

New Folder Name Hook Height in

LVEA and VEAS

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

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Refer to: LIGO-T950114-00-O
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Subject: Hook height in LVEA and VEAs

The following email message from R. Savage to G. Stapfer, dated 10/8/95, is hereby archived as a technical memo per A. Lazzarini's request:

From rick Sun Oct 8 08:51:29 1995
To: gerry
Subject: hook height in LVEA and VEAs
Cc: worden, lazz, coyne, sibley, fba
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On Friday, Gerry asked me to review the hook height requirements in light of the proposed 6'4" distance from the LVEA floor to the beam tube centerline (global coordinate origin) at the vertex point in the corner station.

Memo LIGO-T950048-00-O, dated July 24, 1995, describes the process by which John, Otto, and I arrived at the 26'6" hook height. The hook height was determined by requiring that a 6'8" tall beamsplitter bell jar be lifted over a 17'2" tall BSC. We allowed 2'2" for the lifting fixture and allowed 6" for grouting and floor height changes. This totals to 26'6".

The drawing in the vacuum equipment RFP shows that the centerline of the BSC is 5'10" above the bottom of the chamber. With the 6" for grouting and floor height changes, our hook height estimate was based on a floor to beam height distance at the vertex of 6'4". Coincidentally, this is exactly the distance that is being proposed.

Thus, at the vertex, the 6'4" specification is just what we originally considered in setting the hook height. The maximum variation in distance between the LVEA slab (which is locally level) and the BT centerline, for the present corner station design is ~ =, - 1.2". Thus the maximum BSC to BT centerline distance (anywhere on the slab) would

be 6'5.2". This would result in a reduction of how high the bell jar could be lifted with respect to the BSC of 1.2".

I believe that there was enough safety margin built into our original estimate to accommodate the potential 1.2" reduction. The professional rigger who reviewed our lifting fixture height allowance, estimated that a carefully designed lifting fixture might be as much as 6" shorter.

In short, I feel we will meet our lifting requirements if we specify the -6'4" floor elevation at the vertex.

RLS:rls

Distribution:

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