

Title	<i>Booster BPM Upgrade</i>			
Project Requestor	Michael Borland			
Date	May 13, 2008			
Group Leader(s)	Arnold, Borland, Decker			
Machine or Sector Manager	Nicholas Sereno			
Category	Accelerator Hardware and ID Improvements			
Content ID*	APS_XXXXXX	Rev.	ICMS_Revision	ICMS Document Date

*This row is filled in automatically on check in to ICMS. See Note ¹

Description:

Start Year (FY)	2009	Duration (Yr)	3
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Objectives:

The purpose of this initiative is to improve tunability, day-to-day reproducibility, and shot-to-shot performance for the booster. This will be accomplished by improving the obsolete booster BPMs.

Benefit:

Smoother operation with more tolerance for upstream errors and more consistent delivery of beam to the storage ring for top-up.

Risks of Project: See Note ²

Low.

Consequences of Not Doing Project: See Note ³

Continued intermittent problems with booster performance.

Cost/Benefit Analysis: See Note ⁴

The components of this initiative are not costly, yet the benefits can be significant. Hence, the cost/benefit is favorable.



Description:

A description of this proposal in the context of an overall Booster improvement plan is available in OAG-TN-2008-008, Section 3. Presently, we cannot monitor the orbit in the booster on a routine basis because of inadequate beam position monitor electronics. The existing electronics are noisy and only allow viewing the beam at a single time point on each ramp. We propose to replace these with a modern, FPGA-based system that will have reduced noise and allow monitoring the beam position at many points along the ramp, for each ramp. This will allow detection and (combined with other improvements) correction of orbit drift. The FPGA-based system will borrow heavily from bpm electronics improvements planned for the storage-ring as part of a separate proposal.

Funding Details

Cost: (\$K)

Use FY08 dollars.

Strategic Project Proposal
Funding Details
FY 08 \$

Cost (\$k)

Year	AIP	Contingency
1	20	10.00%
2	150	10.00%
3		
4		
5		
6		
7		
8		
9		
Total	170	

Contingency may be in dollars or Percent

The effort portion need not be filled out in detail by March 28

Effort (FTE)

Year	Mechanical Engineer	Electrical Engineer	Physicist	Software Engineer	Tech	Designer	Post Doc	Total
1		0.25		0.25	0.25	0.5		1.25
2		0.5	0.25	0.5	1	0.5		2.75
3								0
4								0
5								0
6								0
7								0
8								0
9								0

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Notes:

ICMS. Check in first revision to ICMS as a *New Check In*. Subsequent revisions should be checked in as revisions to that document i.e. *Check Out* the previous version and *Check In* the new version. Be sure to complete the *Document Date* field on the check in screen.

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Risk Assessment. Advise of the potential impact to the facility or operations that may result as a consequence of performing the proposed activity. Example: If the proposed project is undertaken then other systems impacted by the work include ... (If no assessment is appropriate then enter NA.)

3

Consequence Assessment. Advise of the potential consequences to the facility or to operations if the proposal is not executed. Example: If the proposed project is not undertaken then ____ may happen to the facility. (If no assessment is appropriate then enter NA.)

4

Cost Benefit Analysis. Describe cost efficiencies or value of the risk mitigated by the expenditure.

APS Strategic Planning Proposal

Example: Failure to complete this maintenance project will result in increased total costs to the APS for emergency repairs and this investment of ___ will also result in improved reliability of _____. (If no assessment is appropriate then enter NA.)