**MUSE Basis of Estimate**

**Element WBS #6**

I. General Information

Task Name: PMTs for Cerenkov

Unique ID Number

Date of Estimate: November 2, 2015 (last update)

Estimate Generator: R. Gilman, R. Ransome

Cost Category:

 X M&S

 SWF

Comments: We currently have one PMT-240 used for prototyping. We expect this to be the spare for the experiment. The budget currently calls for the first two PMTs to be purchased in the first year, but as the beam Cherenkov is not a critical path item all component purchases could be delayed into the second year.

Vendor Quote Number if Applicable\_\_Sydor quote MCA 110215\_\_\_\_\_\_

Drawing Reference Number or Attachment:

Costing Method: Quote

Total Task Cost: $90,000

Total Contingency: $9,000

Task Name: Preamp/CFDs for Cerenkov

Unique ID Number

Date of Estimate: November 2, 2015 (last update)

Estimate Generator: R. Gilman, R. Ransome

Cost Category:

 X M&S

 SWF

Comments: We currently have 2 ``Ortec 9327’’ units. One has been used in prototyping. The other is currently being modified by our electronics shop for remote control. If this

fails, we will have 5 locally operated units, one as a spare. If this succeeds we will modify units as we obtain them, and have 2 spares.

Vendor Quote Number if Applicable\_\_Ametek quote AK4603-1\_\_\_\_\_\_

Drawing Reference Number or Attachment:

Costing Method: Quote

Total Task Cost: $12,472

Total Contingency: $1,247

II. Cost Estimate Breakdown

Cost of each element, along with justification

Photek PMT240, $22,500 each

2 tubes will be ordered in year 1. Cost $45,000

2 tubes will be ordered in year 2. Cost $45,000

4 Ortec 9327 preamp/CFDs will be ordered in year 2. Cost $12,472

Total cost of major components is $102,472.

Total project cost, including F&A but no contingency, is $116,156

III. Contingency and risk analysis

The cost is dominated by off the shelf components, already used in prototypes, with low technical/price risk. However, the PMTs are produced in the UK, so we estimate a contingency of 10% should be applied for currency fluctuations.

Total contingency $11,616.



