

Spallation Neutron Source

Acceptance Strategy



Page 1 of ___ WBS Number _____

() opt. AS # within WBS

QA Level __ (opt) Rev. ___

Title BCM System

Description _____

Originator _____ Lab _____

(originator may list his/her part of the total strategy and request others to add to the list, but the final version must be approved)

#	Expectation	Location	Responsibility	Verified by	Date
0	<p>Background information</p> <p>The BCM system consists of four major components:</p> <ul style="list-style-type: none"> a) The beamline devices/assemblies: toroids from commercial vendor. Toroids outside the vacuum also include ceramic breaks and housings. b) Cabling c) Network attached devices (NAD) consisting of a PC and associated mounting hardware, analog and digital boards, link interface, power connection via RABBITS, auxiliary electronics (i.e. calibrator module) and software (device drivers, LabVIEW VI's, dll's, channel access software, BIST software, gate array image, initialization file, etc). NAD has the following well-defined interfaces (as documented in the ICD): network, event link, RTDL, MPS, power, I/O. d) As-built documentation: mechanical drawings, schematics, block diagrams, PCB/BOM files, commented source code, gate array code, system configuration and initialization data, ICD, user manual, test procedures and software, troubleshooting guide, installation procedure, Test Reports/ QA records (Traveler), turn-on/set-up procedures, cable data, vendor-provided documentation. <p>Notes on responsibility: BNL has responsibility for the overall system design. Responsibility for the components is as follows:</p> <ul style="list-style-type: none"> • MEBT toroids: LBNL • DTL/CCL/SCL toroids: LANL • HEBT, Ring, and RDBT toroids: BNL • Cabling: BNL ?? • NADs, including LabVIEW VIs and client access software: BNL (includes content from LBNL, LANL) • Cable plant testing and verification: ORNL. • Electronics racks installation and preparation: ORNL. • RABBITS and network cabling: ORNL. • User interface software: ORNL. • Documentation: The partner lab responsible for each component provides as-built documentation for that component. System documentation (user 				



	<p>manual, cable data, etc) is provided by BNL as a first article and then maintained by ORNL on the project website and Oracle database. Cabling data including specification, length, termination, and routing. ORNL will provide barcode labels for major components.</p>				
1	<p>Final design review(s) complete.</p> <p>Final design documents are available on website along with Diagnostic Advisory Committee report/response. The following acceptance criteria are detailed in these documents:</p> <ul style="list-style-type: none"> • Minimum and target performance requirements • Qualification test procedure: vertical integration tests that demonstrate potential to achieve target performance. • Component acceptance test procedures: tests of individual components that confirm minimum performance. 	TBD	LANL	ORNL	
2	<p>Design Verification Tests</p> <p>Vertical integration tests are performed on the bench at BNL and optionally, in parallel at ORNL. In addition, beam tests are performed during MEBT commissioning at LBNL. Individual component tests are performed at the responsible labs.</p> <p>These tests use pre-production components and must demonstrate that the system design is fundamentally capable of achieving the target performance requirements.</p>	LANL/ ORNL/ BNL/ LBNL/	LANL/ ORNL/ BNL/ LBNL/	ORNL	
3	<p>First Article Acceptance</p> <p>Each first article component will be received and tested by the lab that designed it. The responsibilities are summarized above. ORNL staff will participate in the tests at these labs and perform some tests in parallel at the RATS building. The purpose of this parallel activity is to prepare the RATS facilities for production acceptance tests. ORNL staff will participate in vendor visits.</p> <p>Toroids: Measurements of each toroid type performed to determine its electrical performance. Visual and vacuum integrity of the item is successfully verified based on the final, as built documentation.</p> <p>Cable: Cable assemblies will be tested with the electronics. Layout of the racks will be confirmed.</p> <p>NADS: First article NAD (including beta software) will be tested. The test environment includes simulated beam signals, final cable types, event/RTDL inputs, and channel access client software. Testing will be performed under simulated SNS</p>	LBNL/ LANL/ BNL/ ORNL/	LBNL/ LANL/ BNL/ ORNL/	ORNL	

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	<p>physical environmental conditions, network traffic, event rates, and client loads. Seamless integration with the EPICS control system will be demonstrated. System must run for more than 10 days without intervention.</p> <p>Documentation: Final, as built documentation will be released.</p>			
4	<p>Production Unit Acceptance</p> <p>All production units are received and acceptance tested at RATS by ORNL personnel. All vendors' warranties are transferred to ORNL. Partner lab personnel will be available for consulting and will maintain test facilities at their site. If required, the responsible partner lab will repair units that fail acceptance tests. Test and repair can take place at RATS or at the partner lab. The handoff will be declared complete when the last article passes acceptance tests at ORNL.</p> <p>Toroids Accepted at RATS as part of an integrated assembly.</p> <p>Cables: Accepted from vendor at RATS.</p> <p>NADs: Accepted at RATS. 48 hours of successful burn-in where applicable.</p> <p>Documentation: After the first article acceptance, ORNL staff will revise documentation to match accepted components. Partner lab staff will consult in this process.</p>	ORNL	ORNL	LBNL LANL BNL

Role	Name (originator may suggest approvers)	Plan Approval Signature	Date
SNS Division	Craig Deibele		11/9/01
	Tom Shea		10-9-01
	Norbert Holtkamp		11-9-01
LANL	Martin Kesselmen, John Power		4/Nov/01
	Mike Plum, Diagnostics WPM		7/Nov/01
	Mark Gardner, QA Representative		11/06/01
	Will Fox, Project Office		11/06/01
	Don Rej, Division Director		11/6/01

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Systems		
Integration		
SNS ES&H		
SNS QA		

Items/System Accepted at SNS

Installation Manager or designee

Printed Name

Signature

Date: