ARRA FE ID Project Update

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APS User Operation Meeting
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Outlines

- What is ARRA FE ID Project
- Project breakdown
- Project work scope
- DOE milestones
- Current status of the project
- ARRA project management requirement
- ARRA project reporting requirement
- ARRA procurement challenges
- Draft installation schedule

What is ARRA FE ID Project

- ARRA stands for “The American Recovery and Reinvestment Act of 2009 ” commonly known as the stimulus fund.
- APS has three ARRA funded projects:
  - $3.6 M to build three canted undulator front ends and three sets of canted undulators for GSECARS Sector 13, HP-CAT Sector 16 and XOR Sector 34. This is the ARRA FE ID Project
  - $4.3 M for detector project
  - $2.5 M for early career awards

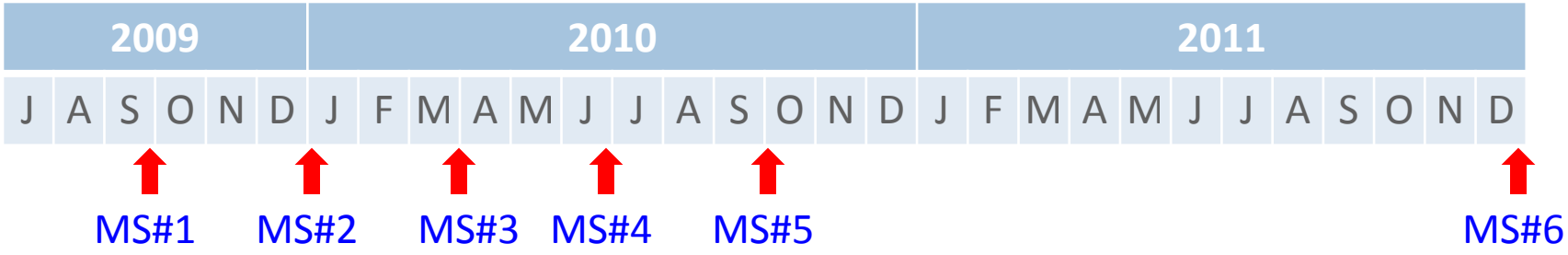
Project Break Down and Responsible Groups

- Financially the fund is broken down to three work projects:
  - S16 (0200A) $1,075 k , all equipments, no efforts allowed to be charged.
  - S13 (0201A) $1,569 k, equipments plus $137 k designer effort for two new undulators.
  - S34 (0202A) $956 K, all equipments, no efforts allowed to be charged.
- Technically the project is broken down into 4 technical systems
  - Front Ends (AES/MED responsible)
  - Vacuum Chambers for Canted Undulators (AES/MED responsible)
  - Canting Magnets (ASD/MD responsible)
  - Undulators (ASD/MD responsible)

ARRA FE ID Project Work Scope

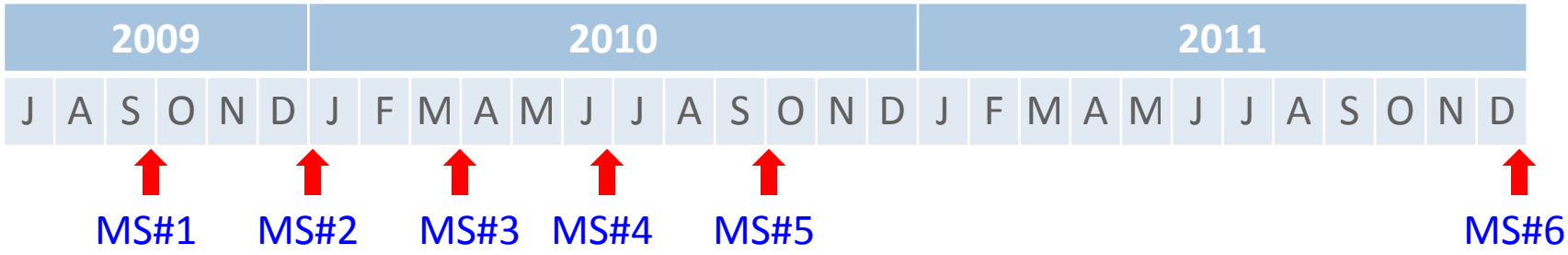
- Design and fabricate three sets of canted undulator front ends, CU vacuum chambers and canting magnets for S13, S16 and S34
- Undulators are different for each sectors
  - For sector 13 GSECARS, design and fabricate two complete new undulators (new design with user specified new period length). Budgeted $137k for designer effort. A designer was hired with the ARRA fund.
  - For Sector 16 HP-CAT, fabricate one new undulator. (User to choose the periods from the existing design of U23, U27, U30, U33 and U35). Shorten the existing U33.
  - For XOR Sector 34, fabricate one new U30 and shorten the existing U33.

DOE Project Milestones



- Project milestones are set by DOE and come with the funding. There are total of 6 milestones. Milestones are for completing design, procurement, fabrication and receiving all components. Installation is not part of the milestone.
  - Milestone 1 (09/30/2009)
    - At least one front end (FE) and vacuum chamber (VC) layout and component design completed.
  - Milestone 2 (12/31/2009)
    - Procurement packages for canted magnets, corrector magnets, and Sector 34 permanent magnet blocks (PMBs) completed. All FE and VC layouts and component designs completed.
  - Milestone 3 (03/31/2010)
    - All FE design reviews completed. Magnetic designs for both GSE undulators completed. Procurement package for HP-CAT PMBs completed.

DOE Project Milestones (continue)



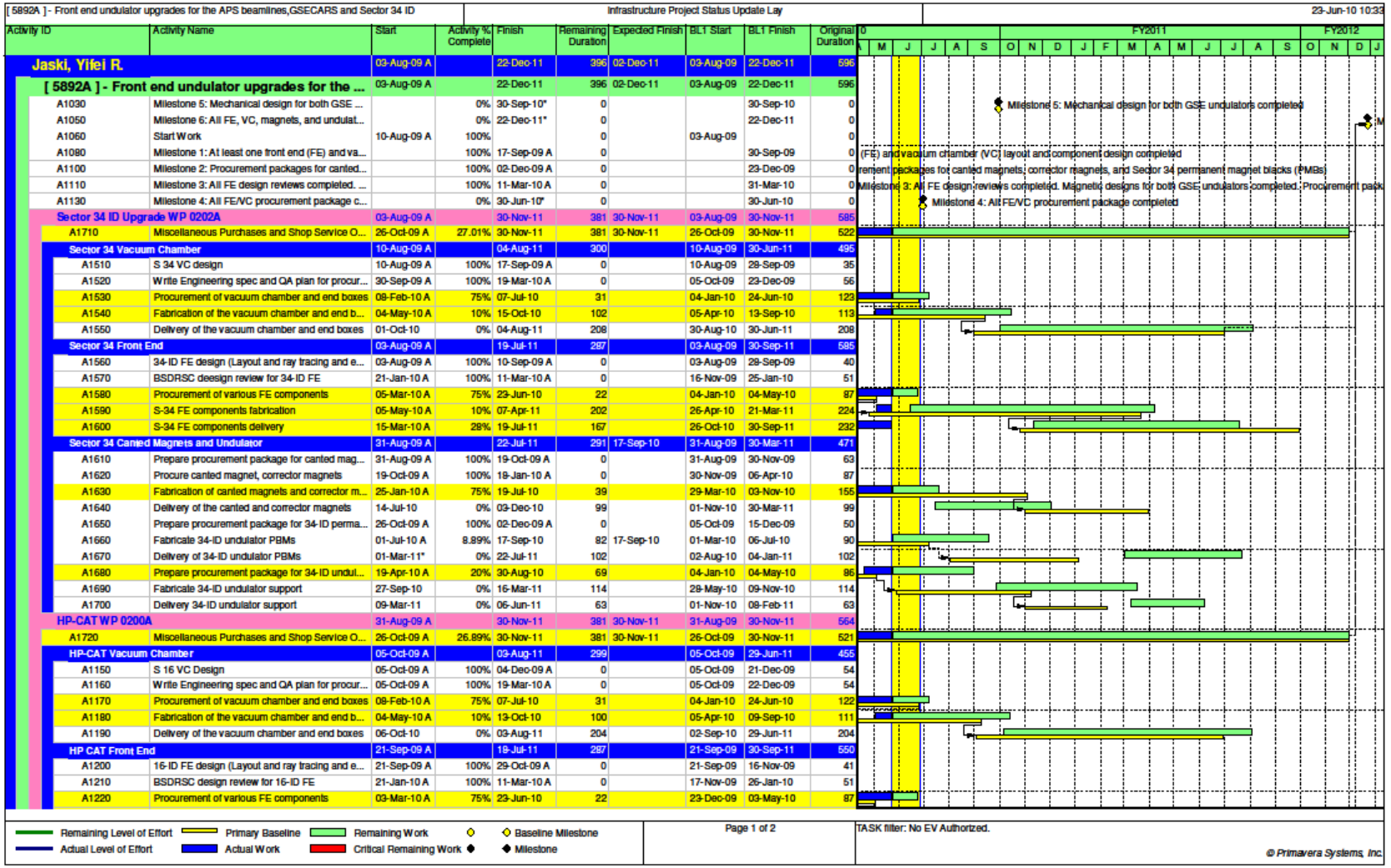
- Milestone 4 (06/30/2010)
  - All FE/VC procurement package completed.
- Milestone 5 (09/30/2010)
  - Mechanical design for both GSE undulators completed. Procurement packages for GSE PMBs completed. All FE /VC procurement packages awarded
- Milestone 6 (12/31/2011)
  - All FE, VC, magnets, and undulator components delivered.

Current Project Status

- Just completed the milestone for 6/30/2010. All procurement packages for FE and VC are completed. Long lead items of FE such as shutters and masks were awarded . All FE and VC components expect to be received by 12/2010.
- Canting magnets are expected to be received in July/August 2010.
- All sectors finalized their choice of undulator periods
  - GSECARS, U36 and U30
  - HP-CAT, U33 and U30
  - XOR-34 U33 and U30
- The mechanical design for GSECARS U36 is completed.
- The magnets order for three sets of 3.0-cm magnets is in process, will be awarded soon after a very length process due to order to be awarded to Japanese company.
- The undulator strongbacks and misc parts are in fabrication. The poles for U30 are in procurement process.
- The procurement process for U36 magnets and poles will be completed by 9/30.

ARRA Project Management Requirement

- Formal project management (usually used only for project cost $20M or more) are required for ARRA project.
- Project cost and schedule are required to be developed and entered into Primavera (integrated project cost schedule management system) within two weeks after establish the work project.
- Project cost and schedule performance are monitored by Argonne Office of Project Management personnel. Project status (activity start date, finish date and % completion) are required to be updated on a monthly basis. Sample shown next page.



Activity ID	Activity Name	Start	Activity % Complete	Finish	Remaining Duration	Expected Finish	BL1 Start	BL1 Finish	Original Duration
Jaski, Yifei R.		03-Aug-09 A		22-Dec-11	396	02-Dec-11	03-Aug-09	22-Dec-11	596
[5892A] - Front end undulator upgrades for the ...		03-Aug-09 A		22-Dec-11	396	02-Dec-11	03-Aug-09	22-Dec-11	596
A1030	Milestone 5: Mechanical design for both GSE ...		0%	30-Sep-10*	0			30-Sep-10	0
A1050	Milestone 6: All FE, VC, magnets, and undulat...		0%	22-Dec-11*	0			22-Dec-11	0
A1060	Start Work	10-Aug-09 A	100%		0		03-Aug-09		0
A1080	Milestone 1: At least one front end (FE) and va...		100%	17-Sep-09 A	0			30-Sep-09	0
A1100	Milestone 2: Procurement packages for canted...		100%	02-Dec-09 A	0			23-Dec-09	0
A1110	Milestone 3: All FE design reviews completed. ...		100%	11-Mar-10 A	0			31-Mar-10	0
A1130	Milestone 4: All FE/VC procurement package c...		0%	30-Jun-10*	0			30-Jun-10	0
Sector 34 ID Upgrade WP 0202A		03-Aug-09 A		30-Nov-11	381	30-Nov-11	03-Aug-09	30-Nov-11	585
A1710	Miscellaneous Purchases and Shop Service O...	26-Oct-09 A	27.01%	30-Nov-11	381	30-Nov-11	26-Oct-09	30-Nov-11	522
Sector 34 Vacuum Chamber		10-Aug-09 A		04-Aug-11	300		10-Aug-09	30-Jun-11	495
A1510	S 34 VC design	10-Aug-09 A	100%	17-Sep-09 A	0		10-Aug-09	28-Sep-09	35
A1520	Write Engineering spec and QA plan for procur...	30-Sep-09 A	100%	19-Mar-10 A	0		05-Oct-09	23-Dec-09	56
A1530	Procurement of vacuum chamber and end boxes	08-Feb-10 A	75%	07-Jul-10	31		04-Jan-10	24-Jun-10	123
A1540	Fabrication of the vacuum chamber and end b...	04-May-10 A	10%	15-Oct-10	102		05-Apr-10	13-Sep-10	113
A1550	Delivery of the vacuum chamber and end boxes	01-Oct-10	0%	04-Aug-11	208		30-Aug-10	30-Jun-11	208
Sector 34 Front End		03-Aug-09 A		19-Jul-11	287		03-Aug-09	30-Sep-11	585
A1560	34-ID FE design (Layout and ray tracing and e...	03-Aug-09 A	100%	10-Sep-09 A	0		03-Aug-09	28-Sep-09	40
A1570	BSDRSC deesign review for 34-ID FE	21-Jan-10 A	100%	11-Mar-10 A	0		16-Nov-09	25-Jan-10	51
A1580	Procurement of various FE components	05-Mar-10 A	75%	23-Jun-10	22		04-Jan-10	04-May-10	87
A1590	S-34 FE components fabrication	05-May-10 A	10%	07-Apr-11	202		26-Apr-10	21-Mar-11	224
A1600	S-34 FE components delivery	15-Mar-10 A	28%	19-Jul-11	167		26-Oct-10	30-Sep-11	232
Sector 34 Canted Magnets and Undulator		31-Aug-09 A		22-Jul-11	291	17-Sep-10	31-Aug-09	30-Mar-11	471
A1610	Prepare procurement package for canted mag...	31-Aug-09 A	100%	19-Oct-09 A	0		31-Aug-09	30-Nov-09	63
A1620	Procure canted magnet, corrector magnets	19-Oct-09 A	100%	18-Jan-10 A	0		30-Nov-09	06-Apr-10	87
A1630	Fabrication of canted magnets and corrector m...	25-Jan-10 A	75%	19-Jul-10	39		29-Mar-10	03-Nov-10	155
A1640	Delivery of the canted and corrector magnets	14-Jul-10	0%	03-Dec-10	99		01-Nov-10	30-Mar-11	99
A1650	Prepare procurement package for 34-ID perma...	26-Oct-09 A	100%	02-Dec-09 A	0		05-Oct-09	15-Dec-09	50
A1660	Fabricate 34-ID undulator PBMs	01-Jul-10 A	8.89%	17-Sep-10	82	17-Sep-10	01-Mar-10	06-Jul-10	90
A1670	Delivery of 34-ID undulator PBMs	01-Mar-11*	0%	22-Jul-11	102		02-Aug-10	04-Jan-11	102
A1680	Prepare procurement package for 34-ID undul...	19-Apr-10 A	20%	30-Aug-10	69		04-Jan-10	04-May-10	86
A1690	Fabricate 34-ID undulator support	27-Sep-10	0%	16-Mar-11	114		28-May-10	09-Nov-10	114
A1700	Delivery 34-ID undulator support	09-Mar-11	0%	06-Jun-11	63		01-Nov-10	08-Feb-11	63
HP-CAT WP 0200A		31-Aug-09 A		30-Nov-11	381	30-Nov-11	31-Aug-09	30-Nov-11	564
A1720	Miscellaneous Purchases and Shop Service O...	26-Oct-09 A	26.89%	30-Nov-11	381	30-Nov-11	26-Oct-09	30-Nov-11	521
HP-CAT Vacuum Chamber		05-Oct-09 A		03-Aug-11	299		05-Oct-09	29-Jun-11	455
A1150	S 16 VC Design	05-Oct-09 A	100%	04-Dec-09 A	0		05-Oct-09	21-Dec-09	54
A1160	Write Engineering spec and QA plan for procur...	05-Oct-09 A	100%	19-Mar-10 A	0		05-Oct-09	22-Dec-09	54
A1170	Procurement of vacuum chamber and end boxes	08-Feb-10 A	75%	07-Jul-10	31		04-Jan-10	24-Jun-10	122
A1180	Fabrication of the vacuum chamber and end b...	04-May-10 A	10%	13-Oct-10	100		05-Apr-10	09-Sep-10	111
A1190	Delivery of the vacuum chamber and end boxes	06-Oct-10	0%	03-Aug-11	204		02-Sep-10	29-Jun-11	204
HP CAT Front End		21-Sep-09 A		19-Jul-11	287		21-Sep-09	30-Sep-11	550
A1200	16-ID FE design (Layout and ray tracing and e...	21-Sep-09 A	100%	29-Oct-09 A	0		21-Sep-09	16-Nov-09	41
A1210	BSDRSC design review for 16-ID FE	21-Jan-10 A	100%	11-Mar-10 A	0		17-Nov-09	26-Jan-10	51
A1220	Procurement of various FE components	03-Mar-10 A	75%	23-Jun-10	22		23-Dec-09	03-May-10	87

Project Reporting Requirement

- ARRA has rigorous reporting requirements:
  - Weekly progress report was required from the beginning of the project (07/2009) till 11/5/2009.
  - Switched to semi-monthly report starting 11/19/2009 till 5/19/2010.
  - Switched to monthly report starting 6/4/2010 and going forward.
- Each quarter, an Argonne wide quarterly progress report on ARRA projects must be completed and uploaded to ARRA federal reporting website.

ARRA Procurement Challenges

- All orders must go through PARIS. BPA (Blanket Purchase Agreement) not able to handle the ARRA paperwork.
- If not sole source, foreign vendor price need to be 12% better than domestic vendor if the domestic vendor is a small business, or 6% better if the domestic vendor is a large business.
- Any order over $100k to a foreign vendor requires DOE approval.
- Due to the ARRA paper work require vendor to disclose their financial and employment information, certain foreign vendor refuse to fill these paper work causing procurement delay. One example is the Japanese company for the undulator magnets.
- Need to budget extra time in order to meet the milestones.

Installation

- Installation is not part of the ARRA milestones.
- Installation has to be coordinated with the beamline upgrade schedule to ensure beamline is ready to take canted undulator beams once the CU FE is installed.
- Draft version of the installation schedule has been distributed to the sectors. The schedule shows the earliest possible installation dates based on when all the components will be received, inspected and tested.
- The actual installation schedule has not yet been set. Front end installation typically takes two shut downs to complete which will result dark time for the sector between the shut downs. To avoid the dark time, we need to run double shifts with technicians and installation engineer which require management approval for extra resources.

Installation Schedule (Draft)

- Earliest installation schedule:
  - S34 May 2011 shut down
  - S16 Sept 2011 shut down
  - S13 Jan 2012 shut down

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