ADVANCED LIGO

INFORMATION RELATED TO THE PROCUREMENT OF CANTILEVER BLADES FOR THE CONTROLS PROTOTYPE QUAD ETM SUSPENSION

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1.1 INTRODUCTION

Information related to the procurement of the cantilever blades for the Controls Prototype Quadruple Pendulum End Test Mass Suspension: -

ITEM	*DCC # & REVISION*	*QUANTITY*
Top Blades	**LIGO-D040296-C**	**12**
Middle Blades	**LIGO-D040297-C**	**13**
Bottom Blades	**LIGO-D040297-C**	**12**

In October 2004, fifteen companies from both the US and Europe were considered during this process. After a request for interest, we asked ten of these companies to quote. The cantilever blades are made from Maraging Steel (MARVAL 18) C250, de-scaled and annealed. LIGO were going to supply this material to the vendors. The quotes were to include the costs for grinding the material to the desired thickness, machining to the desired shape, bending to the correct radius and a heat treatment for 100 hours. The companies were also asked to quote any sub-contractors used and to specify any tooling costs. We requested a delivery time of 8 to 14 weeks.

1.2 QUOTES

COMPANY	*PRICE*	*COMMENTS*
1.	$16,000 total	deliver within 12 weeks
2.	$38,000 total	less $8,000 if we reduce heat treatment to 4 hours
3.	$15,000 total	
4.	$2,500 for each blade!	
5.	NO BID!	
6.	$33,000 total	citing expensive heat treatment costs
7.	NO BID!	
8.	$5,000 total	build to modified drawing specification and in 4 weeks
9.	$24,000 total	citing tooling costs and 100 hour heat treatment
10.	NO THANK YOU	

1.3 ORDER

Amoung other things and including logistical reasons Company #1 was offered the contract. They completed the delivery of the blades in 12 weeks.
Company #8 was offered the asked to re-bid on a quantity of 4 for each blade. They offered this at $1,800 (in 4 weeks) with the following changes to the specification, (THICK +/- .003, TRUE POSITION .014, PARALLEL .003) Actual was 7 weeks.

All of the blades have (or are in the process) been characterized and the results are summarised in LIGO-T040229.

1.4 SUMMARY and OTHER RELATED INFORMATION

It would be a good idea to gather the quotes obtained for the 2001 MIT blades and the GEO 600 blades.
Ricardo De Salvo has found that material costs and delivery time for the Maraging steel have both increased by a factor of ~ 2.5 since 2001.