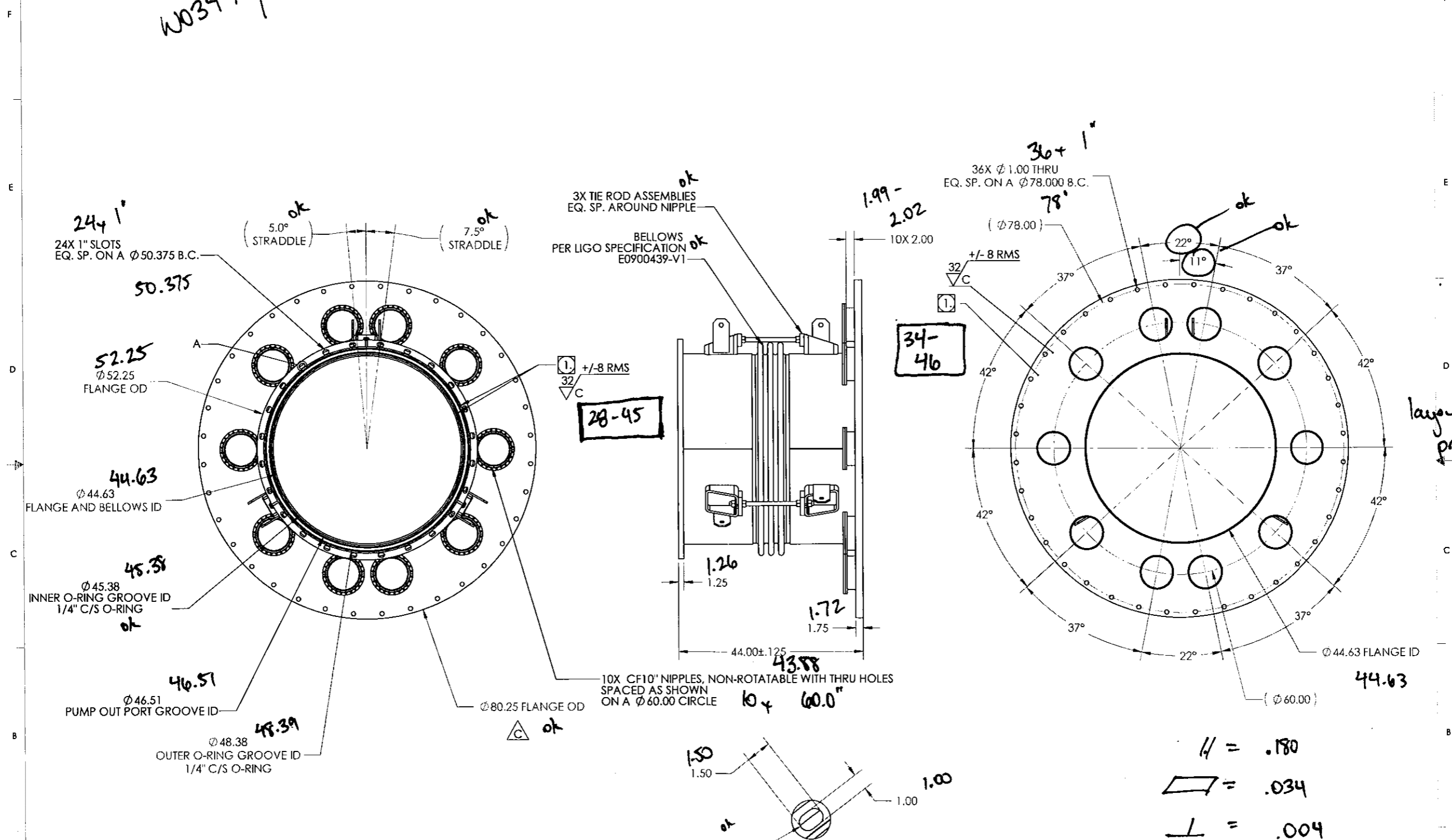


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ZONE	REV.	DESCRIPTION	DATE	APPROVED
A		REVISED MODEL TO MATCH MFG. PROCESSES	6/9/10	MKM2
B		REVISED TOLERANCE BLOCK, GD&T TOLERANCE WAS .01, NOW .03	6/24/2010	MKM2
C		80.00 WAS 80.30, ADDED THICKNESSES OF FLANGES, BKG FLANGE THICKNESS INCREASED TO 1.75	7/20/2010	MKM2
D		RELEASED TO PRODUCTION	8/20/2010	MKM2

W03474/1



layout ok,
 program ok

NOTES
 1. VACUUM SEALING SURFACE
 2. CONFLAT PORTS ARE NON-ROTATABLE WITH THRU HOLES.

DETAIL A
 SCALE 1:4
 1" SLOT DETAIL
 24 PLACES

MATERIAL: AISI 304/AISI 304L DUAL CERT PER SA240

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES

TOLERANCES: FINISH 125

ANGULAR: ± 0°30'

XX ±.06

XXX ±.008

UNSPECIFIED FILLETS: R.015

BREAK EDGES .015x45°

REMOVE ALL BURRS

WITHIN .03

THIRD ANGLE PROJECTION

WEIGHT: 2352.01#

APPROVALS DATE

DRAFTER MKM2 6/9/10

CHECKER RW 6/15/10

ENGINEER MKM2 6/9/10

GNB CORPORATION
 SCIENTIFIC AND INDUSTRIAL EQUIPMENT
 3200 DWIGHT RD. SUITE 100
 ELK GROVE, CA 95758
 916-395-3003 FAX: 916-395-3363
 www.gnbvalves.com

TITLE: OUTLINE, ADAPTER A-17

DO NOT SCALE DRAWING

C Dwg. NO. 114142-00 REV

SCALE: 1:16 SHEET 1 OF 1 D

1st A-17 Pre Clean



Corporation

QP1750-A7

Subject: Leak Test Procedure (LIGO Only)

Revision: B

Page 4 of 4

GNB - LIGO LEAK TEST RECORD AND CERTIFICATION			
Detector			
Mdl: Varian VSMD301	SN: L11007L045	Cal. Exp. Date: 6-9-11	Tracer Gas: He4
Std Lk Rate:		Std Response:	
Component	(1)	(2)	(3)
Component Name	1 st A-17		
GNB Drawing No. & Rev.	114141-00		
Serial No.	85109 85111 CB 4/22/11		
Leak Test Data			
Pressure	1.2 mt. Hg only Varian leak checker pumping on chamber		
Duration			
Response	No Leak Detected		
Leak Rate Allowable: $\leq 1 \times 10^{-9}$ Torr-L/S			
Welds I, Measured	8.9×10^{-10}		
Welds II, Measured	8.9×10^{-10}		
CF III, Measured	8.9×10^{-10}		
Performed By/Date: <i>Clancy Blinty</i>	Pre-Final Clean	<input checked="" type="checkbox"/>	Post Bakeout
Witnessed By:	Title:		
Signature/Date: <i>Clancy Blinty</i>	4-22-11		
Comments:			
Annulus Pump-down			
Allowable: $\leq 1 \times 10^{-5}$ Torr	Pass / Fail	Pass / Fail	Pass / Fail
Annulus1/Category IV			
Annulus1/Category V			
Measured Vacuum			
Annulus2/Category IV			
Annulus2/Category V			
Measured Vacuum			
Performed By/Date:	Signature/Date:		
Witnessed By:	Signature/Date:		
Comments:			



QP1750-D2

Subject: Aqueous Cleaning Procedure (LIGO Only)
Revision: B Page 8 of 9**GNB - LIGO FINAL CLEANING RECORD****This Version For MC or Mid-Station Tubes**

Component Name:	GNB Dwg Number:	Serial Number:	Date:
A-17 ADAPTER #1	114436-005	85111	4-26-11
External Surfaces - Detergent Wash & Rinse			
Start Time: 3:00	End Time: 3:45		
VBS - Pre-Rinse / Component Heat-Up			
Start Time: 3:45	Rinse Water Temperature: 460°F		
Int#1: 97.3°F	Int#2: 98.2°F	Int#3: 98.7°F	Ext#1: 96.7°F Ext#2: 97.1°F
End Time: 4:30			
VBS - Detergent Wash			
Washing with Fixture-	Start Time: 4:30	End Time: 5:15	
Typical Surface Temps Attained:	#1: 97.4°	#2: 98.1	#3: 98.6
Washing with Wand(s)-	Start Time: 4:30	End Time: 5:15	
Area Location:	Approx Sq.Ft.:	Start Temp:	Time to get to 130F:
#1 TOP FLANGE	5	65.4	
#2 CENTER ROLL UP	30	65.7	
#3 BOTTOM FLANGE	15	66.1	
6:00 First DI Rinse			
Start Time: 5:15	End Time: 6:00	Rinse Duration at least 15 minutes? (y/n): Y	
Spot Check for Film or Residue			
Swab Coloration Evident? (y/n): N. If yes, comments & title/signature:			
6:30 Final DI Rinse			
Start Time: 6:00	End Time: 6:30	Rinse Duration at least 15 minutes? (y/n): Y	
Nitrogen Blow Dry			
Start Time: 6:30	End Time: 6:45		
Operators:	1: DANIEL BRADFORD 2: CLAUDEY BLILIEY		
Comments:	Final Hot DI Rinse 8:30 to 9:30 4-27-11 <i>Chapman</i>		
Visual Inspection (VC-Exterior / Vis+UV-VB Surfaces)			
Vacuum Boundary? (pass/fail): Pass	Title of Inspector: Lead Tech <i>Chapman</i>		
External Surfaces? (pass/fail): Pass	Signature/Date: <i>Chapman</i> 4/27/11		
Comments:			

1ST A-16 & A-17 Final Leak Check

GNB - LIGO LEAK TEST RECORD AND CERTIFICATION			
Detector			
Mdl: Varian VSMD301	SN: 4410074045	Cal. Exp. Date: 6-9-11	Tracer Gas: He4
Std Lk Rate: 9.1E-08		Std Response: 9.1E-08	
Component	(1)	(2)	(3)
Component Name	1 ST A-16	1 ST A-17	
GNB Drawing No. & Rev.	114141-00	114142-00	
Serial No.	85109	85111	
Leak Test Data			
Pressure	.9 mtorr	.9 mtorr	
Duration	20 min	20 min	
Response	No Leak Detected	NO Leak Detected	
Leak Rate Allowable: $\leq 1 \times 10^{-9}$ Torr-L/S			
Welds I, Measured	1.0^{-7} Torr L/S	1.0^{-7} Torr L/S	
Welds II, Measured	"	"	"
CF III, Measured	"	"	"
Performed By/Date: Marc Putz		Pre-Final Clean	Post Bakeout <input checked="" type="checkbox"/>
Witnessed By: Clancy Blodig		Title: Lead Tech	
Signature/Date: Clancy Blodig		5-10-11	
Comments: Chambers isolated to navit; only the leak checker pumping on vessels during leak check. 20 minutes of heavy He flood area and no leaks detected			
Annulus Pump-down			
Allowable: $\leq 1 \times 10^{-5}$ Torr	Pass/Fail	Pass / Fail	Pass / Fail
Annulus1/CategoryIV			
Annulus1/CategoryV	1 ST A-16	1 ST A-17	
Measured Vacuum	1×10^{-5}	N/A	
Annulus2/CategoryIV			
Annulus2/CategoryV			
Measured Vacuum			
Performed By/Date: Clancy Blodig			
Witnessed By:		Signature/Date: Clancy Blodig 5-10-11	
Comments:			

Final Leak Check



1st A-16 & A-17
 Subject: Leak Test Procedure (LIGO Only)
 Revision: B Page 4 of 4

QP1750-A7

1st A-16, A-17 Post Bake Leak Check

GNB - LIGO LEAK TEST RECORD AND CERTIFICATION			
Detector			
Mdl: Varian VSMD301	SN:	Cal. Exp. Date:	Tracer Gas: He4
Std Lk Rate:	Std Response:		
Component	(1)	(2)	(3)
Component Name	1 st		
GNB Drawing No. & Rev.			
Serial No.			
Leak Test Data			
Pressure	.9 mtorr with only leak checker pumping on chamber		
Duration	5 min Heavy He Flood		
Response			
Leak Rate Allowable: $\leq 1 \times 10^{-9}$ Torr-L/S			
Welds I, Measured	1.0 ⁻⁹ Torr-L/S		
Welds II, Measured	"		
CF III, Measured	"		
Performed By/Date: <u>Clayton/Marc</u>	Pre-Final Clean	Post Bakeout <input checked="" type="checkbox"/>	
Witnessed By: <u>Clayton</u>	Title:		
Signature/Date: *			
Comments:	No Leak Detected M. P. 9/10/11		
Annulus Pump-down			
Allowable: $\leq 1 \times 10^{-5}$ Torr	Pass / Fail	Pass / Fail	Pass / Fail
Annulus1/Category IV			
Annulus1/Category V			
Measured Vacuum			
Annulus2/Category IV			
Annulus2/Category V			
Measured Vacuum			
Performed By/Date:			
Witnessed By:	Signature/Date:		
Comments:			



QP1750-A3

Subject: Testing, PCL&NVR (LIGO Only)

Revision: A

Page 5 of 7

GNB - LIGO CLEANLINESS TESTING RECORD

Component (check only 1)

- 114141-00 A16 Adptr 114142-00 A17 Adptr 114143-00 A18 Adptr 114144-00 Mid-St Sp
- 114146-00 MC-B 114146-01 MC-B 114146-02 MC-B 114146-03 MC-B
- 114145-00 MC-A 114425-00S Sept. Plt.
- 114424-01S Sept. Plt. 114424-02S Sept. Plt. 114424-03S Sept. Plt. 114424-04S Sept. Plt.

Other Items (prv/description/quantity):
using IPA for all samples

Revision: 114436-00S Serial Number: 8511

Samples

Sample(s) Taken By: Clancy/Rich

Date: 4-27-11

Sample 1 - Bottle Number & Area Sampled:

Filtered IPA Baseline

Sample 2 - Bottle Number & Area Sampled:

Filtered IPA & collection tools

Sample 3 - Bottle Number & Area Sampled:

Inner wall below bellows

Sample 4 - Bottle Number & Area Sampled:

View Port

Sample 5 - Bottle Number & Area Sampled:

Sample 6 - Bottle Number & Area Sampled:

AstroPak PO Number: LC-0107-01

Ship Date, Carrier, Tracking#:

Test Result Disposition

AstroPak Test Report Attached? (y/n):

Is this a Repeated Test? (y/n):

Is Component Accepted or Rejected?

Title:

Signature:

Date:

Comments (enter here and/or to right of sample area descriptions):



ASTRO PAK

astropak.com

12201 Pangborn Avenue, Downey, CA 90241 (562) 293-3557 Fax (562) 803-3870
For inquiries regarding in-process orders, please call Customer Service at (562) 293-3552 or (866) 492-7876 ext. 3552

Certificate of Compliance

Astro Pak Corporation hereby certifies that all processes required by your purchase order were performed and that all materials used were in accordance with the applicable specification(s). Any evidence of tampering with the package or seals prior to installation without specific approval, nullifies this certification.


Customer GNB 3200 Dwight Road Suite 100 Elk Grove, CA 95758
P.O. LC-0107-01 Log 93717080 Total Quantity 4 Date 5/6/2011

The process specification or service performed: Particle and NVR Testing

Tested per IEST-STD-CC1246D for particulate levels and reported results

Line #	Qty	Part #	Part Description	Extended Description	Serial #s	Job #
1	1	Bottle #1	Baseline, 100 ml sample	Sample Tested at Level 93 A/3.23		
2	1	Bottle #2	Filter & Collection Tool, 100 ml sample	Sample Tested at Level 100 A/3.70		
3	1	Bottle #3	Inner Wall below below, 100 ml sample	Sample Tested at Delta Level 44 A/16.6		
4	1	Bottle #4	View Port, 100 ml sample	Sample Tested at Delta Level 88 A/4.35		

Quality Assurance


Martin Smith, QA Manager



Date MAY 06 2011

Source Required No

Date



Astro Pak Corporation's Precision Cleaning Facility - Downey CA is an AS 9100B:2004 and ISO 9001:2008 registered facility.

Cert. #42548



1 of 1



Certified Test Report

Customer: GNB Corporation

PO: LC-0107-01

Log # 93717080

Description: Samples

Specification: IEST-STD-CC1246D, Level 100A/20

Acceptance Criteria and Results

Size/microns	> 5	> 15	> 25	> 50	> 100	NVR
Allowable	1,780	264	78	11	1	0.05 mg
1	1,392	192	29	6	0	0.31 mg
2	390	90	21	9	1	0.27 mg
Δ of 3	113	13	0	0	0	0.06 mg
Δ of 4	1,036	49	0	0	0	0.23 mg
IEST-STD-CC1246D Levels	93	92	76	85	NA	A/3.23
IEST-STD-CC1246D Levels	65	74	69	95	100	A/3.70
IEST-STD-CC1246D Levels	44	41	NA	NA	NA	A/16.6
IEST-STD-CC1246D Levels	86	62	NA	NA	NA	A/4.35

1 = " 95% UCL = 1,466 particles > 5 μm / 0.1 m²; LCL = 1,322 "

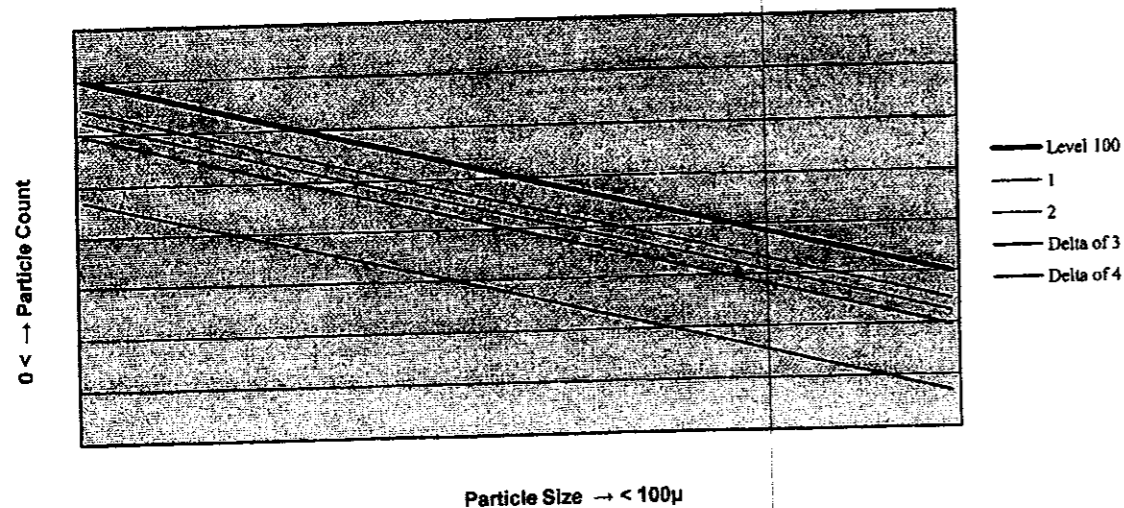
2 = " 95% UCL = 430 particles > 5 μm / 0.1 m²; LCL = 354 "

Delta of 3 = " 95% UCL = 135 particles > 5 μm / 0.1 m²; LCL = 94 "

Delta of 4 = " 95% UCL = 1,100 particles > 5 μm / 0.1 m²; LCL = 976 "

NOTE: The graph below is merely a visual representation of the raw laboratory data reported above.
The graph extrapolates the median cleanliness levels to form a graphable line.

IEST-STD-CC1246D, Level 100



Lab Tech: Carlos Alcala
Date/Time: 05/02/11 1330
Relative Humidity: 46%
Temp: 65° F
Sample method: ASTM F303
Test Method: ASTM F311, F312 & F331

THE ABOVE DATA HAS BEEN REVIEWED AND APPROVED

[Signature]
Astro Pak Quality
MAY 06 2011

Bake Out Data Collection Sheet

Date: 5/16/11 Technician: Stanley Bleily Component: 1st A-16 & A-17

Bake Out Day 1 / 5/16			Bake Out Day 2 / 5/17			Bake Out Day 3 / 5/18		
Time	Temp	Pressure	Time	Temp	Pressure	Time	Temp	Pressure
			Original in					
			1 st A-16 Folder					
			7:00	108	6.0 ⁻⁶			
			8:00	114	6.2 ⁻⁶			
			9:00	120	6.9 ⁻⁶			
			10:00	126	7.9 ⁻⁶			
			11:00	134	8.6 ⁻⁶			
			12:00	140	8.0 ⁻⁶	12:00	150	4.8 ⁻⁶
1:00	30°	8.9 ⁻⁶	1:00	146	9.5 ⁻⁶			
2:00	36°	8.0 ⁻⁶	2:00	150	9.7 ⁻⁶			
3:00	42°	7.2 ⁻⁶						
4:00	48°	7.8 ⁻⁶						
5:00	54°	7.4 ⁻⁶						
6:00	60	7.7 ⁻⁶						
7:00	66	8.1 ⁻⁶						
8:00	72	9.0 ⁻⁶						
9:00	78	9.1 ⁻⁶						
10:00	84	1.1 ⁻⁵						
11:00	90	1.2 ⁻⁵						
12:00	96	1.4 ⁻⁵						

Subject: Bakeout Procedure (LIGO Only)

Revision: Page 14 of 15

Time	Temp	Pressure	Time	Temp	Pressure	Time	Temp	Pressure
			7:00	84	2.2 ⁻⁷			
8:00	150	3.0 ⁻⁶	8:00	78	1.8 ⁻⁷			
			9:00	72	1.4 ⁻⁷			
			10:00	66	1.3 ⁻⁷			
			11:00	60	1.1 ⁻⁷			
			12:00	54	9.0 ⁻⁸			
2:00	144	3.0 ⁻⁶						
3:00	138	2.8 ⁻⁶	3:00	48	8.2 ⁻⁸			
4:00	132	2.4 ⁻⁶	4:00	42	8.2 ⁻⁸			
5:00	126	2.1 ⁻⁶	5:00	36	NA			
6:00	120	1.9 ⁻⁶	6:00	30	NA			
7:00	114	1.7 ⁻⁶						
8:00	108	1.3 ⁻⁶						
9:00	102	1.1 ⁻⁶						
10:00	96	1.0 ⁻⁶						
11:00	90	1.0 ⁻⁶						

Bake Out Data Collection Sheet

Date: / / Technician: Component:

1:00 5-6-11 Test heater function - TC function
2:00 36° set point all looks good
3:00 42° set point all looks good
3:10 Install jackets.
6:40 RGA Turn on

87°

5-9-11: 2:00 pm Start ramp down

A-16 view port covers 165° 158° 156°
A-17 view port covers 135° 132° 134°

5-10 - Start disassemble for final leak test WRG disconnected at 4:00 so last 2 pressure readings not available.