Hall C Target Configuration Jan 24, 2018



Engineering Report

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Document Title: Hall C Target Configuration for Jan 24, 2018		
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Description: Configuration report for the Hall C Target ladder installed for the Fall 2017 run period and altered 1/24/2016. This document gives BDS positions, target thicknesses, cell thicknesses and overall assembly data. The target configuration can be found in JLAB Drawing TGT-301-1001-0110 Rev C which can be found in the JLAB document repository.

1 Revision History

sion: 0 1/24/2018	Revision: 0
1/2 1/2010	110 (151011. 0

2 Purpose and Scope

This report documents the configuration for the Hall C Target as installed for the Fall 2017 run period and altered on 1/24/2018. Target thicknesses and uncertainties are included. Reference TGT-CALC-17-002 for calculation details. The target configuration can be found in JLAB Drawing TGT-301-1001-0110 Rev C which can be found in the JLAB document repository.

3 Target list and lifter positions

The following lifter positions were determined by alignment of the system.

Target name	Lifter position	Target Material
Loop 1 4 cm	33360185	4 cm Loop 1
Loop 1 10 cm	29577088	10 cm Loop 1
Loop 2 10 cm	23827667	10 cm Loop 2
Loop 3 10 cm	16205625	10 cm Loop 3
10 cm dummy with C *	11424989	Aluminum 7075/Carbon
10 cm dummy	10807261	Aluminum 7075
4 cm dummy	10059485	Aluminum 7075
Optics #1 +/-10 and 0	8498909	Carbon
Optics #2 +/-5 cm	7783645	Carbon
Carbon Hole	6508765	Carbon
Carbon 6%	5793501	Carbon
Carbon 6%	5078237	Carbon
Carbon 0.5%	4362973	Carbon
10B4C	3647709	B4C
11B4C	2932445	B4C
Be	2217181	Be 99.99%
Carbon 1.5%	1501405	Carbon
Home	0	N/A

^{*} Note: Carbon target located at Z=0 on 10 cm dummy target position one. Lifter positions have been adjusted 3.5 mm up from original survey/alignment encoder positions.

4 Target Thicknesses

4.1 Hydrogen loops

Entrance and exit window thicknesses are given below. Loop 1 is in standby with helium gas. Loop 2 is connected to the H2 panel and Loop 3 is connected to the D2 panel.

Target	Entrance (mm)	Exit (mm)	Length (mm)	Material
Loop 1 (4 cm)	0.165 ± 0.0019	0.151 ± 0.0053 Tip 0.151 ± 0.0097 Wall	40 ± 0.26	AL 7075
Loop 1 (10 cm)	0.104 ± 0.0025	0.133 ± 0.0096 Tip 0.162 ±0.014 Wall	100 ± 0.26	AL 7075
Loop 2 (10 cm)	0.150 ± 0.011	0.191± 0.019 Tip 0.219 ± 0.018 wall	100 ± 0.26	AL 7075
Loop 3 (10 cm)	0.130 ± 0.012	0.188 ± 0.013 Tip 0.184 ± 0.017 wall	100 ± 0.26	AL 7075

4.2 Dummy Targets

The dummy targets are aluminum foils mounted on separate frames with foils located at Z positions corresponding to the cryotarget exit and entrance windows.

Target	Thickness Total (g/cm²)	Material
4 cm Dummy	0.0789 ± 0.00014 0.0811 ± 0.00014	Al 7075
10 cm Dummy	0.1816 ± 0.0003 0.1815 ± 0.0003	Al 7075

4.3 Optics Target

The optics target has two positions with carbon (99.95% C) foils in a linear array with foils located nominally at:

- 1. Three foils located at Z = 0 cm and ± 10 cm
- 2. Two foils located at $Z = \pm 5$ cm

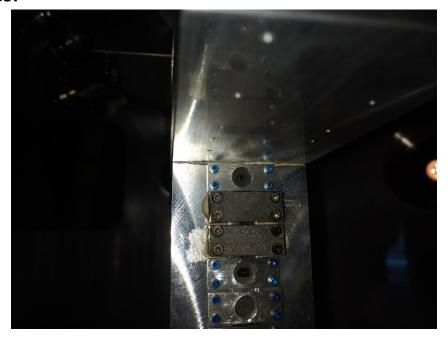
The nominal thickness of each carbon foil is: 0.044 ± 0.001 g/cm².

4.4 Solid Targets

Solid targets are located on the solid target ladder nominally at Z = 0.

Target name	Thickness (g/cm²)	Target Material
Carbon on 10 cm dummy	0.4426 ± 0.0008	Aluminum 7075/Carbon 99.95%
Carbon Hole	0.171 ± 0.001	Carbon 99.95%
Carbon 4.9%	1.683 ± 0.009	Carbon 99.5%
Carbon 4.9%	1.690 ± 0.009	Carbon 99.5%
Carbon 0.5%	0.1749 ± 0.00035	Carbon 99.95%
10B4C	0.5722 ± 0.001	B4C (99.9% Chem/ 95% iso-enrichment)
11B4C	0.6348 ± 0.001	B4C (99.9% Chem/ 95% iso-enrichment)
Be	1.314 ± 0.001	Be (99.99%)
Carbon 1.5%	0.5244 ± 0.001	Carbon 99.95%
Home	0	N/A

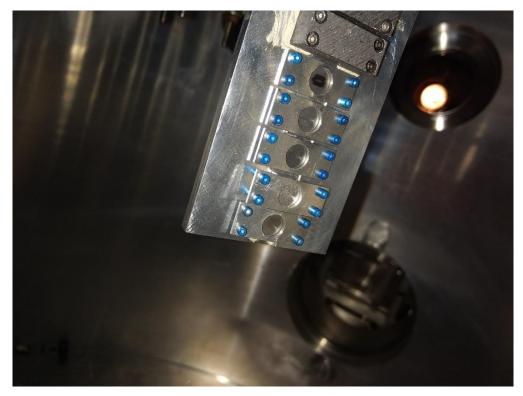
5 Pictures:

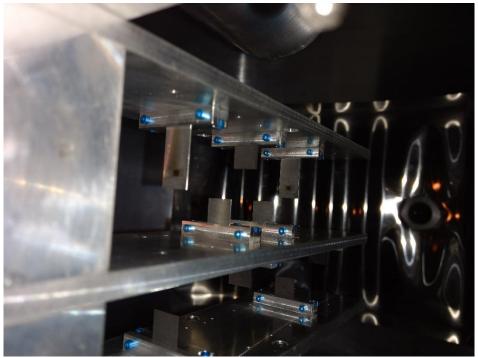






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