

CAM Training

Change Control, EACs/ETCs, and Control Account Plans

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Congratulations



<http://science.energy.gov/opa/project-management/evms-certifications/>

Continuous Improvement Opportunity (CIO) #1

- It is recommended that further training on EAC analysis and maintenance be conducted with the CAMs, and the CAMs should take on a more active role in maintaining their EAC. The training should include the value a properly maintained EAC adds to the project, as well as how to determine what justifies an EAC update. It is also recommended that documentation be kept on file to reflect the basis of the adjustment, and that both additions and subtractions be maintained in the EAC in order to reflect a valid projection of project costs.

Continuous Improvement Opportunity (CIO) #3

- The Committee recommends that PPPL deploy EVMS training that is consistently and rigorously applied so that the message becomes a part of the normal work process of functioning as a CAM or a PCM. A training venue, especially in the areas of change control, EAC and the development and usage of a comprehensive Control Account Plan should deliver results that show CAMs and PCMs have integrated the teaching into their everyday work methods and not just 'taken' a class or reviewed an online assignment; then "went back to work". The intent of the Committee's recommendation is not so much to request training is "conducted" but that a training program is focused on the CAMs and PCMs "using" the training and ensuring the consistent and continuous application of the EVMS policies and procedures across all Control Accounts.

Overview

- Change Control (ECPs)
 - Requirements
 - Discussion of Change Control (NSTXU-PROC-001)
NSTXU Configuration Control
 - On-line ECP Process
- Estimate at Complete
 - Requirements.....and what feedback is needed
 - Calculations
- Control Account Plan
 - Requirements
 - Components

Change Control

Requirements: ANSI 748/NDIA IG

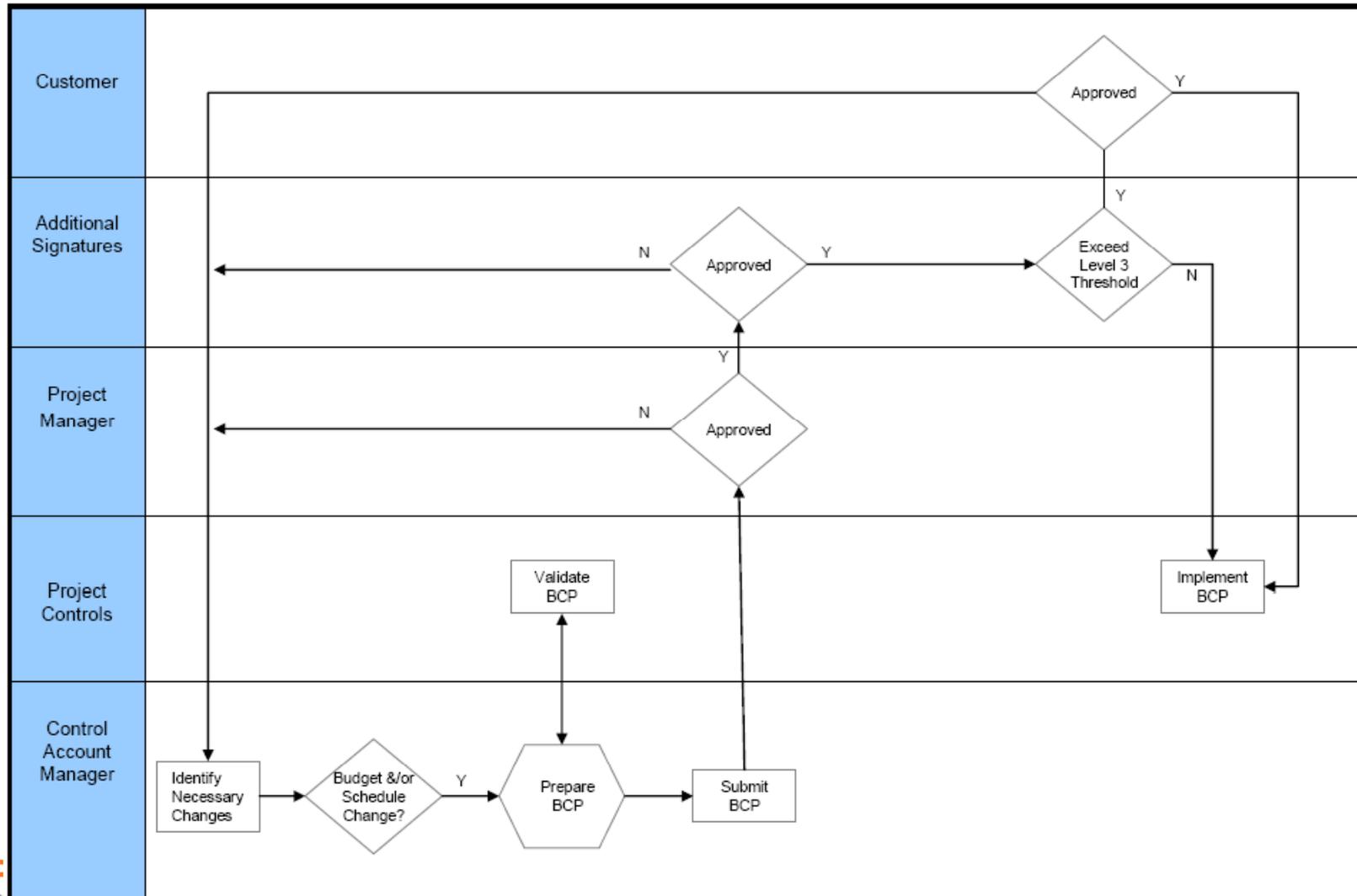
- ANSI-748/NDIA Intent Guide for Revisions and Data Maintenance
 - Guideline #28: Incorporate authorized changes in a **timely** manner, recording the effects of such changes in the budgets and schedules. In the directed effort prior to negotiation of a change, base such revisions on the amount estimated and budgeted to the program organizations.
 - Guideline #29: Reconcile current budgets to prior budgets in terms of changes to the authorized work and internal re-planning in the detail needed by management for effective control.
 - Guideline #30: Control retroactive changes to records pertaining to work performed that would change previously reported amounts for actual costs, earned value, or budgets. Adjustments should be made only for correction of errors, routine accounting adjustments, effects of customer or management directed changes, or to improve the baseline integrity and accuracy of performance measurement data.
 - Guideline #31: Prevent revisions to the program budget except for authorized changes.
 - Guideline #32: Document changes to the performance measurement baseline.

Change Control

Requirements: PMSD

- PMSD Section 5 Change Control
- PMSD Procedure 9 Change Control
 - When a PPPL CAM observes or is presented with a potential scope, schedule, or budget change the CAM will notify the Project Manager. The CAM works with Project Controls to define the impacts of the proposed change. The CAM then submits a change, using an ECP form, to the Project Manager. Project Controls maintains the project ECP Log generates an ECP number and summarizes the schedule and/or budget impact of the proposed change.

Change Control Process Flow



NSTXU-PROC-001

NSTXU Configuration Control (consistent with PMSD)

- Applicability:
 - This procedure covers changes to the following controlled documents that define the functional or technical requirements, the design configuration of the NSTX Upgrade Project (NSTXU), or cost and schedule baselines associated with the technical baseline:
 - Approved NSTXU specifications, including the General Requirements Document (GRD) and System Requirements Documents (SRDs);
 - Approved Interface Control Documents (ICDs); and
 - NSTXU cost and schedule baselines.

NSTXU-PROC-001

NSTXU Configuration Control

When ECP Needed	When ECP NOT Needed
<p>When there is a design change that impacts a Specification (Technical Baseline Requirements) or the Cost or Schedule baselines. Drawing changes (technical baseline) will also impact a Specification since the Specification contains a table that lists the latest drawing revisions.</p> <p>Additionally, an ECP may be used to request application of contingency in cases where:</p> <ol style="list-style-type: none">1. There is a directed change from DOE in the annual funding or schedule; or2. There is a change in the GRD impacting scope and schedule; or3. There is a change in the PEP that reflects a change in a Level 1 or Level 2 milestone or redefines PEP deliverables; or4. A planned procurement bid is much higher or reflects a significant schedule change; or5. Experience has shown that certain estimated work is more complex and will require application of contingency to reflect added complexity (NOT A RETROACTIVE CHANGE).	<p>Minor editorial changes will not normally require the processing of an ECP. The Systems Engineering Manager will determine whether an ECP is required on a case-by-case basis.</p>

NSTXU-PROC-001

NATIONAL SPHERICAL TORUS EXPERIMENT UPGRADE PROJECT Engineering Change Proposal (ECP)	
<i>PART I</i> <i>(TO BE COMPLETED BY ORIGINATOR)</i> ECP-	
Originator:	Date:
<u>Overview of Change</u>	
Type of ECP:	<input type="checkbox"/> EXPEDITED <input type="checkbox"/> STANDARD
Type of Change:	<input type="checkbox"/> TECHNICAL <input type="checkbox"/> COST <input type="checkbox"/> SCHEDULE <input type="checkbox"/> EDITORIAL
<i>(Check all that Apply)</i>	
Reason for Change:	
Impacted WBS Elements:	
Impacts of Change (Briefly Describe):	
Does this Change Impact Material Already Procured or Parts/Assemblies Already Assembled/Manufactured using this Material: <input type="checkbox"/> Yes <input type="checkbox"/> No	
If "Yes", what is the recommended disposition of this material/part/assembly?	
Assessment of Other Options:	

On-line ECP

[Privacy and Security Notice](#)

National Spherical Torus Experiment (NSTX) Upgrades

Control Account Manager Notebook



Instructions for Submitting ECP

Submit ECP

ECP Log

1 [Control Account Manager Responsibilities](#)

2 [Control Account Plan \(WAD/WAF/Budget per mo./Schedule\)](#)

3 [Organizational Breakdown Structure \(OBS\)](#)

Estimate at/to Completion Requirements: ANSI 748

- Guideline #27: Develop revised estimates of cost at completion based on performance to date, commitment values for material, and estimates of future conditions. Compare this information with the performance measurement baseline to identify variances at completion important to company management and any applicable customer reporting requirements including statements of funding requirements.

Estimate at/to Completion Requirements: NDIA IG 27

- On a monthly basis, the control account manager should review the status of the expended effort and the achievability of the forecast and significant changes briefed to program management. This analysis should focus on performance to date within the control account, an assessment of the effort to complete the remaining work, and an evaluation of the type and quantity of resources required to complete the effort. When updates are made to existing forecasts of cost to complete, significant changes are briefed to program management. Prudent maintenance of the control account-level EAC by the control account manager ensures that the EAC reflects a valid projection of project costs.

Estimate at/to Completion Requirements: PMSD

- (From the PMSD) On a Monthly basis the CAM *SHALL*:
 - Review the Estimate to Complete (ETC) for the elements of their control account. If, in the judgment of the CAM, the current ETC does not accurately reflect the cost for the remaining work in the control account, the CAM develops a new estimate and submits it to the Project Manager. CAMs should include in the ETC any cost variances to date as well as estimates for known pending changes and mitigation of known risks.

Estimate at Completion (EAC)

- Provided EACH MONTH by the CAM
- NSTXU PEP requires a bottom-up estimate every six months

WBS[2] OBS[3]	Current Period					Cumulative to Date						At Completion			
	BCWS	BCWP	ACWP	SV	CV	BCWS	BCWP	ACWP	SV	CV	SPI	CPI	TCPI	BAC	EAC
1.1 Torus Systems															
1000 CSU Analytical Support (Dudek)	4	16	9	12	7	207	206	145	-2	61	0.99	1.42	0.29	38	760
1001 CS Plasma Facing Components (Trosmer)	18	55	37	36	18	871	880	723	9	157	1.01	1.22	1.12	2,165	1,874

TAB 11 of CAM Notebook

EAC Updates DO NOT
CHANGE YOUR BUDGET !

You must file an ECP to change
your budget!!

Monthly Status Email.....EAC!

PLEASE NOTE THE NEW LINE 2. BELOW. AN UPDATE EAC IS REQUIRED TO BE SUBMITTED EACH MONTH.

CAMs,

In an effort to best utilize (and limit) our time spent during the monthly status meetings I ask that you provide status on the tasks ahead of time using the attached document. Please indicate percent complete for tasks that have started AND a forecast finish date for tasks currently underway. The status should be provided for progress through the last Thursday of the Month. Additionally, provide answers to the questions below.

Please return your input to Orlando Guzman per the Google Calendar at bottom of the on-line CAM Notebook:

<http://www-local.pppl.gov/EVMS/CAMNB/INDEX.htm>

Thank You,
Ron.

EVMS Rules: A= LOE, B=Milestone, C=% Complete, D= Units Complete, E= 50/50, F=0/100, K= Planning Package

1- Any changes in Estimate to Complete (ETC)??

2- Reply to this email with your updated EAC. If you would like your current EAC updated with this month's cost variance added let me know.

3- Any changes in Risks? (Retired Risks, New Risks, or Risks near triggering)

4- Other issues (Resources, dependencies, other)?

**MY EAC IS = MUST
SUPPLY A NUMBER EACH
MONTH – MUST ADD
CURRENT MO. COST VAR.**

Estimate at Completion (EAC) Calculations

- There Are Many Formulas That Can Be Used To Calculate The EAC
 - $EAC = ACWP + ETC$
 - Used Early On In Project Execution
 - Uses Actuals & Subjective Estimate To Complete Provided By CAMs
 - $EAC = ACWP/BCWP \times BAC$
 - Assumes That The Burn-rate Will Be The Same For The Remainder Of The Project
 - Uses The Actuals, Performance & The BAC
 - $EAC = BAC/CPI$
 - Assumes That The Burn-rate Will Be The Same For The Remainder Of The Project
 - Uses BAC & CPI Instead Of Actuals
 - I Can Keep Going But Let's Just Get To The Punch Line...

Bottom-Up Estimates (PEP requires every 6 months)

7100.xlsx [Read-Only] - Microsoft Excel

	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Total Change	\$	-	0	0	0	0	0	0	0	0	0	0
			M&S (\$k)	EA** EM (analysis engr)	EA** SB (Designer)	EE** EM (Electr Engr)	EE** SM (Senior Electr Tech)	EE** SB (Electr Tech)	EE** TB (Electr Tech)	EM** EM (FO&M Engr)	EM** SM (Senior Tech)	EM** SB (FO&M Tech)	EM** TB (FO&M Tech)
2	Job Number	Activity ID	Activity Name										
1211	7100	CS7000041	FY2012 Project Management										
1212	7100	CS7000041G	FY2012 General Arrangement Drawings										
1213	7100	CS7000041R	FY2012 Project Reviews										
1214	7100	CS7000041W	FY2012 WCC										
1215	7100	CS7000052	ORA support										
1216	7100	CS7000053	FY2013 Project Management										
1217	7100	CS7000053G	FY2013 General Arrangement Drawings										
1218	7100	CS7000053R	FY2013 Project Reviews										
1219	7100	CS7000053W	FY2013 WCC										
1220	7100	CS7000054	FY2014 Project Management										
1221	7100	CS7000054G	FY2014 General Arrangement Drawings										
1222	7100	CS7000054W	FY2014 WCC										
1885													
1886													
1887													

Control Account Plan Requirements: PMSD

- Procedure 5 of PMSD "*Control Account Plan/Work Authorization*"
 - Upon direction of the PM, the CAM develops scope, detailed schedules and resource/cost estimates for his/her assigned Work Packages and Planning Packages (WAF). The CAMs forward these cost estimates to Project Controls for validation using the Control Account Plan (CAP)/Work Authorization form for each control account. The CAP includes the relationship to the WBS element or elements, responsible organization identification, control account task description, schedule, and time-phased budget in dollars. The Control Account Plan/Work Authorization is reviewed by the Project Controls manager and approved by the Project Manager and the CAM to document the delegation of work to the CAM. Work Packages are authorized to begin upon signature of the PM and the CAM. All work scheduled to start in a current month shall have a detailed plan for the applicable work package. Completed and signed Work Packages shall be in place before beginning work.

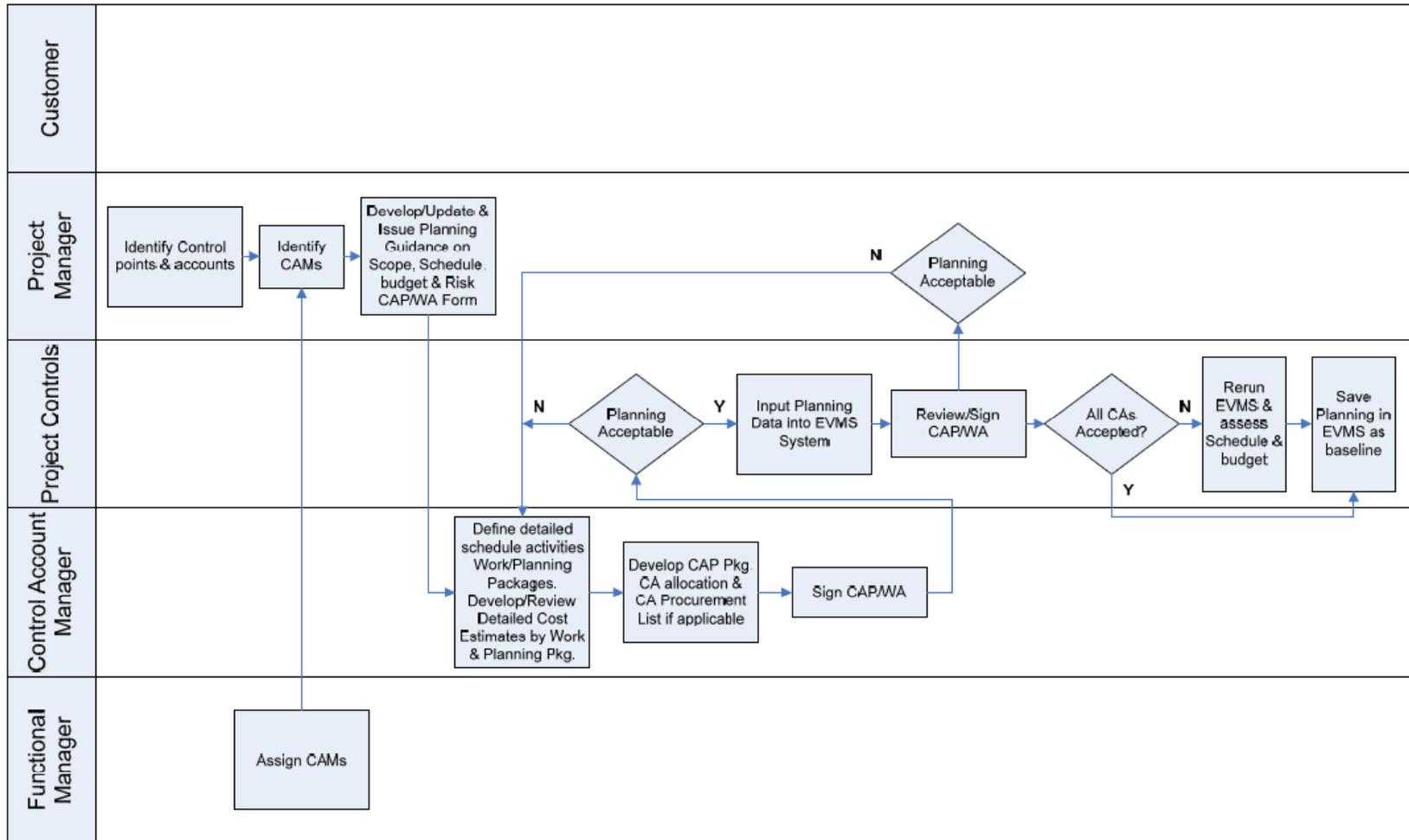
Control Account Plan

- Tab 2 of CAM Notebook
 - Work Authorization Document (WAD)
 - Schedule showing all WPs and PPs
 - Budgeted cost by month
 - Original WAF
 - WBS Dictionary sheet that defines the scope of work for this WBS element

Work Authorization Document (WAD)

Work Authorization Document				
NSTX Upgrade Project				
Control Account #:	8200	Title:	CS & Coil Spt Struc Install	
WBS	1.8.2	Title:	Torus Assembly and Construction	
Period of Performance: 02 November 2009 through 30 September 2014				
Authorized Budget (\$K):	\$6,474	Control Account Manager: E. Perry		
Revision #:	1	Revision Date: October-11		
Authorized Work Description: Torus Assembly and construction includes the assembly and installation of the NSTX torus, coils systems and all associated supports including construction management. This WBS element includes removal of equipment for clearance and accessibility, moving existing coils, modifying existing supports mounted on the vacuum vessel and installing a new external coil support structure.				
Attachments: 1- A detailed Control Account schedule showing all work packages and planning packages. 2- Budgeted Cost by month. 3- Original Work Authorization Form (WAF) 4- WBS Dictionary sheet that defines the scope of work for this WBS element.				
Control Account History				
FYDA	Implement Date	Prior Budget	New Budget	Signature
4	11/10/2011	\$6474 K	\$5929 K	Stephen Langish <small>Digitally signed by Stephen Langish DN: cn=Stephen Langish, o=PPPL, ou=Fabrication and Operations, email=slangish@pppl.gov, c=US Date: 2011.11.09 09:28:45-0500</small>
006	21Nov11	\$5,929K	\$5,929	Stephen Langish <small>Digitally signed by Stephen Langish DN: cn=Stephen Langish, o=PPPL, ou=Fabrication and Operations, email=slangish@pppl.gov, c=US Date: 2011.11.08 09:28:45-0500</small>
008	02Dec11	\$5,929K	\$5,969	Stephen Langish <small>Digitally signed by Stephen Langish DN: cn=Stephen Langish, o=PPPL, ou=Fabrication and Operations, email=slangish@pppl.gov, c=US Date: 2011.11.29 09:28:45-0500</small>
013	19Dec11	\$5,969K	\$6,327K	Stephen Langish <small>Digitally signed by Stephen Langish DN: cn=Stephen Langish, o=PPPL, ou=Fabrication and Operations, email=slangish@pppl.gov, c=US Date: 2011.11.29 09:28:45-0500</small>
Approvals	Name	Signature		Date
NSTX-U Project Manager	R. Strykowski	Ron Strykowski <small>Digitally signed by Ron Strykowski DN: cn=Ron Strykowski, o=PPPL, ou=Fabrication and Operations, email=rstrykow@pppl.gov, c=US Date: 2011.11.28 09:21:52 -0500</small>		
Control Account Manager	E. Perry	Erik D. Perry <small>Digitally signed by Erik D. Perry DN: cn=Erik D. Perry, o=PPPL, ou=Fabrication and Operations, email=edperry@pppl.gov, c=US Date: 2011.11.29 09:27:55 -0500</small>		
Functional Manager	L. Dudek	Lawrence E. Dudek <small>Digitally signed by Lawrence E. Dudek DN: cn=Lawrence E. Dudek, o=PPPL, ou=Fabrication and Operations, email=ldudek@pppl.gov, c=US Date: 2011.11.29 09:25:42 -0500</small>		

Control Account Plan



Summarize

- Take Away's:
 - On-line system set up for CAMs to submit ECPs
 - Monthly EAC updates are required by all CAMs. A monthly EAC has been started to document.
 - Bottom-up estimate due at end of month
 - EAC updates DO NOT change your budget
 - Control Account Plans consist of WADs and attached documentation:
 - Primavera Schedule
 - Original signed WAF
 - Applicable portion of the WBS Dictionary (from PEP)
 - Monthly allocated budget