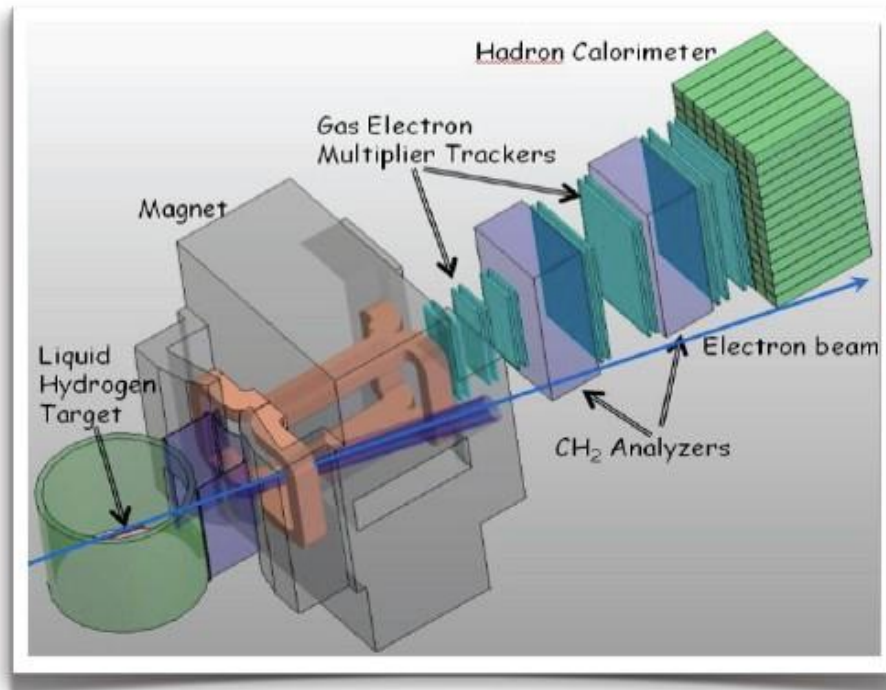


Super-BigBite-Spectrometer (SBS)

Monthly Progress Report

January 15, 2013



Introduction:

The SBS Program consists of three separate, but interrelated Projects.

- The first Project, **SBS Basic (WBS 1)**, involves the acquisition of an existing magnet and the associated work of preparing it for use during the SBS research program. The effort includes modifications to the magnet, including machining a slot in the yoke for beam passage, field clamps, and a solenoid to reduce the transverse magnetic field on the beam line, the design and development of the infrastructure needed to run the magnet, and the construction of the platform on which it will stand.
- The second Project, **Neutron Form Factor (WBS 2)**, involves the construction of twenty-nine GEM detector modules with associated front-end and DAQ modules to meet the requirements of the approved neutron form factor measurements.
- The third and final Project, **Proton Form Factor (WBS 3)**, involves the construction of thirty-five GEM detector modules with associated front-end and DAQ modules and the addition of pole shims for increased magnetic field integral to meet the requirements of the approved proton form factor measurements.

Project Management Highlights:

This is the fourth Monthly Progress Report for the SBS Program. The collaboration is in place, and the Program Management Plan has been approved by Jefferson Lab management and by the DOE-NP Instrumentation Program Manager.

We have noted a minor error in the PMP. The Project Costs reported in the table on page 29 are incorrect. That table, reproduced here:

WBS		FY13	FY14	FY15	FY16	Total	Contingency	WBS Total
2	Neutron Form Factor	\$ 64	\$ 1,127	\$ 19	\$ 0	\$ 1,222	\$ 362	\$ 1,572

Should read as follows:

WBS		FY13	FY14	FY15	FY16	Total	Contingency	WBS Total
2	Neutron Form Factor	\$ 64	\$ 875	\$ 253	\$ 19	\$ 1,222	\$ 362	\$ 1,572

This would be consistent with what is presented in the associated Gantt charts in the PMP. The problem was WBS 2.3. It is supposed to happen in FY15. It is reported as such in the Gantt chart, but was incorrectly tabulated in the summary numbers in the PMP. In the PMP summary it was put in fy14 and FY16 was shifted into FY15.

On Dec 10, at the Hall A Collaboration meeting, an hour and 20 minutes were dedicated to reports on SBS Instrumentation.

The first and second Projects within the SBS Program, SBS Basic (WBS 1) and Neutron Form Factor (WBS 2), started at the beginning of FY13. The third Project, Proton Form Factor (WBS 3), isn't scheduled to start until FY14.

WBS 1: SBS Basic

WBS 1	SBS Basic: (Hall A Infrastructure)	WBS 1.01	Milestones
		WBS 1.02	Project Oversight
		WBS 1.1	Magnet, power and construction
		WBS 1.2	Magnet/detector platforms
		WBS 1.3	Beam line

WBS 1.01 Milestones:

Id #	Level	Milestone	Scheduled Date	Expected Date 12/1/2012	Expected Date 1/1/2013	Actual Date
1.1-01M	1	Project start	10/1/2012	10/1/2012	10/1/2012	10/1/2012
1.2-01M	2	Magnet delivered to JLab	4/30/2013	4/30/2013	4/30/2013	
1.2-10M	2	Platform parts received	6/27/2014	6/27/2014	6/27/2014	
1.2-20M	2	Magnet assembled on platform	3/19/2015	3/19/2015	3/19/2015	
1.2-30M	2	Beam-line parts received	9/24/2015	9/24/2015	9/24/2015	
1.1-10M	1	Project completion	1/29/2016	1/29/2016	1/29/2016	

WBS 1.02 Project Oversight:

- SBS weekly meetings are being held via shared file (EVO) and teleconference every Wednesday. During this Report period, meetings were held on Dec 5th, and Dec 12th. Participants included Jefferson Lab, University of Virginia, St. Mary's University, William and Mary, University of Massachusetts, and INFN – Catania, Genova, Bari, and Rome.
- Project is staffed appropriately for this beginning stage, and includes a Jefferson Lab manager, scientist, and magnet engineer.

WBS 1.1 Magnet, Power and Construction:

- Continuing the magnetostatic simulation of the magnet to define the modifications required. (50% completed)

WBS 1.2 Magnet/Detector Platforms:

- Continuing structural analysis of counter weight support method. (30% completed)
- Continuing design work on magnet counter weight support to incorporate movement of support to relocate magnet as needed. (30% completed)

WBS 1.3 Beam Line:

- No activity this period.

WBS 1 Costs:

- Budget for this WBS for FY13 is \$838K.
- Costed and obligated to date (as of 1/1/2013?): **\$15.251K (1.8%)**

WBS 2: Neutron Form Factor

WBS 2	Neutron Form Factor	WBS 2.01	Milestones
		WBS 2.02	Project oversight
		WBS 2.1	GEMs (UVa)
		WBS 2.2	GEM Electronics (UVa)
		WBS 2.3	Electronics Hut, Lead Shielding, Lead platform, and Detector Frames
		WBS 2.4	Coordinate Detector

WBS 2.01 Milestones:

ID #	Level	Milestone	Scheduled Date	Expected date 12/1/2012	Expected date 1/1/2013	Actual Date
2.1-01M	1	Project start	10/1/2012	10/1/2012	10/1/2012	10/1/2012
2.2-01M	2	UVa receives GEM parts	2/3/2014	2/3/2014	2/3/2014	
2.2-20M	2	UVa receives electronics parts	8/20/2014	8/20/2014	8/20/2014	
2.2-10M	2	UVa GEM modules assembled and tested	10/17/2014	10/17/2014	10/17/2014	
2.2-40M	2	Coordinate Detector Assembled	11/17/2014	11/17/2014	11/17/2014	
2.2-30M	2	UVa front-end electronics assembled and tested	2/2/2015	2/22/2015	2/22/2015	
2.2-40M10	2	WBS 2.3 completed (Electronics Hut Assembled etc.)	10/5/2015	10/5/2015	10/5/2015	
2.1-10M	1	Project completion	1/29/2016	1/29/2016	1/29/2016	

WBS 2.02 Project Oversight:

- SBS weekly meetings are being held via shared file (EVO) and teleconference every Wednesday. During this Report period, meetings were held on Dec 5th, and Dec 12th. Participants included Jefferson Lab, University of Virginia, St. Mary's University, William and Mary, University of Massachusetts, and INFN – Catania, Genova, Bari, and Rome.
- Project is staffed appropriately for this beginning stage, and includes Jefferson Lab (manager, scientist, and magnet engineer), UVA (two scientists), and W&M (one scientist).

WBS 2.1 GEMs (UVA):

Pre R&D work on the production of GEM modules for WBS 2.1, aimed at starting production work, has continued. Below is a report on how that pre R&D work is progressing.

- Completed the first report containing the results of the SBS prototype #1 tests.
- Continued the characterization of SBS prototype #1.
- The aspects of the chamber operation studied in December include:
 - chamber efficiency
 - signal strength
 - uniformity of the chamber response as a function of position and gas flow
 - chamber gain as a function of high voltage.

WBS 2.2 GEM Electronics (UVA):

As with WBS 2.1, pre R&D continues on the GEM electronics. Below is a report on that work.

- Modifications to the INFN APV25 electronics system design was completed and finalized. These modified electronics modules are ready for production; we are currently waiting for the FY 12-13 Jefferson lab SBS pre-R&D contract to be initiated so that we can place orders for these units.
- The existing INFN APV25 system hardware was moved to Jefferson lab. The work on incorporating the INFN APV25 readout system into the Jefferson lab CODA data acquisition system is continuing at Jefferson lab.

WBS 2.3 Electronics Hut, Lead Shielding, Lead platform, and Detector

Frames:

- No activity this period.

WBS 2.4 Coordinate Detector:

- No activity this period

WBS 2 Costs:

- Budget for this WBS for FY13 is \$81K.
- Costed and obligated to date (as of 1/1/2013?): **\$5.313K (6.6%)**

WBS 3: Proton Form Factor

This Project is not scheduled to start until FY14: October 1, 2013. The WBS structure and milestone table are included below for completeness.

WBS 3	Proton Form Factor	WBS 3.01	Milestones
		WBS 3.02	Project Oversight
		WBS 3.1	Magnet Pole shims and exit field clamp
		WBS 3.2	GEM's (UVa)
		WBS 3.3	GEM electronics (UVa)
		WBS 3.4	Trigger (RU)

WBS 3.01 Milestones:

ID #	Level	Milestone	Scheduled Date	Expected date 12/1/2012	Expected date 1/1/2013	Actual Date
3.1-01M	1	Project start	10/1/2013	10/1/2013	10/1/2013	
3.2-01M	2	UVa receives parts for GEM modules	8/20/2014	8/20/2014	8/20/2014	
3.2-10M	2	UVa begins assembly of electronics	1/5/2015	1/5/2015	1/5/2015	
3.2-50M	2	RU begins trigger design	1/6/2016	1/6/2016	1/6/2016	
3.2-20M	2	UVa electronics assembly and tests completed	7/20/2016	7/20/2016	7/20/2016	
3.2-30M	2	JLab receives pole shims	8/22/2016	8/22/2016	8/22/2016	
3.2-40M	2	JLab receives exit field clamp	8/22/2016	8/22/2016	8/22/2016	
3.2-70M	2	RU completes trigger	12/1/2016	12/1/2016	12/1/2016	
3.2-60M	2	UVa GEM modules assembled (and tested)	2/2/2017	2/2/2017	2/2/2017	
3.1-10M	1	Project completion	7/31/2017	7/31/2017	7/31/2017	