

**Chicago Bridge & Iron**

*Technical Services Company*

**FAX TRANSMISSION**

File 2.3/0071

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<b>TO:</b> <u>Larry Jones</u>	<b>FROM:</b> <u>Warren Carpenter</u>
<b>COMPANY:</b> <u>Caltech</u>	<b>DATE:</b> <u>9/9/96</u>
<b>FAX NO.:</b> <u>818 304 9834</u>	<b># OF PAGES:</b> <u>(including cover) 6</u>

Larry,

Attached is DRD #9, CDRL #30-C which provides the Coupon Outgassing Test Data for the first bake of 36" wide coil beam tube material which is heat 11L285. The six coils in the bake were 11L850 through 11L855.

The coupon material code stamp is "C" which corresponds to the CDRL number of "30-C". Three tests were conducted and resulted in hydrogen outgassing rates of  $6.3 \times 10^{-15}$ ,  $1.3 \times 10^{-14}$ , and  $2.0 \times 10^{-15}$  torr liters per second per centimeter squared. The hydrogen outgassing results are not very repeatable, probably due to the high ratio of chamber outgassing to coupon outgassing rates. It is however well below the go/nogo value of  $1 \times 10^{-13}$  TL/cm<sup>2</sup> sec.

Regards,

W.A. Carpenter  
Plainfield Engineering

CC: L. Buboltz - Hanford Site - LIGO MOF 2.3  
S. Peters / R. Johnson - Hanford Site - LIGO MOF 11.14.5



Coupon Outgassing Test Data  
Heat 11L285, Material Code "C"

CBI Services, Inc.  
953570

Contract No. PC181520  
LIGO Beam Tube Modules

DRD No. 09  
CDRL No. 30-C

Date of Issue: September 6, 1996

Document No. LIGO-C962280-00-B

Submitted for: Caltech's Information   
Caltech's Approval

If Submitted for Approval:

Submitted By : \_\_\_\_\_  
CBI Signature Date

This Document has been reviewed and is: A - Approved  
(Reviewer to circle appropriate code) C - Approved with Comments  
D - Disapproved

By : \_\_\_\_\_  
Caltech Signature Date

**CDRL No. 30 - Coupon Screening Outgassing Test Data**

#30-A: Coupons "A" - Heat 11J245A - Expansion Joint Material - May 10, 1996

#30-B: Coupons "B" - Heat 11J240A - Beam Tube Material - June 27, 1996

#30-B, Rev.1: Coupons "B" - Heat 11J240A - BT Material - June 27, 1996

#30-C: Coupons "C" - Heat 11L855 - Beam Tube Material - 3A- Sept. 6, 1996

The hydrogen outgassing test results for coupons "C" are attached. Coil numbers 11L850 through 11L855 were contained in this material bake.

## COUPON OUTGASSING RATE CALCULATION

COUPON IDENTIFICATION =	C	
COIL DESIGNATION =	11L855	
NO OF COUPONS =	110	
AREA OF EACH COUPON =	263	CM2
CALIBRATED LEAK SIZE =	5.00E-09	TL/S
VOLUME OF SYSTEM =	20.29	L
COUPON TEST FILE NO. =	COUPC12	
COUPON ACCUMULATION TIME =	30	MIN
COUPON ACCUMULATION PEAK RGA READING =	3.0E-11	
CALIBRATED LEAK TEST FILE NO. =	LK906A2	
CALIBRATED LEAK ACCUMULATION TIME =	10	MIN
CALIBRATED LEAK PEAK RGA READING =	2.1E-11	
CHAMBER BACKGROUND OUTGASSING RATE =	2.2E-09	TL/S
OUTGASSING RATE CORRECTION FACTOR =	7040.766	
OUTGASSING RATE FOR CHAMBER AND COUPONS =	2.4E-09	TL/S
COUPON OUTGASSING =	1.8E-10	TL/S
COUPON OUTGASSING RATE =	6.3E-15	TL/S-CM2
AVERAGE CHAMBER TEMPERATURE =	24	DEG C

## COUPON OUTGASSING RATE CALCULATION

COUPON IDENTIFICATION =	C	
COIL DESIGNATION =	11L855	
NO OF COUPONS =	110	
AREA OF EACH COUPON =	263	CM2
CALIBRATED LEAK SIZE =	5.00E-09	TL/S
VOLUME OF SYSTEM =	20.29	L
COUPON TEST FILE NO. =	COUPC22	
COUPON ACCUMULATION TIME =	30	MIN
COUPON ACCUMULATION PEAK RGA READING =	3.3E-11	
CALIBRATED LEAK TEST FILE NO. =	LK906B2	
CALIBRATED LEAK ACCUMULATION TIME =	15	MIN
CALIBRATED LEAK PEAK RGA READING =	3.2E-11	
CHAMBER BACKGROUND OUTGASSING RATE =	2.2E-09	TL/S
OUTGASSING RATE CORRECTION FACTOR =	6930.754	
OUTGASSING RATE FOR CHAMBER AND COUPONS =	2.6E-09	TL/S
COUPON OUTGASSING =	3.8E-10	TL/S
COUPON OUTGASSING RATE =	1.3E-14	TL/S-CM2
AVERAGE CHAMBER TEMPERATURE =	24	DEG C

### COUPON OUTGASSING RATE CALCULATION

COUPON IDENTIFICATION =	C	
COIL DESIGNATION =	11L855	
NO OF COUPONS =	110	
AREA OF EACH COUPON =	263	CM2
CALIBRATED LEAK SIZE =	5.00E-09	TL/S
VOLUME OF SYSTEM =	20.29	L
COUPON TEST FILE NO. =	COUPC32	
COUPON ACCUMULATION TIME =	30	MIN
COUPON ACCUMULATION PEAK RGA READING =	2.8E-11	
CALIBRATED LEAK TEST FILE NO. =	LK906C2	
CALIBRATED LEAK ACCUMULATION TIME =	15	MIN
CALIBRATED LEAK PEAK RGA READING =	3.1E-11	
CHAMBER BACKGROUND OUTGASSING RATE =	2.2E-09	TL/S
OUTGASSING RATE CORRECTION FACTOR =	7154.327	
OUTGASSING RATE FOR CHAMBER AND COUPONS =	2.3E-09	TL/S
COUPON OUTGASSING =	5.8E-11	TL/S
COUPON OUTGASSING RATE =	2.0E-15	TL/S-CM2
AVERAGE CHAMBER TEMPERATURE =	24	DEG C