Exhibit 300: Capital Asset Plan and Business Case Summary

Part I: Summary Information And Justification (All Capital Assets)

Section A: Overview (All Capital Assets)

1. Date of Submission:	9/10/2007
2. Agency:	Department of Energy
3. Bureau:	National Nuclear Security Administration
4. Name of this Capital Asset:	NNSA ASC SNL Red Storm Platform
5. Unique Project (Investment) Identifier: (For IT investment only, see section 53. For all other, use agency ID system.)	019-05-01-11-01-2052-00
6. What kind of investment will this be in FY2009? (Please NOTE: Investments moving to O&M in FY2009, with Planning/Acquisition activities prior to FY2009 should not select O&M. These investments should indicate their current status.)	Operations and Maintenance
7. What was the first budget year this investment was submitted to OMB?	FY2001 or earlier

8. Provide a brief summary and justification for this investment, including a brief description of how this closes in part or in whole an identified agency performance gap:

An upgrade to ASC Red Storm has increased its peak speed in a computing terrain in which a single teraflop was a big deal only six years ago. ASC Red Storm is now rated second fastest in the world. The widely recognized Linpack test measures a supercomputer's speed as applied to a computing problem. In peak speed, Red Storm remains well behind BlueGene/L at Lawrence Livermore National Laboratory, but, "in terms of scalability, Red Storm is the best in the world. Red Storm is Sandia's largest high-performance computer and is thrifty in its use of power.

9. Did the Agency's Executive/Investment Committee approve this request?	Yes
a. If "yes," what was the date of this approval?	8/14/2007
10. Did the Project Manager review this Exhibit?	Yes
11. Contact information of Project Manager?	
Name	White, Frank, and Lee, Sander
Phone Number	505-845-4877 / 202-586-2698
Email	fwhite@doeal.gov / sander.lee@nnsa.doe.gov
a. What is the current FAC-P/PM certification level of the project/program manager?	TBD
12. Has the agency developed and/or promoted cost effective, energy-efficient and environmentally sustainable techniques or practices for this project?	Yes
a. Will this investment include electronic assets (including computers)?	Yes
b. Is this investment for new construction or major retrofit of a Federal building or facility? (answer applicable to non-IT assets only)	No
1. If "yes," is an ESPC or UESC being used to help fund this investment?	
2. If "yes," will this investment meet sustainable design principles?	
3. If "yes," is it designed to be 30% more energy efficient than relevant code?	
13. Does this investment directly support one of the PMA initiatives?	Yes
If "yes," check all that apply:	Expanded E-Government
a. Briefly and specifically describe for each selected how this asset directly supports the identified initiative(s)?	The ASC program supports the Presidential Expanded E-Government initiative through Mission Area Support by

(e.g. If E-Gov is selected, is it an approved shared service provider or the managing partner?)	enabling collaborations between the three DOE/NNSA nuclear weapons Laboratories - Los Alamos, Lawrence Livermore, and Sandia National Laboratories (LANL, LLNL, and SNL) through shared research & development "high performance computing" simulations platforms in order to meet DOE mission Goal 2.1 deliverables.
14. Does this investment support a program assessed using the Program Assessment Rating Tool (PART)? (For more information about the PART, visit www.whitehouse.gov/omb/part.)	Yes
a. If "yes," does this investment address a weakness found during a PART review?	No
b. If "yes," what is the name of the PARTed program?	Advanced Simulation and Computing (ASCI)
c. If "yes," what rating did the PART receive?	Effective
15. Is this investment for information technology?	Yes

If the answer to Question 15 is "Yes," complete questions 16-23 below. If the answer is "No," do not answer questions 16-23.

For information technology investments only:

16. What is the level of the IT Project? (per CIO Council PM Guidance)	Level 3
17. What project management qualifications does the Project Manager have? (per CIO Council PM Guidance)	(1) Project manager has been validated as qualified for this investment
18. Is this investment or any project(s) within this investment identified as "high risk" on the Q4 - FY 2007 agency high risk report (per OMB Memorandum M-05-23)	No
19. Is this a financial management system?	No
a. If "yes," does this investment address a FFMIA compliance area?	
1. If "yes," which compliance area:	
2. If "no," what does it address?	

b. If "yes," please identify the system name(s) and system acronym(s) as reported in the most recent financial systems inventory update required by Circular A-11 section 52

20. What is the percentage breakout for the total FY2009 funding request for the following? (This should total 100%)

Hardware	0
Software	0
Services	100
Other	0
21. If this project produces information dissemination products for the public, are these products published to the Internet in conformance with OMB Memorandum 05-04 and included in your agency inventory, schedules and priorities?	N/A

22. Contact information of individual responsible for privacy related questions:

Name	Lopez, Abel
Phone Number	202-586-5955
Title	Freedom of Information & Privacy Acts Officer
E-mail	abel.lopez@hq.doe.gov
23. Are the records produced by this investment appropriately scheduled with the National Archives and Records Administration's approval?	No

Question 24 must be answered by all Investments:

24. Does this investment directly support one of the GAO High Risk Areas?	No

Section B: Summary of Spending (All Capital Assets)

1. Provide the total estimated life-cycle cost for this investment by completing the following table. All amounts represent

budget authority in millions, and are rounded to three decimal places. Federal personnel costs should be included only in the row designated "Government FTE Cost," and should be excluded from the amounts shown for "Planning," "Full Acquisition," and "Operation/Maintenance." The "TOTAL" estimated annual cost of the investment is the sum of costs for "Planning," "Full Acquisition," and "Operation/Maintenance." For Federal buildings and facilities, life-cycle costs should include long term energy, environmental, decommissioning, and/or restoration costs. The costs associated with the entire life-cycle of the investment should be included in this report.

Table 1: SUMMARY OF SPENDING FOR PROJECT PHASES (REPORTED IN MILLIONS)
(Estimates for BY+1 and beyond are for planning purposes only and do not represent budget decisions)

	PY-1 and earlier	PY 2007	CY 2008	BY 2009	BY+1 2010	BY+2 2011	BY+3 2012	BY+4 and beyond	Total
Planning:	0	0	0	0					
Acquisition:	73	7.75	0	0					
Subtotal Planning & Acquisition:	73	7.75	0	0					
Operations & Maintenance:	7.5	2.5	2.5	2.5					
TOTAL:	80.5	10.25	2.5	2.5					
Government FTE Costs should not be included in the amounts provided above.									
Government FTE Costs	0.00009	0.00003	0.00004	0.00004					
Number of FTE represented by Costs:	1	1	1	1					

Note: For the multi-agency investments, this table should include all funding (both managing partner and partner agencies). Government FTE Costs should not be included as part of the TOTAL represented.

2. Will this project require the agency to hire additional FTE's? No

a. If "yes," How many and in what year?

3. If the summary of spending has changed from the FY2008 President's budget request, briefly explain those changes:

Government FTE budget increases due to annual inflation.

Section C: Acquisition/Contract Strategy (All Capital Assets)

1. Complete the table for all (including all non-Federal) contracts and/or task orders currently in place or planned for this investment. Total Value should include all option years for each contract. Contracts and/or task orders completed do not need to be included.

Contracts/Task Orders Table: * Costs in millions

Contract or Task Order Number	Type of Contract/ Task Order	Has the contract been awarded (Y/N)	If so what is the date of the award? If not, what is the planned award date?	Start date of Contract/ Task Order	End date of Contract/ Task Order	Total Value of Contract/ Task Order ($M)	Is this an Interagency Acquisition? (Y/N)	Is it performance based? (Y/N)	Competitively awarded? (Y/N)	What, if any, alternative financing option is being used? (ESPC, UESC, EUL, N/A)	Is EVM in the contract? (Y/N)	Does the contract include the required security & privacy clauses? (Y/N)	Name of CO	CO Contact information (phone/email)	Contracting Officer Certification Level (Level 1,2,3,N/A)	If N/A, has the agency determined the CO assigned has the competencies and skills necessary to support this acquisition? (Y/N)
32124	Firm Fixed Price M&O SubContract with Milestone Payments tied to specific deliverables and schedule dates.	Yes	9/23/2002	9/23/2002	5/15/2010	92	No	Yes	Yes	NA	No	Yes	Wagner, Patty	505-845-6036 / patty.wagner@snl.gov	N/A	Yes

2. If earned value is not required or will not be a contract requirement for any of the contracts or task orders above, explain why:

EVM is not required on steady state investments, but completion of operational analysis is required on steady state investments. The Sandia National Laboratories M&O Contracting Officer on Red Storm is Patricia Brown (phone: 505-284-0191; email: pgbrown@sandia.gov).

3. Do the contracts ensure Section 508 compliance?	Yes
a. Explain why:	ASC Red Storm is Section 508 compliant. This is a centralized computer system housed in a large computing facility. The entire building that will house the platform is ANSI A117.1.1998 compliant on which Section 508 is based. Users access the system via network connections. Accessability issues of those users are the responsibility of their IT Department.
4. Is there an acquisition plan which has been approved in accordance with agency requirements?	Yes
a. If "yes," what is the date?	5/1/2001
b. If "no," will an acquisition plan be developed?	
1. If "no," briefly explain why:	

Section D: Performance Information (All Capital Assets)

In order to successfully address this area of the exhibit 300, performance goals must be provided for the agency and be linked to the annual performance plan. The investment must discuss the agency's mission and strategic goals, and performance measures (indicators) must be provided. These goals need to map to the gap in the agency's strategic goals and objectives this investment is designed to fill. They are the internal and external performance benefits this investment is expected to deliver to the agency (e.g., improve efficiency by 60 percent, increase citizen participation by 300 percent a year to achieve an overall citizen participation rate of 75 percent by FY 2xxx, etc.). The goals must be clearly measurable investment outcomes, and if applicable, investment outputs. They do not include the completion date of the module, milestones, or investment, or general goals, such as, significant, better, improved that do not have a quantitative or qualitative measure.

Agencies must use the following table to report performance goals and measures for the major investment and use the Federal Enterprise Architecture (FEA) Performance Reference Model (PRM). Map all Measurement Indicators to the corresponding "Measurement Area" and "Measurement Grouping" identified in the PRM. There should be at least one Measurement Indicator for each of the four different Measurement Areas (for each fiscal year). The PRM is available at www.egov.gov. The table can be extended to include performance measures for years beyond FY 2009.

Performance Information Table

Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Category	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
2007	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Customer Results	Timeliness and Responsiveness	Delivery Time	Sustained calculation speed measured in calculations per second relative to peak system flop.			Available Q1 FY08
2007	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Mission and Business Results	Defense and National Security	Operational Defense	Annual # of simulations run.			Available Q1 FY08
2007	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of	Processes and Activities	Productivity and Efficiency	Efficiency	Percent CPU Utilization: Measures the time period (cycles) that a CPU actually performs its intended function to enable response to stockpile	80%	5%	Available Q1 FY08

Performance Information Table

Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Category	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	the 21st Century.				issues.			
2007	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Technology	Reliability and Availability	Availability	Percent Time Available: Measures platform uptime for simulation codes needed to perform predictive capability.	88%	5%	Available Q1 FY08
2008	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Customer Results	Timeliness and Responsiveness	Delivery Time				
2008	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Mission and Business Results	Defense and National Security	Operational Defense				
2008	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Processes and Activities	Productivity and Efficiency	Efficiency				
2008	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Technology	Reliability and Availability	Availability				
2009	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Customer Results	Timeliness and Responsiveness	Delivery Time				
2009	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear	Mission and Business Results	Defense and National Security	Operational Defense				

Performance Information Table

Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Category	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.							
2009	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Processes and Activities	Productivity and Efficiency	Efficiency				
2009	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Technology	Reliability and Availability	Availability				
2010	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Customer Results	Timeliness and Responsiveness	Delivery Time				
2010	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Mission and Business Results	Defense and National Security	Operational Defense				
2010	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st Century.	Processes and Activities	Productivity and Efficiency	Efficiency				
2010	GOAL 2.1 Nuclear Deterrent – Transform the Nation's nuclear deterrent and supporting infrastructure to be more responsive to the threats of the 21st	Technology	Reliability and Availability	Availability				

Performance Information Table								
Fiscal Year	Strategic Goal(s) Supported	Measurement Area	Measurement Category	Measurement Grouping	Measurement Indicator	Baseline	Target	Actual Results
	Century.							

Section E: Security and Privacy (IT Capital Assets only)

In order to successfully address this area of the business case, each question below must be answered at the system/application level, not at a program or agency level. Systems supporting this investment on the planning and operational systems security tables should match the systems on the privacy table below. Systems on the Operational Security Table must be included on your agency FISMA system inventory and should be easily referenced in the inventory (i.e., should use the same name or identifier).

For existing Mixed-Life Cycle investments where enhancement, development, and/or modernization is planned, include the investment in both the "Systems in Planning" table (Table 3) and the "Operational Systems" table (Table 4). Systems which are already operational, but have enhancement, development, and/or modernization activity, should be included in both Table 3 and Table 4. Table 3 should reflect the planned date for the system changes to be complete and operational, and the planned date for the associated C&A update. Table 4 should reflect the current status of the requirements listed. In this context, information contained within Table 3 should characterize what updates to testing and documentation will occur before implementing the enhancements; and Table 4 should characterize the current state of the materials associated with the existing system.

All systems listed in the two security tables should be identified in the privacy table. The list of systems in the "Name of System" column of the privacy table (Table 8) should match the systems listed in columns titled "Name of System" in the security tables (Tables 3 and 4). For the Privacy table, it is possible that there may not be a one-to-one ratio between the list of systems and the related privacy documents. For example, one PIA could cover multiple systems. If this is the case, a working link to the PIA may be listed in column (d) of the privacy table more than once (for each system covered by the PIA).

The questions asking whether there is a PIA which covers the system and whether a SORN is required for the system are discrete from the narrative fields. The narrative column provides an opportunity for free text explanation why a working link is not provided. For example, a SORN may be required for the system, but the system is not yet operational. In this circumstance, answer "yes" for column (e) and in the narrative in column (f), explain that because the system is not operational the SORN is not yet required to be published.

Please respond to the questions below and verify the system owner took the following actions:

1. Have the IT security costs for the system(s) been identified and integrated into the overall costs of the investment:

a. If "yes," provide the "Percentage IT Security" for the budget year:

2. Is identifying and assessing security and privacy risks a part of the overall risk management effort for each system supporting or part of this investment.

3. Systems in Planning and Undergoing Enhancement(s), Development, and/or Modernization - Security Table(s):			
Name of System	Agency/ or Contractor Operated System?	Planned Operational Date	Date of Planned C&A update (for existing mixed life cycle systems) or Planned Completion Date (for new systems)

4. Operational Systems - Security Table:							
Name of System	Agency/ or Contractor Operated System?	NIST FIPS 199 Risk Impact level (High, Moderate, Low)	Has C&A been Completed, using NIST 800-37? (Y/N)	Date Completed: C&A	What standards were used for the Security Controls tests? (FIPS 200/NIST 800-53, NIST 800-26, Other, N/A)	Date Complete(d): Security Control Testing	Date the contingency plan tested
ASC SNL Red Storm							

5. Have any weaknesses, not yet remediated, related to any of the systems part of or supporting this investment been identified by the agency or IG?

a. If "yes," have those weaknesses been incorporated into the agency's plan of action and milestone process?

6. Indicate whether an increase in IT security funding is requested to remediate IT security weaknesses?

a. If "yes," specify the amount, provide a general description of the weakness, and explain how the funding request will remediate the weakness.

7. How are contractor security procedures monitored, verified, and validated by the agency for the contractor systems above?

8. Planning & Operational Systems - Privacy Table:

(a) Name of System	(b) Is this a new system? (Y/N)	(c) Is there at least one Privacy Impact Assessment (PIA) which covers this system? (Y/N)	(d) Internet Link or Explanation	(e) Is a System of Records Notice (SORN) required for this system? (Y/N)	(f) Internet Link or Explanation
ASC SNL Red Storm	No	No	No, because the system does not contain, process, or transmit personal identifying information.	No	

Details for Text Options:
Column (d): If yes to (c), provide the link(s) to the publicly posted PIA(s) with which this system is associated. If no to (c), provide an explanation why the PIA has not been publicly posted or why the PIA has not been conducted.

Column (f): If yes to (e), provide the link(s) to where the current and up to date SORN(s) is published in the federal register. If no to (e), provide an explanation why the SORN has not been published or why there isn't a current and up to date SORN.

Note: Working links must be provided to specific documents not general privacy websites. Non-working links will be considered as a blank field.

Section F: Enterprise Architecture (EA) (IT Capital Assets only)

In order to successfully address this area of the capital asset plan and business case, the investment must be included in the agency's EA and Capital Planning and Investment Control (CPIC) process and mapped to and supporting the FEA. The business case must demonstrate the relationship between the investment and the business, performance, data, services, application, and technology layers of the agency's EA.

1. Is this investment included in your agency's target enterprise architecture? — Yes

a. If "no," please explain why?

2. Is this investment included in the agency's EA Transition Strategy? — Yes

a. If "yes," provide the investment name as identified in the Transition Strategy provided in the agency's most recent annual EA Assessment. — NNSA ASC SNL Red Storm Platform (ASC-SNL-RSP)

b. If "no," please explain why?

3. Is this investment identified in a completed (contains a target architecture) and approved segment architecture? — Yes

a. If "yes," provide the name of the segment architecture as provided in the agency's most recent annual EA Assessment. — Nuclear Weapons Stockpile Certification and Testing

4. Service Component Reference Model (SRM) Table:
Identify the service components funded by this major IT investment (e.g., knowledge management, content management, customer relationship management, etc.). Provide this information in the format of the following table. For detailed guidance regarding components, please refer to http://www.egov.gov.

Agency Component Name	Agency Component Description	FEA SRM Service Domain	FEA SRM Service Type	FEA SRM Component (a)	Service Component Reused Name (b)	Service Component Reused UPI (b)	Internal or External Reuse? (c)	BY Funding Percentage (d)
Modeling	Develop descriptions to adequately explain relevant data for the purpose of prediction, pattern detection, exploration or general organizatio of data	Business Analytical Services	Knowledge Discovery	Modeling			No Reuse	
Simulation	Utilize models to mimic real-world processes	Business Analytical Services	Knowledge Discovery	Simulation			No Reuse	

a. Use existing SRM Components or identify as "NEW". A "NEW" component is one not already identified as a service

component in the FEA SRM.

b. A reused component is one being funded by another investment, but being used by this investment. Rather than answer yes or no, identify the reused service component funded by the other investment and identify the other investment using the Unique Project Identifier (UPI) code from the OMB Ex 300 or Ex 53 submission.

c. 'Internal' reuse is within an agency. For example, one agency within a department is reusing a service component provided by another agency within the same department. 'External' reuse is one agency within a department reusing a service component provided by another agency in another department. A good example of this is an E-Gov initiative service being reused by multiple organizations across the federal government.

d. Please provide the percentage of the BY requested funding amount used for each service component listed in the table. If external, provide the percentage of the BY requested funding amount transferred to another agency to pay for the service. The percentages in the column can, but are not required to, add up to 100%.

5. Technical Reference Model (TRM) Table:
To demonstrate how this major IT investment aligns with the FEA Technical Reference Model (TRM), please list the Service Areas, Categories, Standards, and Service Specifications supporting this IT investment.

FEA SRM Component (a)	FEA TRM Service Area	FEA TRM Service Category	FEA TRM Service Standard	Service Specification (b) (i.e., vendor and product name)
Modeling	Component Framework	Data Management	Reporting and Analysis	
Simulation	Component Framework	Data Management	Reporting and Analysis	
Modeling	Service Platform and Infrastructure	Hardware / Infrastructure	Servers / Computers	
Simulation	Service Platform and Infrastructure	Hardware / Infrastructure	Servers / Computers	
Modeling	Service Platform and Infrastructure	Software Engineering	Modeling	

a. Service Components identified in the previous question should be entered in this column. Please enter multiple rows for FEA SRM Components supported by multiple TRM Service Specifications

b. In the Service Specification field, agencies should provide information on the specified technical standard or vendor product mapped to the FEA TRM Service Standard, including model or version numbers, as appropriate.

6. Will the application leverage existing components and/or applications across the Government (i.e., FirstGov, Pay.Gov, etc)? No

a. If "yes," please describe.

Exhibit 300: Part III: For "Operation and Maintenance" investments ONLY (Steady State)

Section A: Risk Management (All Capital Assets)

Part III should be completed only for investments identified as "Operation and Maintenance" (Steady State) in response to Question 6 in Part I, Section A above.

You should have performed a risk assessment during the early planning and initial concept phase of this investment's life-cycle, developed a risk-adjusted life-cycle cost estimate and a plan to eliminate, mitigate or manage risk, and be actively managing risk throughout the investment's life-cycle.

1. Does the investment have a Risk Management Plan?	Yes
a. If "yes," what is the date of the plan?	10/2/2006
b. Has the Risk Management Plan been significantly changed since last year's submission to OMB?	No
c. If "yes," describe any significant changes:	

2. If there currently is no plan, will a plan be developed?

a. If "yes," what is the planned completion date?

b. If "no," what is the strategy for managing the risks?

Section B: Cost and Schedule Performance (All Capital Assets)

1. Was operational analysis conducted?	Yes
a. If "yes," provide the date the analysis was completed.	6/15/2007

b. If "yes," what were the results?

The NNSA Advanced Simulation and Computing (ASC) Program hereby certifies that the NNSA ASC SNL Red Storm Platform system utilization met its target, and the investment is funded 100% for steady state operation, and it is achieving at least 90% of its cost, schedule, and performance baseline goals as documented in the Exhibit 300.

c. If "no," please explain why it was not conducted and if there are any plans to conduct operational analysis in the future:

2. Complete the following table to compare actual cost performance against the planned cost performance baseline. Milestones reported may include specific individual scheduled preventative and predictable corrective maintenance activities, or may be the total of planned annual operation and maintenance efforts).

a. What costs are included in the reported Cost/Schedule Performance information (Government Only/Contractor Only/Both)?	Contractor and Government

2.b Comparison of Plan vs. Actual Performance Table:

Comparison of Plan vs. Actual Performance Table

Milestone Number	Description of Milestone	Planned		Actual		Variance	
		Completion Date (mm/dd/yyyy)	Total Cost($M)	Completion Date (mm/dd/yyyy)	Total Cost($M)	Schedule (# days)	Cost($M)
1	Material Purchase	9/25/2002	$0.00835	9/22/2003	$8.017444	-362	$-8.009094
2	Pre-pay for T&M OS Dev	9/25/2002	$0.00125	9/30/2003	$1.25	-370	$-1.24875
3	System Chip (Seastar)	9/25/2002	$0.00017	1/16/2003	$0.17	-113	$-0.16983
4	RAS design specs	9/30/2002	$0.12	9/19/2003	$0.12	-354	$0
5	Hardware specs per SOW	9/30/2002	$0.22	10/7/2002	$0.22	-7	$0
6	PVFS clie	9/30/2002	$0.12	9/30/2002	$0.12	0	$0
7	System chip FAB	9/30/2002	$0.07	9/30/2002	$0.07	0	$0
8	General progress checkpoint	9/30/2002	$0.2	9/30/2002	$0.2	0	$0
9	Floor plan netlist	10/15/2002	$0.2	2/19/2003	$0.2	-127	$0
10	Material Purchase	10/1/2002	$3.95	12/16/2003	$3.217041	-441	$0.732959
10	System boot design	10/15/2002	$0.15	7/25/2003	$0.15	-283	$0
11	Connector passes qualification	10/30/2002	$0.15	12/12/2002	$0.15	-43	$0
12	Service & I/O board module	10/30/2002	$0.2	12/20/2002	$0.2	-51	$0
13	General Progress Checkpoint	10/31/2002	$0.2	10/31/2002	$0.2	0	$0
14	RAS event logging	11/29/2002	$0.17	12/2/2002	$0.17	-3	$0
15	RAS diagnostics design	11/29/2002	$0.17	12/16/2003	$0.17	-382	$0
16	Reliability database demo	11/29/2002	$0.17	12/11/2002	$0.17	-12	$0
17	Total Catamount design	11/29/2002	$0.19	12/24/2002	$0.19	-25	$0
18	General progress checkpoint	11/29/2002	$0.2	11/29/2002	$0.2	0	$0
19	Preliminary Seastar transmit	12/16/2002	$0.15	1/6/2003	$0.15	-21	$0
20	Node resilient demo	12/31/2002	$0.075		$0.075		$0
21	Complete PBS design	12/31/2002	$0.075		$0.075		$0
22	Manufacturing, assembly & test DRAFT	12/31/2002	$0.1	12/31/2002	$0.1	0	$0
23	PVFS Client Demo	12/31/2002	$0.15	12/31/2002	$0.15	0	$0
24	RISK MIT-PVFS Demo	12/31/2002	$0.15	12/31/2002	$0.15	0	$0
25	General progress checkpoint	12/30/2002	$0.2	12/30/2002	$0.2	0	$0
26	Mechanical cabinet design	1/30/2003	$0.125	2/11/2003	$0.125	-12	$0
27	RAS GUI prototype demo	1/30/2003	$0.1	2/11/2003	$0.1	-12	$0

Comparison of Plan vs. Actual Performance Table

Milestone Number	Description of Milestone	Planned		Actual		Variance	
		Completion Date (mm/dd/yyyy)	Total Cost($M)	Completion Date (mm/dd/yyyy)	Total Cost($M)	Schedule (# days)	Cost($M)
28	Preliminary Seastar Netlist	1/30/2003	$0.2	5/27/2003	$0.2	-117	$0
29	Starfish I/O board back from FAB	1/31/2003	$0.275	7/1/2003	$0.275	-151	$0
30	General progress checkpoint	1/31/2003	$0.2	1/31/2003	$0.2	0	$0
31	Compute module board trial route	2/28/2003	$0.15	9/19/2003	$0.15	-203	$0
32	Final Seastar Netlist delivered	2/28/2003	$0.25	9/24/2003	$0.25	-208	$0
33	Demo 8 way strip PVFS	2/28/2003	$0.2	3/10/2003	$0.2	-10	$0
34	Demo MPI 1.2 + MPI I/O	2/28/2003	$0.1	6/12/2003	$0.1	-104	$0
35	General progress checkpoint	2/28/2003	$0.2	6/12/2003	$0.2	-104	$0
36	Key supplier qualification process	3/31/2003	$0.1	4/21/2003	$0.1	-21	$0
37	System accounting design	3/31/2003	$0.1	6/5/2004	$0.1	-432	$0
38	Starfish containing router & LCB testing	3/31/2003	$0.1	11/24/2003	$0.1	-238	$0
39	Prototype compute cabinet fabricated	3/31/2003	$0.15	9/22/2003	$0.15	-175	$0
40	Demonstrate portals driver on Linux	3/31/2003	$0.15	5/13/2003	$0.15	-43	$0
41	Catamount demo on development hardware	3/31/2003	$0.1	5/20/2003	$0.1	-50	$0
42	General progress checkpoint	3/31/2003	$0.2	3/31/2003	$0.2	0	$0
43	RAS diagnostic demo	4/30/2003	$0.1	9/16/2004	$0.1	-505	$0
44	RAS to initialize starfish support demo	4/30/2003	$0.3	9/19/2003	$0.3	-142	$0
45	Starfish compute Node to FAB	4/30/2003	$0.3		$0.3		$0
46	General progress checkpoint	4/30/2003	$0.2	4/30/2003	$0.2	0	$0
47	TotalView NUB Demo	5/15/2003	$0.15	11/24/2003	$0.15	-193	$0
48	Performance tool able to monitor MPI	5/30/2003	$0.225		$2.25		$-2.025

Comparison of Plan vs. Actual Performance Table

Milestone Number	Description of Milestone	Planned		Actual		Variance	
		Completion Date (mm/dd/yyyy)	Total Cost($M)	Completion Date (mm/dd/yyyy)	Total Cost($M)	Schedule (# days)	Cost($M)
49	Third party file system (Lustre) demo	5/30/2003	$0.2	6/12/2003	$0.2	-13	$0
50	Fault tolerant PBS demo	5/30/2003	$0.125		$0.125		$0
51	General progress checkpoint	5/31/2003	$0.2	5/31/2003	$0.2	0	$0
52	Select gigE offload card	6/30/2003	$0.1	9/19/2003	$0.1	-81	$0
53	Linux boot on Starfish I/O module demo	6/30/2003	$0.6	9/19/2003	$0.6	-81	$0
54	General progress checkpoint	6/30/2003	$0.2	6/30/2003	$0.2	0	$0
55	Demonstrate ability to boot Catamount thru RAS	7/31/2003	$0.1	10/21/2003	$0.1	-82	$0
56	Full starfish boot (linux & Catamount)	7/31/2003	$0.4	1/19/2004	$0.4	-172	$0
57	Prototype Bill of Material (BOM) Review	7/31/2003	$0.2	8/28/2003	$0.2	-28	$0
58	General progress checkpoint	7/31/2003	$0.2	7/31/2003	$0.2	0	$0
59	Seastar physical design release	8/15/2003	$0.4	12/16/2003	$0.4	-123	$0
60	Logarithmic or constant time demo	8/29/2003	$0.15		$0.15		$0
61	Manufacturing readiness review	8/29/2003	$0.15	9/19/2003	$0.15	-21	$0
62	General progress checkpoint	8/31/2003	$0.2	8/31/2003	$0.2	0	$0
63	Sandia pre-payment for T&M OS dev	9/1/2003	$1.25	9/8/2003	$1.25	-7	$0
64	PVFS or alternative demo file system	9/30/2003	$0.25	8/18/2004	$0.25	-323	$0
65	Functional MPI per requirements in SOW	9/30/2003	$0.15		$0.15		$0
66	Fully functional TotalView on Starfish	9/30/2003	$0.2	8/18/2004	$0.2	-323	$0
67	General progress checkpoint	9/30/2003	$0.3	9/30/2003	$0.3	0	$0
68	Materials Purchase	10/1/2003	$15.2	9/23/2004	$12.94871	-358	$2.25129
69	RTAT parts back from	10/15/2003	$0.25	2/20/2004	$0.25	-128	$0

Comparison of Plan vs. Actual Performance Table

Milestone Number	Description of Milestone	Planned		Actual		Variance	
		Completion Date (mm/dd/yyyy)	Total Cost($M)	Completion Date (mm/dd/yyyy)	Total Cost($M)	Schedule (# days)	Cost($M)
	FAB						
70	Red/Black switch cabinet built	10/31/2003	$0.2	10/31/2003	$0.2	0	$0
71	Seastar I/O module board	10/31/2003	$0.25	3/2/2004	$0.25	-123	$0
72	General progress report	10/31/2003	$0.2	10/31/2003	$0.2	0	$0
73	Computer cabinet fabricated	11/30/2003	$0.2	12/16/2003	$0.2	-16	$0
74	RTAT Seastar evaluation	11/30/2003	$0.4	5/4/2004	$0.4	-156	$0
75	Seastar NTAT wafers released	11/30/2003	$0.1	6/5/2004	$0.1	-188	$0
76	General progress checkpoint	11/30/2003	$0.2	11/30/2003	$0.2	0	$0
77	Linux & catamount boot on Seastar demo	12/31/2003	$0.2		$0.2		$0
78	Production Bill of Materials complete	12/31/2003	$0.3	8/18/2004	$0.3	-231	$0
79	SeaStar NTAT parts back from FAB	12/31/2003	$0.1	8/12/2004	$0.1	-225	$0
80	General progress report	12/31/2003	$0.3	12/31/2003	$0.3	0	$0
81	Checkout first Pilot Compute Cabinet	1/7/2004	$0.1	8/18/2004	$0.1	-224	$0
82	4 I/O Seastar modules release	1/23/2004	$0.25	8/12/2004	$0.25	-202	$0
83	8 Compute Seastar modules	1/23/2004	$0.25	8/12/2004	$0.25	-202	$0
84	System boot demo on NTAT Seastar	1/30/2004	$0.1		$0.1		$0
85	Service Plan V1 Release	1/30/2004	$0.1	5/19/2004	$0.1	-110	$0
86	General progress checkpoint	1/31/2004	$0.1	1/31/2004	$0.1	0	$0
87	Agency Compliance Testing	2/18/2004	$0.2		$0.2		$0
88	Phase I Reliability & Stress System	2/27/2004	$0.2		$0.2		$0
89	Production 12 Red/Black switch racks RTM	2/27/2004	$0.25	9/16/2004	$0.25	-202	$0
90	General progress checkpoint	2/29/2004	$0.25	2/29/2004	$0.25	0	$0

Comparison of Plan vs. Actual Performance Table

Milestone Number	Description of Milestone	Planned		Actual		Variance	
		Completion Date (mm/dd/yyyy)	Total Cost($M)	Completion Date (mm/dd/yyyy)	Total Cost($M)	Schedule (# days)	Cost($M)
91	Phase III Stress System complete	3/24/2004	$0.3		$0.3		$0
92	Phase II Reliability & Stress System complete	3/31/2004	$0.3		$0.3		$0
93	General progress checkpoint	3/31/2004	$0.3	3/31/2004	$0.3	0	$0
94	Pass Phase IV Reliability & Stress test	4/15/2004	$0.3		$0.3		$0
95	Factory demo of MP-Linpack at 3.5TFlops	4/30/2004	$0.3		$0.3		$0
96	Red Storm online with Cray Service System	4/30/2004	$0.2	12/21/2004	$0.2	-235	$0
97	General progress checkpoint	4/30/2004	$0.1	4/30/2004	$0.1	0	$0
98	Demo 2US ping-pong MPI latency	5/1/2004	$0.2		$0.2		$0
99	1/4 system-Single Service Partition	5/3/2004	$0.4		$0.4		$0
100	General progress checkpoint	5/31/2004	$0.3	5/31/2004	$0.3	0	$0
101	1/4 System-Single Compute Partition	6/1/2004	$0.4		$0.4		$0
102	Run MP-Linpack at 3.5 TFlops	6/30/2004	$0.3		$0.3		$0
103	General progress checkpoint	6/30/2004	$0.2	6/30/2004	$0.2	0	$0
104	1/4 system-Single Compute Partition	7/1/2004	$0.4		$0.4		$0
105	Run MP-Linpack at 7 TFlops	7/31/2004	$0.2		$0.2		$0
106	General progress checkpoint	7/30/2004	$0.3	7/30/2004	$0.3	0	$0
107	1/4 system-Final Service Partition	8/2/2004	$0.4		$0.4		$0
108	Run MP-Linpack at 10.5 TFlops	8/31/2004	$0.2		$0.2		$0
109	Demo bandwith, latency & BER	8/24/2004	$0.2		$0.2		$0
110	Software reliability run	8/24/2004	$0.1		$0.1		$0

Comparison of Plan vs. Actual Performance Table

Milestone Number	Description of Milestone	Planned		Actual		Variance	
		Completion Date (mm/dd/yyyy)	Total Cost($M)	Completion Date (mm/dd/yyyy)	Total Cost($M)	Schedule (# days)	Cost($M)
	(24 hrs)						
111	General progress checkpoint	9/30/2004	$0.9		$0.9		$0
112	Material Purchase	10/1/2004	$9.5	6/28/2005	$8.132514	-270	$1.367486
112	Run MP-Linpack at 14 TerOPS	10/1/2004	$2		$2		$0
113	Service payment 5/31/04-5/31/05	10/31/2004	$2.5		$2.5		$0
115	Single 50 ASCI hour run	10/29/2004	$4		$4		$0
116	Demo a factor of 7 performance increase	12/31/2004	$3		$3		$0
117	All other SOW & Sched B requirements have been meet	12/31/2004	$1		$1		$0
118	I/O meets SOW requirements of 50 GBbytes/sec demo	12/31/2005	$1		$1		$0
118	Service Payment	10/31/2005	$2.5		$2.5		$0
119	Service Payment	5/31/2006	$2.5		$2.5		$0
119	Svc payment 5/31/07-5/31/08	5/31/2007	$2.5		$2.5		$0
124	Gov't. FTE by FY 2007	9/30/2007	$0.03	9/30/2007		0	