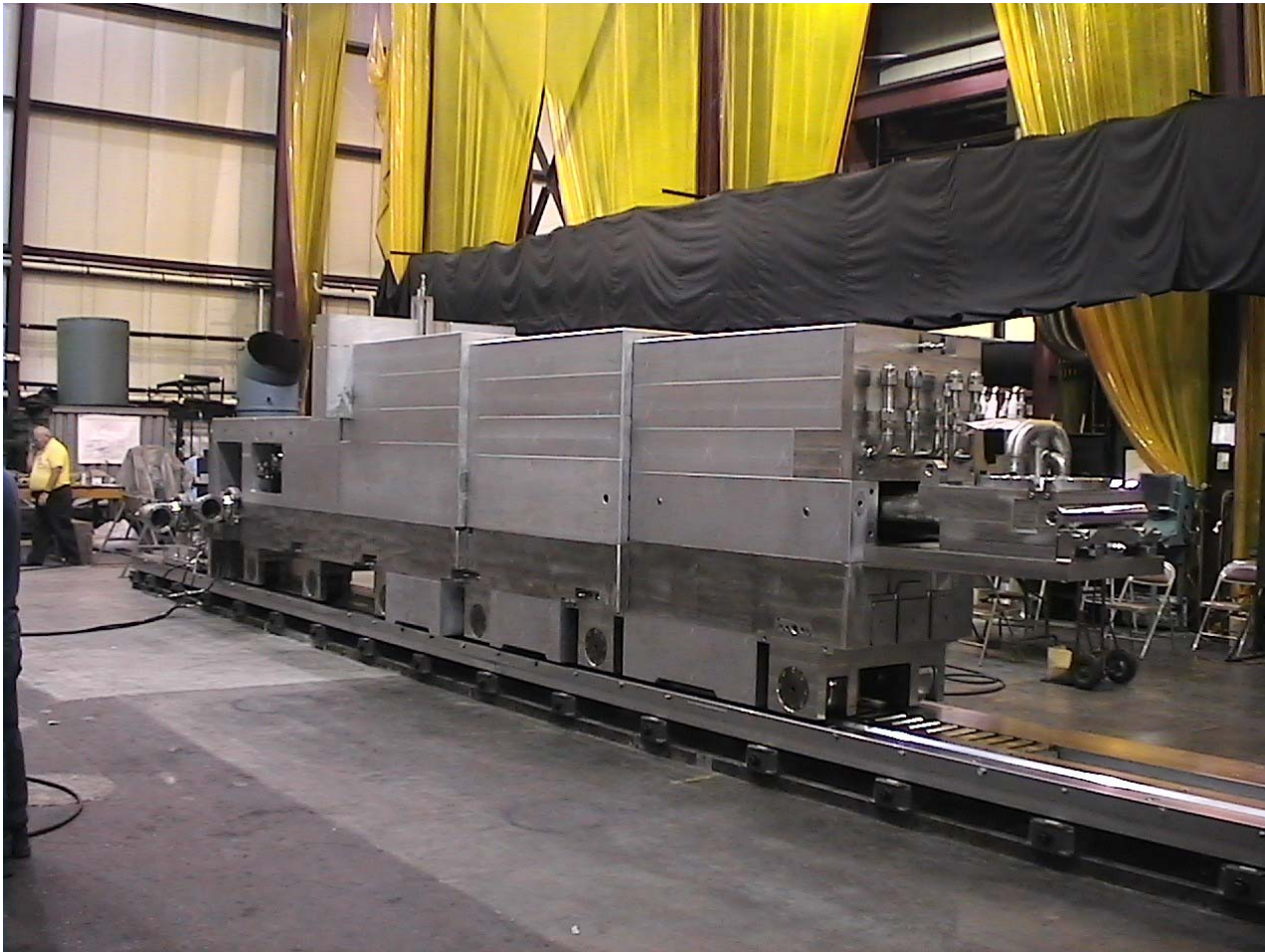


The Spallation Neutron Source Monthly Report

July 2004



SNS 102010000-TR0047-R00



A U.S. Department of Energy Multilaboratory Project

SPALLATION NEUTRON SOURCE
Argonne National Laboratory • Brookhaven National Laboratory • Thomas Jefferson National Accelerator Facility • Lawrence Berkeley National Laboratory • Los Alamos National Laboratory • Oak Ridge National Laboratory



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Project Overview and Assessment



Poured in place shielding for the Backscattering Spectrometer Instrument

Technical Assessment:	Satisfactory
Cost Assessment:	Satisfactory
Schedule Assessment:	Satisfactory

Carl N. Strawbridge
 Carl N. Strawbridge
 SNS Deputy Project Director
 9/9/04
 Date

Highlights and Issues:

- Good project performance continues with minor cumulative cost and schedule variances of 0.2% and -1.6% respectively against the March 2006 early finish schedule. Through the end of July, 84.5% of the project is complete. Completion percentages by area are:
 - ◇ 99 % of R&D
 - ◇ 96 % of design
 - ◇ 84% of technical hardware (including procurement and fabrication)
 - ◇ 93 % of conventional construction
 - ◇ 66 % of installation
- Contingency continues to be tight. The available contingency balance of \$28.1M will be reduced to \$20.8M once the changes identified in the Estimate at Completion are incorporated into the baseline. Approximately \$6M of undistributed pre-operations budget is

also available.

- Management focus continues on executing/managing the critical path work of target installation.
- Good safety performance continues. Through July 23, 2004, the total project has worked in excess of 5.6 million hours with 75 recordable injuries (an increase of 2 from last month) and 1 lost work day (away) case. Injuries and trends have been evaluated and methods to improve safety performance have been discussed with all contractors and staff. Increased attention to job planning and interfaces with other work has been requested from all individuals on site.
- FY04 and FY05 BA are being closely managed and activities scheduled through the end of FY05 are being prioritized to optimize the BA usage.
- The Integrated Installation Schedule review, incorporating Instrument Systems, Target Systems, ASD and CF installation and testing activities in the Target Building, was successfully completed. A plan of action to implement committee recommendations has been developed.

Assessment:

Accelerator Systems Division (ASD): The ARR for DTL 3-6 and CCL 1-3 has been successfully completed. All warm Linac magnet power supplies were ready for beam tests and alignment and polarity checks of all 48 CCL magnets was completed. The diagnostics have been reinstalled into the DTL beam boxes. The beam stop, which will be positioned at the end of CCL4, was fiducialized with respect to the new mounting plate. The final half-cell, seven 45 degree ion pump adaptors, the RF#3 system (including cavity, PS, PA, and spare parts), a wall current monitor, wire scanner hardware and an assortment of coated and uncoated bellows assemblies have all been received at SNS. The review for cooling down cryomodule MB03 (Medium Beta) was held and the recommendations from the committee have been implemented. Preparations for cooldown of the transfer lines are in the final stages with initiation of cooldown in the last week of August. High power certification tests were run on SCL ME-1 RF systems in preparation for applying RF to cryomodule MB03. The cryomodule tunnel Helix terminations are complete. Lead shielding and output waveguide sections were installed on the MB05 klystrons. Installation of the DI piping to the SCL-ME3 HVCM and the water lines to SCL Cryomodule #3 couplers is complete. SCL magnet power supplies have been installed through SCL ME-4 (Cryomodule HB3). ME-3 LLRF installation is complete with testing and checkout in progress and ME-2 LLRF installation is nearly complete.

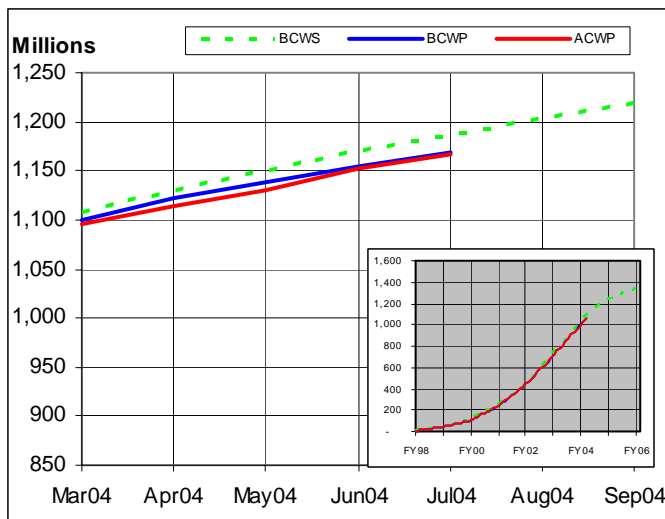
loop water sampler cabinets have been received and are ready for installation and installation of the Helium refrigeration system is going well. Standardization efforts on vacuum systems and the utility interface to instrument systems sample environment equipment are underway and installation of the poured in place shielding for the Backscattering Spectrometer is proceeding. Core Vessel insert installation is proceeding ahead of schedule.

Conventional Facilities (CF): Final items on the punch list are being completed on the CLO basement level. Mechanical, electrical and drywall work continues in the front office wing. Installation of the remaining passenger elevators in the office wing is progressing. Two process building substations remain to energize, one at Target and one at the Compressor Building. The chillers have again pulled a new record load of 841 tons of chilled water capacity; the previously reported high was 650 tons. A draft management plan for the self performed air blown fiber portion of the work has been prepared and is being reviewed. A meeting was held August 16, 2004, with ASD, PSSO, and the consultant who inspected the RTBT tunnel settlement cracks; no corrective action is required or anticipated. Cracks will continue to be monitored for remaining minor settlement. Award of the contracts for the Central Exhaust Facility stack and the blowers is nearing completion. Piping equipment installation is continuing in the Target Building. Shut down of the ringer crane is planned for the end of October. Final site grading requirements are being determined for the areas around the Target and the CLO. Construction of storm drains, curbs and paving north of the CLO are being coordinated between contractors to complete the work in that area.

Experimental Systems Division (XFD): Target hardware continues to arrive and be installed. The mercury loop pump and isolation valve, as well as the heat exchanger, have been received and installed. Thirteen of twenty interstitial blocks have been installed and final factory inspection on the pedestal manipulator has been completed. The five cooling



Project Overview and Assessment (con't)



Total Project	Jul04	Cum-to-Date
BCWS	17,131	1,186,970
BCWP	13,230	1,168,473
ACWP	15,021	1,166,569
CV	-1,791	1,904
SV	-3,901	-18,497
CPI	0.88	1.00
SPI	0.77	0.98
Budget at Complete		1,383,555
Contingency		28,145
Total Project Cost		1,411,700

Total Project Cost (TPC)	\$1,411.7 M
Percent planned (cumulative)	85.8%
Percent complete (cumulative)	84.5%
Total Estimated Cost (TEC)	\$1,192.7 M
Cost and Commitments through 7/31/04	\$1,054M
Outstanding Phase Funded Awards	\$17.0M
Budget to Complete	\$110.7M
Contingency	\$28.1M
Estimate at Completion	\$1,171.9M
Remaining Contingency Based on EAC (20.5%)	\$ 20.8M

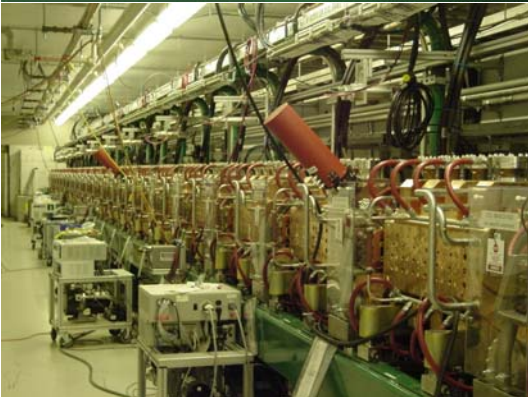
Critical Path:

Based on the March 30, 2006 completion date, no activities in the project schedule show negative float at this time.

The project's longest path remains unchanged and is associated with the Target System's Target Service Bay installation sequence. Currently, 22 days of positive float exist in this installation and integrated testing sequence. The schedule is being monitored closely to ensure that there are no delays in the loading of Target Mercury, conducting integrated startup testing of the Target systems and the Target Readiness assessment. Target Systems installation effort has been grouped into "installation packages" with the General Construction Contractor responsible. The package involving installation of the Hot Cell equipment is being finalized and SNS personnel worked closely with the General Contractor to capitalize on all schedule optimization opportunities including parallel sequencing and double shifting.

Milestones:

Description	Milestone Date	Forecast Date
CD-1 Mission Need	Aug-96	Aug-96 ✓
CD-2 Baseline Approved	Dec-97	Dec-97 ✓
CD-3 Begin Construction	Nov-99	Nov-99 ✓
CD-4 Project Complete	Jun-06	Mar-06



Warm Linac

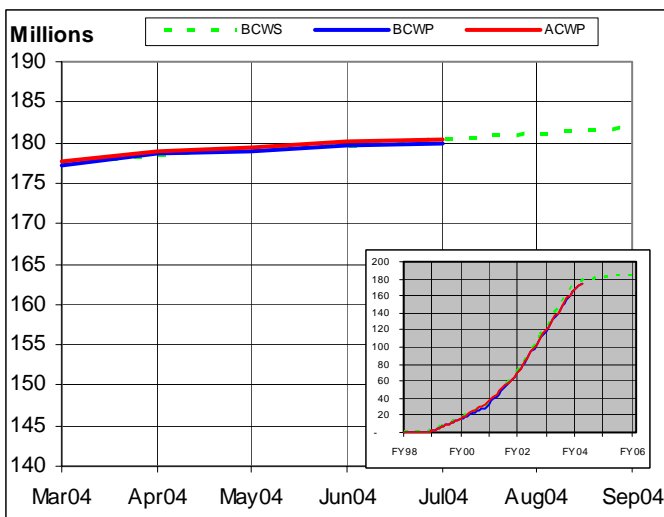
Highlights:

- Assembly of the SNS Target Harp was completed.
- High power testing of all the 5 MW loads, as well as one 5MW circulator, has been completed. High power testing of the final circulator is underway. Heat runs on the last 5MW klystron and the last Thales 550 kW klystron remain.
- All technical work at LANL was shut down in the middle of July in accordance with Laboratory directives.

Assessment/ Issues:

- Project management for the remaining LANL effort has been transitioned to ASD-ORNL.
- The recent work stoppage at LANL is being evaluated for cost/schedule impact.

Performance and Milestones:



	Jul04	Cum-to-Date
BCWS	799	180,515
BCWP	274	179,940
ACWP	223	180,345
CV	51	-405
SV	-525	-575
<hr/>		
CPI	1.23	1.00
SPI	0.34	1.00
<hr/>		
Budget at Complete		183,448
<hr/>		
Planned % Complete		98.4%
Actual % Complete		98.1%

Cost Performance:

Cause and Impact: The cumulative cost variance is due primarily to overruns in HV power conditioners.

Corrective Action: Possible reductions in other LANL workscope are being considered to offset this variance.

Schedule Performance :

Cause and Impact: The current schedule variance is due to shut-down of LANL operations in mid-July.

Corrective Action: Workarounds or scope reductions are being examined.

Description	Milestone Date	Forecast Date
Linac Design Complete	Sep-02	Apr-02



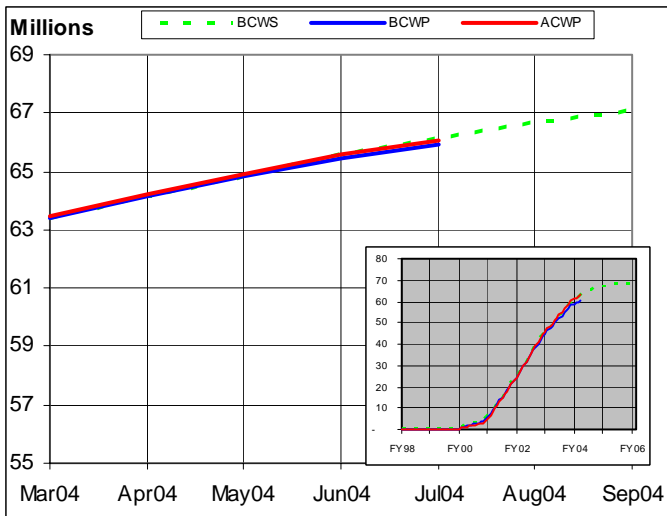
Highlights:

- Three additional High-β cavities were qualified and string assembly for cryomodule H-7 has been completed.
- Post-assembly checkout of the H-3 cryomodule revealed a leak between the process helium system and the insulation vacuum. Efforts are underway to locate and repair the leak.
- Assembly of cryomodule H-4 was completed and shipped to ORNL and assembly of cryomodule H-5 was completed. Assembly of cryomodules H-6 and H-7 has been started.
- Testing of H-1 was suspended to replace piezoelectric tuners.

Cryomodules placed in the Linac Tunnel

Assessment/Issues: There are no current outstanding issues or actions to be reported.

Performance and Milestones:



	Jul04	Cum-to-Date
BCWS	589	66,144
BCWP	466	65,914
ACWP	474	66,046
CV	-8	-133
SV	-123	-230
CPI		
	0.98	1.00
SPI		
	0.79	1.00
Budget at Complete		68,358
Planned % Complete		96.8%
Actual % Complete		96.4%

Cost Performance:
Cause and Impact: Not required.
Corrective Action: None required.

Description	Milestone Date	Forecast Date
Linac Design Complete	Sep-02	Apr-02 ✓
Initiate Testing of Prototype Cryomodule	May-02	Apr-02 ✓

Schedule Performance:
Cause and Impact: The current month SPI is due a delay in cavity and coupler receipts in July.
Corrective Action: None required. All cavities required for the 23 production cryomodules have been received at JLAB. In addition, six of the spare cavities were received at the beginning of August and this variance will be recovered by the end of FY04.



Last Arc Half Cell Magnet arrives at SNS

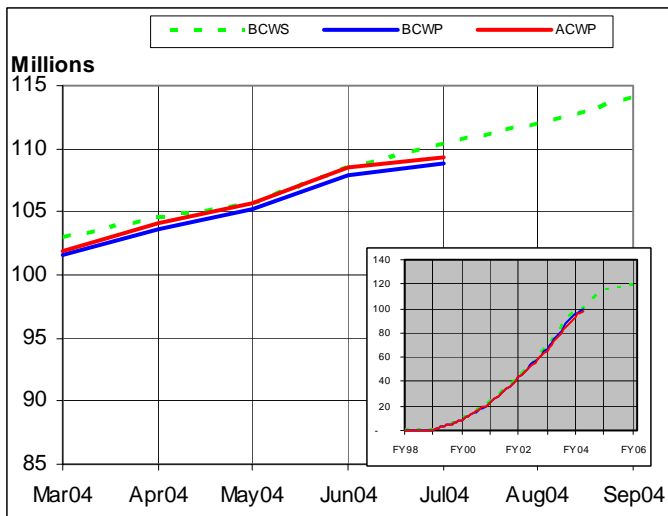
Highlights:

- With the completion of the #32 dipole-quadrupole-corrector (half-cell) assembly, all the arc-section assemblies of the SNS accumulator ring have been completed and shipped from BNL to ORNL.
- During the arc-section vacuum leak check at ORNL, a leak was found at the pump T-joint of one of the half-cell assemblies. BNL assisted in the repair and subsequently, two of the four ring arcs have been pumped down and leak checked.
- The injection straight section trial-assembly continues. The repaired injection dump magnet #2 has been received. Dump magnet #1 will be returned to the vendor for repair of the coil insulation after magnetic measurements are finished.
- Field measurements and corrections were iterated several times on the injection chicane #1, a special magnet that has asymmetric iron geometry to clear the injected beam. The magnet coils were locked in position, and iron -correction bumps modified to reduce the undesired sextupole and octupole components. New end steel "z-bumps" are being fabricated for this magnet and it will be measured again to confirm their effect on the magnet field quality.
- Two RTBT radiation hardened corrector magnets have been magnetically measured and qualified.
- Two design reviews were conducted for the RTBT-Target interface region on the design and support of the radiation hardened magnet elements, and on assembly, shielding and infrastructure issues. During the reviews, ORNL and BNL agreed that ceramic breaks should be used instead of regular hoses for the water fitting of the radiation hardened quadrupoles.
- Five people participated in the European Particle Accelerator Conference, presenting a total of 17 papers (talk and posters).

Assessment/Issues:

Purchase requisitions are being approved based on immediate schedule need only due to FY04 BA constraints.

Performance and Milestones:



	Jul04	Cum-to-Date
BCWS	1,768	110,358
BCWP	980	108,799
ACWP	840	109,317
CV	139	-517
SV	-788	-1,559
Performance Indicators		
CPI	1.17	1.00
SPI	0.55	0.99
Budget at Complete		118,925
Planned % Complete		92.8%
Actual % Complete		91.5%

Cost Performance :

Cause and Impact: The current period variance is due to an accounting credit of -\$84.3K which was applied to procurement and G&A burdens. The cumulative variance is due to labor costs that exceeded plan by ~30%.

Corrective Action: Mitigation opportunities are being pursued.

Schedule Performance :

Cause and Impact: The current period schedule variance is due to delays with Beam Position Monitors and Ring Beam Current Monitors.

Corrective Action: None required. These deliveries will be complete by the end of the FY.

Description	Milestone Date	Forecast Date
Ring Design Complete	Oct-03	Jul-03



Mercury Water Heat Exchanger

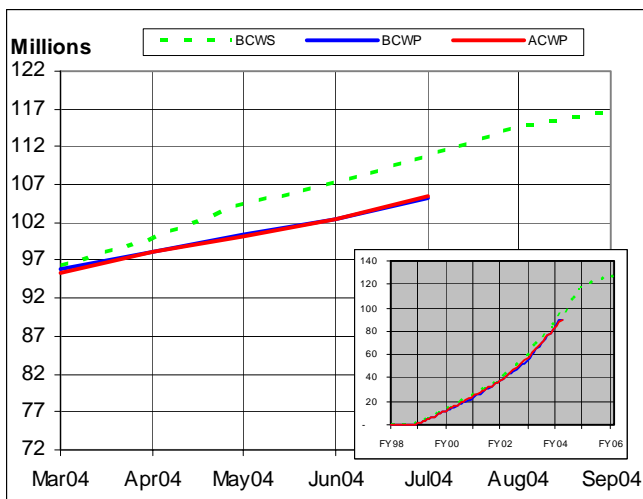
Highlights:

- The hot cell spill collection basin, as well as the portion of the carriage rails located in the tunnel between the vacuum vessel and hot cell, have been installed.
- Final acceptance testing of the heat exchanger, five cooling loop water samplers and the proton beam window assembly was completed. These have all been delivered to SNS.
- The cold box and bearing buffer vessel was anchored in the Target building.
- Nine (out of 20) upper interstitial blocks have been installed. Two additional upper interstitial blocks are on site.
- All of the concrete components for the shutter plugs were received.
- The fabrication and testing of the mercury loop off-gas valve panel has been completed.
- The target service bay bridge crane has been installed. This is the first major installation of the remote handling systems. The servomanipulator bridge was also installed.
- A two week operator and maintenance training program for the servomanipulators began at the vendor. This program includes the operation and maintenance of the mobile and pedestal manipulator systems.

Assessment/ Issues:

Hardware deliveries and the installation schedule continue to be monitored closely. Critical deliveries are monitored weekly at the division level.

Performance and Milestones:



	Jul04	Cum-to-Date
BCWS	3,574	110,861
BCWP	2,695	105,227
ACWP	3,085	105,444
CV	-390	-218
SV	-879	-5,635
CPI		
	0.87	1.00
SPI		
	0.75	0.95
Budget at Complete		
		126,338
Planned % Complete		
		87.7%
Actual % Complete		
		83.3%

Cost Performance:

Cause and Impact: The current period negative cost variance is primarily due to actual costs for the Target share of the core team as well as several Request for Change Proposals processed to modify the General Construction Installation contracts. Neither of these items are in the baseline but have been carried as part of the EAC.

Corrective Action: These variances will continue until a PCR is processed to incorporate these items in the baseline.

Schedule Performance:

Cause and Impact: The current period variance is due to delays in deliveries of top blocks and shutter gates as well as the H2 system PDR. The cumulative schedule variance is largely due to behind schedule efforts in target utilities installation as well as delivery delays in target carriage and plug assemblies, shielding blocks and shutters.

Corrective Action: Management attention is focused on timely completion of all the installation packages being performed by the general contractor and ensuring that equipment deliveries support the installation plan. These delays do not impact the critical path at this time but are of concern.

Description	Milestone Date	Forecast Date
Target Design Complete	Jun-03	Jun-03 ✓
Start Target Installation	Jun-03	Apr-03 ✓
Start System Test with Beam	June-06	Mar-06



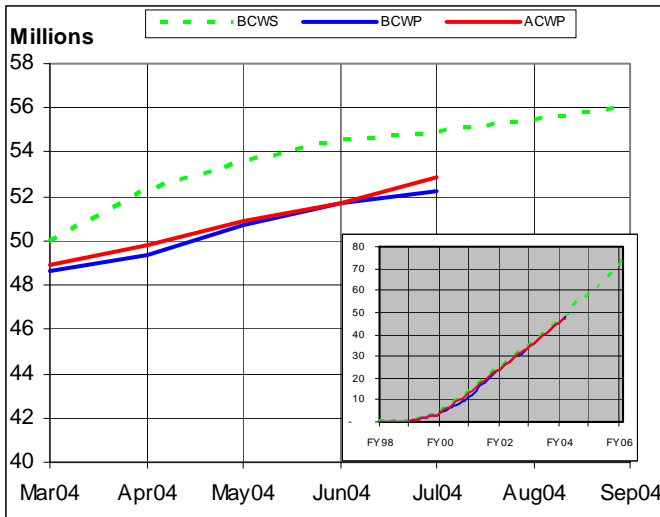
Modular, Adaptable, Sample Environment Housing

Highlights:

- The integrated installation schedule for all instruments at the SNS facility has been completed.
- A plan has been developed that utilizes compensated high-field magnets to prevent magnetic interference between the instruments on Beamlines 3 and 4. A draft policy governing magnetic field interference between instruments has been prepared.
- Several sections of the concrete shielding and guide base for Beamline 2 have been completed.
- Mechanical design of the incoming quality assurance test fixtures for detector modules for the Backscattering instrument has been completed
- Beam monitor requirements for the instruments have been reviewed and the preliminary conclusion suggests that the monitors should operate in ionization mode.
- An updated proposal for a standardized utility distribution panel for sample environment equipment was circulated for review.
- The SNS Modular, Adaptable, Sample Environment Housing (SMASH) has been received and setup in the CLO.
- Installation of core vessel inserts has begun.

Assessment/ Issues: Work on refining the integrated installation schedule is a priority.

Performance and Milestones:



	Jul04	Cum-to-Date
BCWS	346	54,895
BCWP	466	52,209
ACWP	1,176	52,861
CV	-710	-651
SV	120	-2,686
CPI		
	0.40	0.99
SPI		
	1.35	0.95
Budget at Complete		
		78,121
Planned % Complete		
		70.3%
Actual % Complete		
		66.8%

Cost Performance:

Cause and Impact: The current period cost variance is the result of actual costs that were incurred in July for progress taken in June.
Corrective Action: None required.

Schedule Performance:

Cause and Impact: The cumulative schedule variance is due to behind schedule deliveries in the goniometers and core vessel inserts for several instruments.
Corrective Action: All inserts will be delivered by the end of September and the contract for one of the two goniometers is in the process of being pulled back and re-awarded to a different vendor. A PCR will be performed that will incorporate anticipated delivery dates. These delays do not impact the project's completion date.

Description	Milestone Date	Forecast Date
Start Instrument Installation	Mar-04	Mar-04 ✓
Instrument Design Complete	Oct-04	Oct-04
Complete Subproject Acceptance Tests	June-06	Mar-06



Conventional Facilities– Oak Ridge National Lab



CLO stairs

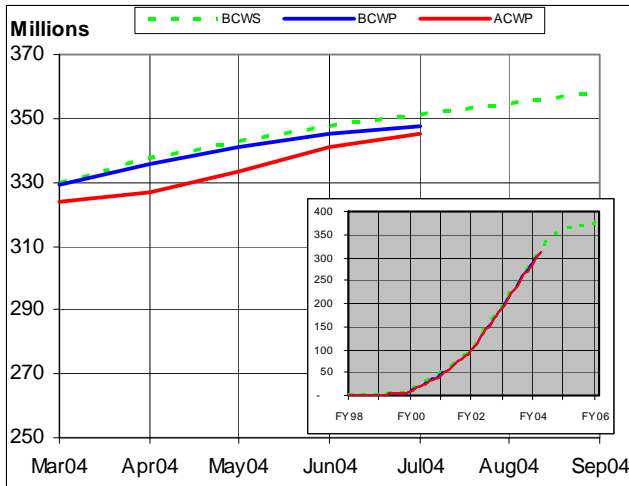
Highlights:

- RTBT Tunnel backfill and liner installation are complete. Additional work for storm drain installation has been given to the contractor.
- Target Building siding is complete on the North side and window installation almost complete. Precast covers for the RTBT tunnel roof have now been set. Core vessel insert and pipe installation in the monolith piping pan continues. Installation of Target Cart rails and shielding inside the Target Cart Liner is complete.
- CLO Building general construction work continues. Concrete work for July included the placement of the East retaining wall and start of sidewalk installation on the North side of the building. Progress continued with framing, drywall installation and finishing throughout the building, and with plumbing, ductwork, electrical, elevator installation, exterior siding, window framing and glazing. Fire Alarm System work is approximately 90% complete in all areas of the CLO.

Assessment/ Issues:

Focus continues on coordinating Target Building construction and Target Systems component installation to achieve required milestones.

Performance and Milestones:



	Jul04	Cum-to-Date
BCWS	3,781	351,077
BCWP	2,562	347,500
ACWP	4,149	345,227
CV	-1,587	2,272
SV	-1,219	-3,578
CPI		
	0.62	1.01
SPI		
	0.68	0.99
Budget at Complete		378,912
Planned % Complete		92.7%
Actual % Complete		91.7%

Description	Milestone Date	Forecast Date
Award AECM Contract	Nov-98	Nov-98 ✓
Start Site Work	Mar-00	Mar-00 ✓
BOD Front End Building	Dec-02	Oct-02 ✓
BOD 1000 MeV Linac	Apr-03	Dec-02 ✓
BOD Ring Tunnel	Aug-03	Jun-03 ✓
BOD Target Building	May-05	Feb-05
Construction Complete	Nov-05	Mar-05

Cost Performance:

Cause and Impact: The positive cost variance is the result of a contractual issue with the structural steel (\$1.1M) and the retention earned to date in CLO and the Target Building (\$2.0M).

Corrective Action: The contractual issues with the steel are being worked.

Schedule Performance:

Cause and Impact: The negative schedule variance is primarily in the CLO (-\$2.3M), the Target Building (-\$752K) and CF Local Controls, which has been deferred until FY05 (-\$760K).

Corrective Action: None required. This work does not impact the critical path or project end date.



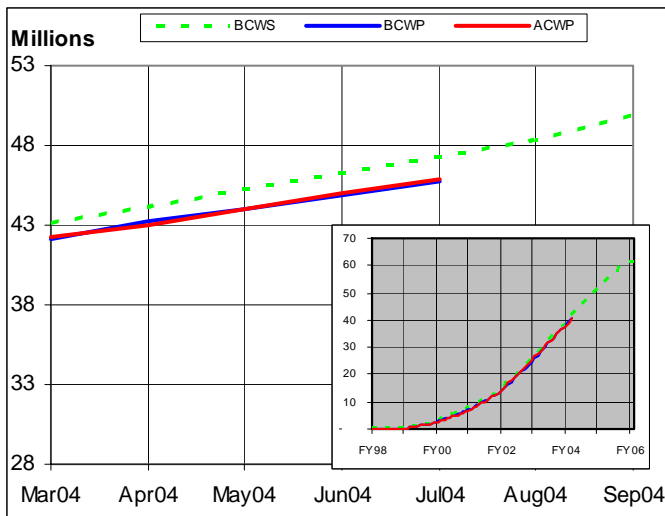
Linac Controls

Highlights:

- Setup of the controls and PPS labs in the CLO has been completed.
- As part of move to CLO server architecture was changed to improve remote access to archive data from the main archive server and synchronization between controls EDM screens and the outside world.
- All LLRF systems for the RFQ and DTL tanks 1 to 6 were replaced with the standard Field Control Modules (FCM) and installed and tested supporting IOC software.
- The installation of MPS hardware required for the DTL/CCL operations, as well as PPS Phase 1.0 has been completed.
- The dry run for Linac Oxygen Deficiency Hazard integration testing was completed.
- Testing of RCCS, Drift Tube Thermocouples, and Vacuum Systems for DTL 4-6 and CCL 1-3 has been completed.
- The magnet power supply control applications for DTL4, DTL5, and DTL6 have been tested and the DTL Beam Loss Monitor (BLM) IOCs as well as the CCL BLM IOCs have been installed and tested.
- All instrumentation and control system checks required for running the CHL main 4.5 K cold box has been completed and all ICS communications cables have been pulled in the HEFT Service Building.
- EPICS configuration of the extraction power supply IOCs is complete.

Assessment/Issues: No issues at this time.

Performance and Milestones:



	Jul04	Cum-to-Date
BCWS	1,046	47,300
BCWP	955	45,783
ACWP	953	45,902
CV	1	-119
SV	-92	-1,517
CPI		
CPI	1.00	1.00
SPI		
SPI	0.91	0.97
Budget at Complete		61,449
Planned % Complete		77.0%
Actual % Complete		74.5%

Cost Performance:

Cause and Impact: Not required.
Corrective Action: None required.

Schedule Performance:

Cause and Impact: Not required.
Corrective Action: None required. There is no impact to the project finish date.

Description	Milestone Date	Forecast Date
Start Front End Controls Installation	Oct-02	Jun-02 ✓
Global Controls Design Complete	Jan-03	Sep-02 ✓
Global Controls Subproject Test Complete	May-06	Mar-06



Installation in the Ring Injection section

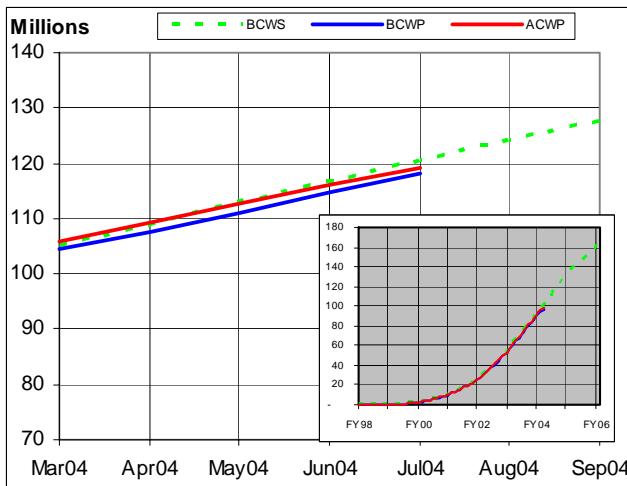
Highlights:

- Preparations for the August 23 warm Linac Accelerator Readiness Review were completed. The RFQ is ready and DTLs 1 – 6 as well as CCLs 1 - 3 have been conditioned to full power at 10hz and full pulse. The Quad Magnet Cooling System (QMCS) is up and running to allow magnet testing and cavity operations. All CCL quad magnets have been installed and aligned. CCL 4 was sealed and pumping has begun. Eight CCL 4 intersegments were prepared for installation. The magnet power supplies for the first 8 magnets of CCL 4 have been powered to the magnets and checked out. The power supplies for the remaining 4 magnets in CCL 4 have been connected to the magnets
- The CHL 4.5 K coldbox run was concluded on Wednesday July 14. The plant started up and was producing liquid helium in about eight hours. A number of tests were run, indicating that the plant has more than ample capacity for 32 cryomodules. However, the problem with higher than specified nitrogen consumption is still present.
- Thirty of thirty-two half cells have been installed in the tunnel and much of the arcs is under vacuum. Half-cell #31 has been received and staged for installation.
- Two styles of replacement feedthroughs for the 2 K coldbox are being fabricated for testing in August. An alternative design has already passed testing, and delivery of the first batch of ten is scheduled for August.

Assessment/ Issues:

All deliveries that could affect the commissioning schedule are being monitored closely.

Performance and Milestones:



	Jul04	Cum-to-Date
BCWS	3,793	120,504
BCWP	3,398	118,202
ACWP	2,874	119,003
CV	524	-801
SV	-395	-2,302
CPI		
CPI	1.18	0.99
SPI		
SPI	0.90	0.98
Budget at Complete		172,139
Planned % Complete		70.0%
Actual % Complete		68.7%

Cost Performance:

Cause and Impact: The cumulative cost variance is due primarily to over runs in craft labor associated with installation activities. The favorable cost variance for the month is due to the transfer of some actual costs to a more appropriate accounts and the completion of all DTL activities and most CCL activities.

Corrective Action: The cumulative cost variance in craft labor is not recoverable and is included in ASD's EAC.

Schedule Performance:

Cause and Impact: The schedule variance is due primarily to delays in CHL installation and klystron spares procurements.

Corrective Action: None required. The installation delays will be recovered and the delay in spares delivery does not impact the commissioning schedule.

Description	Milestone Date	Forecast Date
Start Front End Installation	Sep-02	Jun-02 ✓
Start Linac Installation	Sep-02	Apr-03 ✓
Start Ring Installation	Aug-03	Jul-03 ✓
FE Beam Available to DTL	Mar-03	Dec-02 ✓
Linac Beam Available to HEBT	Aug-05	May-05
HEBT& Ring Beam Available to RTBT and Target	Feb-06	Nov-05



CLO ground floor shops

Highlights:

- The 17th Annual Tennessee Labor-Management Conference has announced that SNS, along with Knight Jacobs and the Knoxville Building and Construction Trades Council, is a finalist for the Award of Excellence.
- The Transition to Operations Team continues to meet, addressing issues related to the operational plan for ASD and XFD, F&O organization and work flow and the research mechanic selection process.
- Ongoing vendor surveillance continues to dominate the XFD QA representative and the ASD QA representative is supporting installation in issues including mechanical inspections and daily equipment calibration.
- An effort to accelerate and capture the generation of “Instruments” ACLs (Acceptance Criteria Listings) is underway. This effort is expected to double the number of XFD/Instruments ACLs.
- One of SNS’s engineers, Lorelei Jacobs is one of three finalists in the science and technology category of the Knoxville YWCA Tribute to Women.

Assessment/Issues: Managing within budget. Continuing strong focus on BA management, cost control and contingency management.

External Review Data:

No progress on recommendations from external reviews was made in July.

Review	Recommendations	Closed This Month	Open Actions
DOE SC Review (11/03)	25	0	1
DOE SC Review (5/04)	22	0	22

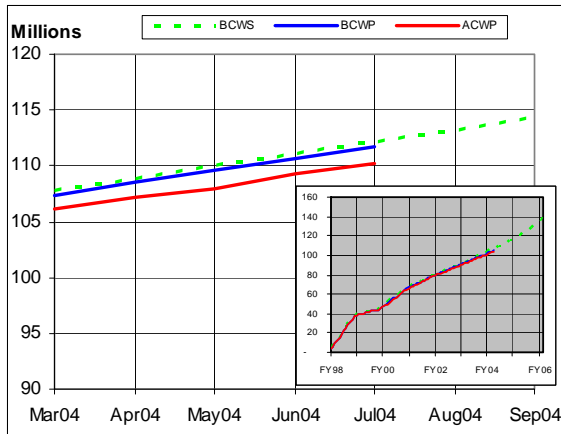
Life of Project Market Experience:

Major Awards (\$M)	Baseline Estimate (\$M)	Baseline Savings (\$M)	Percent savings over baseline
549.0	512.8	-36.2	-7.1%

Through August 19, 2004: 98% of the major procurements are already awarded.



Performance:



	Jul04	Cum-to-Date
BCWS	1,092	112,176
BCWP	1,091	111,759
ACWP	949	110,236
CV	142	1,522
SV	-1	-417
<hr/>		
CPI	1.15	1.01
SPI	1.00	1.00
<hr/>		
BAC (1.2)		75,636
BAC (1.10.3, 1.1.13, 1.10.5)		71,284
<hr/>		
Planned % Complete		76.4%
Actual % Complete		76.1%

Cost Performance:

Cause and Impact: The cost variance is largely due to increased efficiencies and improper phasing of move costs. The latter should have been isolated to June 2004 and rather was spread across FY04. The impact of the move costs can be seen in the current period cost variance and the positive cumulative variance will be depleted as the remaining costs are processed.

Corrective Action: None required.

Schedule Performance:

Cause and Impact: None required.

Corrective Action: None required.

Milestones:

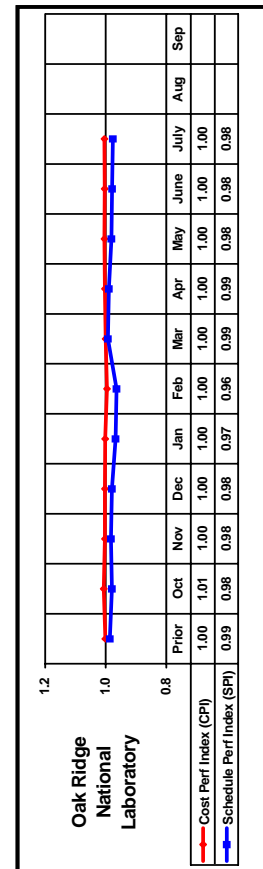
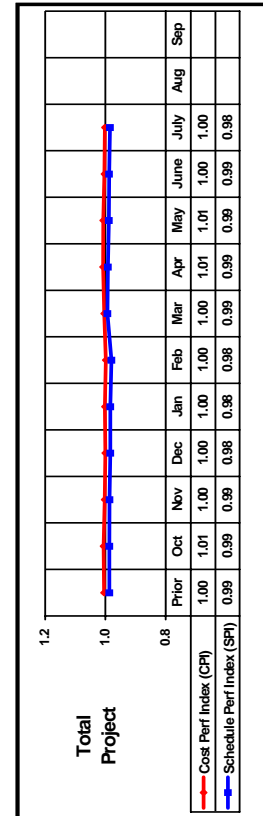
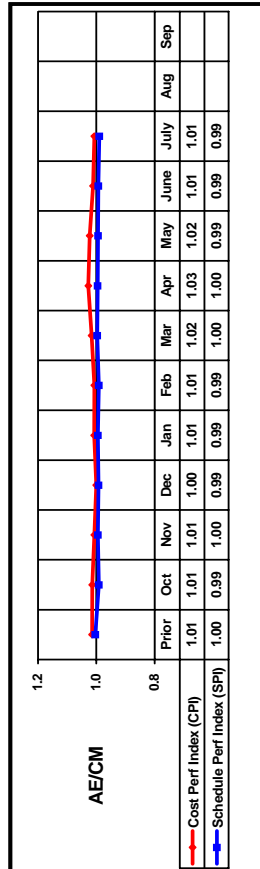
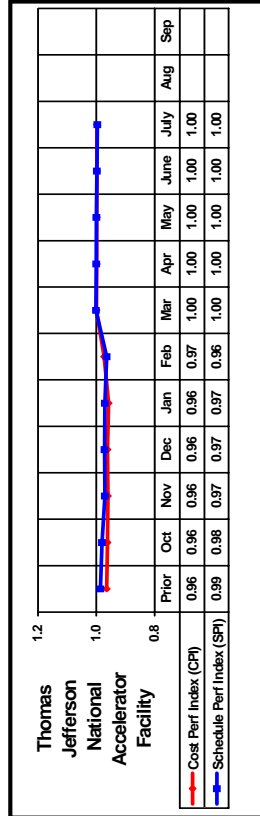
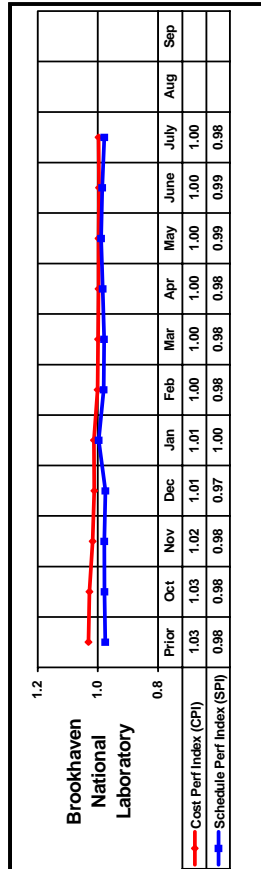
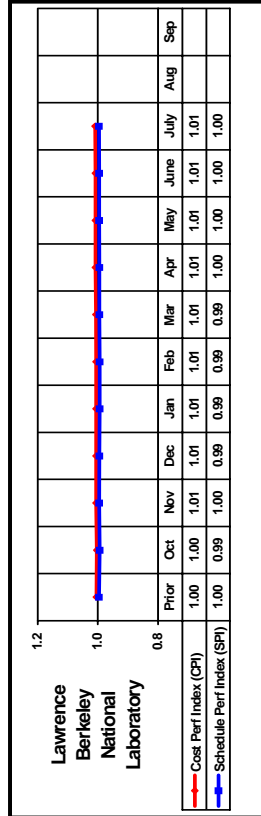
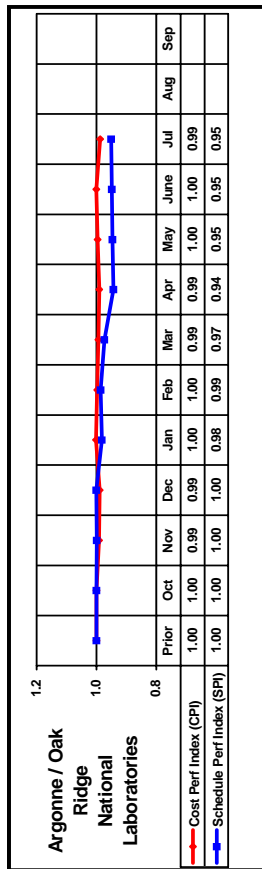
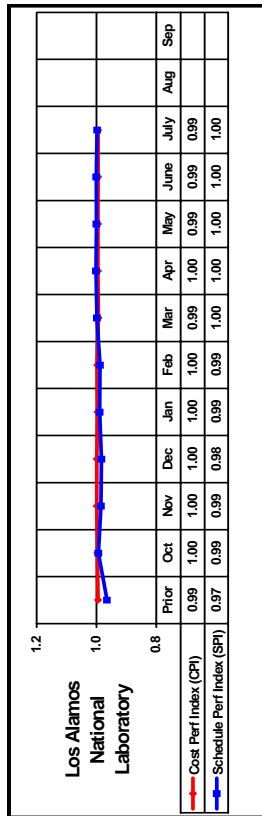
Description	Milestone Date	Forecast Date
EIS ROD	Jun-99	Jun-99 ✓
PSAR Issued for Approval	Dec-99	Dec-99 ✓
Submit PSAR to DOE for Approval	Dec-99	Dec-99 ✓
PSAD issued for Information	Sep-00	Sep-00 ✓
Issue FSAD for approval (Front End and Linac)	Sep-02	Aug-02 ✓
Issue FSAD for approval (Ring and Transfer Lines)	Jun-05	Apr-05
FSAR Issued for Approval	Aug-05	Jun-05
Complete Physical Construction and Project Acceptance Test	Jun-06	Mar-06



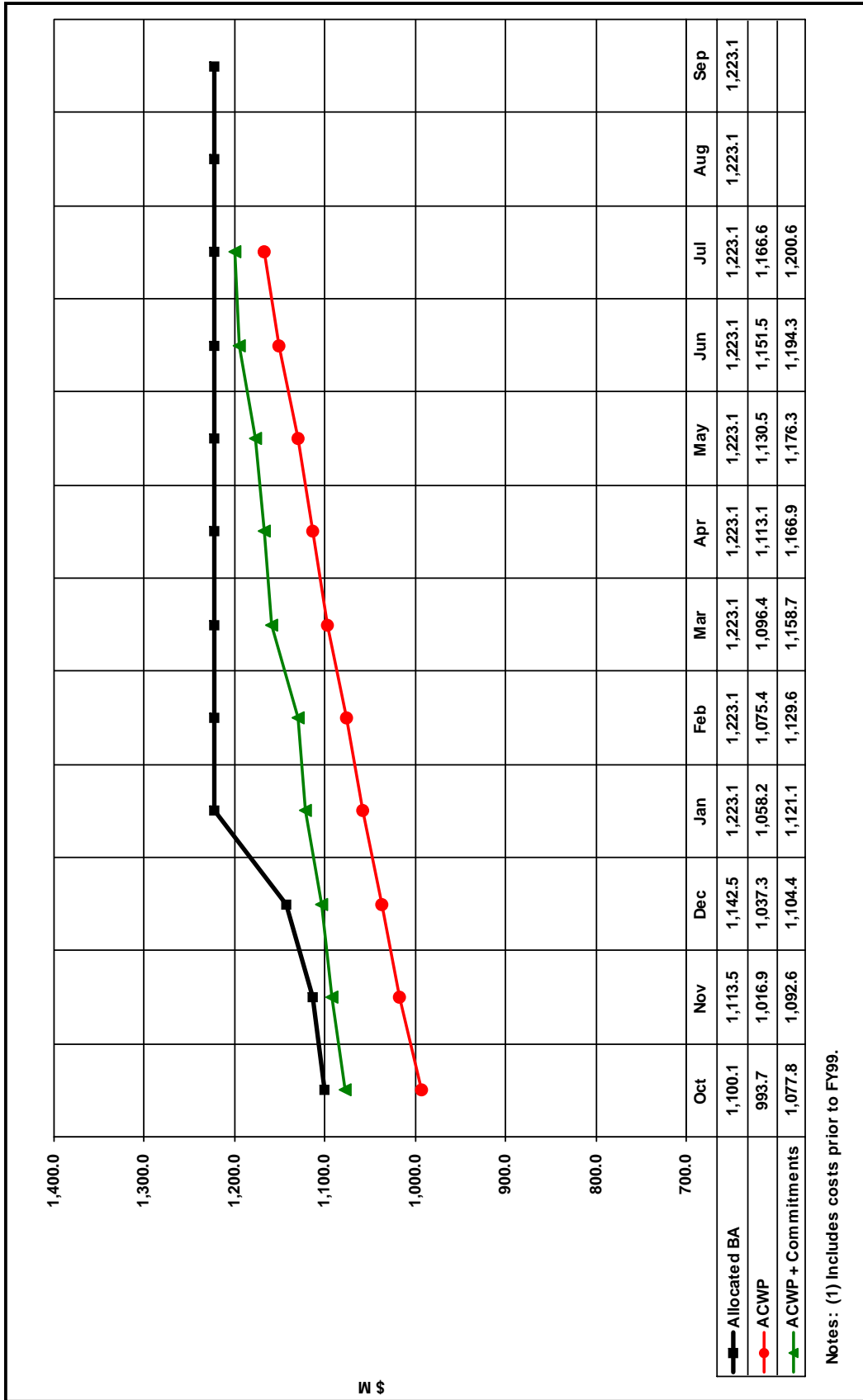
CLO Loading Dock



Overall Project Performance is stable



TPC Obligation Profile against BA



Notes: (1) Includes costs prior to FY99.

Phase funded procurements at the end of July could obligate an additional \$17.0M, raising the total obligation potential to \$1,218M.



PROJECT TITLE:	REPORTING PERIOD:		July 01, 2004 through July 31, 2004												PROJECT NUMBER:		
	PARTICIPANT NAME AND ADDRESS:		July 04												START DATE:		
	BOWS PLAN DATE:		AT COMPLETION												COMPLETION DATE:		
ITEM	CURRENT PERIOD			VARIANCE			BUDGETED COST			CUMULATIVE TO DATE			VARIANCE			AT COMPLETION	
	WORK SCHED	WORK PERF	ACTUAL COST	SCHED	COST	ACTUAL COST	WORK SCHED	WORK PERF	ACTUAL COST	WORK SCHED	WORK PERF	SCHED	COST	BUDGET (BAC)	ESTIMATE (EAC)		
1.02 Project Support	756.0	756.0	475.9	0.0	280.1	66,666.9	66,666.9	65,402.7	65,402.7	66,666.9	65,402.7	(0.0)	1,264.2	75,636	75,268		
1.03 Front End Systems	0.0	0.0	0.0	0.0	0.0	20,832.0	20,832.0	20,907.7	20,907.7	20,832.0	20,907.7	0.0	(75.7)	20,832	20,832		
1.04 Linac Systems	3,764.0	2,859.1	2,590.2	(904.9)	269.0	299,680.2	296,503.4	298,211.4	298,211.4	296,503.4	298,211.4	(3,176.8)	(1,708.0)	315,969	314,840		
1.05 Ring & Transfer System	2,329.8	1,403.7	1,245.7	(926.1)	157.9	122,062.0	120,574.1	121,110.5	121,110.5	120,574.1	121,110.5	(1,487.9)	(536.4)	142,001	142,841		
1.06 Target Systems	3,574.4	2,694.9	3,084.6	(879.5)	(399.7)	92,706.4	87,071.9	87,290.0	87,290.0	87,071.9	87,290.0	(5,634.5)	(218.1)	108,183	111,887		
1.07 Instrument Systems	282.9	386.5	995.6	103.5	(609.1)	40,784.7	38,230.9	38,583.9	38,583.9	38,230.9	38,583.9	(2,553.8)	(363.0)	63,277	63,498		
1.08 Conventional Facilities	3,780.8	2,562.1	4,149.1	(1,218.7)	(1,587.0)	351,077.2	347,499.7	345,227.5	345,227.5	347,499.7	345,227.5	(3,577.5)	2,272.2	378,912	382,905		
1.09 Integrated Control Systems	1,046.1	954.5	953.4	(91.6)	1.1	45,595.6	44,078.8	44,198.1	44,198.1	44,078.8	44,198.1	(1,516.8)	(119.3)	59,745	59,845		
LINE ITEM SUBTOTAL	15,534.0	11,616.7	13,494.5	(3,917.3)	(1,877.7)	1,039,405.2	1,021,457.7	1,020,931.8	1,020,931.8	1,021,457.7	1,020,931.8	(17,947.4)	525.9	1,164,556	1,171,917		
CONTINGENCY														28,145	20,784		
TOTAL LINE ITEM	15,534.0	11,616.7	13,494.5	(3,917.3)	(1,877.7)	1,039,405.2	1,021,457.7	1,020,931.8	1,020,931.8	1,021,457.7	1,020,931.8	(17,947.4)	525.9	1,192,700	1,192,700		
1.01 Research & Development	62.6	79.3	180.0	16.7	(100.7)	99,266.8	99,134.5	99,508.6	99,508.6	99,134.5	99,508.6	(132.4)	(374.2)	100,000	100,000		
1.10 Operations	1,534.6	1,534.0	1,346.4	(0.6)	187.7	48,298.0	47,881.2	46,128.4	46,128.4	47,881.2	46,128.4	(416.9)	1,752.7	119,000	119,000		
OTHER PROJECT COSTS SUBTOTAL	1,597.2	1,613.3	1,526.4	16.1	86.9	147,564.9	147,015.6	145,637.0	145,637.0	147,015.6	145,637.0	(549.3)	1,378.6	219,000	219,000		
TOTAL PROJECT COST	17,131.2	13,230.1	15,020.9	(3,901.2)	(1,790.8)	1,186,970.0	1,168,473.3	1,166,568.9	1,166,568.9	1,168,473.3	1,166,568.9	(18,496.7)	1,904.4	1,411,700	1,411,700		
RECONCILIATION TO CONTRACT BUDGET BASE																	
DOLLARS EXPRESSED IN: Thousands																	
DATE: August 21, 2004																	



PROJECT TITLE	REPORTING PERIOD:										PROJECT NUMBER:			
	July 01, 2004 through July 31, 2004										99-E-334			
PARTICIPANT NAME AND ADDRESS:	BCWS PLAN DATE:										START DATE			
	Oak Ridge National Laboratory Oak Ridge, TN										October 1988			
ITEM	CURRENT PERIOD					CUMULATIVE TO DATE					AT COMPLETION			
	BUDGETED COST		ACTUAL COST		VARIANCE	BUDGETED COST		ACTUAL COST		VARIANCE		BUDGET	ESTIMATE (EAC)	
	WORK SCHED	WORK PERF	WORK SCHED	WORK PERF	SCHED COST	WORK SCHED	WORK PERF	WORK SCHED	WORK PERF	SCHED COST	WORK SCHED	WORK PERF		
AE/CM	3,780.8	2,562.1	4,149.1	(1,218.7)	(1,587.0)	351,077.2	347,469.7	345,227.5	(3,577.5)	2,272.2	378,912	382,906		
Argonne National Laboratory / ORNL	345.5	465.8	1,175.6	120.2	(709.8)	54,915.1	52,229.0	52,880.3	(2,686.1)	(651.3)	78,140	78,361		
Brookhaven National Laboratory	1,975.8	1,137.2	957.5	(838.6)	179.8	118,778.0	116,278.4	116,541.4	(2,499.6)	(263.0)	129,212	129,555		
Thomas Jefferson Laboratory	588.5	465.7	473.7	(122.8)	(7.9)	66,143.6	65,913.9	66,046.4	(229.8)	(132.5)	68,358	68,413		
Los Alamos National Laboratory	949.6	388.1	354.9	(561.5)	33.2	190,719.0	190,279.7	191,359.8	(439.3)	(1,060.0)	194,711	194,711		
Lawrence Berkeley National Laboratory	61.2	71.4	50.1	10.3	21.4	28,959.4	28,848.7	28,594.6	(110.7)	254.1	29,676	29,676		
Oak Ridge National Laboratory	9,429.8	8,139.7	7,860.1	(1,290.1)	279.6	376,377.7	367,423.9	365,918.9	(8,953.8)	1,505.0	504,547	507,296		
WBS SUBTOTAL	17,131.2	13,230.1	15,020.9	(3,901.2)	(1,790.9)	1,186,970.0	1,168,473.3	1,166,588.9	(18,496.7)	1,904.4	1,383,556	1,390,917		
CONTINGENCY											28,145	20,784		
TOTAL PROJECT COST	17,131.2	13,230.1	15,020.9	(3,901.2)	(1,790.9)	1,186,970.0	1,168,473.3	1,166,588.9	(18,496.7)	1,904.4	1,411,700	1,411,700		
RECONCILIATION TO CONTRACT BUDGET BASE														
DOLLARS EXPRESSED IN: Thousands													DATE: August 21, 2004	



PROJECT TITLE: Spallation Neutron Source Project	REPORTING PERIOD: July 01, 2004 through July 31, 2004												PROJECT NUMBER: 99-E-334				
PARTICIPANT NAME AND ADDRESS: Oak Ridge National Laboratory Oak Ridge, TN	BCWS PLAN DATE: Jul-04												START DATE: October 1998				
	BUDGETED COST FOR WORK SCHEDULED (NON - CUMULATIVE)												COMPLETION DATE: June 2006				
ITEM	BCWS CUM TO DATE	FISCAL YEAR												FY Total	Out Years	Budget at Completion	
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep				
PM BASELINE (BEGINNING OF PERIOD)	862,169	17,125	19,307	18,982	21,567	17,640	9,985	21,434	18,880	16,783	15,948	15,217	15,180	208,047	94,340	1,164,556	
1.02 Project Support		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.03 Front End Systems		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.04 Linac Systems		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.05 Ring & Transfer System		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.06 Target Systems		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.07 Instrument Systems		-	-	-	-	-	-	-	-	-	(414)	(131)	(867)	(1,412)	1,412	-	-
1.08 Conventional Facilities		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.09 Integrated Control Systems		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TOTAL AUTHORIZED CHANGES		-	-	-	-	-	-	-	-	-	(414)	(131)	(867)	(1,412)	1,412	-	-
PM BASELINE (END OF PERIOD)	862,169	17,125	19,307	18,982	21,567	17,640	9,985	21,434	18,880	16,783	15,534	15,086	14,313	206,635	95,751	1,164,556	
RECONCILIATION TO CONTRACT BUDGET BASE																	
DOLLARS EXPRESSED IN: Thousands																	
DATE: August 21, 2004																	

One Project Change Request was implemented in July:

Revision	PCR Number	Description	Impact (Cost/Sched/Tech)	Actual Cost Impact (Total \$)
R501	IS-04-004	Reassign BCWS from Award Activities to Procurement Activities	Schedule	-



Actual Cost of Work Performed (ACWP)—Actual cost incurred as reported through laboratory cost accounting systems plus any accruals.

Allocated Budget Authority (BA)—Cumulative funds currently allocated and authorized by the Department of Energy that may be committed and spent by the contractor for project activities.

Budget at Completion (BAC)—The sum of all budgets allocated to the project excluding contingency

Budget to Complete (BTC)—The sum of all budgets allocated to the project less commitments and cumulative actual costs.

Budgeted Cost of Work Performed (BCWP)—Value of the planned scope of work physically accomplished.

Budgeted Cost of Work Scheduled (BCWS)—Cost plan based on the budgeted value of a scope of work, time-phased based on the schedule for the scope of work.

Commitments—Funds allocated to subcontractors where the work has been authorized but not yet expensed.

Cost Performance Index—The ratio of the value of the work performed to actual cost; $CPI = BCWP/ACWP$. Values less than 1.0 represent “cost overrun” condition, and values greater than 1.0 represent “cost underrun” condition.

Cost Variance (CV)—Difference between the value of the physical work performed and the actual cost expended. $CV = BCWP - ACWP$. A negative result is unfavorable and indicates the potential for a cost overrun.

Estimate at Completion (EAC)—Forecast final cost of a scope of work based on the current ACWP plus a management assessment of the cost to complete the remaining scope of work.

Estimate to Complete (ETC)—Resource requirements necessary to complete the remaining scope of work.

Forecast Budget Authority—Future time-phased plan of how the project expects remaining BA to be allocated to the project by DOE. Through the current reporting period Forecast BA will equal Allocated BA.

Line Item (LI)—Fund “type” for design, procurement, construction, fabrication, installation, and pre-operational testing of a capital facility.

Obligation Plan—Time-phased plan of how each laboratory plans to commit their Allocated BA. Labor and

materials and supplies are typically time-phased as expended, while procurements are typically time-phased at award of contract plus award of any contract options.

Other Project Cost (OPC)—Fund “types” (Operating Expense and Capital Equipment) supporting, but not directly contributing to a LI construction project, generally include research and development and pre-operation activities.

Percent Complete—The ratio of the Earned value to the Budget at Completion. $\% \text{ Complete} = BCWP/BAC$

Percent Contingency remaining—The ratio of remaining contingency dollars to remaining work calculated as follows. The numerator is equal to the contingency available after consideration of the EAC. The denominator is the EAC less ACWP less commitments (excluding commitment to the AECM that has not been passed through to subcontractors) and outstanding phase funded procurements.

Percent Planned—The ratio of the current plan to the budget at completion. $\% \text{ Planned} = BCWS/BAC$

Schedule Performance Index—The ratio of the value of the work performed to work scheduled; $SPI = BCWP/BCWS$. Values less than 1.0 represent “behind schedule” condition, and values greater than 1.0 represent “ahead of schedule” condition.

Schedule Variance (SV)—Difference between the value of the physical work performed and the value of the work planned (scheduled). $SV = BCWP - BCWS$. A negative result is unfavorable and indicates a behind schedule condition.

Total Estimated Cost (TEC)—The TEC represents the total capital funds authorized for the project including contingency funds.

Total Project Cost (TPC)— $TEC + OPC$