| **Title** | ***New Booster Ramping Power Supplies*** | | | |
|---|---|---|---|---|
| Project Requestor | Ju Wang | | | |
| Date | 04/18/2008 | | | |
| Group Leader(s) | Ju Wang | | | |
| Machine or Sector Manager | SERENO, NICHOLAS S. | | | |
| Category | Obsolescence/Spares | | | |
| 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) 2** | |
|---|---|---|---|

**Objectives:**

Procure new power supplies for the Booster main ramping magnets

**Benefit:**

The booster main ramping supplies, particularly the dipole supplies, have been the largest contributors to the booster downtimes. We had dipole power supply faults that took more than 24 hours to troubleshoot and repair. Because of the deficiency in the power circuit design, they are extremely sensitive to the AC line conditions and their regulation is marginal to operations. They are the "bottle neck" for the booster operations and need constant adjustment. The poor performance is mostly due to the inadequate design and the technology available at the time. With today's technology, much better performance can be easily achieved. New power supplies are required to resolve the aging and obsolescence issues and significantly improve the booster operations.

**Risks of Project:** See Note [2]

None

**Consequences of Not Doing Project:** See Note [3]

Without this project the Booster operation will continue with the risks of long downtime when a fault happens at one the ramping power supplies. The risk level is increasing as the power supplies are getting old. Without this project the performance of the booster operations can not be improved.

**Cost/Benefit Analysis:** See Note [4]

Failure of this project will keep the ASP operations at the risk of extended downtime. A typical major failure in the dipole power supply costs for than 12 hours of downtime. With a spare power supply in standby, a downtime due to a failure can be reduced to just a couple of hours or even less.

**Description:**

The project is to procure new power supplies for the Booster main ramping dipole, quadrupole, and sextupole magnets, and install them in a way that the power feed to the magnets can be switched from one supply to the other quickly.

## Funding Details

**Cost: ($K)**
Use FY08 dollars.

**Cost ($k)**

| Year | AIP | Contingency |
|---|---|---|
| 1 | 600 | 10% |
| 2 | 412 | 10% |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |

Contingency may be in dollars or percent. Enter figure for total project contingency.

**Effort: (FTE)**
The effort portion need not be filled out in detail by March 28

| Year | Mechanical Engineer | Electrical Engineer | Physicist | Software Engineer | Tech | Designer | Post Doc | Total |
|---|---|---|---|---|---|---|---|---|
| 1 | | | | | | | | 0 |
| 2 | | | | | | | | 0 |
| 3 | | | | | | | | 0 |
| 4 | | | | | | | | 0 |
| 5 | | | | | | | | 0 |
| 6 | | | | | | | | 0 |
| 7 | | | | | | | | 0 |
| 8 | | | | | | | | 0 |
| 9 | | | | | | | | 0 |

## Notes:

[1] **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.

[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.)