

BTA Stripping Foils 2008

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BTA foil changer was opened for examination of foils on 10 July 2008.

Foil 7, which was exposed to beam during RHIC Runs 7 and 8, was found to have two areas where the aluminum has creases and wrinkles. These areas are above and below beam center. Closer inspection by Peter Thieberger [1] revealed a small crack and a small hole in the aluminum. The aluminum on Foil 3 was found to have similar wrinkles but they are not as pronounced as those on Foil 7. Foil 3 was exposed to beam only during Run 8.

Foil 7 was replaced with a new foil of the same materials and thicknesses. The aluminum on the new foil has a thin coating of carbon to improve radiation of heat.

Table 1: Status of BTA Foils as of 10 July 2008

Holder	Foil Material	Δt	Δx	Status
1	Empty	Inches	mg/cm^2	Unchanged
2	Carbon	.003	13.9	Unchanged
3	Al and C	$A + c$	$6.42 + 8.68$	Used
4	Carbon	.005	23.1	Unchanged
5	Carbon	.005	23.1	Unchanged
6	Al and C	$A + c$	$6.45 + 8.39$	Unused
7	Al (C-coated) and C	$A + c$	$6.32 + 8.50$	New
8	Carbon	$C + c$	24.7	Unchanged

Here A is the thickness of “Heavy Duty” Renolds Wrap; $C = 100 \mu\text{m}$ and $c = 60 \mu\text{m}$ are the thicknesses of the Glassy Carbon foils; Δt is the foil thickness and Δx is foil surface density. In holders 3, 6, and 7, the Aluminum foil is mounted upstream of the Glassy Carbon foil. Peter

Thieberger mounted the foils on holders 3, 6, 7, and 8. Before mounting them he measured their dimensions and weighed them to obtain the surface densities given in the Table.

Here are Peter's remarks about the foils [1]:

1. There are now 3 usable Al-C strippers for gold installed in BTA of which two are unused.
2. There is one spare stripper that has not been installed as insurance against catastrophe.
3. The aluminum foils appear to undergo radiation damage (swelling and embrittlement).
4. It is not clear that the carbon coating will help. We must be prepared for periodic replacements of these foils.
5. The glassy carbon shows some evidence of swelling (slight bowing), but so far not enough to affect performance.

References

- [1] Peter Thieberger, Powerpoint presentation, 14 July 2008.