Watts Bar Nuclear Plant
Unit 2 Completion Project

Third
Quarterly Update to the
Estimate to Complete
November 2012 - January 2013

Published March 2013

Nuclear
Construction

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Section 1 - Executive Summary

On April 26, 2012, the TVA Board of Directors approved continuation of the completion and startup of Watts Bar Unit 2 (WBN2) in accordance with a revised Estimate to Complete (ETC). As part of that process, the WBN2 team committed to performing a quarterly update to the ETC in order to maintain the integrity of the estimate, as well as to provide transparency into project performance. This is the third quarterly update of the ETC.

The results of this review indicate the WBN2 project performance continues to be consistent with the ETC plan, and the project team continues to actively work on further performance improvement initiatives.

- Workers continued to deliver good safety performance working more than 17.8 million hours without a lost time accident and maintaining the recordable injury rate better than goal.
- Quality performance measured by the Quality Control (QC) Acceptance Rate remained high, tracking above 96-percent. The project identified some increase in QC rejections of pipe hangers and took action to improve performance.
- The WBN2 project continues to be within budget and to meet the project schedule. New budget and schedule metrics are being developed to accurately track performance as the project transitions to system completion and testing.
- No new risks have been identified that compromise project completion. The project team is addressing previously identified challenges in the corrective action program, productivity, and document closure in order to avoid negative impacts.
- Previously identified risks to budget and schedule have not significantly changed, and are being addressed. The use of the project risk reserve has been as expected.
- Regulatory and licensing issues remain the primary risks for the project; however, there is no change in project risk due to licensing. Inspection results and feedback from the Nuclear Regulatory Commission (NRC) show sustained performance improvements in licensing and compliance.
- Improvements in WBN2 project organization health continue to support and sustain project completion.

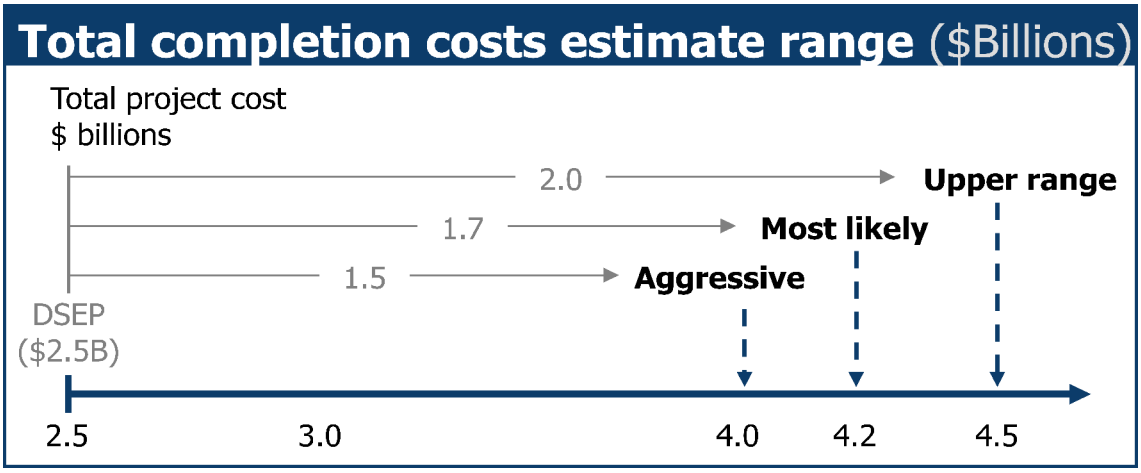
Section 2 - Overview

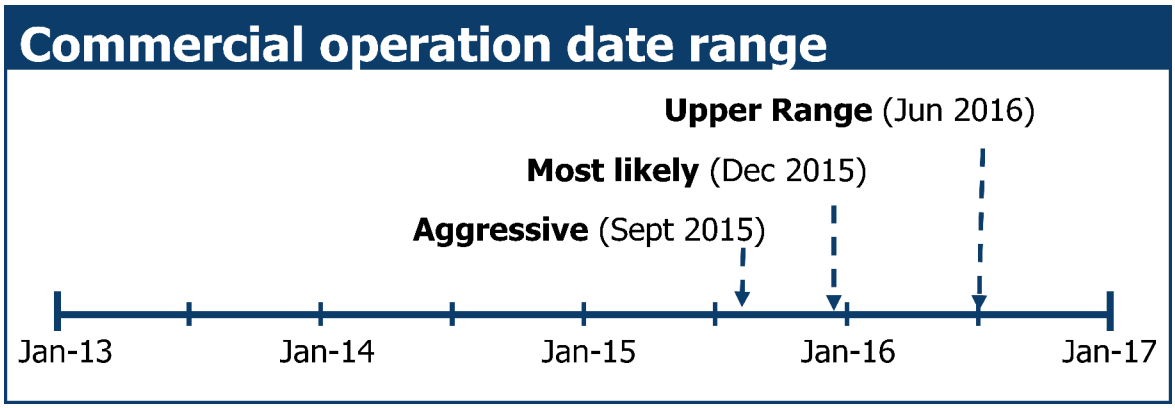
Background

The TVA Board of Directors approved resuming construction to complete WBN2 in August, 2007. During the next four years, however, WBN2 did not meet performance expectations for schedule or budget.

In August 2011, a new management team began to be formed for WBN2. The new team performed a root cause analysis of the issues responsible for the performance problems, and began developing a new ETC for the project. Details of the cause analysis and the process used to develop the new ETC can be found in the *Executive Final Report on the Estimate to Complete*: *http://www.tva.com/power/nuclear/pdf/wattsbar2_executive_etc.pdf*

The Watts Bar 2 ETC is based on a range of values for schedule and budget that were developed using the risks associated with meeting expectations. The project's approved budget and schedule are:





Quarterly Performance Summary

The project metrics that were developed as a part of the WBN2 improvement plan continue to be implemented and refined. In addition, as the project transitions through the different phases of project completion other metrics and indicators are being developed that will continue to accurately measure performance.

The project is meeting project-to-date safety, quality, cost and schedule targets and is expected to meet the FY 2013 forecasts. Additional details on project performance are provided in the remaining sections of this report.

Quarterly Highlights

In addition to overall performance meeting targets, the project accomplished a number of milestones:

- Workers achieved over 17.8 million hours without a lost-time incident.
- The 288,000-plus pound WBN2 reactor pressure vessel head was safely moved from its holding stand to the top of the reactor pressure vessel in order to support work activities in the containment building.
- The project began efforts to transition from bulk construction to system completion and turnover for testing. The project team is accelerating the completion of several systems to begin testing earlier in order to reduce project risk.
- WBN2 workers were trained on completeness and accuracy requirements in dealing with the NRC (10 CFR 50.9) and promoting a safety conscious work environment.
- The Watts Bar 2 PCIP was implemented to help retain the best skilled workers, ensure completion of work activities in a safe and high quality manner, and sustain a level of productivity that aligns with the construction schedule.
- A Dual Unit Operational Readiness Team was formed to lead the transition of Watts Bar from two units - one operating and one under construction - to a safe, reliable dual-unit operating station.
- Members of the WBN2 senior management team met with NRC senior management. The meetings were conducted to discuss current progress regarding WBN2 construction completion, the status of efforts specific to Watts Bar concerning the NRC's Fukushima Orders and 10 CFR 50.54(f) letter, and to share concerns regarding the NRC's Waste Confidence rulemaking schedule.
- Submitted the "Final" As-designed Fire Protection Report to the NRC.
- Completed American Society of Mechanical Engineers surveys and Certificate of Authorization renewals for PCI, TVA, Bechtel Engineering and Bechtel Construction.

- A risk assessment was conducted to identify how the WBN2 work environment could be improved and what could potentially impact WBN2 being delivered safely, on time, and within budget. This was a collaborative effort and included members from the Office of Inspector General (OIG), TVA's Training Development & Organizational Health, Employee Concerns and Project Assurance.

- TVA and its contract partners conducted an executive project review meeting in November 2012 to review performance, strengthen relationships, and develop any needed corrective action plans. Similar meetings have been and will be conducted throughout the project

Project Risks

Schedule Risk - The project-to-date Schedule Performance Index (SPI) continues to meet project goals. During FY 2013 the project has earned 78,738 more work hours than planned through January 2013. The scheduled remaining hours continues to be less than the number of hours estimated in the ETC. The project team is accelerating the completion of systems, which has challenged the organization and caused schedule adherence to be less than desired. The project team has implemented actions and schedule adherence has improved. Completing systems early increases the rate of discovery and issue resolution, reducing schedule risk. Therefore, current schedule performance risk is minimal.

Budget Risk - Progress metrics for large construction projects evolve throughout the life of a project. During construction and prior to system turnover for testing, progress measurement is focused on the installation of bulk commodities. WBN2 has been reporting construction progress using the standard industry metric of Cost Performance Index (CPI).

CPI measures the direct labor performance for installing bulk quantities by comparing actual hours and completed commodities with estimated productivity (hours to install a particular commodity). The CPI for the project-to-date is over 1.0, indicating that tasks are being performed according to the estimates assumed in the ETC. However, CPI represents less than 25% of the overall capital project cost at WBN2.

The project is currently transitioning from bulk construction to system turnover and testing, at which time it is expected that CPI will degrade in its ability to accurately reflect project progress. Therefore, different performance indicators are being developed to monitor progress.

The WBN2 project team is developing a Project Performance Index (PPI) which is a broad-based indicator for monitoring cost performance. This more comprehensive metric is made up of all project elements including construction (includes CPI), engineering, work closure, startup, system completion, operations, Fukushima modifications, River Operations and overall project support functions. PPI results are expected to be reported in the next ETC quarterly update.

The cost-related risks that were added to the project budget remain acceptable. Approximately 19-percent of the project cost risk contingency has been allocated. During 2012, craft staffing was held below plan in order to ensure adequate planning was complete and productivity goals were met. Therefore, project-to-date spending has been less than planned. An increase in project cash flow for FY 2013 is possible assuming that today's under runs are realized in the future.

Fukushima Risk – The regulatory impacts of Fukushima, including related seismic and hydrology issues, will be significant for WBN2. The project has submitted the required documents to the NRC with near-term submittals due for flood impacts and FLEX strategies-an approach that uses a diverse and flexible set of portable equipment and emergency plans to increase protection against events that go beyond a plant design basis. The final regulatory framework for the industry response has not yet been developed and guidance, especially for seismic and hydrology, is potentially months away. In the interim, the project team has developed a number of alternatives based on the information currently available. However, until the framework is completed by the NRC, the risk due to the Fukushima event remains at the same level as in the ETC.

Plans and detailed schedules have been developed by teaming with several organizations within TVA and numerous contractors to facilitate completing the large volume of work. Activities under way to address the events at Fukushima include:

- The concrete sections of two dams have been analyzed, and engineering is in the process of determining necessary modifications.
- The engineering design for the permanent fix of the temporary flood barriers is approximately 30-percent complete for the four affected dams.
- Eighteen additional dams are being analyzed. Walk downs have been completed on all eighteen, geotechnical exploration is in progress on eleven dams, the development of the new seismic hazard curves and multi-dam locations have been contracted, and the nuclear-specific cases defined for all eighteen dams.
- The design engineering for the FLEX Equipment Building is approximately 40-percent complete and the diesel pumps and portable generators (both large and small) have been procured. Designs for the physical installations of the FLEX equipment are in progress.
- The preliminary design for the spent fuel pool level instrumentation is complete and the procurement of the instrumentation is under way.
- Hardening of the existing condensate storage tank was not possible, so the design for a replacement beyond design basis event tank is under way.
- The vendor for the Seismic Probabilistic Risk Assessment has been chosen.
- Design engineering and procurement of the new communications equipment is in progress.

Waste Confidence Ruling Risk - In response to a court decision vacating the NRC's 2010 update of its "Waste Confidence Decision" rulemaking, the NRC is in the process of reissuing the vacated rule based on additional generic analyses addressing the deficiencies identified by the court. The Commission has required NRC staff to conduct site-specific analyses only in rare circumstances of compelling need that would not impact the generic analyses. This decision has the potential to impact the final licensing process for the project, but it is not expected to impact WBN2 in the short term. The indeterminate nature of this rulemaking must be considered an additional long-term risk for WBN2. The project team continues to closely follow the issue and is preparing an alternate site-specific approach in the event NRC generic rulemaking is delayed.

Licensing Strategy Implementation Risk - A licensing strategy has been developed that provides structure to the myriad of regulatory and licensing issues that must be addressed prior to operation of WBN2. Included in this strategy are action plans to improve the quality and timely completion of licensing documents.

Regulatory interface is critical to the completion of the project and remains a major focus, and over the quarter, several key discussions were held with the NRC. Those included:

- A discussion by members of the WBN2 senior management team and members of the NRC Region II management in November 2012 to review current project status and schedule and commitment closure coordination improvements.
- Meetings with NRC senior management in January 2013 to discuss the progress of construction, the status of efforts relating to the NRC's Fukushima Orders and 10 CFR 50.54(f) letter, and the agency's schedule for Waste Confidence rulemaking.

The NRC continues to draft two new rules that could impact WBN2. The first involves a nuclear plant's ability to deal with a station black-out or loss of electrical power. The second is also an industry-wide issue dealing with nuclear fuel cladding. WBN2 is closely following both these issues and alternatives have been developed to deal with them as required.

Work Document Closure Risk - Construction of a nuclear power plant requires a significant amount of documentation to show that work is completed to meet all regulatory and design requirements. Over time, the completion of construction work has outpaced the completion of final documentation verification and the creation of an acceptable document package.

With work document closure remaining a project challenge, project management is closely monitoring performance in this area and continues to focus the organization on implementing its plan to close the gap between construction completion and document closure and to address the large quantity of old, complex work documents that require closure. These documents contain large numbers of changes and cross-references between documents. The age of the documents increases the difficulty of closing them and their complexity increases the possibility for human error. Historically, work document closure has had a low priority, and until the documents are closed there is some risk for discovery of new work.

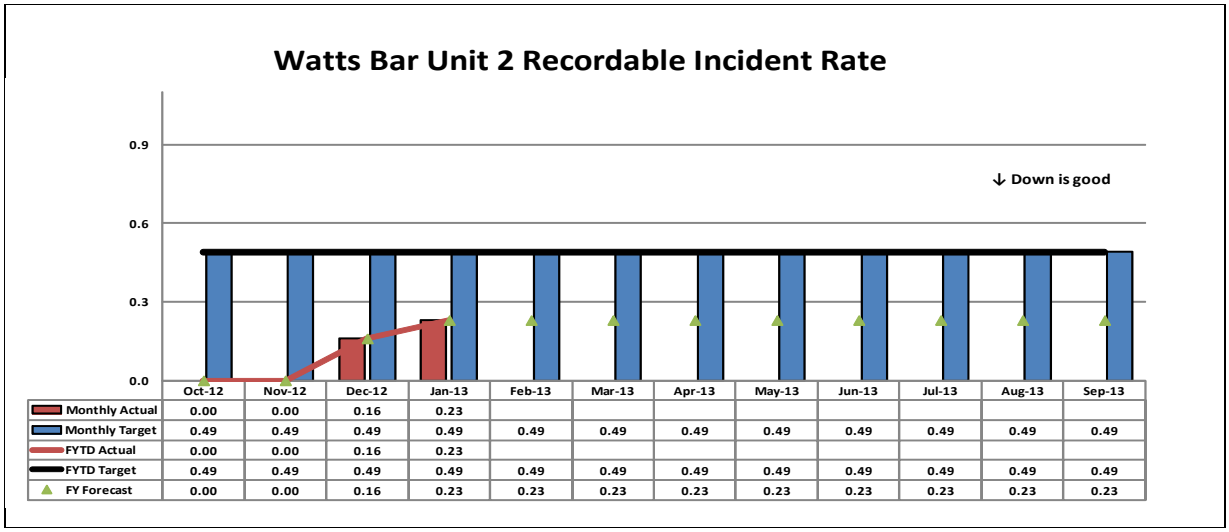
During the quarter, the project team focused on improving the quality and closure rate of work documents and used metrics to help drive improvement in this critical area. A modified closure process was successfully implemented to facilitate unbundling multi-system work order packages to support early system turnovers. Work order closure back logs have been essentially eliminated and closure capacity has steadily improved. The following results were recognized:

- Work package closure rates met the monthly goals in November (431 vs. 345) and December (315 vs. 300). The closure rate fell short of the goal in January (356 vs. 600) due to the prior reduction of backlogs and a lower number of new construction field completions following the holiday break period. The number of construction work order completions is expected to increase to the target level for the balance of FY 2013.
- Work package quality continued to improve with only 1-percent needing to be returned for correction in January.

Section 3 - Quarterly ETC Results by Category

Safety

During the quarter, workers at WBN2 achieved over 17.8 million hours without a lost-time incident. Additionally, the Recordable Incident Rate performance was better than goal, as shown in the indicator below.



	Oct-12	Nov-12	Dec-12	Jan-13	Feb-13	Mar-13	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13
Monthly Actual	0.00	0.00	0.16	0.23								
Monthly Target	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
FYTD Actual	0.00	0.00	0.16	0.23								
FYTD Target	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
FY Forecast	0.00	0.00	0.16	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23

The safety performance for WBN2 is good and is the result of a number of activities:

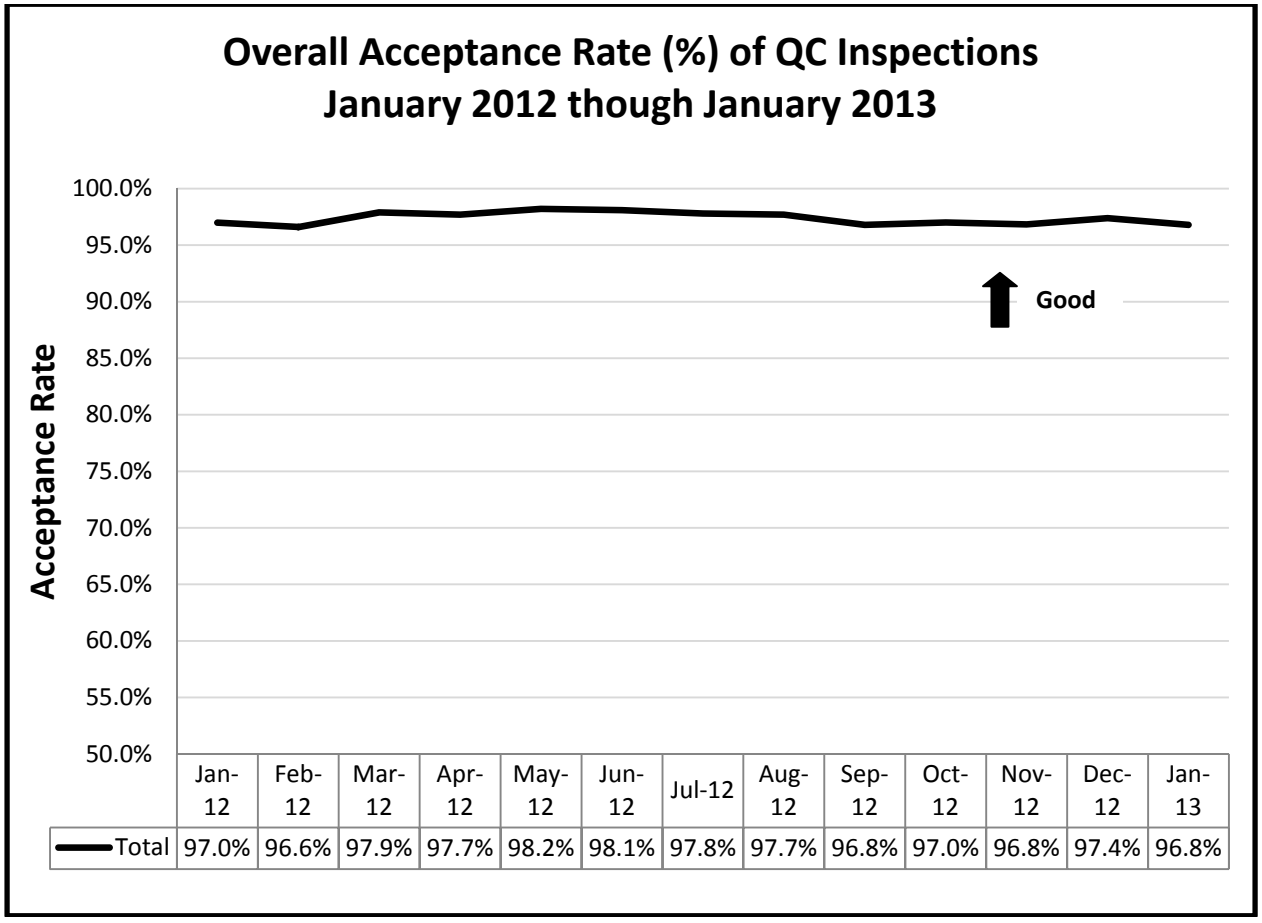
- Interventions - WBN2 workers intervene to protect teammates from unsafe activities. The safety intervention program was developed by the Tri-lateral Safety Alliance (TLSA). During this quarter interventions have consistently met or exceeded the goal and the number of interventions continues to show a rising trend. Peer-to-peer coaching and interventions are powerful tools in preventing safety incidents.
- Workers continue to submit safety suggestions and effectively identify job hazards in order to improve workplace safety.
- Plan of the Day meetings begin with a safety message and a discussion of industry safety operating experience. WBN2 TVA senior management routinely attends site TLSA monthly meetings and TVA corporate TLSA meetings.
- Positive reinforcement of safe performance including the safe worker of the month award.
- Site-wide dissemination of safety information via various media including a craft safety newsletter.

There has been an increase in the number of low-level safety incidents at the project. This may be a precursor to more serious safety incidents; therefore, the project team has reemphasized the need for continued management focus and leading by example to demonstrate that every injury can be prevented. Bechtel is also bringing additional safety professionals to WBN to evaluation the incidents and trends to determine if additional actions are needed. Expectations are clear, training is performed, and management performs observations of work to ensure safe work practices are demonstrated.

To help sustain and further strengthen safety performance, the Watts Bar team is frequently sharing safety lessons learned and operating experience during crew briefings and implementing a positive reinforcement safety incentive program.

Quality

The quality of work performed at WBN2 remains high. This is an indicator of positive worker training, as well as the level of involvement by the Quality Control (QC) workers in day-to-day activities of the project. The primary measure of project construction quality is the QC acceptance rate. It measures the percentage of work that has passed the QC inspection process during installation.



	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13
Total	97.0%	96.6%	97.9%	97.7%	98.2%	98.1%	97.8%	97.7%	96.8%	97.0%	96.8%	97.4%	96.8%

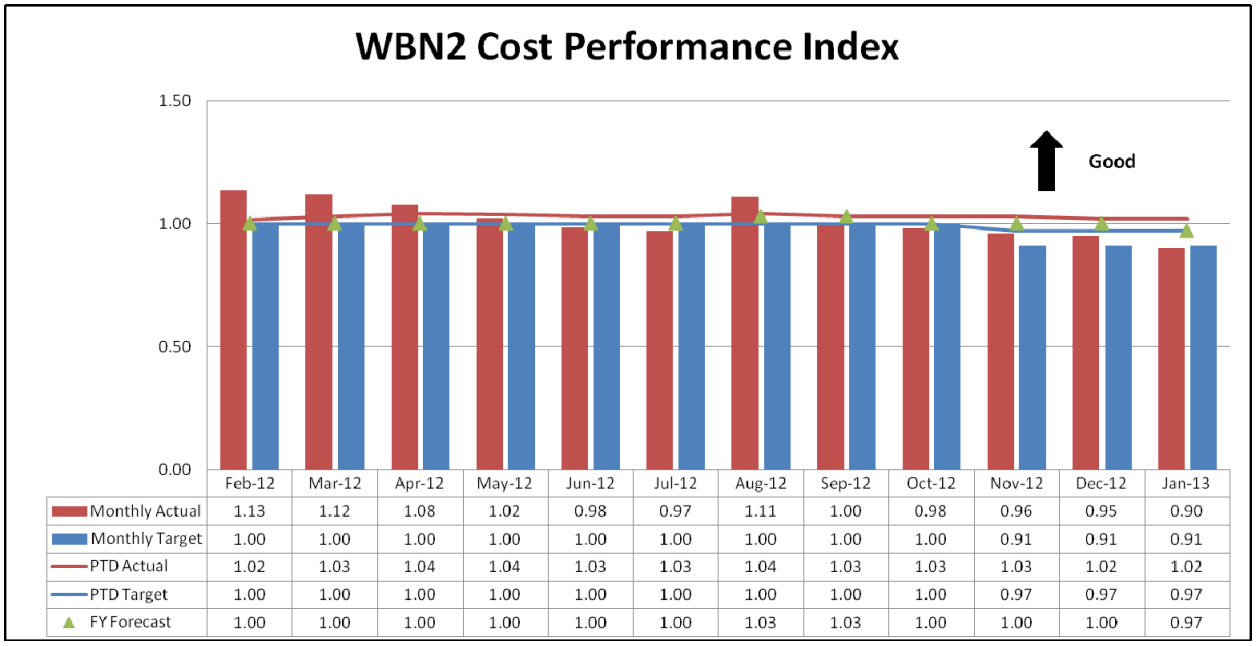
TVA Quality Assurance personnel performed several audits of the Bechtel Quality Assurance 10 CFR Appendix B activities with no significant findings identified. These audits were in the following areas:

- Nuclear Construction Reorganization
- Document Control and Records Management
- Vendor Information Corrective Action Program

The QA organization is beginning to shift its focus to providing oversight of system startup activities as the project moves forward.

Cost

Overall project cost performance met expectations for the quarter, with project-to-date CPI coming in at 1.02, slightly better than target. CPI is an indicator of how efficiently work is being performed against the plan, basically measuring whether construction workers are able to complete tasks within the work hours originally planned for the task when the ETC was developed. The WBN2 CPI is shown on the chart below:



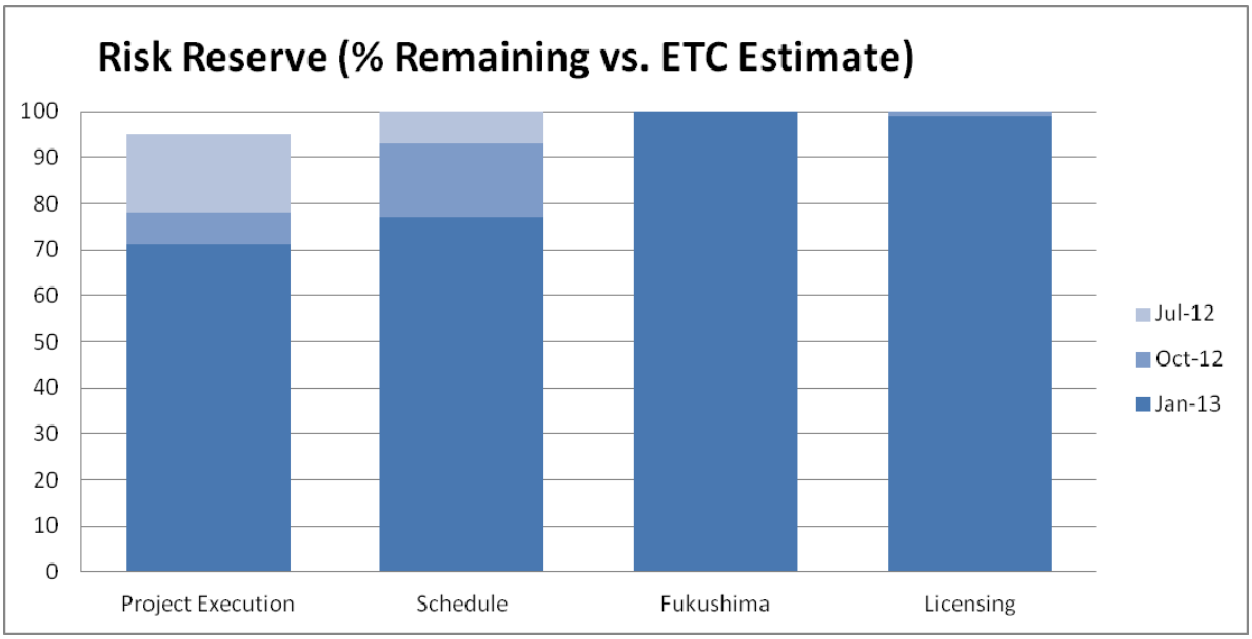
	Feb-12	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12	Sep-12	Oct-12	Nov-12	Dec-12	Jan-13
Monthly Actual	1.13	1.12	1.08	1.02	0.98	0.97	1.11	1.00	0.98	0.96	0.95	0.90
Monthly Target	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	0.91
PTD Actual	1.02	1.03	1.04	1.04	1.03	1.03	1.04	1.03	1.03	1.03	1.02	1.02
PTD Target	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.97	0.97
FY Forecast	1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.03	1.00	1.00	1.00	0.97

As the WBN2 project transitions from bulk construction to system turnover and testing, the CPI will degrade in its ability to accurately reflect project progress. The WBN2 project team is developing a Project Performance Index (PPI) which is a more comprehensive metric to monitor cost performance. PPI results are expected to be reported in the next quarterly ETC update.

Risk Management

A goal of the quarterly ETC update is to understand how the project is tracking against reserves included in the ETC. When the ETC was developed, project risks were identified and categorized; plans were put in place to be able to address those risks. Each of the risks has a budget assigned in the ETC. The amount of funding used on those risk projects indicates whether the ETC project risk assumptions are valid or whether the risks are likely to cause a cost overrun.

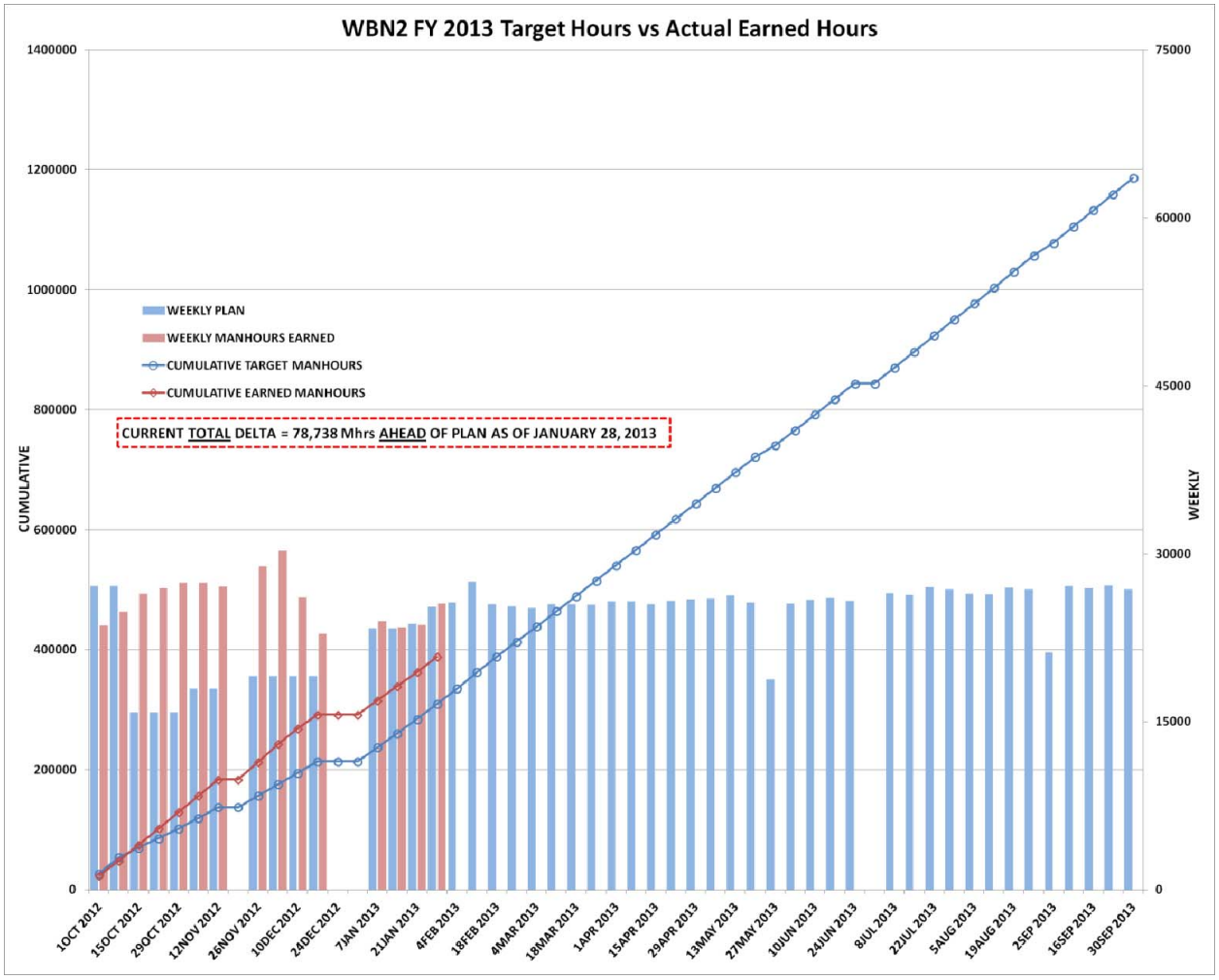
The chart below shows the current status of the risk reserve and the changes since the previous ETC update. Some of the risk reserve has been allocated through the Change Control Board (CCB) process to activities. The overall risk reserve is currently at 81-percent. This is well within the range expected and planned in the ETC. This analysis, therefore, concludes that allocation of risk reserves does not currently indicate a risk to the overall cost of the project as compared to the ETC.



As discussed in the previous quarterly update, during Fiscal Year (FY) 2012 and early FY 2013 the project team decided not to fully staff to planned levels. As a result, project expenditures were less than projected. There is a risk that these cost under runs will need to be spent in later quarters to meet milestones, thus increasing needed cash flow during FY 2013. While this cash flow projection is a risk, it is not yet certain whether a shift in cost to later years will be necessary. While the project has not identified an increase in the overall project budget, there is a potential of changing cash flow timing.

Schedule

Schedule performance met expectations for the quarter, with the project-to-date Schedule Performance Index (SPI) improving to 1.02. The chart below shows schedule performance for WBN2 in terms of the number of actual earned hours per week versus the target hours. This metric indicates the cumulative earned hours exceeded the cumulative target hours by 78,738 through January 2013.

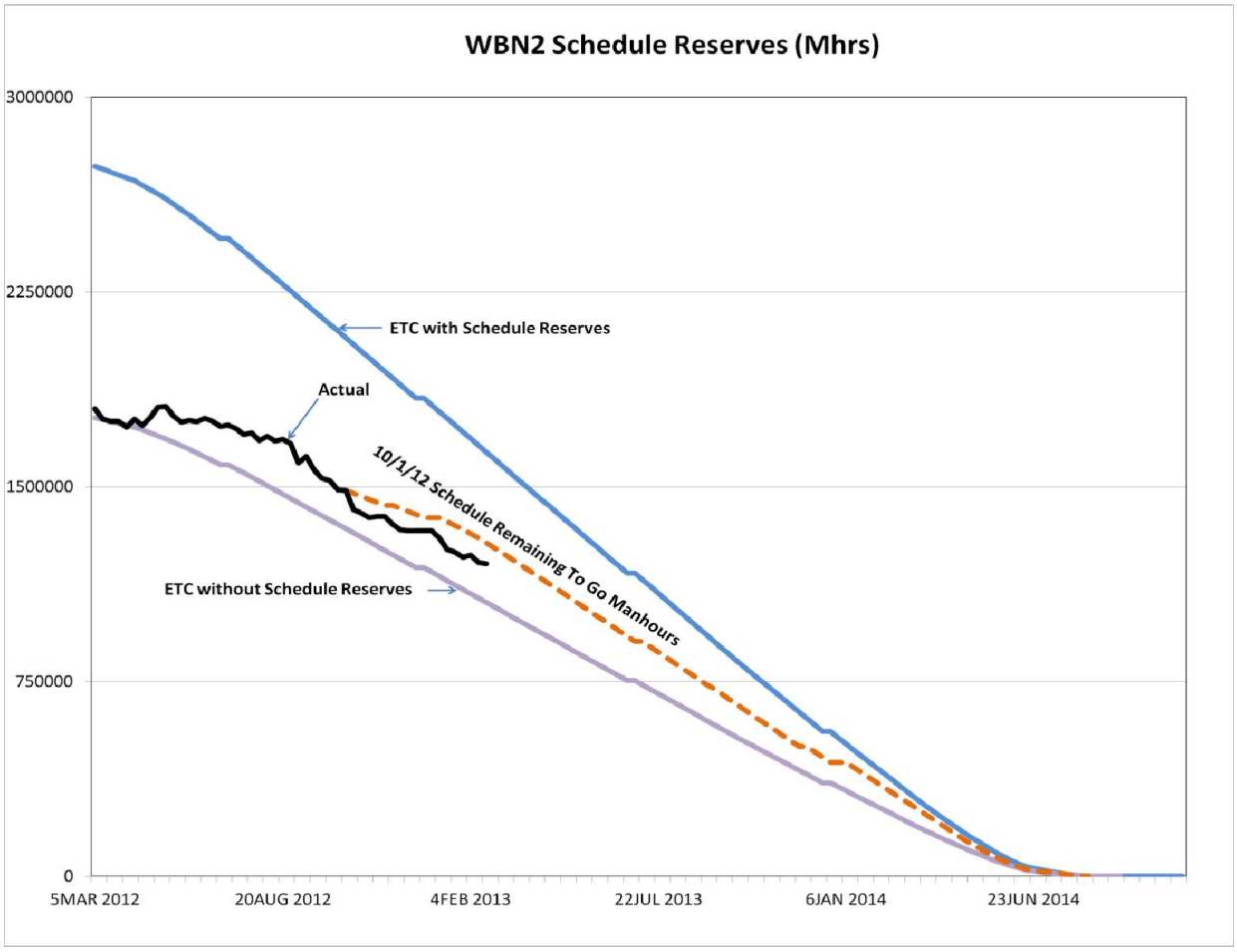


The project is focused on keeping schedule performance at or above target. Actions to sustain schedule performance include:

- Conducting daily schedule adherence meetings to identify and remove barriers, and to ensure accountability
- Incrementally increasing schedule loading to higher craft staffing levels
- Maintaining an aggressive schedule target
- Conducting twice-a-day meetings on near-term critical path systems turnover progress, restraints and challenges
- Daily project team monitoring of project/system critical path tracking, construction field work complete, construction turnover to testing and work document closure.

An important element of the quarterly ETC update is to understand how the project is progressing toward schedule completion compared to the estimates in the ETC. When the schedule was developed, not all work orders had been planned and scheduled. Also, with a mega-project of this size and complexity, estimates must be made to deal with equipment that does not perform as planned or additions to the scope of the work that must be accommodated. Therefore, the ETC contains estimates for each of these categories that could impact the project schedule, and, ultimately, the project completion date.

The project keeps track of the baseline work hours without reserves and makes a comparison against the total work hours in the ETC. The purpose of tracking this metric is to make sure that the project is not exceeding the overall ETC estimate. This metric is shown on the chart below.



Currently, the schedule is on track to meet project completion milestones. Challenges in the future involve a smooth transition from bulk work to turnover and testing while accelerating system completions.

Commodity Quantity Analysis

The project team conducts quarterly quantity reviews in an effort to increase the confidence level of the ETC (see summary table below). A bottoms-up approach is used to perform these reviews. An estimate for all planned work is derived from the commodity database, which includes identification of the commodity by work order and unique identifier. An estimate for any unplanned work is prepared using engineering and construction input.

Commodity quantity analyses that have been presented to and approved by the Change Control Board (CCB) have resulted in the reduction of quantities for some of the major commodities. These commodities include miscellaneous steel, conduit, conduit supports, small bore valves and tubing supports.

In summary, the overall pace of commodity installation during this period is currently on track to meet scheduled project completion milestones. Evaluations will continue on a quarterly basis and recommended adjustments will be presented to the CCB for approval.

Commodity Quantity Analysis

Commodity Description	UOM	BOARD APPROVED	REMAINING
Miscellaneous Steel	LB	109,855	60,986
LB Pipe Weld	EA	322	115
LB Hanger	EA	151	41
LB Hanger Remove	EA	229	121
LB Hanger Modify	EA	506	287
SB Pipe	LF	2,043	481
SB Weld	EA	2,959	939
SB Hanger	EA	233	79
SB Hanger Remove	EA	105	6
SB Hanger Modify	EA	375	170
LB Valve	EA	74	3
SB Valve	EA	470	111
Conduit	LF	43,992	4,627
Conduit Support	EA	7,386	1,575
Cable	LF	311,255	280,763
Cable Terminations	EA	33,386	28,714
Instruments Mechanical	EA	1,941	1,093
Tubing	LF	22,932	18,475
Tubing Rework	LF	20,556	5,128
Instr SB Pipe	LF	10,967	5,595
Instr SB Pipe Weld	EA	4,443	2,232
Tubing Support	EA	3,965	1,946
Instr SB Pipe Support	EA	2,589	976
Duct Mods	EA	206	55

SB = Small Bore; LB = Large Bore

Section 4 - Project Oversight

Nuclear Construction Review Board

The Nuclear Construction Review Board (NCRB) is an independent committee comprised of industry experts who routinely review TVA's nuclear construction project performance and provide their insight to the Senior Vice President of Nuclear Construction. The NCRB is independent of WBN2 management to ensure that reviews are not biased and that project performance is on track.

The most recent NCRB report issued in November 2012 included the following conclusions:

- Since the last meeting of the NCRB in April 2012, the project has made progress toward completion of the plant construction and readiness for operations.
- Overall alignment on execution strategy and priorities among and between the leadership of all work groups in the project is evident and is having a positive impact on overall efficiency.
- Corrective actions and controls have been implemented to address causes of previous performance shortfalls and to provide early identification and correct indications of potential problems.
- The construction project plan and logic schedule are in place to achieve a 2015 completion date. Over the next several months, one of the team's major challenges will be to refine and execute a level of schedule that sequences the work packages to the finishing of systems for turnover to startup testing.

The NCRB also noted other challenges for the project; and made recommendations that should aid in addressing and mitigating the impact of these challenges. Recommendations from the NCRB report are being tracked to closure by the project team as shown in the table on pages 18 and 19.

November 2012 NCRB Recommendations and Action Tracking

ID	Recommendation	Due Date	Complete (Y/N)	Status/ Actions Taken
1	Recommendation (2012-01): Develop a better level of interface and support for construction completion and testing of Unit 2 systems by the Unit 1 management team while maintaining Unit 1 safe operations at the working level.	03/31/2013	N	Status of Actions per NCRB Nov 2012 report: The steps and processes have been recently established and need time to provide results sufficient to determine effectiveness before this recommendation can be closed. Initial NPG-WBN1 / NC Operational Readiness Management Review meeting held 1/8/13. Interface agreement for OPS drafted and in review.
2	The key stakeholders, including the site project team, TVA Board, and the NCRB should align on the basis or metrics being used to indicate progress toward overall project completion and communicate a consistent message to all stakeholders.	03/31/2013	N	The project team is currently developing a project Cost Index (CI). This index in combination with the project level II schedule, financial analysis dashboards and other project metrics will provide for a consistent overall project completion status. On track to finalize by due date.
3	The TVA and Bechtel organizations should improve housekeeping within some of the project work areas.	01/17/2013	Y ongoing	Complete
4	The site project has been refining the master schedule (work-order detailed level) toward finishing systems as a focus, as well as, completing work on a bulk construction type schedule. Progress toward finishing construction could be enhanced by having this more detailed, resource loaded, and well-defined schedule with work sequenced to a critical path for finishing of systems for turnover to startup testing. (Note: this recommendation should be combined with the one in Focus Area 7 for action.)	02/28/2013	Y	Process for transition out of bulk into system testing has been developed with revision of SMP-4.0 and P3 milestones. Critical path schedule has been developed for the provided electrical cable trees on the near-term systems, and the process for inclusion of future systems is in place. A level II schedule is issued.
5	The Performance Assurance and Construction Management oversight organization should assure that its monthly focus review includes assessing whether the corrective actions in place to address previous performance problems are effective in sustaining performance. This oversight organization should also take steps to assure there are sufficient resources to maintain an aggressive oversight function consistent with any "ramp up" in schedule.	02/28/2012	Y	PA is spot checking actions in-place for effectiveness. Selected actions are reviewed each month. Additional resources are being evaluated. PA has decided that no additional staffing will be required since reports will be issued quarterly instead of monthly.
6	As the project continues to obtain more information and improve on construction effectiveness, the site organization should continue to refine the "quantities to finish" estimates and integrate into Estimate to Completion (ETC) and construction schedules.	01/07/2013	Y ongoing	Complete
7	Package design parameters should be continually reviewed for the most efficient installation of items in the planned work. For example, it is not efficient for the construction crews to install long runs of conduit in one package, when the support hangers for this length of conduit are contained in multiple packages (due to a 10-support hanger limit per work package).	01/31/2013	Y	Complete
8	The scope of cost and time for the amount of work needed by engineering to roll up the field changes from construction work into the final drawings and calculations should be determined and evaluated for placement into the cost and schedule for the project.	02/15/2013	Y	Complete
9	Continue to monitor overall effectiveness and improvement potential through routine self-assessments of the changes to the CAP, after some implementation time. The Performance Assurance and Construction Management oversight organization should include assessing this area as part of its monthly focus to ensure that actions put in place to address previous performance problems are effective in sustaining improved performance.	02/28/2013	Y	Complete

November 2012 NCRB Recommendations and Action Tracking (Cont.)

ID	Recommendation	Due Date	Complete (Y/N)	Status/ Actions Taken
10	Due to the uncertainty in regulatory requirements related to the flooding and seismic requirements to be used as a basis for the NRC decision on the operating license, the organization should define and reach alignment with NRC on the final list of specific actions to be completed prior to the decision and those that are considered enhancements and can be completed after issuance of an operating license. These actions should be placed in a more detailed timeline and schedule than the current ones.	03/31/2013	N	Final alignment on strategy for seismic and flooding items is in progress. Meetings are being scheduled for January to discuss Licensing Strategy and schedule with NRC Commissioners and Senior NRC Staff.
11	The project organization is on a path to define and work a critical path type schedule for remaining electrical cable installation and other work needed to finish key components in systems (e.g., with work orders integrated or linked to a sequence that supports efficient and logic of the startup testing plan for systems). Continual pursuit of this type schedule will enhance the completion and movement of the project toward the startup-testing program.	02/28/2013	Y	1. The process for transition has been completed with the revision and issue of SMP-4.0 , and P3 schedule milestones for construction work complete and turnover to system for testing. The process is being piloted with early targets of systems 33, 70 and 67. 2. Critical path schedules have been developed and they include the electrical cable tree data for near term systems. The process for transferring future electrical scoping results into the critical path are in place. 3. Level II project schedule is drafted and on track for issuance.
12	Carefully analyze the additional engineering scope and costs necessary to N-Stamp individual systems versus the benefits of performing maintenance during startup testing under the TVA ASME Section 11 program before changing the ASME N-5 stamping program.	03/15/2013	N	Completed analysis of Engineering effort/cost, and current plan is to N-stamp the system at turnover. Work will be performed during testing under Section XI, except for OVT systems which require cold hydro. Pilot systems of 33 and 70 are being implemented, and changes to process will be made if necessary.
13	Previous experience indicates there can be difficultly in effectively moving from a construction focused Lock Out Tag Out (LOTO) process to one consistent with the TVA procedure, TSP-613. To assure the transition is accomplished in a timely manner, a formal process should be developed and deployed as part of the transition to operations planning.	01/09/2013	Y	Complete
14	As the project progresses, the organization should perform formal, focused self-assessments to assure a high level of operating discipline is being maintained related to compliance with safety rules, best practice use, and leveraging lessons learned.	02/15/2013	Y	Complete
15	Encourage the TVA operating units, including Watts Bar Unit 1, to stock and manage their own spare parts and labor needs without depending on Watts Bar Unit 2. Requests for support from Unit 2 should be on a limited and high priority basis only.	03/28/2013	N	On track. Critical spares analysis working and parts being ordered. SVP policy being issued. No issues
16	The ECP organization should complete a self-assessment on the effectiveness of the program for the Bechtel contractor and the TVA U2 project.	03/28/2012	N	Assessment planned for March. New position hired in Jan 2013 for Governance and Oversight Program Manager and plan is to ensure that position is involved in prep and execution of S/A.

Project Assurance

The Project Assurance (PA) group is an organization within NC that reports directly to the Senior Vice President of Nuclear Construction. It is independent of the WBN2 project organization. PA has several full-time members whose jobs are to continually assess various facets of project performance and provide those reports to the Senior Vice President of Nuclear Construction.

During this quarter, the PA group issued three monthly reports. To develop the reports, PA members routinely conduct field observations, attend project meetings, verify commodity installation, interview individual project team members, and review project metrics.

The PA reports generally concluded that project progress indicators continue to indicate that work is progressing in accordance with the approved budget and schedule; there were no findings or specific recommendations identified.

McKinsey

McKinsey and Company, a management consulting firm, completed a four-week long project check-in during November 2012. The scope of the effort was to deliver the following:

- Independent assessment of progress toward meeting revised ETC parameters
- Corrective action update against OIG / Root Cause assessment
- Actions required to improve project controls, assurance and delivery

This review concluded that the WBN2 project has clearly made significant advances over the past ten months. The findings from the report are as follows:

- Schedule progress indicates alignment with the ETC.
- Current CPI measures work productivity rather than dollar spent. Cost Control has launched an effort to build a PPI. Data must be meaningful and measure PPI against the range of budget estimates approved by the TVA Board of Directors in the ETC that is transparent to stakeholders.
- Current physical progress is tracking against ETC, though risks remain and must be managed.

The recommendations from the report along with associated action plans and estimated due dates are contained in the table on the following page:

McKinsey Recommendations and Action Tracking

ID	Recommendation	Action Plan	Est. Completion Date
1	Ensure that the CI is a comprehensive, meaningful cost-based metric	1. Develop an integrated Project Cost Indicator that measures progress to plan against FY forecasts and EAC. 2. Publish Monthly 3. Validate inputs to indicator are accurate	03/31/2013
2	Refresh the spending plan for FY 2013-2016 and ensure tie to schedule	1. Establish monthly departmental variance reviews 2. Establish the process to refresh the FY 14 - 16 departmental finance forecast 3. Integrate the current schedule forecast to the financial forecast 4. Compare the output to current plans and utilize the CCB process	03/31/2013
3	Develop a visible critical path Schedule to enable advance planning	1. Establish means to develop CP 2. Issue critical path schedule 3. Establish frequency for routinely publishing CP 4. Establish venues to post CP	Complete
4	Develop plans to ensure paper closure needs are being met	1. Establish or validate paper backlog 2. Establish performance improvements to enable closure productivity gains 3. Identify monthly closure goal to minimize end of project bow wave 4. Identify and correct performance issues that are enabling meeting monthly closure goal 5. Track and adjust performance	03/15/2013
5	Adapt governance approach to ensure ownership of WBN2 through commissioning and to two unit operations at rated capacity	1. Document current operational readiness plan to ready site for INPO assessments, NRC ORAT, 2 unit operations and preoperational testing 2. Revise Operational Readiness plan as required for lessons learned.	04/12/2013
6	Enhance Risk Management process by increasing the robustness and effectiveness of risk mitigation	1. Document actions taken to date to build WBN2 risk matrix 2. Identify program requirements that will maintain Risk Management program 3. Conduct Risk Management meetings to drive high, medium risk items to low risk or to minimize the risk item. Additionally, the RM meeting should help in identifying new risks and degradation of low risk items.	Complete
7	Mitigate Licensing risk by addressing a)seismic issues b) hydrology issues c) waste confidence issues	1. Document action plans to mitigate or close the subject risk items.	03/15/2013
8	Improve craft productivity by clarifying and addressing workability issues with work packages (especially instrument and electrical) through craft working sessions	1. Establish performance indicators to provide insight to issue 2. Initiate actions to improve workability	03/31/2013
9	Initiate TVA-Bechtel CEO dialogue to troubleshoot issues not resolved via other interactions, and ensure relationship continues to improve	1. Contact Bechtel Power Corp. 2. Contact TVA CEO 3 Define periodicity of meetings and facilitate meetings and agenda	04/29/2013

Section 5 - Project Organizational Health

Improvement Initiatives

One of the "Rules of Engagement" at WBN2 commits that the management team will find, analyze and correct issues which adversely affect performance. When a performance issue is identified and prioritized as a Top Priority Project Initiative, a team is established. The fundamental process for engagement is to assign a team lead and a management sponsor, assemble a team, document the gap in performance, establish a charter, prepare an action plan and identify the metrics that will be used to monitor progress.

As of January 31, 2013 five active improvement initiatives have been designated as Top Priority Project Initiatives for WBN2. Steady progress was made over the quarter for the four on-going initiatives - Corrective Action Program Improvements, Construction Productivity Improvements, Paper Closure and Change Paper Tracking System. Each of these is still a challenge to the project and has on-going actions aligned to meet project goals.

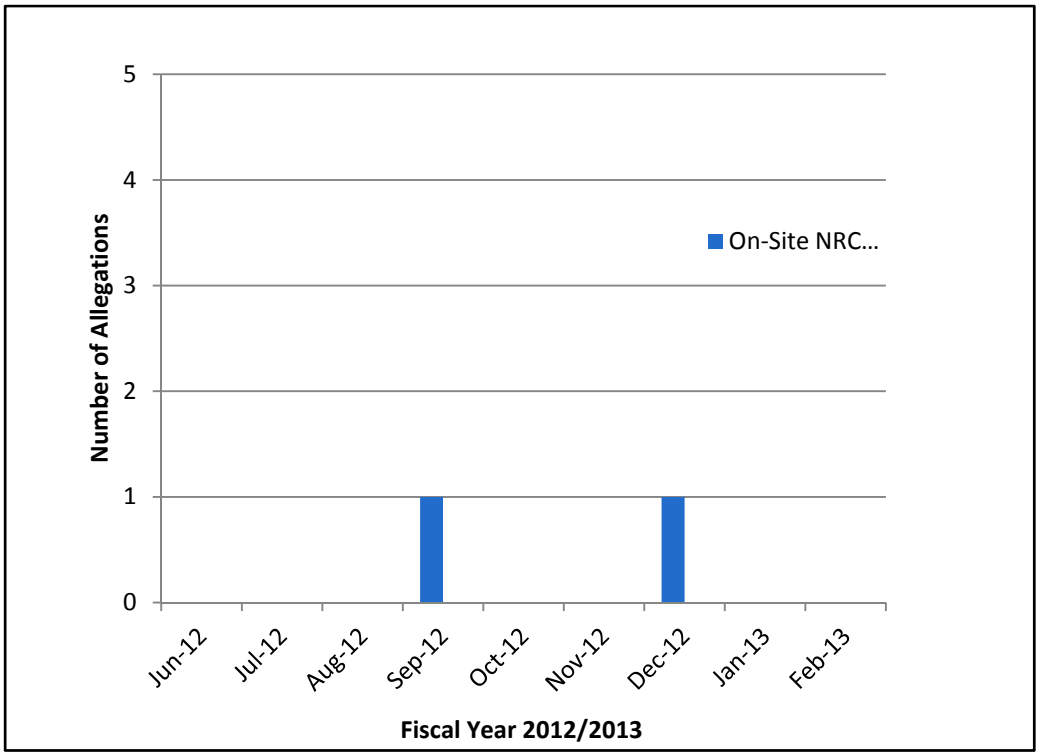
The fifth Top Priority Project Initiative was added during the quarter. This initiative addresses adverse QC inspection trends of rejections associated with pipe hangers that are not meeting management expectations and which may be indicative of quality issues. In addition, QC rejects and process inefficiencies are leading to hanger schedule performance shortfalls. The project initiative team developed a comprehensive analysis and plan which was implemented. Training workshops have been completed, and some performance improvement has already been recognized.

Safety Culture

The construction of a nuclear power plant involves recognizing and adhering to many special and unique requirements. Because nuclear safety is our overriding priority, the project must maintain an open environment that allows and encourages individuals to express concerns about nuclear safety and quality. Management encourages employees to bring safety concerns directly to the management team for action. Employees also have additional avenues to express concerns that are independent of management through the Employee Concerns Program (ECP), the TVA OIG, and the NRC.

A measure of organizational health is the number and nature of concerns raised outside the management team via these independent avenues. Employee concerns to the ECP rose between June and November of 2011, but declined throughout the remainder of FY 2012. The number of employee concerns raised in the first quarter of FY 2013 has remained consistent with the trend experienced in late FY 2012. A slight decline was seen in December 2012 and January 2013; however, this is considered the result of the shortened work periods in these months due to the holiday period.

Regarding concerns raised to the NRC, the trend reflects the pattern established for internal ECP communications seen in late FY 2012. To date, one allegation was referred to the site by the NRC in FY 2013 through January.



The trends in ECP and NRC allegations continue to be indications of an improving safety culture. While the trend remains positive, it is important to note that employees are encouraged to raise concerns and take any avenue available to them to raise nuclear safety concerns when appropriate. The results seen in late FY 2012 and early FY 2013 indicate that the project continues to provide an environment that fosters a strong safety culture.

Work Environment Risk Assessment

A team conducted a Risk Assessment to identify improvement opportunities to make the WBN2 work environment better and what could potentially impact delivering the project safely, on time, and within budget.

This assessment was a collaborative effort and included team members from the OIG, TVA's Training Development & Organizational Health, the ECP and PA. Based on the comments received, the following three areas of focus were identified:

- Improve communications and increase knowledge about the project across the WBN2 organization
- Address Unit 1 and Unit 2 interface issues and work priorities to support system completion and turnover
- Review and remove existing barriers to productivity.

Specific actions to address issues in each of these areas are being developed, and recommendations made in the discussions on how issues can be prevented or mitigated are being reviewed. A status of the actions will be provided in the next quarterly update.

Project Completion Incentive Program

One step TVA took to ensure safety and that the WBN2 construction timeline and budget remain on track was the implementation of a completion incentive program - the WBN2 PCIP. The incentive program encourages:

- Skilled workers to stay with the project, to complete their work as planned, and to move on to other jobs, ensuring that activities that will bring WBN2 into commercial operation can proceed in accordance with the target schedule
- Completion of all work activities in a safe manner with high quality built in
- A level of productivity that aligns with the construction schedule.

The incentive program will be funded with savings from the project being completed in a safe, timely, and cost-effective manner. For any incentive payout to be made commercial operation for WBN2 must be certified by TVA by December 31, 2015 and the project must be completed at or below $4.4 billion.

Through January 2013, all four targets - safety, quality, cost, and schedule, - were on track.

Section 6 - Going Forward

For the upcoming quarter, the project focus will be on the transition from bulk construction work to system completion, turnover and testing, and to improve the timing and quality of work documents. In addition, new challenges must also be addressed in order to complete the project as scheduled.

The project will also be focusing on the following four focus areas during the upcoming quarter:

Unit 1/Unit 2 Integration - A Dual Unit Operational Readiness Team has been created that includes three groups.

- Transition/Operational Readiness Assessment Team (ORAT) Group is responsible for ensuring that Watts Bar transitions to safe, reliable dual-unit operations and is developing, managing, and implementing the strategy for successfully passing the Institute of Nuclear Power Operations Readiness Review and the NRC ORAT inspections.
- Turnover and Power Ascension Test Group is helping to safely ensure initial fuel loading and operational testing necessary to achieve dual-unit operations. This group is also responsible for the overall testing strategy and procedures needed for initial fuel load and power ascension.
- Performance Group has as its primary goals to ensure that proper levels of operational excellence are achieved in the transition of WBN2 from TVA's Nuclear Construction organization to the Nuclear Power Group.

System Completion - The project team has made good progress on optimizing the processes used to transition to system completion. This was accomplished by selecting Open Vessel Testing (OVT) as a project-wide milestone. OVT tests those systems that inject water into the reactor vessel. OVT was selected as a milestone to validate equipment performance, exercise completion processes and drive significant safety and support systems to testing. Several systems were selected to complete early to test the process, identify road blocks, align the organization, and reduce project risks.

Multi-System and Complex Work Packages - The WBN2 project team has determined that complex work packages are impeding progress to system completion. Both design and construction work packages are complex in that they contain large scope, multiple systems and/or multiple commodities. The project team is implementing a plan that improves the processes necessary to support simplifying these complete work packages by prudently unbundling them. This reduces confusion during implementation and closure and allows systems to be tested earlier.

Electrical Conduit and Cable Completion Scoping - The WBN2 project team identified the need for detailed schedule logic for conduit and cable completion for each system prior to transitioning to system completion and OVT. Determining this logic requires:

- Review and development of cable tree drawings (roadmap for field implementation)
- Review of all work documents for completion of conduit installation
- Determination of the number and location of existing installed cables that will require pulling back and reinstalled with new cables

The project team has developed the necessary electrical conduit and cable schedule logic. An action plan is currently being implemented, actions have been completed for four systems, and bulk cable installations have begun.

In addition, the team identified the need for the same level of detail for electrical terminations and splices. This scope is also being completed and added to the schedule on a system-by-system basis.