NMMSS Upgrade Progress

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WSRC

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Outline

- Project Organization
- Project Methodology
- Current Status of Software Development
- Planned Work
- Demonstration of the Current NMMSS Upgrade

Project Organization

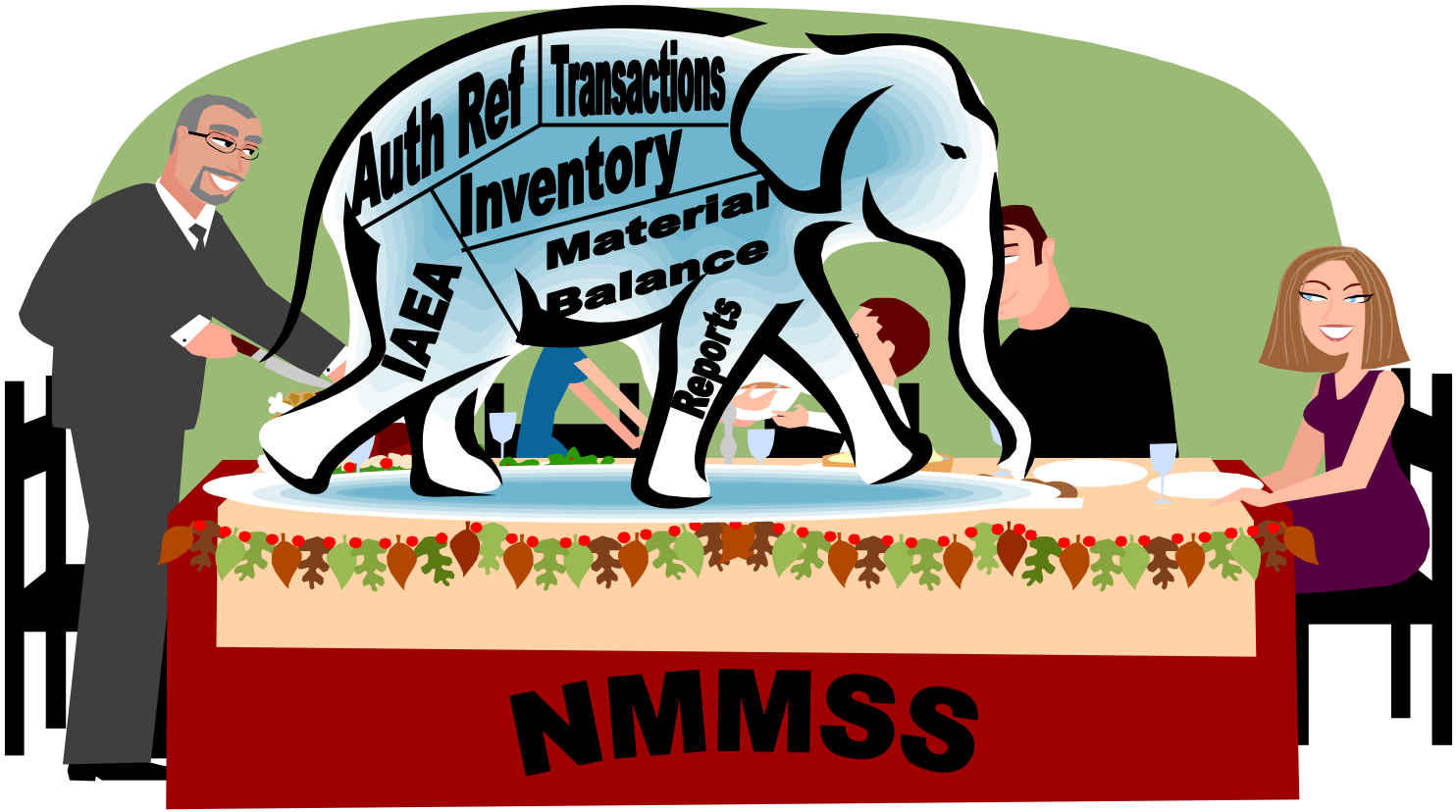
- Project Sponsors
  - Peter “the Sponsor” Dessaules (DOE) and Brian Horn (NRC)
- Local Oversight
  - Tom Williams and Scott Boeke (DOE-SR)
- Washington Savannah River Company
  - Jerry O’Leary (Project Manager), John Robichaux (Design Authority)
  - Dan Farmer (Technical Manager), Rick Edwards (Team Lead)
    - Team – Norma Camp, Brent Krenz and Bob Alger
- NAC International
  - Dan Collier (Point of Contact), Tina Barnett (Technical Liaison), Sam Brown (Technical Liaison) , and Mitch Hembree (Testing Lead)

Project Methodology

- Spiral / Iterative Development
  - Each major function of the NMMSS is divided into segments.
    - Authority Reference
    - Transactions
    - Inventory
    - Material Balance
    - SAMS
    - IAEA Reports
    - Reports
  - Each segmented function (or turn of the spiral) will be completed sequentially and tested at NAC for use after completion.

Project Methodology

- Eating the Elephant one byte at a time



Project Methodology

- Rigorous Project Management and Software Engineering Practices are followed.
  - DOE 0 413.3 Project Management Order
  - DOE M 413.3-1 Chapter 12 Earned Value Management
  - DOE M 200.1-1A Systems Engineering Methodology

Project Management

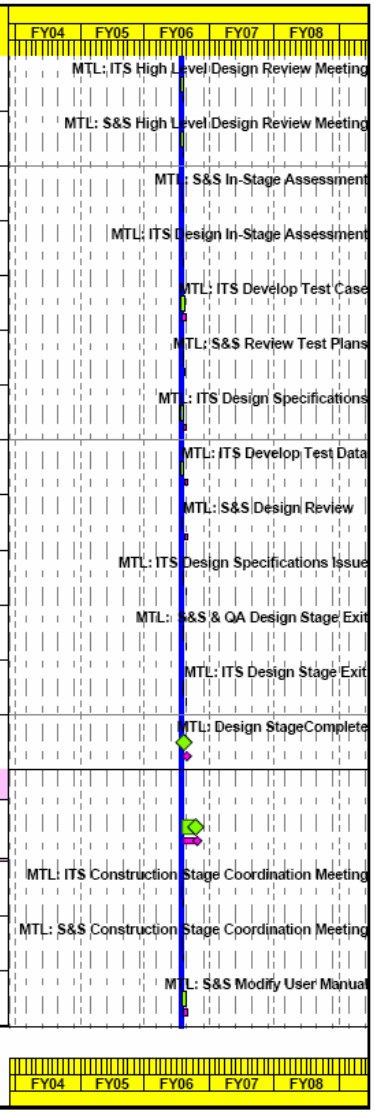
- Project Management Plan and a Team Execution Plan
- Project flow is controlled through Critical Decision Points (CD's).
  - CD-O Approve Mission Need
  - CD-1 Approve Preliminary Baseline
  - CD-2 Approve Performance Baseline
  - CD-3 Approve Start of Construction
  - CD-4 Approve Start of Operations or Project Closeout

Project Management

- Project status and progress is tracked through an Earned Value Management System (EVMS)
  - Each functional area identifies the work to be performed
  - A work plan is created with estimates and deliverables for tasks
  - Work plans feed into the scheduling system and a formal schedule is established along with Control Account Plans for each functional area

Schedule

Activity ID	Tar1 EStart	Tar1 E Finish	Tar BQ	Orig Dur	Early Start	Early Finish	Total Float	Vari EFinish	% Comp	MHRS Per Day	CLS#	Pred	Successors
3045	10MAY06	10MAY06	20.00	1	28APR06	28APR06	16	8	0	20.00	Y23NMSMBD	3044*	3049*
3046	10MAY06	10MAY06	18.00	1	28APR06	28APR06	102	8	0	18.00	Y22NMSMBD	3041, 3044*	3048
3049	11MAY06	11MAY06	8.00	1	01MAY06	01MAY06	16	8	0	8.00	Y22NMSMBD	3045*	3047, 3051*, 3061*
3051	11MAY06	11MAY06	13.00	1	01MAY06	01MAY06	105	8	0	13.00	Y23NMSMBD	3049*	3047, 3060*
3042	04MAY06	17MAY06	80.00	10	25APR06	08MAY06	99	7	0	8.00	Y23NMSMBD	3040*	3043, 3050*
3050	18MAY06	19MAY06	16.00	2	09MAY06	10MAY06	99	7	0	8.00	Y22NMSMBD	3042*	3115
3047	12MAY06	22MAY06	155.00	7	18APR06A	02MAY06	100	14	50	22.14	Y23NMSMBD	3049, 3051	3048*
3043	18MAY06	24MAY06	40.00	5	24APR06A	28APR06	107	18	10	8.00	Y23NMSMBD	3025, 3042	3115
3048	23MAY06	25MAY06	20.00	3	03MAY06	05MAY06	100	14	0	6.67	Y22NMSMBD	3046, 3047*	3052*
3052	26MAY06	26MAY06	10.00	1	08MAY06	08MAY06	100	14	0	10.00	Y23NMSMBD	3048*	3053*, 3054*
3053	30MAY06	30MAY06	8.00	1	09MAY06	09MAY06	100	14	0	8.00	Y22NMSMBD	3052*	3055*
3054	30MAY06	30MAY06	12.00	1	09MAY06	09MAY06	100	14	0	12.00	Y23NMSMBD	3052*	3055*
3055		30MAY06	0.00	0		09MAY06	100	14	0	0.00		3053*, 3054*	3115
CONSTRUCTION													
Subtotal	12MAY06	27JUL06	1,260.00	53	02MAY06	17JUL06	53	8	0	154.98			
3060	12MAY06	12MAY06	14.00	1	02MAY06	02MAY06	105	8	0	14.00	Y23NMSMBC	3051*, 3061*	3115
3061	12MAY06	12MAY06	8.00	1	02MAY06	02MAY06	16	8	0	8.00	Y22NMSMBC	3049*	3060*, 3062, 3063*, 3064*, 3068*, 3078*
3068	15MAY06	26MAY06	48.00	10	03MAY06	16MAY06	95	8	0	4.80	Y22NMSMBC	3061*	3073



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Control Account Plan

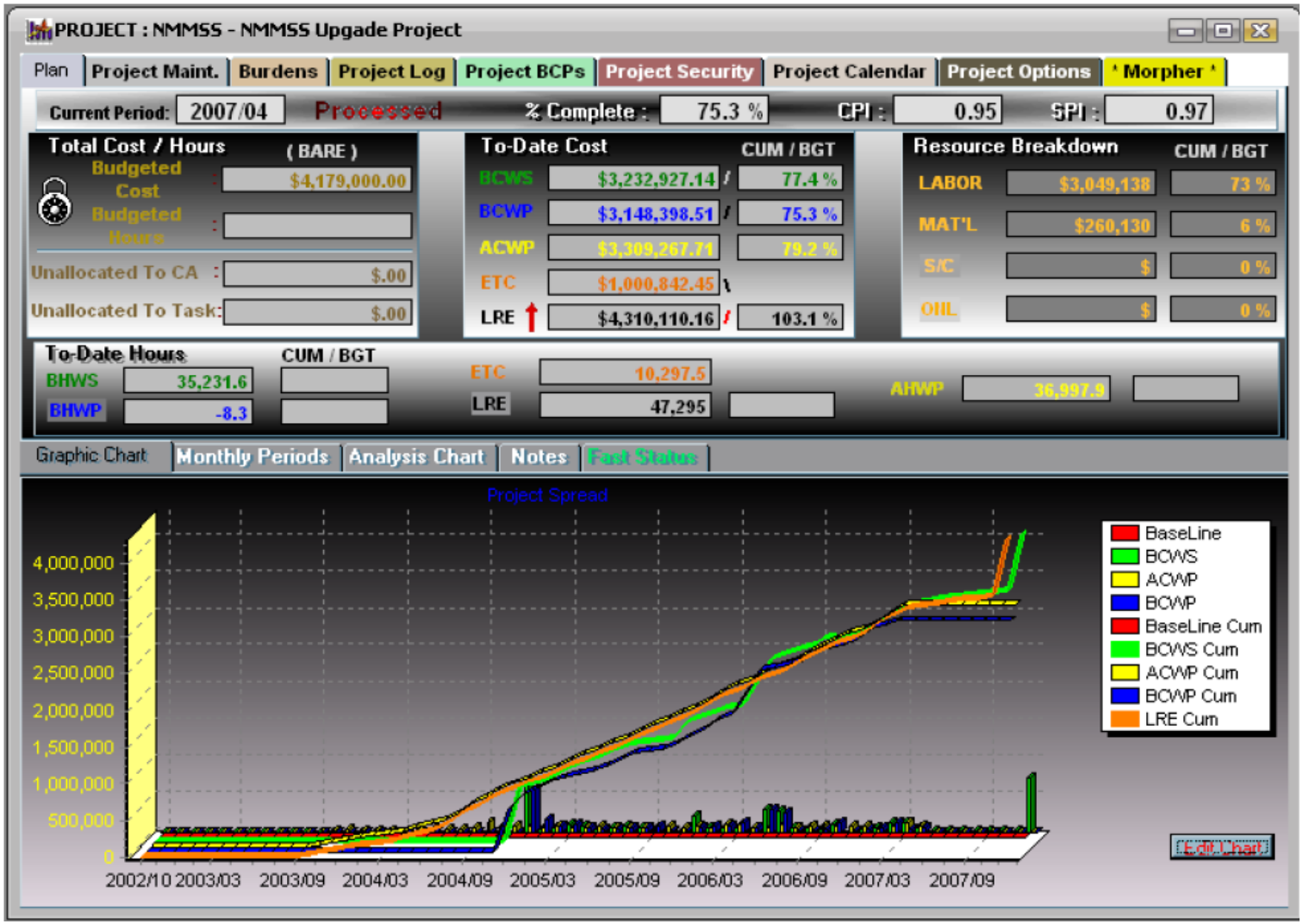
Program/Product	NMMSS Upgrade		
Modification Title	NMMSS Upgrade		
Control Account	Y23NMSMBD	IT Material Balance Design	
BQWS	415.0		
BCWS	$36,014		$43,937 (Fully Burden)
EVM[1]	Management Assessment		

Activity #	Value	Schedule Identification	Work Activity	Scope of Work	Work Product	Close Out Criteria
3040	20	ITS Design Stage Coordination Meeting	Kick off planning meeting for stage	Review work to be performed during stage. Make plans and assignments.	Meeting notes.	Issue Meeting notes
3042	80	ITS Develop Test Cases	6.4 Develop Integration Test Plan 6.5 Develop System Test Plan	Develop test cases and scenarios based on spiral requirements.	-Test cases -Integration Test Plan (draft) -System Test Plan (draft)	Test cases
3043	40	ITS Develop Test Data	6.4 Develop Integration Test Plan 6.5 Develop System Test Plan	Review data set received from NAC to create data set scenarios that will verify spirals requirements.	Data sets	Data sets
3044	65	ITS High level design and Initial Screen Layouts	5.8 Develop Functional Design 5.1 Determine System/Product Structure 5.2 Design Content of System Inputs and Outputs 5.3 Design User Interface 5.6 Build Logical Model 5.7 Build Data Model 5.8 Develop Functional Design	Develop process and data flows. Create views of screens	Design Meeting notes, diagrams, and screen shots.	Screen shots and process and data models
3045	20	ITS High Level Design Review Meeting	Meet to review current design.	Meet with NAC to review screens and process flows.	Meeting notes.	Publishing meeting notes

Project Management

- Weekly status meetings
- Periodic upgrade team meetings
  - At Spiral Kick Off
  - Design Review
  - During Construction, System Testing and Factory Acceptance Testing
- Monthly Project Status Reports

Monthly Project Status Report



Monthly Project Status Report

Criteria :All Inclusive
Total Duration

Project ID : NMMSS
NMMSS Upgade Project

Hours Performance Report - Control Account and Task

Project: Start Date : 10/1/2003
Finish Date : 12/31/2007

Items		Current Period : 2006/04					Cumulative To Date Through Current Period					At Completion			
		Budgeted Hours		Actual Hours	Variance		Budgeted Hours		Actual Hours	Variance				Variance	
		Work Scheduled	Work Performed	of Work Performed	Schedule	Performance	Work Scheduled	Work Performed	of Work Performed	Schedule	Performance	Budgeted	Latest Revised Estimate	Hours	Pct
IAEA REPORTING	Y2D000 : NMMSS IAEA											3,980	3,980		
BUDGET	Y2D000 : Planning Budget For											3,980	3,980		
INVENTORY	Y2D000 : NMMSS Inventory		284	159.5	284	124.4	3,799.2	3,835	3,285.5	35.8	549.5	3,835	3,285.5	549.5	14.3 %
Y22NMSIVA	Y2D000 : S&S Inventory		146	74	146	72	230	230	84		146	230	84	146	63.5 %
Y22NMSIVC	Y2D000 : S&S Inventory						96	96	106		-10	96	106	-10	-10.4 %
Y22NMSIVD	Y2D000 : S&S Inventory Design						92	92	60.5		31.5	92	60.5	31.5	34.2 %
Y22NMSIVP	Y2D000 : S&S Inventory						68.2	104	263	35.8	-159	104	263	-159	-152.9 %
Y22NMSIVR	Y2D000 : S&S Inventory						96	96	47.5		48.5	96	47.5	48.5	50.5 %
Y22NMSIVT	Y2D000 : S&S Inventory Testing			18		-18	146	146	151		-5	146	151	-5	-3.4 %
Y23NMSIVA	Y3G000 : ITS Inventory		108	29.5	108	78.5	312	312	34		278	312	34	278	89.1 %
Y23NMSIVC	Y3G000 : ITS Inventory						1,506	1,506	1,137		369	1,506	1,137	369	24.5 %
Y23NMSIVD	Y3G000 : ITS Inventory Design						446	446	595		-149	446	595	-149	-33.4 %
Y23NMSIVP	Y3G000 : ITS Inventory Planning						185	185	134		51	185	134	51	27.6 %
Y23NMSIVR	Y3G000 : ITS Inventory						184	184	4		180	184	4	180	97.8 %
Y23NMSIVT	Y3G000 : ITS Inventory Testing						228	228	229		-1	228	229	-1	-.4 %
Y23NMSIVX	Y3G000 : ITS Inventory Rework		30	38	30	-8	210	210	440.5		-230.5	210	440.5	-230.5	-109.8 %
MATERIAL BALANCE	Y2D000 : NMMSS Material	207	308.1	439.5	101.1	-131.4	488	565.6	623.5	77.6	-57.9	4,602	4,737.1	-135.1	-2.9 %
BUDGET	Y2D000 : Planning Package For											192	191.6	.4	.2 %
Y22NMSMBA	Y2000 : S&S Material Balance											200	200		
Y22NMSMBC	Y2D000 : S&S Material Balance											80	80		
Y22NMSMBD	Y2D000 : S&S Material Balance											80	80		
Y22NMSMBP	Y2D000 : S&S Material Balance		64	9	64	55	170	170	101.5		68.5	170	101.5	68.5	40.3 %
Y22NMSMBR	Y2D000 : S&S Material Balance	58	41.6	22.5	-16.4	19.1	58	105.6	34	47.6	71.6	170	146	24	14.1 %
Y22NMSMBT	Y2D000 : S&S Material Balance											100	100		
Y23NMSMBA	Y3G000 : ITS Material Balance											575	575		

Monthly Project Status Report

Reports

April Month End Cum Totals

CUM CPI	**0.95**
Cum SPI	**0.97**
Project Percent Complete	**75.3%**

Current Status of Software Development

- Spirals Completed to Date
  - Authority Reference (Software 12/15/04, Parallel Testing 03/16/05)
  - Transactions (Software 8/31/05, Parallel Testing 01/31/06)
  - Inventory (Software 3/31/06, Parallel Testing 06/30/06)
  - Material Balance (Software 9/30/06, Parallel Testing TBD)
- Current Efforts
  - Construction of SAMS
  - Requirements of IAEA Reporting
  - Maintenance Campaign
- Upgrades to SQL Server and the Software Development tools were incorporated into the Material Balance Spiral

Current Status of Software Development (cont.)

- Maintenance Campaign
  - Need identified during the start of Material Balance Parallel Testing.
  - Too many open issues from previous spirals to effectively test Material Balance.
  - 385 Open and closed items had been identifed from the past spirals.
  - Separate effort, the Maintenance Campaign, was created to address issues.
  - In Acceptance Testing now

Project Size

NMMSS Upgrade Project
Current Progress

	Authority Reference		Transactions		Inventory		Material Balance	
Configuration Item	Objects	Lines of Code	Objects	Lines of Code	Objects	Lines of Code	Objects	Lines of Code
Projects	15		4		0		21	
Forms	11	4949	10	2307	0	183	14	3515
Modules	13	4870	3	514	0	0	11	1845
Class	42	25059	44	32259	3	2757	31	-1669
User Controls	10	3034	0	110	0	0	7	2916
Stored Procedures	74	12399	49	12948	46	7526	45	12274
Style Sheets	42	9547	21	6190	7	3732	8	5346
	207	59858	131	54328	56	14198	137	24227

Total Objects	531
Total Lines of Code	152611

Baseline Change Proposal

	WBS		Element	Total Cost Baseline	Level 2 Performance Measurement Cost Baseline	Level 2 Performance Measurement Schedule Baseline
04	01		**NMMSS Program Support Activities**	**1,646,700**	**1,646,700**	**1/31/2008**
			{Maintenance Campaign	***311,700***	***311,700***	***4/5/2007}***
			WBS Subtotal	**1,958,400**	**1,958,400**	
04	02	00	**NMMSS System Description**	**193,500**	**193,500**	**3/31/2004**
04	02	01	**NMMSS Authority Reference**	**573,700**	**573,700**	**12/31/2004**
04	02	02	**NMMSS Transactions**	**547,000**	**547,000**	**8/31/2005**
04	02	03	**NMMSS Inventory**	**492,000**	**492,000**	**3/31/2006**
04	02	04	**NMMSS Material Balance**	**355,200**	**355,200**	**9/30/2006**
04	02	07	**NMMSS SAMS**	**184,700**	**184,700**	**5/31/2007**
04	02	05	**NMMSS IAEA Reporting**	**460,500**	**460,500**	**10/31/2007**
04	02	06	**NMMSS Reports**	**331,000**	**331,000**	**12/31/2007**
			Contractor Contingency	**94,900**		
04			**Total Project**	**5,190,900**	**5,096,000**	**1/31/2008**

Planned Work

- The remaining Spirals
  - SAMS (Software 5/31/06)
  - IAEA Reports (Software 10/31/07)
  - Reports (Software 12/31/07)

Demonstration