

SAMPLE (I) SUMMARY

15 PARTS SAMPLED.

4" x 2.5" AREA ON EACH PART.

TOTAL AREA SAMPLED

WITH/FOR SAMPLE 1: 150 sq in

EACH AREA SAMPLED

TWICE (2 PASSES WITH SAMPLE 2 ACROSS EACH AREA)

E1900307-v2

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LIGO

ADVANCED LIGO FTIR SAMPLE RECORD

LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

~~Have not ruled on yet~~ Ct

Document:	LIGO-E	E1900307	-v2	Date:	9/27/19
Submitter:	Name:	Matthew Henze		Email address:	mhenze@ligo-b.cafel.hawaii.edu
Title:	FTIR:	TMS X-end Baffles "Sample 1" — BLACK NICKEL COATED STAINLESS STEEL			
System(s):	TMS				
Assembly(ies):	TMS shroud baffle (Don't have pic on me) LIGO-01900262				
Bake Load:	9636	<input checked="" type="checkbox"/> Pre-Bake	<input checked="" type="checkbox"/> Class A	<input checked="" type="checkbox"/> URGENT?	
JIRA URL:		<input type="checkbox"/> Post Bake	<input checked="" type="checkbox"/> Class B		
Notes:	Done on all panels in 4" x 2.5" square, twice over in same area. Have marked on drawing, where sample taken. Air Bake in LIGO large bake oven.				

PARTS				SAMPLES			
#	Part No.	SN	Description	#	Type	Description (for holes indicate "through" or "blind")	Amount
1	D1900260	N/A	TMS shroud Assy, Roof Panel	1	Surface	taken near edge. See drawing	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				2	Holes		# of Holes:
2	D1900390	N/A	TMS shroud Assy, Side Panel	3	Surface	taken near middle. See drawing	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				4	Holes		# of Holes:
3	D1900261	N/A	TMS shroud Assy, Bottom Panel	5	Surface	taken near edge. See drawing	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				6	Holes		# of Holes:
4	D1900257	N/A	TMS shroud Assy, Front Panel	7	Surface	taken near edge. See drawing	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				8	Holes		# of Holes:
5	D1900258	N/A	TMS shroud Assy, Rear Panel	9	Surface	taken near edge. See drawing	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				10	Holes		# of Holes:

2 passes.



## ADVANCED LIGO FTIR SAMPLE RECORD

6	D1900391-01 N/A	TMS Shroud Assy. ALS Panel ✓	11	Surface	taken between holes. See	Area ( <del>cm<sup>2</sup></del> ): 4" x 2.5" (x2)
			12	Holes	Diagram	# of Holes:
7	D1900391-02 N/A	TMS Shroud Assy. ALS Panel ✓	13	Surface	taken between holes. See	Area ( <del>cm<sup>2</sup></del> ): 4" x 2.5" (x2)
			14	Holes	Diagram	# of Holes:
8	D1900259 #1	TMS Shroud Assy. SIDE PANEL ✓	15	Surface	taken @ edge. See	Area ( <del>cm<sup>2</sup></del> ): 4" x 2.5" (x2)
			16	Holes	Diagram	# of Holes:
9	D1900259 #2	" "	17	Surface	✓ " "	Area ( <del>cm<sup>2</sup></del> ): 4" x 2.5" (x2)
			18	Holes	'	# of Holes:
10	D1900260-02	TMS Shroud Assy. Roof Panel ✓	19	Surface	taken @ centre, see	Area ( <del>cm<sup>2</sup></del> ): 4" x 2.5" (x2)
			20	Holes	Diagram	# of Holes:

## Instructions:

- 1) All parts must be sampled. The sampling must be at least 5% of the total area and at least 5% of the total number of holes. Surface samples and hole samples are to be separate. Sampling fewer than all parts in a bake load, or sampling less than 5% of the area or holes requires a waiver from the Vacuum Review Board, or a LIGO Vacuum Review Team member (see the Advanced LIGO [VRB wiki](#) for member list). (*Sampling requirements are defined in section 5.1 of E0900480.*)
- 2) Read the instructions on how to take FTIR samples, given in document LIGO-E0900479. Make sure that the sample bottles are tightly sealed!
- 3) Reserve a Document Number (E-type) from the LIGO Document Control Center (DCC):  
<https://dcc.ligo.org/cgi-bin/private/DocDB/ReserveHome>
- 4) Complete the form above.
- 5) File this completed form in the DCC under the reserved number as revision 1, i.e. -v1.
- 6) If off-site ship a printed copy of this completed form and the FTIR Samples (properly packaged) to Calum Torrie at Caltech. Follow ALL procedures laid out in LIGO-T1700469: Documentation associated with shipping "dangerous goods" in excepted quantities.
- 7) Once at Caltech Calum will review (for need and priority) and then forward a printed copy of this completed form and the FTIR Samples (properly packaged) to:  
Attn: Jerami Mennella, Jet Propulsion Laboratory  
Bldg 83 room 1014800 Oak Grove drive Pasadena, California 91109-8099
- 8) Calum will then send an email to [Jerami.Mennella@jpl.nasa.gov](mailto:Jerami.Mennella@jpl.nasa.gov) indicating that an FTIR sample package is in route and indicate whether testing results are urgent or not.
- 9) JPL should put the LIGO document number of this sample form into the header of their FTIR analysis report and email this report to the submitter (email given in form).
- 10) The completed FTIR analysis report from JPL is to be reviewed and approved by the Vacuum Review Team member at the submitter's location. The Vacuum Review Team member makes any desired notations on the report and then files the report (\*.pdf) into the DCC as version -v2 of the document number of this completed sample record form. This DCC record should also be associated with the event "FTIR Testing". If approved, the VRT member also indicates electronic approval on the -v2 DCC record. The VRT member also informs the submitter via email whether the FTIR sampled load is approved or rejected.



**LIGO**

LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

**ADVANCED LIGO FTIR SAMPLE RECORD**

Document:	LIGO-E	-v1	Date:	
Submitter:	Name:		Email address:	
Title:	FTIR: TMS X-END Baffle "SAMPLE 1" CONT — BLACK NICKEL (COMET) STAINLESS STEEL			
System(s):				
Assembly(ies):	LIGO, D1900262			
Bake Load:		<input type="checkbox"/> Pre-Bake	<input type="checkbox"/> Class A	<input type="checkbox"/> URGENT?
JIRA URL:		<input type="checkbox"/> Post Bake	<input type="checkbox"/> Class B	
Notes:				

PARTS				SAMPLES			
#	Part No.	SN	Description	#	Type	Description <small>(for holes indicate "through" or "blind")</small>	Amount
11	D1900389	N/A	TMS SHROUD FRONT PANEL	1	Surface	Edge. See diagram	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				2	Holes		# of Holes:
12	D1900392	01	TMS Shroud Assy Window cover	3	Surface	Bottom. See diagram	Area (cm <sup>2</sup> ):
				4	Holes	"	# of Holes: 4" x 2.5" (x2)
13	D1900392	02	"	5	Surface		Area (cm <sup>2</sup> ):
				6	Holes	"	# of Holes: 4" x 2.5" (x2)
14	D1900392	03	"	7	Surface		Area (cm <sup>2</sup> ):
				8	Holes	"	# of Holes: 4" x 2.5" (x2)
15	D1900392	04	"	9	Surface	"	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				10	Holes		# of Holes:



AMPLE 2 SUMMARY

15 parts sampled.  
 4" x 2.5" area on each part.  
 Total area sampled with/for sample 2: 150 sq in.  
 Each area sampled twice (2 passes with sample 1) across each area.  
 E1900307-V2

~~Has Pulled CT.~~  
 [Handwritten signature]

LIGO

LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

ADVANCED LIGO FTIR SAMPLE RECORD

REPEAT OF SAMPLE # 1.

Document:	LIGO-E 1900307	-v2	Date:	9/27/17	
Submitter:	Name: <i>Mat Hentzer</i>	Email address:	<i>mhentzer@ligo-g.</i>	Location:	<i>LLO</i>
Title:	FTIR: <i>TMS X-END Baffles "SAMPLE 2" BLACK NICKEL COATED STAINLESS STEEL.</i>				
System(s):	<i>TMS</i>				
Assembly(ies):	<i>TMS SHROUD Baffle (Don't have REC on me) LIGO, D1900262</i>				
Bake Load:	<i>9659</i>	<input checked="" type="checkbox"/> Pre-Bake	<input type="checkbox"/> Class A	<input checked="" type="checkbox"/> URGENT?	
JIRA URL:		<input type="checkbox"/> Post Bake	<input checked="" type="checkbox"/> Class B		
Notes:	<i>Done on all panels in 4" x 2.5" square twice over in some areas. Have marked on drawing where sample taken. Air bake in LLO large bake oven.</i>				

PARTS				SAMPLES			
#	Part No.	SN	Description	#	Type	Description (for holes indicate "through" or "blind")	Amount
1	D1900260-1	N/A	Roof Panel	1	Surface	<i>Near centre. See diag</i>	Area (cm <sup>2</sup> ): <i>4" x 2.5" (x2)</i>
				2	Holes		# of Holes:
2	D1900260-2	N/A	"	3	Surface	<i>Near edge. See diag</i>	Area (cm <sup>2</sup> ): <i>4" x 2.5" (x2)</i>
				4	Holes		# of Holes:
3	D1900259	1	SIDE PANEL	5	Surface	<i>Near centre. See diag</i>	Area (cm <sup>2</sup> ): <i>4" x 2.5" (x2)</i>
				6	Holes		# of Holes:
4	D1900259	2	SIDE PANEL	7	Surface	<i>"</i>	Area (cm <sup>2</sup> ): <i>4" x 2.5" (x2)</i>
				8	Holes		# of Holes:
5	D1900391-01	N/A	<del>see</del> ALS PANEL	9	Surface	<i>Between holes and edge.</i>	Area (cm <sup>2</sup> ): <i>4" x 2.5" (x2)</i>
				10	Holes	<i>See diagram</i>	# of Holes:

2 passes.



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6	D1900391-02	N/A	ALS Panel	11	Surface	Between holes and edge	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				12	Holes	See diagram	# of Holes:
7	D1900258 <del>D1900258</del>	N/A	Rear Panel	13	Surface	In center See diagram	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				14	Holes		# of Holes:
8	D1900257	N/A	Front Panel	15	Surface	Near edge See diagram	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				16	Holes		# of Holes:
9	D1900261	N/A	Bottom Panel	17	Surface	Near center See diagram	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				18	Holes		# of Holes:
10	D1900390	N/A	SIDE PANEL	19	Surface	Near edge See diagram	Area (cm <sup>2</sup> ): 4" x 2.5" (x2)
				20	Holes		# of Holes:

## Instructions:

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- 2) Read the instructions on how to take FTIR samples, given in document [LIGO-E0900479](#). Make sure that the sample bottles are tightly sealed!
- 3) Reserve a Document Number (E-type) from the LIGO Document Control Center (DCC):  
<https://dcc.ligo.org/cgi-bin/private/DocDB/ReserveHome>
- 4) Complete the form above.
- 5) File this completed form in the DCC under the reserved number as revision 1, i.e. -v1.
- 6) If off-site ship a printed copy of this completed form and the FTIR Samples (properly packaged) to Calum Torrie at Caltech. Follow ALL procedures laid out in LIGO-T1700469: Documentation associated with shipping "dangerous goods" in excepted quantities.
- 7) Once at Caltech Calum will review (for need and priority) and then forward a printed copy of this completed form and the FTIR Samples (properly packaged) to:  
Attn: Jerami Mennella, Jet Propulsion Laboratory  
Bldg 83 room 1014800 Oak Grove drive Pasadena, California 91109-8099
- 8) Calum will then send an email to [Jerami.Mennella@jpl.nasa.gov](mailto:Jerami.Mennella@jpl.nasa.gov) indicating that an FTIR sample package is in route and indicate whether testing results are urgent or not.
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Title

TMS X-END Baffles "SAMPLE 2" cont.

UGO, D1900262

BLACK MILKEC COATED STAINLESS STEEL

PARTS

Samples

#	PART#	SN	DESCR	1	TYPE	DESCRIP	Amount
11	D1900389	N/A	Front Panel	2		Near Centre see diagram	4" x 2.5" (x2)
12	D1900392	1	Window cover	3		Near top see diagram	4" x 2.5" (x2)
13	D1900392	2	"	4		"	"
14	D1900392	3	"	5		"	"
15	D1900392	4	"			"	"