



**LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY**  
**RECORD OF DECISION/AGREEMENT (RODA)**

Document	LIGO-M 080022-01 -Y	
Date:	24 Mar 2008	
Title:	RODA: ETM reaction mass has same mass as thermal compensator plate.	
To the Attention of:		
cc:		
From/ signatories:	Name/Title: Justin Greenhalgh	Signature: _____
	Name/Title: GariLynn Billingsley	Signature: _____
	Name/Title: Norna Robertson	Signature: _____
	Name/Title: Phil Willems	Signature: _____
	Name/Title: _____	Signature: _____
	Name/Title: _____	Signature: _____
System(s) affected:	<input type="checkbox"/> Initial LIGO <input checked="" type="checkbox"/> Advanced LIGO <input type="checkbox"/> Other: _____	
Nature/ Scope:	<input type="checkbox"/> Design Decision <input type="checkbox"/> Requirements Decision <input type="checkbox"/> Work Scope Decision <input checked="" type="checkbox"/> Working Agreement between Groups <input type="checkbox"/> Other _____	
Subsystem(s) affected	<input checked="" type="checkbox"/> Relevant Subsystem(s)/Component(s): AOS/TCS SUS COC	
Primary Contacts	Justin Greenhalgh, RAL, ALUK Phil Willems, CIT, AOS/TCS GariLynn Billingsley, CIT, COC Norna Robertson, CIT, SUS Group or Affiliation and Contact	
Reference Documents:	<a href="#">T050077-05-K</a> Separation of chains in quad suspensions	

**DECISION/AGREEMENT STATEMENT:**

The reaction mass for the ETM has the same mass, dimensions and is comprised of the same material (fused silica, although the grades can be different) as the Compensation Plate (CP). (In accordance with RODA M060305-01, the dimensions are specifically 340 mm diameter and 130 mm thickness).

In addition, both the reaction mass for the ETM and the CP:

- have no flats,
- have no wedge angle, and
- are set so that their faces are parallel to AR face of the TM with a separation of 5 mm

**BACKGROUND:**

This RODA is a follow-up to RODA M060305-01, “Compensation Plate dimensions”.

Benefits include:

- This will allow the penultimate masses in the two reaction chains (ITM, ETM) to be identical.
- Because the ETM reaction mass and the thermal compensator plate will have the same density, they will be the same size. This simplifies design of structures and earthquake stops
- The reaction chain is narrower than the main chain in order to allow the possibility of switching to a high-density test mass in the main chain (T050077 refers). Had the reaction mass been of the same mass as the test mass, it would have had to use a high-density material with which the community is not familiar. The decision to use a more familiar material is a cost- and risk-reduction measure.