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CALIFORNIA INSTITUTE OF TECHNOLOGY
Laser Interferometer Gravitational Wave Observatory (LIGO) Project

To: Distribution
From: L. Jones 
Phone: 2970
Refer to: LIGO-E960041-00-B
Date: April 29, 1996

Subject: Beam Tube Contract material escalation text update proposal

CBI has ordered the materials for producing expansion joints and spiral tubing, and will be invoicing LIGO for initial shipments shortly. A review of our contract verbiage for calculating the escalation effects on partial payments for material milestones reveals problems which should be corrected before a misunderstanding creates confusion.

The text from the current contract is attached for reference, along with a proposed update. Problems and proposed solutions are categorized as follows:

1. There is no equation for calculating the billing value. An equation is proposed, with added definitions and abbreviations.
2. Timing is currently listed as "... the month the material is produced at the mill" in several places; CBI does not purchase the material from a steel mill, as originally expected, but from a "stainless steel production facility" which purchases from a steel mill. In addition, "produced at" covers an extended period in time, and should be changed to reflect a point in time. The proposed timing is "..... the month the material is ready for shipment from CBI's material supplier"
3. A second order adjustment based on the price of nickel had been added toward the end of negotiations with CBI, from concerns of CBI's material supplier. This nickel price varies daily, and the material index, which is the primary basis of adjustment, varies monthly. As originally written, any excursion of the nickel price above \$5.00 per pound would trigger a price increase. This is judged unreasonable, and the proposal changes this to an average price for the month.
4. Stainless steel poundage was not originally required for adjustment calculations, but it was added with the nickel price adjustment equation. The proposal substitutes $MV/1.532$ for poundage, where 1.532 is the total value of coil material subject to escalation (\$5,774,168) divided by the total poundage of stainless steel proposed (3,770,000 lb).
5. The Base Material Index was unknown at the time of contract award; it is now known to be 101.1, and is proposed to be included for clarity.
6. The existing contract calls for "the latest index available" to be used to determine a preliminary adjustment in case the proper index is not available. Since the material index is furnished in both preliminary and final versions, we should be specific in identifying which latest index

to use. The proposal names the latest final index (latest by month, not by revision).

Please let me know if you have any problems or suggested improvements with the proposed changes, by May 1, if possible. I would like to propose them to CBI this week for their comments.

lj

Distribution:

M. Coles

Ed Jasnow

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cc: J. Worden

Chronological File

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under this clause and the calculated price adjustment.

For this price adjustment provision only, the following definitions will apply:

"Hanford Construction Index" shall be the sum of wages plus union agreement fringes for journeymen boilermakers as published in the Hanford Site Stabilization Agreement (HSSA), which is incorporated by reference into the Project Labor Agreement included in the Additional General Provisions of this Contract.

"Base Hanford Construction Index" shall be the HSSA journeyman boilermaker rate in effect for the period ending October 8, 1995, as published in the 1994 settlement of the HSSA:

Wages	\$20.77
Fringes	8.25
Base Hanford Construction Index	\$29.02

"Monthly Hanford Construction Adjustment Index" shall be the Hanford Construction Index in effect for the month in which a milestone billing is made. Escalation shall only be applied to tasks which are initiated during an escalation period.

"Livingston Construction Index" shall be the sum of wages plus union agreement fringes for journeyman boilermakers as published by the International Brotherhood of Boilermakers, Iron Shipbuilders, Forgers and Helpers of America, AFL-CIO, Local 582, Baton Rouge.

"Base Livingston Construction Index" shall be the sum of wages plus fringes for journeymen boilermakers as published in General Decision of the Secretary of Labor Number BA940055 MOD. 0, dated April 15, 1994, pursuant to the Davis-Bacon Act:

Wages	\$16.40
Fringes	2.65
Base Livingston Construction Index	\$19.05

"Monthly Livingston Construction Index" shall be the Livingston Construction Index in effect for the month in which a milestone billing is made.

2. Type 304L Stainless Steel Coil Material

This price adjustment clause will apply to the portion of the contract price attributable to type 304L stainless steel coil material, which is:

304L Stainless Steel Coil Material \$5,774,168

The portion of the contract price referenced above will be subject to adjustment, upward or downward, for changes in costs as of the time of milestone billings. Each milestone

billing will show separately the amounts, if any, subject to price adjustment under this clause and the calculated price adjustment.

For this price adjustment clause only, the following definitions will apply:

"Material Index" shall be the "final" producer price index for grade 304 stainless plates, product code 3312-45314 under Table 5 as reported by the Bureau of Labor Statistics, U.S. Department of Labor.

"Base Material Index" shall be the average of the material index for the months of June, July, and August 1995. = 101.1 (101.133)

"Monthly Material Adjustment Index" shall be the material index for the month the material is produced at the mill.

In the event that the price of nickle as listed in the London Metal Exchange (LME) for the second month preceeding the month the material is produced at the mill exceeds \$5.00 per pound, the following additional price adjustment shall apply:

where $PA = (P - 5.00) \times 1.20 \times .08 \times W$
PA = Price Adjustment
P = Price of nickle as listed in the LME for the second month preceeding the month the material is produced at the mill, dollars per pound.
W = Weight of stainless steel subject to price adjustment, pounds.

Price Adjustment

If any of the indexes are discontinued, or if the basis of their calculation is changed, new index(es) or some alternative method of price adjustment shall be mutually agreed by the parties to the Contract.

Price adjustments for each payment milestone shall be calculated and billed at the same time as the milestone billing. If any of the monthly adjustment indexes are not available for the months for which a milestone billing is being made, the latest index available shall be used to determine a preliminary adjustment. When available, the actual monthly index will be used to make a final adjustment. For each milestone payment and for each item subject to price adjustment, the following procedure will apply:

The monthly adjustment index shall be compared to the base index and a percentage increase or decrease calculated to one-tenth of 1%.

The price adjustment shall be calculated by applying the percentage increase or decrease to the amount subject to price adjustment, calculated to the nearest one dollar.

~~L. Leak Localization and Repair~~

~~In the event that the leak assay measurements taken during the module acceptance test show unacceptable leakage, the LIGO leak localization software (Ref. LIGO-E950021-01-B) will~~

PARTIAL PAYMENT SCHEDULE

Contract No. PC181520
LIGO-C951080-00-B
December 8, 1995

Payment Milestones for LIGO Beam Tube Modules	Milestone Value	% of Total	Projected Wk ARA	Portion of Value Subject to Escalation		
				Coil Material	WA Craft	LA Craft
Design and Spiral Mill						
1 Contract Award	\$ 1,500,000	3.79%	0	\$ 0	\$ 0	\$ 0
2 Design Review	\$ 1,780,000	4.50%	15	\$ 0	\$ 0	\$ 0
3 Qualify Spiral Mill	\$ 1,718,000	4.34%	28	\$ 0	\$ 0	\$ 0
Hanford, WA Fabrication						
4 Complete Batch #1 Ready to Ship (at mill)	\$ 891,000	2.25%	25	\$ 891,000	\$ 0	\$ 0
5 Complete Batch #2 Ready to Ship (at mill)	\$ 891,000	2.25%	33	\$ 891,000	\$ 0	\$ 0
6 Complete Batch #3 Ready to Ship (at mill)	\$ 891,000	2.25%	40	\$ 891,000	\$ 0	\$ 0
7 Fabrication Readiness Review	\$ 4,013,000	10.15%	36	\$ 322,168	\$ 0	\$ 0
8 Complete Leak Check of Tube Assys. 1-50	\$ 859,000	2.17%	47	\$ 0	\$ 434,000	\$ 0
9 Complete Leak Check of Tube Assys. 51-100	\$ 859,000	2.17%	53	\$ 0	\$ 420,000	\$ 0
10 Complete Leak Check of Tube Assys. 101-150	\$ 859,000	2.17%	59	\$ 0	\$ 420,000	\$ 0
11 Complete Leak Check of Tube Assys. 151-200	\$ 859,000	2.17%	63	\$ 0	\$ 420,000	\$ 0
12 Complete Leak Check of Tube Assys. 201-250	\$ 859,000	2.17%	67	\$ 0	\$ 420,000	\$ 0
13 Complete Leak Check of Tube Assys. 251-300	\$ 859,000	2.17%	73	\$ 0	\$ 420,000	\$ 0
14 Complete Leak Check of Tube Assys. 301-350	\$ 859,000	2.17%	79	\$ 0	\$ 420,000	\$ 0
15 Complete Leak Check of Tube Assys. 351-400	\$ 859,000	2.17%	85	\$ 0	\$ 420,000	\$ 0
Hanford, WA Installation						
16 Installation Readiness Review	\$ 1,932,000	4.89%	43	\$ 0	\$ 0	\$ 0
17 Install & Circumf. Leak Check Tube Assys. 1-50	\$ 300,000	0.76%	51	\$ 0	\$ 299,000	\$ 0
18 Install & Circumf. Leak Check Tube Assys. 51-100	\$ 300,000	0.76%	58	\$ 0	\$ 299,000	\$ 0
19 Install & Circumf. Leak Check Tube Assys. 101-150	\$ 300,000	0.76%	63	\$ 0	\$ 299,000	\$ 0
20 Install & Circumf. Leak Check Tube Assys. 151-200	\$ 300,000	0.76%	68	\$ 0	\$ 299,000	\$ 0
21 Install & Circumf. Leak Check Tube Assys. 201-250	\$ 300,000	0.76%	73	\$ 0	\$ 299,000	\$ 0
22 Install & Circumf. Leak Check Tube Assys. 251-300	\$ 300,000	0.76%	78	\$ 0	\$ 299,000	\$ 0
23 Install & Circumf. Leak Check Tube Assys. 301-350	\$ 300,000	0.76%	83	\$ 0	\$ 299,000	\$ 0
24 Install & Circumf. Leak Check Tube Assys. 351-400	\$ 300,000	0.76%	88	\$ 0	\$ 299,000	\$ 0

PARTIAL PAYMENT SCHEDULE

Contract No. PC181520
LIGO-C951080-00-B
December 8, 1995

Payment Milestones for LIGO Beam Tube Modules	Milestone Value	% of Total	Projected Wk ARA	Portion of Value Subject to Escalation		
				Coil Material	WA Craft	LA Craft
Hanford, WA Acceptance Test						
25 Module 1 Accepted	\$ 513,000	1.30%	77 5/27	\$ 0	\$ 0	\$ 0
26 Module 2 Accepted	\$ 513,000	1.30%	88 8/18	\$ 0	\$ 0	\$ 0
27 Module 3 Accepted	\$ 513,000	1.30%	94 9/29	\$ 0	\$ 0	\$ 0
28 Module 4 Accepted	\$ 513,000	1.30%	102 11/24	\$ 0	\$ 0	\$ 0
29 Completion Review	\$ 200,000	0.51%	103 12/1	\$ 0	\$ 0	\$ 0
Livingston, LA Fabrication						
30 Complete Batch #4 Ready to Ship (at mill)	\$ 891,000	2.25%	85 7/28/97	\$ 891,000	\$ 0	\$ 0
31 Complete Batch #5 Ready to Ship (at mill)	\$ 891,000	2.25%	93 9/22	\$ 891,000	\$ 0	\$ 0
32 Complete Batch #6 Ready to Ship (at mill)	\$ 819,000	2.07%	101 11/17	\$ 819,000	\$ 0	\$ 0
33 Fabrication Readiness Review	\$ 178,000	0.45%	96 10/13	\$ 178,000	\$ 0	\$ 0
34 Complete Leak Check of Tube Assys. 1-50	\$ 859,000	2.17%	105 12/15	\$ 0	\$ 0	\$ 335,000
35 Complete Leak Check of Tube Assys. 51-100	\$ 859,000	2.17%	112 4/2/98	\$ 0	\$ 0	\$ 327,000
36 Complete Leak Check of Tube Assys. 101-150	\$ 859,000	2.17%	117 3/9	\$ 0	\$ 0	\$ 327,000
37 Complete Leak Check of Tube Assys. 151-200	\$ 859,000	2.17%	122 3/30	\$ 0	\$ 0	\$ 327,000
38 Complete Leak Check of Tube Assys. 201-250	\$ 859,000	2.17%	127 5/4	\$ 0	\$ 0	\$ 327,000
39 Complete Leak Check of Tube Assys. 251-300	\$ 859,000	2.17%	132 6/8	\$ 0	\$ 0	\$ 327,000
40 Complete Leak Check of Tube Assys. 301-350	\$ 859,000	2.17%	137 7/13	\$ 0	\$ 0	\$ 327,000
41 Complete Leak Check of Tube Assys. 351-400	\$ 859,000	2.17%	142 8/11	\$ 0	\$ 0	\$ 327,000
Livingston, LA Installation						
42 Installation Readiness Review	\$ 101,000	0.26%	103 12/1/97	\$ 0	\$ 0	\$ 0
43 Install & Circumf. Leak Check Tube Assys. 1-50	\$ 300,000	0.76%	110 1/9/98	\$ 0	\$ 0	\$ 259,200
44 Install & Circumf. Leak Check Tube Assys. 51-100	\$ 300,000	0.76%	117 3/9	\$ 0	\$ 0	\$ 245,400
45 Install & Circumf. Leak Check Tube Assys. 101-150	\$ 300,000	0.76%	123 4/6	\$ 0	\$ 0	\$ 245,400
46 Install & Circumf. Leak Check Tube Assys. 151-200	\$ 300,000	0.76%	128 5/11	\$ 0	\$ 0	\$ 245,400
47 Install & Circumf. Leak Check Tube Assys. 201-250	\$ 300,000	0.76%	133 6/15	\$ 0	\$ 0	\$ 245,400
48 Install & Circumf. Leak Check Tube Assys. 251-300	\$ 300,000	0.76%	139 7/27	\$ 0	\$ 0	\$ 245,400
49 Install & Circumf. Leak Check Tube Assys. 301-350	\$ 300,000	0.76%	144 8/31	\$ 0	\$ 0	\$ 245,400
50 Install & Circumf. Leak Check Tube Assys. 351-400	\$ 300,000	0.76%	149 10/1/98	\$ 0	\$ 0	\$ 245,400

PARTIAL PAYMENT SCHEDULE

Contract No. PC181520
LIGO-C951080-00-B
December 8, 1995

Livingston, LA Acceptance Test						
51 Module 1 Accepted	\$ 513,000	1.30%	135 4/29/98	\$ 0	\$ 0	\$ 0
52 Module 2 Accepted	\$ 513,000	1.30%	146 9/14	\$ 0	\$ 0	\$ 0
53 Module 3 Accepted	\$ 513,000	1.30%	154 11/9	\$ 0	\$ 0	\$ 0
54 Module 4 Accepted	\$ 513,000	1.30%	159 12/15	\$ 0	\$ 0	\$ 0
55 Completion Review	\$ 201,000	0.51%	160 12/22	\$ 0	\$ 0	\$ 0
Total Contract Value	\$39,545,000	100.00%		\$ 5,774,168	\$ 5,766,000	\$ 4,601,000

Proposed changes to Article 4, Special Provisions, K. Economic Escalation:

2. Type 304L Stainless Steel Coil Material

This price adjustment clause will apply to the portion of the contract price attributable to type 304L stainless steel coil material, which is:

304LStainless Steel Coil Material \$5,774,168

The portion of the contract price referenced above will be subject to adjustment, upward or downward, for changes in costs as of the time of milestone billings. Each milestone billing will show separately the amounts, if any, subject to price adjustment under this clause and the calculated price adjustment. Affected milestone billings will be calculated as follows:

$$PA = [MV \times (MMAI - BMI)/BMI] + NPA^*$$

*Note: NPA = 0 unless NP > \$5.00/lb (see NA definition, below)

For this price adjustment clause only, the following definitions will apply:

“PA,” or Price Adjustment, is an adjustment to be applied to Milestone Values for billing purposes. The Price Adjustment shall be calculated to the nearest one dollar.

“MV,” or Milestone Value, shall be the respective number listed in the Partial Payment Schedule for a particular batch of stainless steel material.

“Material Index” shall be the “final” producer price index for grade 304 stainless plates, product code 3312-45314 under Table 5 as reported by the Bureau of Labor Statistics, U.S. Department of Labor.

“MMAI,” or Monthly Material Adjustment Index, shall be the Material Index for the month the material is ready for shipment from CBI’s material supplier.

“BMI,” or Base Material Index, shall be the average of the Material Index for the months of June, July, and August 1995, which is 101.1.

“NPA,” or Nickel Price Adjustment, shall be a calculated price adjustment due to the price of nickel. In the event that the average price of nickel as listed in the London Metal Exchange (LME) for the second month preceding the month the material is ready for shipment from CBI’s material supplier exceeds \$5.00 per pound, the following additional price adjustment shall apply:

$$NPA = (NP - 5.00) \times 1.20 \times .08 \times (MV/1.532)$$

where NP = Price of nickel as listed in the LME for the second month preceding the month the material is ready for shipment from CBI’s material supplier, dollars per pound.

If any of the indexes are discontinued, or if the basis of their calculation is changed, new index(es) or some alternative method of price adjustment shall be mutually agreed by the parties to the Contract.

Adjustments for each payment milestone shall be calculated and billed at the same time as the milestone billing. If either the material index or the price of nickel are not available for the appropriate months relating to a milestone billing, the latest "final" data available shall be used to determine a preliminary billing. When available, the actual data will be used to make a final adjustment.