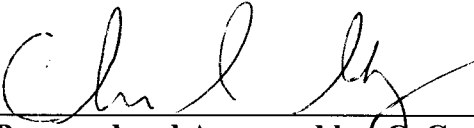




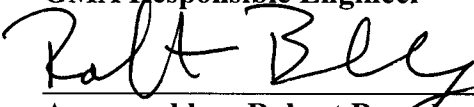
W. W. Hansen Experimental Physics Laboratory
STANFORD UNIVERSITY
STANFORD, CALIFORNIA 94305-4085
GRAVITY PROBE B RELATIVITY MISSION

GMA BASEPLATE PULL DATA

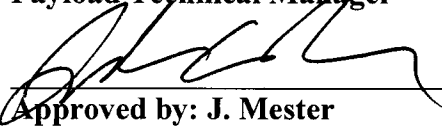
S0849 Rev –
April 03, 2003


Prepared and Approved by **C. Gray**
GMA Responsible Engineer

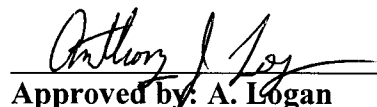
4/3/03
Date


Approved by: **Robert Brumley**
Payload Technical Manager

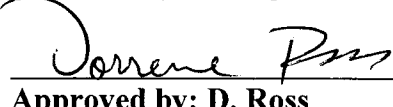
4/3/03
Date


Approved by: **J. Mester**
GMA Technical Manager

4/3/03
Date


Approved by: **A. Logan**
System Engineering

4/3/03
Date

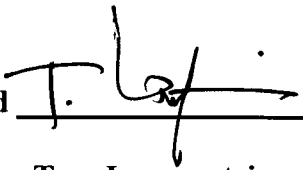

Approved by: **D. Ross**
Program Quality Assurance Manager

4/9/03
Date

ITAR Assessment Performed

☒ No

4/5/03


Tom Langenstein

ITAR Control Req'd? ☐ Yes

REVISION RECORD

Rev	Date	Comments

Purpose:

Documented data taken at Composite optics, Inc. for the GMA Pallet threaded inserts. The data evaluates the “pull” forces required for failure. The data indicates that the inserts meet the PLSE-12 Requirements shown below. (Test requirements – 450psi minimum / test results confirm ~1210psi average for 3 tests) This exceeds the required safety factor of 2.0 ultimate for the baseplate.

Requirement:

PLSE-12 Requirement

Para	Title	Requirement	Method
3.7.8.12.1	Structural Safety Factors	The inertial safety factors for the GMA shall be 1.25 for yield and 1.5 for ultimate for all structure except the base plate; the safety factor for the base plate shall be 2.0 for ultimate.	A

FROM :

PHONE NO. : 6215317

Jan. 31 2002 03:59PM PS

COMPOSITE OPTICS, INC.

Laboratory Request

Lab No. 24955PROJECT No. 1736RWORK ORDER No. NA

1 OF 1

PROG. NAME	<u>MOOG</u>	PART NAME	<u>NA</u>		
PART No.	<u>NA</u>	REV. NA	<u>NA</u>	S/N NA	CURE No. <u>NA</u>
MATERIAL	<u>ALUM SKIN/ALUM COG OPT NA</u>		LOT No.	<u>NA</u>	ROLL No. <u>NA</u>
P.O. No.	<u>NA</u>	LAY-UP	<u>NA</u>	LAM. THICKNESS <u>NA</u>	
PROG. MGR.	<u>BB</u>				
SPECIAL INSTRUCTIONS:		COUPON ID	DATE REC'D. <u>12/17/01</u>		
<u>FWT TEST 3 of 4 coupons. per ASTM C297</u>					
TEST REQUIREMENTS:		TEST RESULTS:			
<u>450 psi min.</u>		<u>1209.7 PSI avg</u>			

LAB TECH. W. H. H.DATE 01/09/02LAB MGR. C. S. H.DATE 1/13/02Q.E. J. MunozDATE 1/1

ORIGINAL TO Q.A., COPY TO TEST LAB, COPY TO PROGRAM MANAGER

FROM :

PHONE NO. : 6215317

Jan. 31 2002 04:00PM P6

Report Date: Jan 3, 2002

Composite Optics Inc.
Mechanical Test Lab
9617 Distribution Ave.
San Diego, CA 92121 USA

Lab Number: 24955 FWT
Method: Flatwise/Pi Tensile (ASTM C297)
Data path: H:\TWDATA25

Test Date: Jan 3, 2002
Operator ID: BILL

Sample Inputs:

Work Order/Step	N/A
Temp. (deg F)	73° F
Panel Thickness	1.550
Material	AL SKIN/AL CORE
Program No/Name	1730R

	Specimen Area Sq.in	Peak Load Lb	Ftu PSI	Ftu MPa
1	3.960	5019.3	1267.5	8.739
2	3.976	4781.4	1202.6	8.291
3	3.968	4598.8	1169.0	7.991
Mean	3.968	4799.8	1209.7	8.340
Stdv	0.008	210.8	54.6	0.378
%Cov	0.200	4.4	4.5	4.513

Specimen Comments:

1: SKIN TO CORE
2: SIN TO CORE
3: SKIN TO CORE

Test Inputs:

Load Limit HI 22000 Lb

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Manufacturing Work Instructions

C71034	E	MOOG PALLET ASSY	Quantity	1 EA	S/N	001
C71034-W	NC	SHIP	12/12/01	001 & On	W/O #	25290
					Prog	1711R

LABORATORY REQUEST

ManFact Lot No.	Raw Material Part No.	Material Description	Inventory Orientation	CPT	Date Rec'd.	Lab No.
	m	Alum skin/alum core sandwich	na	na	1/8/02	25038

Special Instructions:

Pull the (3) each supplied 6" x 6" coupons to failure using a cross head speed of 0.05 in/minute and a test fixture with a 3.5" dia hole to pull through.

Record failure force and a plot of load versus cross head motion.

Forward failed coupons to PM. *Ben Bowen*

B. Bowen

Steps	Work Center	Hrs.	Test Requirements	Test Results
4	440*10	6	NO REQUIREMENT, 1000 lbf Target. <i>Insert Pull-out</i> <i>u</i>	<i>1291.0 lb avg.</i>

Lab Technician	Date
<i>1722</i>	<i>1-21-02</i>

Lab Supervisor	Date
<i>Dan Long</i>	<i>1/22/02</i>

Quality Engineer	Date
<i>JMunoz</i>	

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