Title	***Booster Corrector Upgrade***			
Project Requestor	Michael Borland			
Date	May 13, 2008			
Group Leader(s)	Arnold, Borland, Wang			
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**

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 done in part by upgrading the booster's corrector power supplies.

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. Given upgraded BPMs such as those requested in another proposal, we could in principle perform frequent orbit correction at many points in the ramp. This is hampered by the ramp-loading mechanism used by the present correctors. A modern approach would involve digitally-controlled power supplies each with a series of sliders for different points in the ramp. Combined with the proposed BPM upgrade, we could easily implement routine orbit correction at many points in the ramp using our standard feedback software and techniques. This project requires the purchase of 2 IOCs and borrows from the SR magnet upgrade that replaces the GESPAC with a modern power supply controls system. The modern system will allow corrector ramps to be loaded much faster than at present (<1 s) in vector mode (all H or V correctors at once).

Funding Details

Cost ($K)

Use FY08 dollars

Year	AIP	Contingency
1	170	10.00%
2		
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		1		0.3	2			3.3
2								0
3								0
4								0
5								0
6								0
7								0
8								0
9								0

[1] **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. C*heck Out* the previous version and C*heck In* the new version. Be sure to complete the *Document Date* field on the check in screen.

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[2] **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.

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.)