DATA SHEET

Test Title Penetration Test

Customer Pelican Products, Inc.

Job No. 10443

Specimen Case Model 1535

Date Started 5/20/2016

Part No. See Recv. Insp.

Serial No. See Recv. Insp.

Date Comp. 5/20/2016

Spec. ATA Spec. 300 CAT I

Par. B-2-5

Photo Yes

Amb. Temp. 75° ±15F

Requirements:

Pre-Conditioning:

Temperature: $23 \pm 1^{\circ}\text{C}$
 Humidity: $50 \pm 10\% \text{ RH}$
 Duration: 24 hours minimum

Drop:

Drop Height: 19.7"
 Total Drops: 6 (One on each face)

Test Method:

The penetration test consist of a bar 3.2 centimeters in diameter with a hemispherical end, weighting 6 kilograms being dropped with its longitudinal axis vertical, onto the weakest point of any exterior surface of the container. Reference Figure B-2-1 on the following page for surface identification

Drop the bar once on each surface from a height of 19.7" (0.5 meters) as measured from the bottom of the bar to the top of the container surface.

Failure occurs if the bar either penetrates the outer wall or permanently damages it in a manner which will degrade the structural strength of the container or container wall. Document all results.

Test Results:

All testing was performed per the Test Method and Requirements stated above. No visual evidence of damage was observed to the case following each drop.



DATA SHEET

Test Title Penetration Test

Date 5/20/2016

Customer Pelican Products, Inc.

Job No. 10443

Specimen Case Model 1535

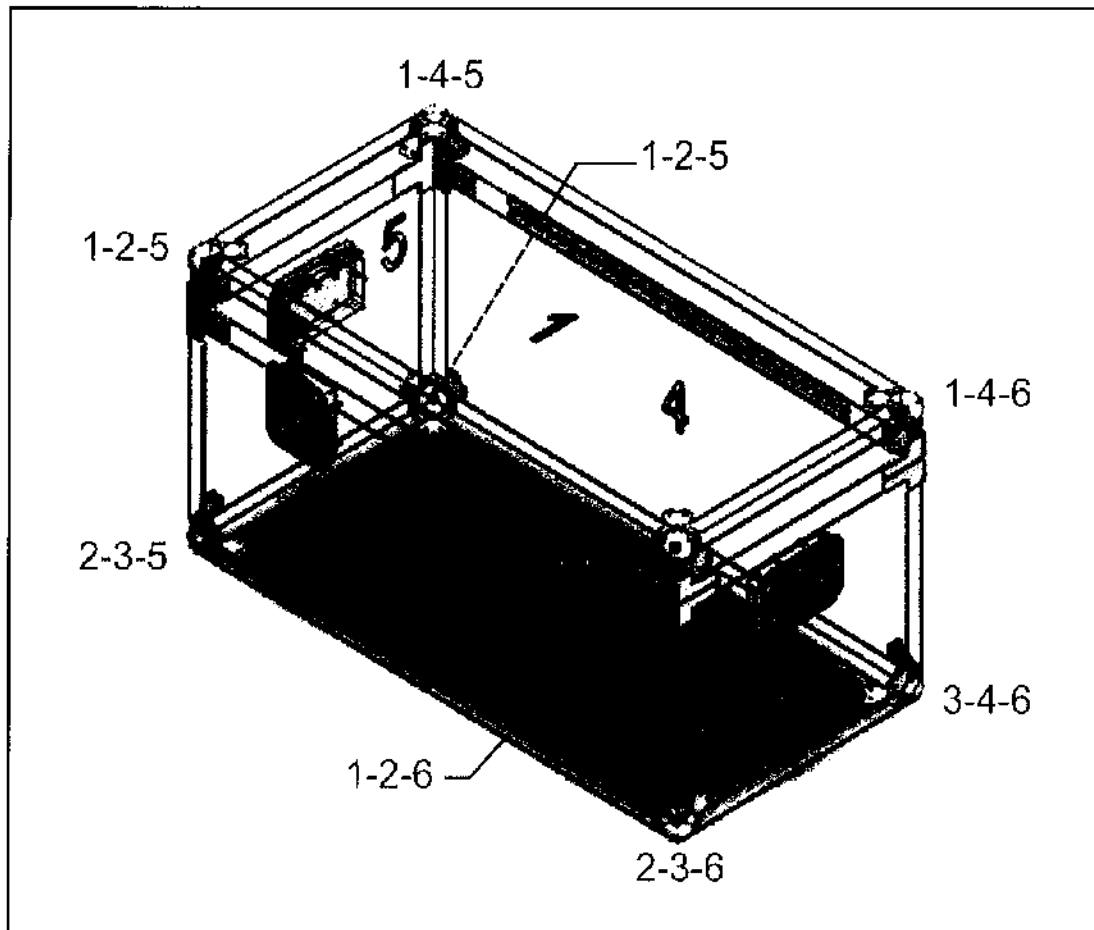
Technician S. Buckler *S.B. 5-20-16*

Part No. See Recv. Insp.

Serial No. See Recv. Insp.

Engineer T. Valfre *T.V. 5/20/16*

Figure B-2-1. Corner and Surface Identification (ref. ASTM D-5276)





Photograph 1
Penetration Test - case 1535 Face 1



Photograph 2
Penetration Test - case 1535 Face 3



Photograph 4
Penetration Test - case 1535 Face 4



Photograph 5
Penetration Test - case 1535 Face 6



Photograph 6
Penetration Test - case 1535 Face 5



CUSTOMER: Pelican Products, Inc. Job No.: 10443
 Specimen: Case (Model 1535)
 Part No.: See Recv. Insp. Serial No.: See Recv. Insp.
 Date: 5/20/2016
 Technician: S. Buckler 58, 5-20-16
 Engineer: T. Valfre TW 5/20/16

EQUIPMENT	MANUFACTURER	MODEL #	RANGE	KELLY #	CALIBRATION		ACCY.
					LAST	DUE	
Tape Measure	Keson Industries	MC-18-100	100 ft.	K10238	8/28/2015	8/28/2016	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 Kelly Space & Technology, Inc. QA files and are available for inspection upon request. *Equipment identified as System Calibration are verified prior to use.