Duke Energy Carolinas, LLC
Response to Department of Energy
Federal Loan Guarantee Application

PART I and II – SECTION C
Technical Information
I-C-1 and II-C-I

WLS/I/C/1/Key Contracts and Agreements

C.I.1 Key Contracts and Agreements: Provide a top level description, schedule and current status of all critical path contracts and agreements, whether entered into or proposed, relevant to the investment, design, engineering, financing, construction, startup commissioning, shakedown, operation and maintenance of the project, including:

a. Engineering Procurement Construction (EPC) Contract
b. Long Lead Procurements
c. Fuel Supply Agreements
d. Operations and Maintenance (O&M) Contracts

Response:

Duke Energy Carolinas, LLC will either own and operate the Lee Nuclear Station directly; or, have positive and direct control over its operation should an alternative Special Purpose Entity ownership with Power Purchase Agreement buyback arrangement be implemented to obtain favorable financing. The Company has over 45 years of experience in the design, construction and operation of nuclear power stations, and currently has seven nuclear operating units that generate over 7,000 megawatts of electricity. Duke Energy Corporation, one of the largest electric power companies in the United States, supplies and delivers energy to approximately 3.9 million U.S. customers. The company has nearly 37,000 megawatts of electric generating capacity in the Midwest and the Carolinas.

a. Engineering Procurement Construction (EPC) Contract

~~Duke Energy Carolinas is currently negotiating the Engineering Procurement Construction ("EPC") contract with a consortium of Westinghouse Electric Company and Shaw Group, Inc. ("WEC/Shaw"). —~~Duke Energy Carolinas ~~and~~ expects to agree on commercial terms and conditions of an EPC ~~in late 2008 or early 2009~~prior to submitting the CPCN and baseload review to the Public Service Commission of South Carolina. ~~.—~~Additionally, two other related agreements with WEC, a fuel supply agreement and a short-term maintenance and services agreement for certain facility components to provide for continuity over a limited time following commercial operations, are being negotiated simultaneously with the EPC negotiations. EPC structure is expected to include appropriate risk/reward sharing mechanisms including fixed price, firm price, target price and cost-reimbursable portions. These mechanisms will be incorporated into an EPC agreement specifying the commercial terms and conditions for the project including:

- scope of work
- project schedule
- contractor and owner responsibilities
- subcontracting
- facility licenses and permits
- inspection and testing requirements
- quality assurance
- equipment, commodity and labor
- indemnifications
- insurance
- limitations of liability
- liens
- intellectual property rights to documentation
- environmental, health and safety responsibilities
- title and risk of loss

pricing
- payment schedules
- change orders
- Force Majuere
- startup testing and turnover
- performance guarantees
- equipment and services warranties
- suspension
- default and termination rights
- qualification and protection of assigned personnel
- records and audits
- taxes
- project credit support
- dispute resolution

The fuel agreement will specify the types and amounts of fuel to be delivered and other commercial terms and conditions, such as fuel performance guarantees and intellectual property rights to fuel-related analyses. The short-term maintenance and services agreement will provide for continuity of WEC services over a limited period of time after commercial operation, to provide maintenance and planned outage support for a specified scope of activities (e.g., steam generator maintenance, inspection and repair services; reactor services; reactor coolant pump maintenance, inspection and repair services; turbine maintenance, inspection and repair services; instrumentation and control services; other in-service inspections and fuel reload engineering and safety analyses). This agreement will also serve to protect Duke Energy Carolinas from certain market risks of having to procure these services within a constrained time period with little bargaining leverage on which to negotiate terms.

Duke Energy Carolinas also continues to explore options to engage one or more joint venture partners for the ownership and construction of a new facility.

b. Long Lead Procurement

Duke Energy Carolinas continues to ~~negotiate~~ evaluate timing of necessary payments for Long Lead Material purchases necessary to support a 2018 Commercial Operation Date. ~~Currently it is anticipated that initial long lead forging reservation commitments may be made by year end 2008. Additional Long Lead Material payments are expected in 2009 and beyond, leading up to site deployment in 2012.~~ DEC notes that there have been several recent developments which demonstrate that the supply chain for critical long lead items should be expanding over the next two to three years and available to provide such items for the Lee Station after the EPC Agreement is executed domestically. Areva and Northrup have announced a new fabrication facility in Newport News and Babcock & Wilcox has announced a new fabrication facility in Madison, which will provide additional nuclear-qualified manufacturing capacity for the supply chain. It is also likely that other facilities with additional nuclear-qualified manufacturing capacity will be announced in the next year. These domestic announcements demonstrate that there should be a more robust domestic supply chain over the next several years, when DEC would be placing its orders for the procurement of the long lead items.

In addition, Japan Steel Works has announced that it is planning for a substantial expansion of its manufacturing capacity for ultra heavy forgings in Japan. This planned expansion of the Japan Steel Works manufacturing capacity should increase the availability of such ultra heavy forgings capacity in the time frame relevant to the construction of the Lee Station. The planned

expansion should serve to relieve some of the current congestion and back-up in the queue for the ultra heavy forgings.

c. Fuel Supply Agreements

Duke Energy Carolinas has secured natural uranium hexafluoride supply commitments to satisfy initial core requirements for both Lee Nuclear Station units. If the Lee nuclear units are delayed or canceled, this supply could alternatively be used to satisfy reload requirements for the existing nuclear fleet.

Duke Energy Carolinas has secured optional enrichment services supply commitments to satisfy initial core requirements for both Lee Nuclear Station units and a portion of the reload requirements for subsequent cycles. If the Company exercises this option and the Lee nuclear units are delayed or canceled, the initial core supply could alternatively be used to satisfy reload requirements for the existing nuclear fleet.

Duke Energy Carolinas is currently in the process of negotiating an agreement for the supply of fuel fabrication services necessary for the Lee Nuclear Station units.

For Lee Nuclear Station fuel requirements not covered under long-term contracts, Duke Energy believes it will be able to renew contracts as they expire, or enter into similar contractual arrangements with other suppliers of nuclear fuel materials and services.

d. Operations and Maintenance ("O&M") Contracts

Similarly, Duke Energy Carolinas ~~is negotiating~~intends to execute an Operations and Maintenance agreement with WEC in conjunction with an EPC agreement. This O&M agreement will ~~to~~ support operation of Lee Nuclear Station after construction and startup testing, supplementing the site workforce. The agreement will be a key contract that will ensure continuity from the construction and startup testing phases into the operating period. The primary service areas that will be supported by WEC, the nuclear steam supply system (NSSS) supplier, will be:

- Steam Generator Services
- Reactor Coolant Pump and Motor Services
- Turbine Generator Services
- Instrument and Controls Services
- Reactor Services
- Inspection Services
- Passive Residual Heat Removal Heat Exchanger Services

Pursuant to the terms of the services agreement, experienced personnel will be utilized to ensure preventative maintenance programs are established and implemented from the earliest period supporting equipment reliability in these key areas. The services agreement will also guarantee access to technical expertise should problems develop or unusual operating conditions require attention.

In most of the primary service areas, the support will largely be refueling outage activity coverage. Experienced WEC crews will perform the preventative maintenance activities supporting high equipment reliability. Duke Energy Carolinas will have dedicated oversight leaders in each of these areas, and a knowledge and experience transfer will take place between the WEC experts and the Duke Energy Carolinas experts.

APOG

Duke Energy Carolinas has entered into a limited liability relationship with other utilities planning on building and operating a WEC AP1000 nuclear station. The joint venture has been organized for the purpose of sharing developmental costs associated with the operation of the new passive reactors. The joint venture has been organized as APOG. To date, five utilities are members of the venture. The APOG utilities are engaged in design reviews and Nuclear Regulatory Commission ("NRC") license application reviews in support of future construction.

APOG member companies provide representatives to an Executive Steering Team, an Engineering Team, an Operations Team with two sub-teams for Procedure Development and Training Development, a Procurement Team, a Licensing Team, a Schedule Team, an Information Management System ("IMS") Team, a Layout Team and a Labor Team. These teams focus on consistency of design, construction, and operation. Members of the WEC/SN Consortium interact with utility representatives to ensure coordination and timely support. By utilizing a unified approach, fewer resources have been dedicated to the AP1000 development effort by each utility. The AP1000 utilities have shared the work for such items as document development, design review, and NRC license application question response. A benefit of the close coordination is a constant reminder to work for AP1000 consistency of design and program development. The drive for consistency should provide large benefits following the construction phase, into the testing phase of plant startup and then during power operations.

Other Contracts:

Additional selected contracts are discussed below including contracts related to: siting study; initial site characterization; COLA preparation; conceptual and detailed site specific engineering; and initial site work activities.

While not a complete list of all contracts awarded or planned for the Lee Nuclear Station, the discussion is included as aid in describing the landscape of activities completed and ongoing in developing the project.

McCallum Turner was a key contributor to the Lee Nuclear Plant Siting Study.

Enercon Services, Inc. has provided engineering, management, and consulting services to prepare the COL Application for the Lee Nuclear Station. This included providing project management and engineering services, developing selected COL Application sections, and preparing the COL Application. Enercon Services, Inc. is a diversified, multi-disciplined engineering services firm with extensive experience in providing services to the United States

commercial nuclear power industry. The firm's capabilities and expertise includes design engineering, regulatory compliance, environmental management, and management services

MACTEC Engineering and Consulting, Inc. has performed geotechnical field investigations and laboratory testing in support of the COL Application for Lee Nuclear Station. These services have included performing standard penetration tests, obtaining core samples and rock cores, and installing groundwater observation wells. MACTEC Engineering and Consulting, Inc. is a leader in the engineering, environmental, and remedial construction industries and provides a full range of engineering consulting services to clients worldwide. These services include site development, planning and engineering design, construction phase services, environmental services, and facilities operations and maintenance services.

William Lettis & Associates, Inc. has performed the investigations and analyses required to prepare the geology, seismology, and geotechnical engineering section of the COL Application for the Lee Nuclear Station. This includes investigating the subsurface materials present at the site, performing a comprehensive geotechnical exploration, and performing geophysical surveys to assess the dynamic response of soil and rock. William Lettis & Associates, Inc. is a consulting firm specializing in applied earth sciences and has extensive experience in earthquake-related services, engineering geology, and geotechnical services. The firm has conducted earth science investigations for a wide spectrum of clients and provides a range of services including detailed site characterization, assessment of capable tectonic features, seismic source zones, and probabilistic seismic hazard assessment studies.

Shaw has performed conceptual design engineering in support of the COL Application for the Lee Nuclear Station, and is currently preparing a number of the required site construction and operation permits required by the state of South Carolina. Shaw (formerly Shaw Stone & Webster) has more than 60 years expertise in the nuclear industry, including a history of firsts. These firsts included the design and construction of the Y-12 facility in Oak Ridge, Tennessee, and the engineering and design of Shippingport, the first commercial nuclear power plant in the United States. Shaw was also the original engineer / designer for 17 U. S. nuclear power plants, developed the first U. S. Nuclear Regulatory Commission-approved Nuclear Quality Assurance Program, and completed the first license application for a spent fuel dry storage facility. Shaw has provided services to 95 percent of all U. S. nuclear plants. Shaw is part of the AP1000 Consortium with Westinghouse Electric Company (“WEC”), which is 20 percent owned by Shaw. This consortium was selected by the People's Republic of China State Nuclear Power Technology Company to build four new nuclear power plants using WEC's AP1000 technology.

Hall Contracting safely completed numerous miscellaneous site tasks, including cleaning of existing excavations that were de-watered.

Facilities Planning and Siting Inc. performed the transmission line siting study. The study process included identifying potential transmission corridors, conducting public meetings, refining the corridors, and then final corridor selection. Transmission design is in progress and transmission Right of Way acquisition is expected to commence in 2009. Estimates for new transmission lines, tie-ins upgrades are included in the estimate of Owners Cost.

Tower Systems was contracted to provide new meteorological towers at the Lee Nuclear site, conforming to current measuring and monitoring requirements.

Brockington and Associates completed the cultural investigation of the site and conducted an assessment of the visual impacts of construction, both as required by the Environmental Report.

Devine Tarbell and Associates has completed numerous civil engineering studies.

Kimley-Horn Associates conducted a Traffic Study in the area to determine impacts on local traffic patterns from both construction and operation.

Crouch Engineering PC completed preliminary engineering work required to determine route, scope and rough estimate of cost to necessary to re-establish rail service to the site. Rail service was previously constructed to the site but the rail line has been abandoned. Acquisition of Rail Right of Way is in progress. Current plans are to have detailed drawings and specification ready for bidding purposes by 1Q09. Estimates for re-establishing the service are included in the estimate of Owners Cost.

BP Barberton has performed preliminary studies for bring municipal water and sewer service to the site. Current plans are to have detailed drawings and specification ready for bidding purposes by 1Q09. Estimates for providing water and sewer service to the site are included in the estimate of Owners Cost.

Cleveland Wrecking Company completed the demolition of existing site structures, on schedule within budget and without injury.

Morgan Corporation completed maintenance and repairs to dam slopes on site as well as performed site perimeter fence clearing and repairs.

Judges Professional Services currently provides seven day a week, twenty four hour security of the site.

Burns and Roe recently completed an Independent Assessment of the WEC/Shaw cost and schedule estimate. Burns & Roe Enterprises, Inc. is an architect-engineering firm with considerable nuclear expertise. The firm has provided design, construction management, and modernization services to a wide variety of domestic and foreign operating utilities. Burns & Roe Enterprises, Inc. contributed to the design and installation of a number of commercial nuclear power plants. The firm has also been involved with the development of advanced light water reactors since their inception.

WLS/I/C/2/Major Project Plans

C.I.2 Major Project Plans: Provide a description, status and associated costs of key project plans, including:

a. Construction Plan
b. O&M Plan
c. Spent Fuel Disposition Plan
d. Decommissioning Plan

Response:

This response, in its entirety, is replaced by WLS/II/C/1/Engineering and Construction Plans, WLS/II/C/2/Operating and Maintenance Plans, WLS/II/C/3/Decommissioning Plan and WLS/II/D/4/Contractual Arrangements. The updated Part II response has no impact on Duke Energy Carolinas Loan Guarantee Application proposed financing structure or Lee Nuclear Station COD.

WLS/I/C/3/Potential Environmental Impacts

C.I.3 Potential Environmental Impacts: Provide an outline of potential environmental impacts of the project and how impacts will be mitigated. Details on required environmental information are contained in Attachment B, NEPA Guidance.

Response:
Pursuant to IV.8 of the Loan Guarantee Solicitation for Applications for Nuclear Power Facilities, DOE will prepare an "environmental critique and synopsis" for those applications deemed to be in the competitive range in accordance with 10 CFR 1021.216 after the preliminary technical and financial review is complete. Potential environmental impacts of the project, mitigation plans, considerations under the National Environmental Policy Act (NEPA), site permits, site preparation and construction and commissioning of the facility will be considered. In addition, life cycle emissions, where significant, will be evaluated. Attachment B of the Solicitation provides additional details on required environmental information.

According to the Solicitation, required environmental information may be extracted from an applicant's environmental report submitted to the Nuclear Regulatory Commission ("NRC") in support of an NRC license application. This position was clarified in the 11 Aug 2008 response to Question 5 under the DOE's "Frequently Asked Questions" ("FAQ") website:

> Q5. Will submission to the DOE of the extensive environmental reports already submitted to the NRC satisfy the requirements of Attachment B and other environmental requirements of the solicitation? The NRC requires extensive environmental reports and it would be most effective to submit that environmental report rather than summarizing the 8 categories as described in Attachment B. A matrix that would cross reference the NRC environmental report to the 8 categories could be provided.
>
> *R5. DOE will accept environmental reports already submitted to the NRC if they are accompanied by a matrix or some other document which cross-references the NRC environmental report to the environmental requirements set forth in the Solicitation; however, Applicants remain responsible for assuring that their submissions meet the requirements of the Solicitation.*

The following provides the environmental information required to be submitted by Duke Energy Carolinas in accordance with the DOE Solicitation.

Potential Environmental Impacts of the Duke Lee Nuclear Station COL Project

Duke Energy Carolinas submitted a combined license application for the two-unit William States Lee III Nuclear Station ("Lee Nuclear Station") on December 13, 2007 (reference NRC docket numbers 52-018 and -019 for units 1 and 2, respectively). Part 3 of this application includes the Environmental Report prepared by Duke Energy Carolinas in accordance with 10 CFR Part 51, Regulatory Guide 4.2, and NUREG-1555, the NRC's Environmental Standard Review Plan. The Lee Nuclear Station application was accepted for review and docketed by the NRC on February

25, 2008, and is currently under review by the NRC. The Environmental Report constitutes Duke Energy Carolinas' input to the NRC's Environmental Impact Statement.

The Lee Nuclear Station Environmental Report was included with the hardcopy of Part I of the Loan Guarantee Application as Appendix 14. A CD containing the Environmental Report files was also sent with the two hardcopies of Part I of the application. Duke Energy Carolinas has evaluated the Environmental Report and the applicable provisions of 10 CFR 51, Regulatory Guide 4.2, and NUREG -1555 as compared against the analogous DOE Loan Guarantee Solicitation and guidance, and has concluded that the Environmental Report substantially satisfies DOE's NEPA requirements, as detailed in the following comparison matrix. Consistent with the "FAQ" response above, this matrix cross-references the Lee Nuclear Station Environmental Report to DOE's environmental requirements set forth in Attachment B of the Solicitation. Duke Energy Carolinas will submit a revised Environmental Report to the DOE in early 2009.

Solicitation Attachment B and Lee Nuclear Station Environmental Report Comparison Matrix

Solicitation Attachment B: Information to be Submitted to DOE in the Application	Applicable Environmental Report Chapter, Section, Subsection, Table,[1] and/or Figure	Notes
1. Facilities – describe and, as appropriate, identify and quantify:		
• new facilities to be constructed, existing facilities to be modified, and materials and equipment to be used in construction;	• § 1.1, The Proposed Project • § 2.2.1, The Site and Vicinity • § 3.1, External Appearance and Plant Layout • § 4.2.1, Demolition Activities Prior to Construction • § 4.2.2, Hydrologic Alterations • § 10.2.2, Irreversible and Irretrievable Commitments of Material Resources	
• size of the new and modified facilities and of the total project site (including support facilities needed, such as parking lots and treatment facilities, and associated land uses, such as agricultural production areas);	• § 1.1, The Proposed Project • Figure 1.1-3, Site Aerial View • Figure 3.1-6, Lee Nuclear Station Units 1-2 • Figure 4.1-1, Detailed Site Plot Plan with Construction Laydown Areas • Table 4.3-1, Cover Types to be Cleared During Construction at the Lee Nuclear Site	
• extent of necessary site clearing and excavation;	• § 1.1, The Proposed Project • § 4.2.1, Demolition Activities Prior to Construction • § 4.2.2, Hydrologic Alterations • Table 4.3-1, Cover Types to be Cleared During Construction at the Lee Nuclear Site • § 4.1, Land Use Impacts	
• associated construction of transport infrastructure (e.g., access roads, railroad links, docks, pipelines, electrical transmission facilities) or waste treatment facilities;	• § 1.1, The Proposed Project • § 2.2.2, Transmission Corridors and Off-Site Areas • § 3.5, Radioactive Waste Management Systems • § 3.6, Nonradioactive Waste Systems • § 4.1, Land Use Impacts • § 4.1.2, Transmission Corridors and Off-Site Areas	• Company planning to tie to municipal waste treatment systems.
• air emissions, water effluents, use of borrow areas, and solid or other liquid waste that would result from construction	• § 3.5, Radioactive Waste Management System • § 3.6, Nonradioactive Waste Systems • § 4.2.4.1, Effluents to Surface Waters	

[1] Where the matrix identifies an applicable Environmental Report section or subsection, any tables referenced within that section or subsection are included in the cross-reference.

Solicitation Attachment B: Information to be Submitted to DOE in the Application	Applicable Environmental Report Chapter, Section, Subsection, Table,[1] and/or Figure	Notes
(include quantitative estimates); and	• Table 4.3-1, Cover Types to be Cleared During Construction at the Lee Nuclear Site • § 4.4.1, Physical Impacts • § 4.6, Measures and Controls to Limit Adverse Impacts During Construction	
• any existing facility that is part of the proposed project.	• § 1.1, The Proposed Project • § 2.2.1, The Site and Vicinity • § 4.2.1, Demolition Activities Prior to Construction • § 4.2.2, Hydrologic Alterations	
2. Project Location – describe and, as appropriate, identify, quantify, or provide a map:		
• project site and location;	• § 1.1, The Proposed Project • Figure 1.1-1, Regional Base Map • Figure 1.1-2, Vicinity Base Map • Figure 1.1-3, Site Aerial View • Figure 1.1-4, Topography on the Lee Nuclear Site • § 2.1, Station Location • Figure 2.1-1, Site Plot Plan with Major Structures Identified • Figure 3.1-1, Construction Zone	
• ownership of or jurisdiction over the land by Federal, state, regional, or local agency;	• § 1.2, Status of Reviews, Approvals and Consultations • § 2.2.1.1, The Site	
• existing transportation corridors and infrastructure;	• § 2.1, Station Location • § 2.2.1, The Site and Vicinity • § 2.2.2, Transmission Corridors and Off-Site Areas • § 2.5.2.2, Transportation • Figure 2.5-4, Road and Highway System in Cherokee and York Counties • Figure 2.5-5, Railways and Airports within the Lee Nuclear Site Region • Figure 3.1-1, Construction Zone	
• nearby land use and features (e.g., residences, industrial facilities, parks, surface water, soils, geology, hydrology);	• § 1.1, The Proposed Project • § 2.1, Station Location • § 2.2.1, The Site and Vicinity • § 2.2.3, The Region • Figure 2.2-1, Site Land Use • Figure 2.2-2, Vicinity Land Use • Figure 2.2-3, Regional Land Use • Figure 2.2-5, Adjacent Land Use	

Solicitation Attachment B: Information to be Submitted to DOE in the Application	Applicable Environmental Report Chapter, Section, Subsection, Table,[1] and/or Figure	Notes
	• § 2.3.1, Hydrology • Figure 2.3-1, The Broad River Basin Within the Santee River Basin • Figure 2.3-2, Upper Broad River Basin and Subbasins • Figure 2.3-3, Broad River and Major Tributaries • Figure 2.3-4, Broad River Profiles • Figure 2.3-5, Local Surface Water Bodies • Figure 2.3-7, Physiographic and Hydrogeologic Provinces of South Carolina • Figure 2.3-8, Area Geologic Map • Figure 2.3-9, Local Geologic Map • Figure 2.3-10, Soil Map of the Lee Nuclear Site • Figure 2.3-18, Area Surface Water Intakes In and Downstream From Upper Broad River Watershed • Figure 2.3-19, The Broad Scenic River and Recreational Areas • Table 2.4-6, Ecologically Oriented Public Recreation Areas in the Vicinity of the Lee Nuclear Site • § 2.5.2, Community Characteristics • § 2.6, Geology • Figure 2.6-1, USGS 7.5 Minute Quadrangle Maps within the Region of Lee Nuclear Station	
• areas with special designation both on the project location and nearby (e.g., National Forests, National Historic Properties, wetlands, floodplains, critical habitat for designated threatened or endangered species);	• § 2.2, Land • § 2.4.1, Terrestrial Ecology • § 2.4.2, Aquatic Ecology • Figure 2.4-1, Ecological Type Map of the Lee Nuclear Site, Cherokee County, South Carolina • § 2.5.3, Historic Properties • § 4.1.3, Historic Properties • § 4.3, Ecological Impacts • Figure 4.3-1, Ecological Cover Types to be Disturbed During Construction at the Lee Nuclear Site, Cherokee County, South Carolina • Figure 4.3-2, Ecological Cover Types to be Disturbed During by Permanent Structures at the Lee Nuclear Site, Cherokee County, South Carolina • § 5.1.3, Historic Properties	
• ambient air quality; and	• § 2.7.1.2.6, Regional Air Quality • § 2.7.2.7, Current and Projected Site Air Quality Conditions	

Solicitation Attachment B: Information to be Submitted to DOE in the Application	Applicable Environmental Report Chapter, Section, Subsection, Table,[1] and/or Figure	Notes
	• § 4.4.1.6, Impacts to Air Quality	
• near-by populations (including minority and low-income).	• § 2.5, Socioeconomics • Figure 2.5-2, 16 km – 80 km Population Sector Map • Figure 2.5-6, Black or African American, Individual States • Figure 2.5-7, Aggregate Minority, Individual States • Figure 2.5-8, Hispanic, Individual States • Figure 2.5-9, American Indian or Alaskan Native, Individual States • Figure 2.5-10, Asian, Individual States • Figure 2.5-11, Native Hawaiian or Other Pacific Islander, Individual States • Figure 2.5-12, Persons Reporting Two or More Races, Individual States • Figure 2.5-13, Persons Reporting Some Other Race, Individual States • Figure 2.5-14, Aggregate Minority Plus Hispanic, Individual States • Figure 2.5-15, Black or African Minority, Two-State Geographic Area • Figure 2.5-16, Aggregate Minority, Two-State Geographic Area • Figure 2.5-17, Hispanic, Two-State Geographic Area • Figure 2.5-18, American Indian or Alaskan Native, Two-State Geographic Area • Figure 2.5-19, Asian, Two-State Geographic Area • Figure 2.5-20, Native Hawaiian or Other Pacific Islander, Two-State Geographic Area • Figure 2.5-21, Persons Reporting Two or More Races, Two-State Geographic Area • Figure 2.5-22, Persons Reporting Some Other Race, Two-State Geographic Area • Figure 2.5-23, Aggregate Minority Plus Hispanic, Two-State Geographic Area • Figure 2.5-24, Low-Income Populations, Individual State Data • Figure 2.5-25, Low-Income Populations, Two-State Geographic Area • § 4.4.3, Environmental Justice Impacts • § 5.8.3, Environmental Justice Impacts	

Solicitation Attachment B: Information to be Submitted to DOE in the Application	Applicable Environmental Report Chapter, Section, Subsection, Table,[1] and/or Figure	Notes
3. Proposed Project Construction and Operation –		
(a) describe and, as appropriate, identify and quantify, project operations, including:		
• material resources to be used, including how they would be transported;	• § 3.8.1, Transportation of Unirradiated Fuel • § 4.1.1.1, The Site • § 10.2.2, Irreversible and Irretrievable Commitments of Material Resources	
• source(s) and rates of water consumption and adequacy of water supply sources;	• § 2.3.1, Hydrology • § 2.3.2, Water Use • § 3.3.1, Water Consumption • Figure 3.3-1, Water Balance Summary for Annual Average and Maximum Cases • Table 3.4-2, Heat Transfer to the Atmosphere and Released in Liquid Discharges • § 4.2.3, Water Use Impacts • § 5.2.1, Hydrologic Alterations and Plant Water Supply • § 5.2.2, Water-Use Impacts • § 5.3.1, Intake System	
• materials produced, including how they would be transported;	• § 3.5, Radioactive Waste Management System • § 3.6, Nonradioactive Waste Systems • § 3.7, Power Transmission System • Figure 3.7-1, Electrical One-line of the Interconnect Substation • Figure 3.7-2, Standard 230KV and 525KV Towers • Figure 3.7-3, Standard 230KV Tower • Figure 3.7-4, Standard 525 KV Tower • Figure 3.7-5, Tower Lines Installation – Tower Foundation • Figure 3.7-6, Tower Lines Installation – Leg Designs • § 3.8, Transportation of Radioactive Materials • § 4.1.1.1, The Site • § 4.4.1.6, Impacts to Air Quality • § 5.2.3, Water Quality Impacts • § 5.3.2, Discharge System • § 5.3.3, Heat-Discharge System • § 5.4, Radiological Impacts of Normal Operation • § 5.5, Environmental Impacts of Waste	
• onsite and offsite releases (air emissions, including carbon dioxide, odors; water	• § 3.5, Radioactive Waste Management System • § 3.6, Nonradioactive Waste Systems	

Solicitation Attachment B: Information to be Submitted to DOE in the Application	Applicable Environmental Report Chapter, Section, Subsection, Table,[1] and/or Figure	Notes
effluents; and solid and other liquid waste streams), including rate and duration of such substances as criteria pollutants, greenhouse gases, and hazardous substances;	• § 4.4.1.6, Impacts to Air Quality • § 5.2.3, Water Quality Impacts • § 5.3.2, Discharge System • § 5.3.3, Heat-Discharge System • § 5.4, Radiological Impacts of Normal Operation • § 5.5, Environmental Impacts of Waste • § 7.0, Environmental Impacts of Postulated Accidents Involving Radioactive Materials	
• onsite and offsite waste treatment and disposal;	• § 3.5, Radioactive Waste Management System • § 3.6, Nonradioactive Waste Systems • § 3.8, Transportation of Radioactive Materials • § 5.5, Environmental Impacts of Waste	• AP1000 DCD Tables and Figures are referenced throughout § 3.5 (but not included with ER) to describe operation of the various radwaste management systems. • *DCD Tables and Figures referenced are available upon request.*
• number of on-site workers; and	• § 4.4.2.1, Demography • Figure 4.4-2, WS Lee Nuclear Station Projected Staffing • § 5.8.1.1, Workers and Local Public • § 5.8.2.1, Demography	
• any mitigating measure(s) to be used or considered to be used to reduce environmental impacts.	• § 4.2.2.9, Construction Storm Water Control and Other Minimizing Actions • § 4.2.3.4, Measures to Mitigate Water Impacts • § 4.2.4.4, Measures to Mitigate Water Quality Impacts • § 4.6, Measures and Controls to Limit Adverse Impacts During Construction • § 5.5.3, Waste Minimization Plan • § 5.10, Measures and Controls to Limit Adverse Impacts During Operation • Chapter 6, Environmental Measurements and Monitoring Programs	
(b) present an overall schematic process diagram that identifies all inputs and outputs; and	•	• Diagram not currently available but will be submitted with ~~Part II of the~~ a 2009 application update.
(c) identify a spectrum of scenarios that could result	• § 2.7.3, Short-term Atmospheric Dispersion Estimates for	• AP1000 DCD and PRA

Solicitation Attachment B: Information to be Submitted to DOE in the Application	Applicable Environmental Report Chapter, Section, Subsection, Table,[1] and/or Figure	Notes
from process upsets, human error, and accidents/intentional destructive acts.	Accident Releases • Chapter 7, Environmental Impacts of Postulated Accidents Involving Radioactive Materials	are referenced throughout Chapter 7 (but not included with ER) to describe inputs and consequences. • *DCD and PRA referenced are available upon request.*
4. Project progression – provide information on:		
• construction milestones;	• § 1.1, The Proposed Project	
• expected operating cycle and any aspects of the project that could result in impacts that vary over time (e.g., with time of day or season of the year); and	• § 3.2, Reactor Power Conversion System • § 5.8.1.3, Roads • § 5.8.2.1, Demography • § 5.0, Environmental Impacts of Operation	
• expected project lifetime, including expansion of initial project at the proposed site and to other sites.	• § 1.1, The Proposed Project	• There is no planned expansion of initial project at the proposed site or to other sites
5. Status of other environmental and regulatory reviews, including permitting		
• if the proposed project would require review or permitting by another Federal agency or by a state, regional, or local agency, identify the required reviews and permits and tell the status of each; and	• § 1.2, Status of Reviews, Approvals, and Consultations • Appendix B, Agency Consultation Correspondence • In addition to the federal, state, and local authorizations listed in Table 1.2-3, Duke Energy Carolinas filed a Combined Operating License application with the NRC on December 12, 2007. That application is pending before the NRC.	
• if an environmental impact review (e.g. NEPA documentation, agency consultations) has been prepared (or is in the process of being prepared or is anticipated) for the proposed project (by another Federal agency or a state agency), provide a summary or copy of the review.	• Environmental Impact Statement to be prepared by NRC. *See* 73 Fed. Reg. 15,009 (Mar. 20, 2008), Duke Energy Carolina, LLC (Duke); William States Lee III Combined License Application; Notice of Intent to Prepare an Environmental Impact Statement and Conduct Scoping Process.	
6. Alternative sites or operating parameters:		
• identify any other sites considered for the proposed project, and state whether they remain options or give the reasons for not	• §9.3, Alternative Sites	

Solicitation Attachment B: Information to be Submitted to DOE in the Application	Applicable Environmental Report Chapter, Section, Subsection, Table,[1] and/or Figure	Notes
proposing them;		
• identify any alternative operating parameters for the proposed project (e.g., materials to be used, emissions controls or carbon sequestration) and state whether they remain options or give the reasons for not proposing them.	• § 9.4, Alternative Plant and Transmission Systems	
7. Post-operational requirements – to the extent possible:		
• describe any reasonably foreseeable future requirements, including site close-out and site restoration; and	• The NRC does not require COL applicants to submit decommissioning plans prior to plant construction and operation. Section 5.9, Decommissioning, discusses decommissioning funding.	
• describe any related decontamination and decommissioning activities, including associated waste streams.	• The NRC does not require COL applicants to submit decommissioning plans prior to plant construction and operation. Section 5.9, Decommissioning, discusses decommissioning funding. • § 3.8.2, Transportation of Irradiated Fuel	
8. Other actions in the project area: • describe current or other possible future industrial or other facilities and activities (for example, coal-fired electrical plants or biomass facilities), including those by other companies, in the same geographic area(s).	• § 2.3.3.3.3, Other Potential Pollution Sources • § 2.8, Related Federal Project Activities • § 8.3.2, Existing and Planned Generating Capability	

WLS/II/C/1 Engineering and Construction Plans

C.II.1 Engineering and Construction Plans: List the engineering and design contractor(s), construction contractor(s), and equipment supplier(s) to be involved in the project, their major activity and cost milestones, and performance guarantees (e.g., bonds, liquidated damages provisions and equipment warranties to be provided). Provide their experience and qualifications as they relate to the proposed project. Include construction schedules for the project.

Response:

Consortium

Duke Energy Carolinas has been negotiating the Engineering Procurement Construction ("EPC") Contract with a consortium of Westinghouse Electric Company LLC ("Westinghouse") and Shaw Nuclear Services, Inc. ("Shaw") (together, "WEC/Shaw" or the "Consortium"). A Term Sheet for the draft EPC Contract is included as Appendix 18, which contains information on the proposed scope of work, completion milestones, performance guarantees, and liquidated damages provisions expected to be included in the EPC Contract, as well as other key terms and conditions expected to be included in the agreement. Duke Energy Carolinas continues to evaluate the right timing to sign an EPC agreement for the Lee Nuclear Station. Plans are to deploy to the site in early 2012 for site development and construction activities. This date allows for a COL to be in hand before beginning large construction expenditures.

Pursuant to the terms of the draft EPC Contract, the Consortium will furnish two 3415 – MWt (1117 – MWe) AP1000 Nuclear Power Plants for Duke Energy Carolinas LLC. The Consortium is responsible for Engineering, Procurement, Construction, Commissioning and Project Management Services. Westinghouse and Shaw have a defined division of responsibility for executing the detailed engineering and design of the various systems, structures and components that makeup the power plant. Westinghouse is utilizing Toshiba in performing design of turbine plant systems, structures and components including the Turbine Building. Please refer to Appendices C-1 through C-5 beginning on page C-53 for a more detailed discussion of the scope of work and division of responsibilities.

A core project management team will be developed to manage the project. This team will consist of key personnel from Westinghouse and Shaw. The team will be led by a Consortium Project Director who will report to Shaw senior management and to Duke Energy Carolinas Project management.

Duke Energy Carolinas

Duke Energy Carolinas will perform reviews and oversight of all activities including: design, procurement, construction, inspection and testing activities.

Duke Energy Carolinas scope also includes: demolishing existing foundations for initial site prep; re-establishing the rail line from the site boundary to the Norfolk Southern main line at Gaffney, SC; constructing transmission system ties, upgrades and the switchyard; and, tying the site to municipal water and sewer services. A more detailed definition of the Owner's scope is

shown in Appendix C-3, "Scope of Work/Supply and Division of Responsibilities" contained herein beginning at page C-59 as represented by an "O".

Westinghouse (WEC)

Westinghouse will be responsible for furnishing detailed design of the Standard Plant key Nuclear Steam Supply System (NSSS) equipment (Steam Generator, Reactor, Pressurizer, etc.). Westinghouse will be performing detailed design of thirty-one NSSS systems and two buildings. These systems include; Component Cooling Water System, Containment System, Main & Startup Feedwater System, Main Steam System, Passive Containment Cooling System, Passive Core Cooling System, Reactor Coolant System, Steam Generator System, Reactor System, and Service Water System. The aforementioned buildings will be the Containment/Shield Building and the Auxiliary building. Please refer to Appendices C-1 through C-5 beginning on page C-53 for more detailed information on WEC scope.

Shaw

The Shaw scope includes Balance of Plant (BOP) systems and structures, site-specific design, procurement of many of the plant components, construction, module fabrication, piping fabrication and commissioning support.

Shaw Nuclear will be performing detailed design of forty-seven Standard Plant systems, nine Site Specific systems and three buildings. These are the Radwaste Building, Diesel Generator Building and the Annex Building. Site specific temporary and permanent site buildings are to be included as well. Please refer to Appendices C-1 through C-5 beginning on page C-53 for more detailed information on Shaw scope.

Toshiba

Toshiba will be performing the design of nine systems and the Turbine Building. Please refer to Appendices C-1 through C-5 beginning on page C-53 for more detailed information on Toshiba scope.

Construction

Shaw Nuclear is responsible for performing all construction either directly or indirectly through subcontractors. The Construction Plan section of the report provides further details on the construction scope and approach.

Procurement

The procurement of all equipment, commodities and modules for the two AP1000s will be performed by Westinghouse, Shaw Nuclear and Toshiba. The scope of supply is defined in the commodity code matrix in Appendix C-5 at page C-86. Typical major vendors are shown for various components in Appendix C-2 at page C-56.

Warranty

Equipment shall be free from defects in design, workmanship and materials. Warranty period starts at delivery to site or original guaranteed substantial completion date. Additional

expectations of warranty terms and conditions that Duke Energy Carolinas finds acceptable are presented in the Summary EPC Terms sheet included in section WLS/II/D/4.

Schedule

The overall project construction schedule is projected to start in Jan. 2012 and substantial completion will be achieved for Unit 1 in July 2018 and Unit 2 July 2019. The construction schedule which includes the site specific schedule can be found in Appendix C-6 at page C-111. This schedule is comprised of key milestones that follow the process of plant construction from site preparation through start-up testing.

NRC Construction Inspection Program and the NRC ITAAC process

The NRC is developing a new construction inspection program (CIP) for plants licensed in accordance with the requirements of 10 CFR Part 52. The introduction of "inspections, tests, analyses, and acceptance criteria" (ITAAC) into the Part 52 licensing process creates a design specific pre-approved set of performance standards that the licensee must meet and that the Commission must find have been met, before the licensee can load fuel and operate the plant.

The scope of the NRC CIP is comprehensive but continues to rely on a sample-based inspection program. The focus of the 10 CFR Part 52 CIP is to select a sample of inspection targets to determine if there is a reasonable basis for concluding that the ITAAC have been successfully completed. NRC will focus its inspections on activities contributing to ITAAC determined to have higher inspection value to establish a baseline inspection program for the CIP. However, additional inspections of quality assurance verification activities and operational programs will also be needed to provide assurance that these activities and programs are in compliance with applicable Nuclear Regulatory Commission (NRC) requirements. The CIP is being developed to address the specific needs associated with verifying the successful completion of the ITAAC as well as to incorporate lessons learned from previous NRC construction inspections. As such, the CIP is described in the following three NRC inspection manual chapters;

- IMC 2503, Inspections of Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC)
- IMC 2504, Non-ITAAC Inspections
- IMC 2507, Vendor Inspections

Inspections associated with IMC-2503, IMC-2504, and IMC-2507 will be conducted in parallel beginning at placement of contracts for major component and module manufacturing. After construction and subsequent NRC inspections have begun, a periodic assessment of licensee performance will be conducted. If an inspection area is identified requiring additional NRC oversight during the assessment process, inspection resources will be added as necessary to provide support the conclusion that the ITAAC have been successfully completed. This assessment process, and the criteria for expanding the sample size, will be further described in IMC-2505, “Periodic Assessment of Licensee Performance during Construction.”

DEC and the Consortium will provide schedule information to the NRC, including plans to perform certain ITAAC activities in vendor shops, so the staff can plan their inspection and ITAAC verification resources accordingly. The NRC has repeatedly stated in public workshops

that the NRC will not establish any hold points related to its baseline CIP. The NRC Construction Inspection Program (NRC/CIP) intends to enhance its ability to perform its regulatory functions with respect to construction inspection oversight activities by planning and scheduling NRC inspections in a timely, effective, and efficient manner. To accomplish this goal, NRC/CIP needs access to construction scheduling information maintained by COL applicants and licensees for inspection planning and scheduling purposes.
There will be a licensee project scheduler that provides NRC with a schedule for ITAAC-related activities on site and off site (in vendor shops) that:

(1) integrates and relates activities performed by participants in support of project milestones and deliverables;
(2) embodies a critical path, resource loaded network that defines activity interfaces and dependencies; and,
(3) provides the basis for activities and logic in detailed execution schedules.

Additional information will be made available as the NRC Scheduler determines a need and makes a request through the Project Scheduling Point of Contact. As schedules are updated, the licensee scheduler will assure that updated schedules are made available to the NRC.

Vendor manufacturing or fabrication of long lead components may commence well before the issuance of the COL; therefore, schedule coordination for inspection activities will likely be required significantly in advance of license receipt. The Consortium has begun developing a procedure which establishes the process of how Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) for the certified design are to be executed and documented. This process will result in appropriate identification of ITAAC activities in the integrated schedule.

INPO Accreditation Process

The process for obtaining INPO initial accreditation of training programs is described in a new INPO document, 'The Process for Initial Accreditation of Training in the Nuclear Power Industry' ACAD 08-001 (preliminary). This document outlines the general steps of obtaining accreditation.

The steps to obtain accreditation from a high level perspective are:

- Prepare and submit an Initial Accreditation Package
- INPO review of Initial Accreditation Package
- Submittal by INPO of an Initial Accreditation Package Review Report to the National Nuclear Accrediting Board for consideration for initial accreditation
- Formal Accrediting Board attended by Utility Executives
- Initial accreditation granted by the National Nuclear Accrediting board
- Formation of a new National Academy Nuclear Training Branch
- Accreditation renewal of all accredited training programs prior to fuel load

Much of the accreditation material will be site specific. However, there are three areas that will be shared by the AP1000 utilities. Those areas are: job performance analysis results, program descriptions and documentation, higher cognitive objectives, training materials and exam banks.

The initial accreditation for the Lee Nuclear Station is planned for late 2013. This accreditation will be based on the program descriptions, training infrastructure plans and schedules, results of any training completed to date, and selected training materials. The systematic approach to training is described using the acronym ADDIE which stands for analysis, design, development, implementation and evaluation. The initial accreditation will verify all phases of ADDIE are well-developed and/or appropriately planned for development, and meet National Academy for Nuclear Training objectives and criteria.

Accreditation renewal is planned for mid 2016. At this time all elements of the ADDIE will again be reviewed to verify training programs remain robust and are producing desired results prior to initial fuel load and plant startup.

INPO Review of New Plant Deployment

INPO has reviewed new nuclear construction projects worldwide in an effort to capture real time operating experience. By reviewing the construction projects, industry problems and good practices have been identified. In keeping with one of the major INPO goals to develop and disseminate operating experience to the industry, several construction oriented documents have been produced. A selection is provided below:

- INPO/UTLITY BENCHMARKING FOR NEW PLANT DEPLOYMENT, June 2007, INPO 07-003
- INPO/UTILITY BENCHMARKING FOR NEW PLANT DEPLOYMENT, December 2007, Addendum to INPO 07-003
- INPO/UTILITY BENCHMARKING FOR NEW PLANT CONSTRUCTION, Visit to Shimane 3, Tomari 3, and Shin-Kori 1 & 2 Nuclear Power Plants, June 2008, INPO 08-002
- Nuclear Exchange NX-1067, *Browns Ferry Nuclear Plant Unit 1 Restart, Operational Readiness Lessons Learned*.
- Nuclear Exchange NX-1070, *Browns Ferry Nuclear Plant Unit 1 Restart, Construction Lessons Learned*.

Duke Energy Carolinas reviews the Operating Experience developed by INPO and incorporates the findings as appropriate into our plans for the Lee Nuclear Station. Additionally, Duke Energy Carolinas is working with INPO to more formally define a process for capturing and dispositioning construction experience, similar to the process for operating experience for the existing nuclear units.

Experience and Qualifications

Shaw Prior Experience

The Shaw Group Inc., a Fortune 500 company, is a major engineering, construction and manufacturing company with annual revenues of more than $5 billion. Shaw's Nuclear Division has provided services in nuclear power development to more than 100 nuclear power plants

worldwide including 95% of the operating plants in the U.S. Shaw's nuclear maintenance contracts cover approximately 40% of the operating units in the U.S. Shaw's power uprates have added more than 2000 MWe to the U.S. grid.

- Shaw is rated number one in power design from among the top 500 design firms by Engineering News Record (ENR) in their April 2008 edition.
- Shaw purchased Stone & Webster in 2000, which designed and constructed 18 commercial nuclear plants in the U.S. and developed the first NRC-approved Nuclear Quality Assurance Program.
- Shaw builds, modifies and maintains all types of large power and process facilities in addition to nuclear plants.

Selected Shaw Recent Major Nuclear Projects –

- Westinghouse/Shaw Consortium was selected to supply four new reactors for the Haiyang project in Shandong Province and the Sanmen project in Zhejiang Province, PRC. Status: Ongoing
- National Enrichment Facility, Eunice, New Mexico - engineering and design. Status: Ongoing
- Lungmen Units 1&2, Taiwan - a two-unit (1350 MWe each) EABWR nuclear plant - engineering, design and procurement support. Status: Complete
- Mixed Oxide Fuel Fabrication Project, Savannah River, South Carolina. EPC - construction began 2007. Status: Ongoing
- Browns Ferry Unit 1, Restart, Tennessee. Recipient of the ENR Energy Construction Project of the Year Award. Status: Construction- complete
- Connecticut Yankee and Maine Yankee Decommissioning. Status: Construction – complete
- Maintenance and Construction Services for 41 U.S. nuclear units plus 28 industrial and process non-nuclear facilities. Status: Ongoing

Selected Shaw Recent Major Non-Nuclear Power Projects –

- Marshall Flue Gas Desulfurization Retrofit of four units totaling 2160 MWe, Terrell, North Carolina - Duke Power. Status: Completed 2007.
- Astoria Energy, New York - a 540 MW combined cycle dual-fuel (natural gas and fuel oil) turbine power plant EPC. Status: Completed May 2006.
- APEX Unit Number 1 Generating Station, Mirant Corporation Location, engineering, design, procurement, construction and startup for this 550 MW, combined-cycle power plant located in Apex Industrial Park, 20 miles north of Las Vegas, Nevada. Status: Completed in May 2003.
- Centralia Power Plant in Lewis County, Washington - PacifiCorp. Engineering, design and procurement, and construction of a flue gas desulfurization system for two units totaling 340 MW. Status: Completed 2001/2002.
- Currant Creek, two 525 MWe combined cycle units for PacifiCorp in Mona, Utah. Engineering, procurement and construction. Status: Completed 2005/2006.

The above projects demonstrate Shaw's capability to perform large power projects on schedule and on budget.

Westinghouse Experience

Westinghouse has designed, developed, and manufactured nuclear Steam Supply Systems since the 1950s, beginning with the world's first large central station nuclear plant (Shippingport), which produced power from 1957. PWRs represent 76 percent of all Light Water Reactors around the world, and 67 percent of the PWRs are based on Westinghouse PWR technology.

Westinghouse has designed and delivered the reactor technology and fuel systems for a combined electrical generating capacity in excess of 90,000 MW. The company's manufacturing facilities include the commercial nuclear fuel fabrication facility at Columbia, South Carolina; and nuclear component manufacturing facilities at Blairsville, Pennsylvania; and Newington, New Hampshire.

Westinghouse has been involved with advanced light water reactor plant design efforts for over fifteen years. Included is the development of the advanced, passive pressurized water reactors known as the AP600 and AP1000.

Westinghouse has substantial experience, knowledge, and capability to design, manufacture and furnish technical assistance for the installation, startup and service of nuclear power plants around the world.

Westinghouse has been part of a very successful nuclear program in South Korea. One of the recent reactor projects in Korea are the Yonggwang 3 & 4 units. Commercial operations began in March 1995 and January 1996, respectively. These are Combustion Engineering (which were purchased by WEC in 2000) System 80-type PWRs producing 950 MWe each from a 177 fuel assembly core. The design features two primary system loops with two reactor coolant pumps and one steam generator per loop, the same configuration as the AP1000. Westinghouse (or its predecessor Combustion Engineering) was the Prime lead for the design, major equipment manufacturing and technology transfer for this 2 unit plant. The major equipment which Westinghouse/CE manufactured includes the Reactor Vessel Internals, Control Rod Drive Mechanisms, Reactor Coolant Pumps and Motors, some Nuclear Steam Supply Systems, and Instrumentation & Control NSSS Safety and Non-Safety Systems. The Yonggwang 3 & 4 units were completed on schedule and within budget.

Westinghouse/CE also contributed a shared design for the Yonggwang 5 & 6 and the Ulchin 3 & 4 plants. All of the equipment listed in the paragraph above was also provided for these (4) units by Westinghouse/CE. The equipment was delivered on schedule and within the “as sold” budget. These (4) units are currently operational.

Operational data for all (6) of the units mentioned above is available at
http://www.khnp.co.kr/khnp2/en/030002 .

There are also several units which are currently under construction in Korea which are also based on the System 80 PWR design. Westinghouse is the Prime equipment supplier for the units at Shin Kori 1 & 2 and the units at Shin Wolsung 1 & 2. These projects are currently on time and on budget.

There are currently two units which are under construction at Shin Kori 3 & 4 which will be the first of the APR-1400 design series, a design evolution of the System 80+. Westinghouse is providing all of the equipment listed above plus the Main Control Room, which has similar I&C technology as the AP1000. Currently this project is on schedule and on budget.

The following table provides a listing of major units that have been worked on in the last 13 years.

Plant	Engr Lead	Equip Supply Lead	COD Date	Constr. Schedule (months)	On Schedule	Within Budget
Yonggwang 3 & 4	WEC	WEC - *	1995, 1996	64	X	X
Ulchin 3 & 4	WEC/ Doosan	WEC - *	1998, 1999	62	X	X
Yonggwang 5 & 6	WEC/ Doosan	WEC - *	2002	58	X	X
Ulchin 5 & 6	Doosan	WEC - *	2004, 2005	56	X	X
Shin Kori 1 & 2	Doosan	WEC - *		54	X	X
Shin Kori 3 & 4	Doosan	WEC - **		TBD	X	X
Shin Wolsung 1 & 2	Doosan	WEC - *		TBD	X	X

Equipment Lists:

* - RCP, RCP Motor, CRDMs, RVI, some NSSS, I&C NSSS Safety & Non-Safety Systems

** - all of the above plus Main Control Room with similar I&C technology as AP1000

Westinghouse's acted as the Prime Contractor, all major engineering documentation was delivered on time, all major manufacturing milestones were achieved on time, and the projects were completed within budget, for the following replacement RSG (Reactor Steam Generator) projects.

Plant	Component	# of loops	Prime	Fab	Engr	Delivery (days early)	Operational Performance			
Sequoyah 2	RSG	4	WEC	Doosan	WEC	6	Moisture Carryover (MCO)		Steam Pressure	
							Max Allowed	0.10%	Min. Required	872.0 psi
							Actual	0.01%	Actual	881.8 psi
Watts Bar 1	RSG	4	WEC	Doosan	WEC	16	Moisture Carryover (MCO)		Steam Pressure	
							Max Allowed	0.10%	Min. Required	1020.0 psi
							Actual	0.00%	Actual	1025.9 psi

CONSTRUCTION PLAN:

Purpose

The Lee Nuclear Station Construction Execution Plan ("CEP") summarized herein, defines the preliminary construction philosophy and approach for constructing the W. S. Lee III Nuclear Station. The CEP is a Lee Nuclear Station site specific document being developed in accordance with the constructor's, Shaw, Nuclear Construction and Startup Procedure ("NCSP") 2-2 "Construction Execution Plan". The CEP is a living document that will continue to evolve as plans are refined and lessons learned are incorporated.

The CEP establishes the WEC/Shaw construction philosophy and planned approach such that work execution will be completed in accordance with the requirements of project contract documents and quality requirements. The CEP defines the scope of construction work, the project management team's organization, and how the project will be managed –including:

- Construction management organization and controls
- Construction sequence and schedule
- Construction execution strategy
- Planning assumptions
- Project controls
- Construction Quality Program
- Compliance with the Environmental, Safety and Health Program (including: Safety Conscious Work Environment)
- Subcontractor award and controls process
- Methods of project communications
- Responsibilities for construction completion and turnover

The CEP also identifies or references the applicable implementing procedures for execution of the work.

SITE OVERVIEW

The planned W. S. Lee III Nuclear Station site is a 1,900 acre site located in Cherokee County near the town of Gaffney, South Carolina. This property is the location of the former Cherokee Nuclear Station. Construction at the Site was initiated in the mid-1970's and was halted in the early 1980's with the former units 1 and 2 excavations completed to foundation grade (sound rock) and the former unit 3 area partially excavated to top of rock. Approximately 40% of the existing unit 1 reactor building and adjacent structures, including the reactor building base mat and lower structural walls, was completed prior to project termination. Duke Energy Carolinas has demolished the existing Cherokee structures leaving only the Unit 1 Nuclear Island concrete base mat and Turbine Building base mat. As planned, Lee Nuclear Station will consist of twin AP1000 power plants. The new AP1000 Unit 1 will occupy the former Unit 1 footprint and is planned to overlie portions of the existing structure and foundation. The new AP1000 Unit 2 will occupy the former Unit 3 footprint area, see **Appendix 4 [File name: 13 Appendix 4 WLS/II/C/1.pdf]**. Both plants under this configuration are located within the existing

excavation and some additional excavation will be required. A major filling operation is required to backfill the existing excavation to develop a level plant grade at approximate elevation of 590 feet.

This site has been classified as a "hard rock" site which means that the Nuclear Island basemat will be founded on rock and although the property is located adjacent to the Broad River, the site must be considered as "land locked" due to the un-navigable nature of the Broad River. All material and equipment deliveries for the planned Lee Nuclear Station will have to be made by road or rail.

SHAW CONSTRUCTION ORGANIZATION

The Shaw Construction Management organization has overall responsibility for coordination, planning, and execution of the project for the construction and startup of the AP1000 project at Lee Nuclear Station. This includes scheduling and furnishing all labor, materials, and equipment to provide for the preparation of the site for construction of the AP 1000 Lee Nuclear Station. The construction management organization relies on project support groups which contribute various specialized services and expertise. This is accomplished through a construction organization concept that is representative of all aspects of the construction process providing oversight and management of the construction teams, subcontractors, and vendors performing the work.

The construction management organization is structured on an area concept separated into three areas of the plant (Nuclear Island, Balance of Plant, and Yard).

Organizing the management of these construction activities in three areas increases focus and enhances the following:

- Integration of critical path activities
- Path of work that can accommodate other subcontracts, as needed
- Risk mitigation for cost, schedule, quality, and safety
- Management between construction installation and equipment delivery schedule
- Communication to accomplish required milestones
- Management control of nuclear safety related and non-nuclear safety related material and equipment
- Control of the nuclear safety related construction activities
- Oversight of non-nuclear safety related construction activities
- Organizational "command and control" in the transition phases of construction completion to system and room/area turnover.
- Integration with startup and operations

Roles and Responsibilities

The Construction and Startup Organization is described in detail in NCSP 2-1 "Construction Organization and Responsibilities". The roles and responsibilities of the key members of the construction and startup organization generally include:

- SITE MANAGER: Responsibilities include, but are not limited to, the following:
  - Performing oversight of all site activities, including subcontractors and suppliers.
  - Providing management direction and support to the Employee Concerns Manager, Deputy Site Managers, Construction Manager, and EH&S Manager.
  - Performing as the principle interface with the customer's site organization including chairing customer progress review meetings.
  - Establishing systems for staff access to the site, staffing the site office, and implementation of required training.
  - Providing project progress reports and updates on scope, schedule, cost, quality, and risk management to nuclear construction management and customer including critical path items.
  - Ensuring site punch list items are closed out.
  - Ensuring a robust EH&S Plan is in place and implemented.
  - Ensuring that all site construction work activities are in compliance with NCSP 2-12, "Construction Quality Program," Construction Execution Plan, EH&S Plan, and NCSPs while meeting cost and schedule expectations.
  - Coordinating with Quality Assurance and Quality Control for implementation of required independent inspection activities under SWSQAP-1-74A, Shaw Stone & Webster Standard Nuclear Quality Assurance Program.

- SUBCONTRACT/PROCUREMENT MANAGER The Subcontract/Procurement Manager has overall responsibility for construction contract administration in accordance with NCSP 2-11 "Construction Subcontract Administration" and Procurement related activities in accordance with WPP 6.1 and WPP 9.0 "Worldwide Procurement Procedures".

- PURCHASING MANAGER (FIELD PROCUREMENT MANAGER) Responsibilities include, but are not limited to, the following:
  - Providing direction and support to the Buyers and Expeditors
  - Implementing the requirements of the field office procurement including processing requisitions, bid packages, and supplier qualifications; bid evaluation; Field Purchase Order (FPO) placement; and expediting.

- SERVICES MANAGER Responsibilities include, but are not limited to, the following:
  - Administration of project services in support of the construction site. Providing direction and support to the Information Technology (IT) support personnel, Accounting Manager, Human Resource Manager, Payroll Manager, Workforce Development Manager, Training/Mobilization Manager, and Administration Manager.

- PROJECT CONTROLS MANAGER Responsibilities include, but are not limited to the following:
  - Generating cost estimates for project scope activities
  - Site construction planning and scheduling for cost analysis and monitoring
  - Preparing reports on schedule and cost performance
  - Coordinating with the procurement staff to ensure adequate integration of

procurement schedules with construction schedules resulting in timely equipment delivery and subcontract awards
  - Coordinating with Subcontract Administration to provide inputs supporting project status reports, such as spending forecasts and accruals
  - Primavera will be used as the scheduling tool, and JD Edwards (ShawTime, ShawVision, and ShawTrac), along with supporting MS-Excel spreadsheet files, for the cost tools on the project

- STARTUP AND TEST MANAGER The Startup and Test Manager has overall responsibility for management of construction site startup activities in accordance with Section 4 of the Nuclear Construction and Startup Procedures program. The organization and responsibilities of the Startup group are described in these NCSP.
  - The Startup and Test Manager provides direction and support to the Preliminary Test Manager, Pre-Operational Test Manager, and Startup and Test Technicians.

- ENGINEERING MANAGER The Engineering Manager supervises a multi-disciplined organization that provides dedicated construction engineering, design engineering, and document control support services to the Construction Managers. Responsibilities include, but are not limited to, the following:
  - Providing direction and support to the Change Case Manager, Field Engineering Manager, Design Engineering Manager, and Document Control Manager
  - Ensuring the competent and expedient production of all field engineering and design work with emphasis on economy, functional adequacy and meeting budgets
  - Managing the engineering work processes and interfaces between engineering and other disciplines assigned to the project
  - Authorizing the Design Engineering personnel to process and approve changes to design documents as required on site

- DESIGN ENGINEERING MANAGER The Design Engineering Manager provides direction and support to design engineering personnel. Responsibilities include, but are not limited to, the following:
  - Assigning appropriate design engineering personnel to the project and staffs the discipline to support project requirements
  - Interfacing with the Field Engineering Manager
  - Ensuring specific registration requirements of engineering personnel and assures they are met before assigning personnel to work requiring professional registration.
  - Ensuring that work produced by the discipline complies with company and project-specific procedures, standards and sound industry practice by monitoring and auditing work processes and deliverables
  - Reading and understanding project contractual, legal and jurisdictional code requirements and ensures that discipline personnel assigned to projects understand and comply with those requirements

- FIELD ENGINEERING MANAGER Responsibilities include, but are not limited to, the

following:

- Providing direction and support to Field Engineers.
- Administering field engineering activities in support of the assigned nuclear construction project. These responsibilities include, but are not limited to, the following:
- Interfacing with the Design Engineering Manager.
- Providing field/office engineering support.
- Providing technical support for special handling and rigging.
- Identifying discipline training needs and provides necessary training.
- Supporting document control/records management.
- Maintaining configuration management program.
- Ensuring ASME Control Center operations.

- CONSTRUCTION MANAGER The Construction Manager is the senior manager of construction on site. Responsibilities include, but are not limited to, the following:
  - Providing management direction and support to Deputy Construction Managers, discipline Chief Superintendents, Labor Relations Manager, Welding Manager, and ASME Coordinators.
  - Providing oversight of all construction related activities on site.
  - Establishing a work culture that fosters safety, security, and quality, in which both direct report and project staff members will achieve the overall objectives and successful performance within budget and schedule.
  - Overall compliance with the Construction Quality Program.
  - Related duties as described in the Construction Execution Plan and applicable Nuclear Construction and Startup Procedures.
  - Providing required staffing for execution of construction activities and ensuring implementation of required training.
  - Site Development, Handling and Installation of On-Site Modules, Turbine Island, Nuclear Island, and Miscellaneous Buildings.
  - Providing oversight of construction activities to discipline Superintendents and Supervisors within defined construction areas.
  - Ensuring construction activities are accomplished in accordance with the Construction Execution Plan, Quality Assurance Plan, EH&S Plan and NCSPs while meeting cost and schedule expectations.

- CHIEF SUPERINTENDENTS The Chief Superintendents in the disciplines of Rigging, Civil/Structural, Electrical/I&C, and Mechanical have responsibilities that include, but are not limited to, the following:
  - Providing direction and support to the discipline Construction Assistants, Superintendents/Supervisors, and craft personnel in the performance of site construction activities in assigned areas.
  - Supervising, monitoring, and coordinating work, and ensuring that the work meets the requirements of the Construction Execution plan, specifications, and good work practice standards.
  - Managing subcontractors' performance to the terms and conditions of their subcontracts.

- Ensuring quality and safety oversight while meeting cost and schedule expectations.
- Leading work coordination and chairing progress review meetings.

- CONSTRUCTION QUALITY PROGRAM (CQP) MANAGER The (CQP) is responsible for administering the construction quality program in accordance with NCSP 2-12 "Construction Quality Program," including Construction coordination and support for Site Quality Control (QC) activities.

- MANAGER, QUALITY ASSURANCE Responsibilities of the Manger, Quality Assurance include:
  - Implementing requirements of the Shaw Stone & Webster Standard Nuclear Quality Assurance Program (SWSQAP 1-74A) and Nuclear Construction Quality Program.
  - Oversight and support for site quality control activities
  - Assuring Construction Quality personnel qualifications and staffing in support of nuclear project execution requirements.
  - Maintaining the corporate ASME and National Board certifications for shop and field activities.

- ENVIRONMENTAL HEALTH AND SAFETY (EH&S) MANAGER The EH&S Manager is responsible for administering programs to provide a safe working environment for employees and to ensure compliance with applicable safety, health, and environmental regulations in accordance with the Shaw Group Environmental, Health, and Safety Program.

- EMPLOYEE CONCERNS MANAGER Provides direction and support to the Employee Concerns Evaluators. Responsibilities include, but are not limited to, the following:
  - Leading and managing the overall effective administration and operation of the Employee Concerns Program (ECP) at the job site in support of Shaw's philosophy and the NRC requirement to maintain a Safety Conscious Work Environment in accordance with NCSP 2-17.
  - Working with concern submitters, company executive officers, managers, subject matter experts, Project Concerns Evaluators, attorneys, and others as necessary to ensure concerns are identified, action plans to investigate concerns are developed and implemented, and recommendations to resolve concerns are developed and executed in a timely manner
  - Managing the evaluation and resolution to employee concerns pertaining to safety, nuclear quality, harassment, intimidation, retaliation or discrimination, and make sound decisions based on all the facts
  - Consulting with the Site Manager in matters of regulatory significance raised through the Employee Concerns Program and closure of investigations and implementation of action required to resolve employee concerns
  - Initiating appropriate and effective program communication to ensure all employees and contractors are aware of the Employee Concerns Program.

CONSTRUCTION SCOPE

The construction scope includes site development, installation of construction facilities, constructing two AP1000 Standard Plants (Unit 1 and Unit 2), installation of all site-specific systems and structures, and erection of site permanent support buildings.

AP1000 STANDARD PLANT STRUCTURES SCOPE

Each AP1000 Standard Plant Unit consists of five principal building structures; the nuclear island, the turbine building, the annex building, the diesel generator building, and the radwaste building. Each of these building structures is constructed on individual basemats. The nuclear island consists of the containment building, the shield building, and the auxiliary building, all of which are constructed on a common basemat. The AP1000 standard plant also contains a Standard Yard area where support equipment and components are located immediately outside the buildings.

CONTAINMENT BUILDING

The containment building is the containment vessel and all structures contained within the containment vessel. The containment building is an integral part of the overall containment system with the functions of containing the release of airborne radioactivity following postulated design basis accidents and providing shielding for the reactor core and the reactor coolant system during normal operations.

SHIELD BUILDING

The shield building is the structure and annulus area that surrounds the containment vessel. During normal operation the shield building, in conjunction with the internal structures of the containment building, provides the required shielding for the reactor coolant system and all the other radioactive systems and components housed in the containment. The shield building is also an integral part of the passive containment cooling system, housing air baffles in the upper annulus area. The shield building also protects the containment from external events of tornadoes and tornado produced missiles.

AUXILIARY BUILDING

The primary function of the auxiliary building is to provide protection and separation for the safety-related seismic Category I mechanical and electrical equipment located outside the containment building. The most significant equipment, systems contained within the auxiliary building are the main control room, I&C systems, electrical power systems, fuel handling area, mechanical equipment areas, containment penetration areas, and the main steam and feedwater valve compartments.

TURBINE BUILDING

The turbine building houses the main turbine, generator, and associated fluid and electrical systems. It provides weather protection for the laydown and maintenance of major turbine/generator components. The turbine building also houses the makeup water purification system. No safety-related equipment is located in the turbine building.

ANNEX BUILDING

The annex building provides the main personnel entrance to the power generation complex. The building includes the health physics facilities as well as personnel support facilities such as locker rooms. The annex building also contains the non-1E AC and DC electric power systems, the ancillary diesel generators and their fuel supply, other electrical equipment, and various heating, ventilating and air conditioning systems. No safety-related equipment is located in the annex building.

DIESEL GENERATOR BUILDING

The diesel generator building houses two identical diesel generators separated by a fire wall. These generators provide backup power for plant operation in the event of disruption of normal power sources. No safety-related equipment is located in the diesel generator building.

RADWASTE BUILDING

The radwaste building includes facilities for segregated storage of various categories of waste prior to processing, for processing by mobile systems, and for storing processed waste in shipping and disposal containers. No safety-related equipment is located in the radwaste building.

STANDARD YARD

The standard yard is the area immediately surrounding the standard plant structures. Major support equipment located in the standard yard is the unit auxiliary transformers, reserve auxiliary transformers, main step-up transformers, diesel fuel oil storage tanks, demineralized water storage tanks, condensate storage tanks, fire water storage tanks, ancillary water storage tank, and the service water system cooling towers.

STANDARD PLANT COMMODITIES FOR TWO UNITS

MAJOR COMMODITIES	QUANTITIES
Concrete	177,628 CY
Concrete Reinforcing	24,628 TN
Structural Steel	16,770 TN
Large Bore Pipe	230,082 LF
Large Bore hangers	20,804 EA
Small Bore Pipe	233,068 LF
Cable	3,645,018 LF
Cable Tray	60,574 LF

SITE-SPECIFIC SCOPE

Site-specific work is divided into four categories. Those categories are Temporary Buildings, Permanent Buildings and Structures, Site-specific Yard, and Site-specific Systems.

TEMPORARY BUILDINGS

The task of constructing two AP1000 nuclear units at the Lee Nuclear Station site will require that certain temporary structures and facilities be installed to support the construction activities. These facilities will include office space for Project Management and administrative staff, service facilities for the construction staff, fabrication shops, module assembly areas, roads, and parking areas. These temporary structures and facilities will be required only while the two AP1000 nuclear units are under construction and will no longer be utilized once the construction effort is complete.

LEE NUCLEAR STATION TEMPORARY BUILDINGS

FACILITY DESCRIPTION	APPROXIMATE SIZE
Craft Change/Lunch Facility #1	70’ x 70’ (4,900 sq. ft.)
Craft Change/Lunch Facility #2	70’ x 70’ (4,900 sq. ft.)
Craft Change/Lunch Facility #3	70’ x 70’ (4,900 sq. ft.)
Craft Change/Lunch Facility #4	70’ x 70’ (4,900 sq. ft.)
Craft Change/Lunch Facility #5	70’ x 70’ (4,900 sq. ft.)
Craft Change/Lunch Facility #6	70’ x 70’ (4,900 sq. ft.)
Craft Change/Lunch Facility #7	70’ x 70’ (4,900 sq. ft.)
Craft Toilet Trailers	20’ x 60’ (1200 sq. ft.)
Safety Facility/Office	70’ x 100’ (7,000 sq. ft.)
Ice House (drinking water)	24’ x 24’ (576 sq. ft.)
Time Alleys	10’ x 60’ (600 sq. ft.)
Repair Shop (truck and equipment)	35’ x 50’ (1,750 sq. ft.)
Outer Lay-down Area Toilet	12’ x 50’ (600 sq. ft.)
Rigging Loft/Tool Room (2 each)	40’ x 100’ (4,000 sq. ft. each)
Air Compressor Building	24’ x 30’ (720 sq. ft.)
Truck Wash Facility	12’ x 35’ (420 sq. ft.)
Electrical Shop/I & C Facility	100’ x 100’ (10,000 sq. ft.)
Bulk Welding Gas Storage Facility	80’ x 80’ Fenced Area (6,400 sq. ft.)
Bottled Gas Storage Facility	30’ x 40’ (1,200 sq. ft.)
Batch Plant Area w/ Aggregate Storage	350’ x 350’ (122,500 sq. ft.)
Testing Lab (concrete, rebar, soils)	50’ x 50’ (2,500 sq. ft.)
Portable Print Stations (12 each)	10’ x 10’ (100 sq. ft. each)
Containment Ring Fabrication Pad – 3 ea.	150’ dia. circular pads (53,014 sq. ft. total)
Module CA-20 Fabrication Area	200’ x 500’ (100,000 sq. ft.)
Module CA-01 Fabrication Area	200’ x 500’ (100,000 sq. ft.)
Carpenter Form Pad	50’ x 200’ (10,000 sq. ft.)
Rebar Fabrication Shop	50’ x 50’ (2,500 sq. ft.)
Craft Parking #1	700’ x 375’ (262,500 sq. ft.)
Craft Parking #2	600’ x 400’ (240,000 sq. ft.)
Craft Parking #3	200’ x 450’ (90,000 sq. ft)
Non-manual Parking #2	800’ x 225’ (180,000 sq. ft.)

FACILITY DESCRIPTION	APPROXIMATE SIZE
CA-04/CA-05 Module Assembly Area	64’ x 100’ (6,400 sq. ft.)
CA-03 Module Assembly Area	50’ x 135’ (6,750 sq. ft.)
Ice Plant for Concrete	50’ x 50’ (2,500 sq. ft.)
Floor and Ceiling Modules Assembly Area	300’ x 50’ (15,000 sq. ft.)
U1 Pad for Lower Bowl Rebar Module	160’ x 160’ (25,600 sq. ft.)
U2 Pad for Lower Bowl Rebar Module	160’ x 160’ (25,600 sq. ft.)
Construction Fueling Station	50’x 50’ (2,500 sq. ft.)
Guard House (main entrance)	12’ x 12’ (144 sq. ft.)
Guard House (truck entrance)	12’ x 12’ (144 sq. ft.)
Dynamic Learning Center	70’ x 100’ (7,000 sq. ft. each)
Chemical Storage Facility (2 each)	12’ x 40’ (480 sq. ft. each)
Workforce Development Complex (4 each)	40’ x 160’ (6,400 sq. ft. each)
Time Office	20’ x 40’ (800 sq. ft.)
Construction New Hire and In-processing Building	50’ x 100’ (5,000 sq. ft.)
Field Document Stations (2 each)	24’ x 30’ (720 sq. ft. each)

PERMANENT BUILDINGS AND STRUCTURES

At the Lee Nuclear Station site, there will be some buildings and structures that will be erected to support the construction effort but will remain to be used by Duke Energy Carolinas after construction. These buildings/structures have been classified as permanent buildings and are listed below. In addition, there are numerous buildings and structures that are a part of the permanent Lee Nuclear Station site but are outside the footprint of the AP1000 standard plant.

LEE NUCLEAR STATION CONSTRUCTION FACILITIES TO BE RETAINED FOR USE BY DUKE ENERGY CAROLINAS AFTER CONSTRUCTION

FACILITY DESCRIPTION	APPROXIMATE SIZE
Construction Administration Building	150’ x 200’ (3 levels – 90,000 sq. ft.)
Carpenter Shop	50’ x 100’ (5,000 sq. ft.)
Outer Craft Shelter	50’ x 100’ (5,000 sq. ft.)
Mechanical and Structural Fab Shop	100’ x 400’ (40,000 sq. ft.)
Warehouses 1 and 2	400’ x 200’ each (160,000 sq. ft. total)
Sandblasting Facility	50’ x 75’ (3,750 sq. ft.)
Paint Facility	50’ x 75’ (3,750 sq. ft.)
Paint Storage Facility	40’ x 60’ (2,400 sq. ft.)
NDT Facility	50’ x 50’ (2,500 sq. ft.)
Weld Test Shop	24’ x 50’ (1,200 sq. ft.)

PERMANENT PLANT BUILDINGS AND STRUCTURES

BUILDING OR STRUCTURE	QUANTITY REQ’D
CWS Cooling Tower with Basins	6 each
CWS Cooling Tower Discharge Flume/Mixing Structure	2 each
Circulating Water Pump House	2 each
CWS Load Center Building	2 each

FACILITY DESCRIPTION	APPROXIMATE SIZE
River Water Intake Structure	1 each
Make-up Pond A Intake Structure	1 each
Make-up Pond B Intake Structure	1 each
Make-up Pond B Load Center Building	1 each
Waste Water Retention Basin	2 each
Clarifier Area (Mechanical/Electrical Building and 3 Tanks)	1 each
Hydrogen Storage Tank	2 each
Switchyard Control Building	1 each
Waste Water Blow-down Sump	1 each
Administrative Office Building and Plant Access Portal	1 each
Ultra Heavy Lift Crane Pad	2 each
Maintenance and Technical Support Center Building	1 each
Receiving Warehouse	1 each
River Water Intake Load Center Building	1 each
Security Training Building	1 each
Training with Simulator Building and In-processing Center	1 each
Visitor Center	1 each
Raw Water System Discharge Structure	1 each
Vehicle Maintenance Shop	1 each
Security Checkpoint Facility	1 each

SITE-SPECIFIC YARD

The Site-specific Yard category consists of all activities associated with clearing and grubbing, trenching, excavation, Mechanically Stabilized Earth ("MSE") wall installation, common backfill, engineered backfill, as well as roads, Turbine Building deep foundations, site information technology systems, and systems such as construction compressed air and construction bulk gas required to support the activities at the various shops and fabrication areas.

SITE SPECIFIC SYSTEMS: CWS, RWS, DRS, PWS, SDS, WWS, ZRS, YFS, WWS, WLS, PGS, EGS and SES

There are several systems that are specific to the Lee Nuclear Station site. Those systems are the Circulating Water System, the Raw Water System, the Storm Drainage System, the Potable Water System, the Sanitary Drainage System, the Waste Water System, the Retail Power Distribution System, and the Yard Fire Protection System. In addition, portions of the Liquid Radwaste System, the Plant Gas System, the Electrical Grounding System, and the Security System are specific to the Lee Nuclear Station site.

The Potable Water System will originate at a municipal source and provide water to the various fabrication shops, offices, and permanent buildings. The Sanitary Drainage System will also tie-in to a municipal source and will service the various fabrication shops, offices, and permanent buildings. The Yard Fire Protection System will be comprised of water two water storage tanks, a primary and back-up fire pump, and underground piping to provide fire hydrants and sprinkler systems for the various structures and fabrication areas located in the Yard area.

The site-specific underground piping systems will require approximately 207,618 linear feet of piping to be installed.

SITE-SPECIFIC UNDERGROUND PIPING SYSTEMS

SYSTEM	MATERIAL(S)	Quantity (Linear Feet)
Circulating Water System (CWS)	120" diameter PCCP	12,890
Circulating Water System (CWS)	102" & 84" diameter PCCP	6,260
Storm Drainage System (DRS)	16" – 42" HDPE	12,000
Yard Fire Protection System (FPS)	6" – 18" HDPE	40,000
Potable Water System (PWS)	10" diameter and under HDPE	31,000
Raw Water System (RWS)	54" diameter and under HDPE	30,800
Sanitary Drainage System (SDS)	8" diameter HDPE	24,000
Plant Gas System (PGS) (Site-specific Portion)	2" diameter stainless steel	1,200
Waste Water System (WWS)	36" diameter and under HDPE	43,710
Liquid Radwaste System (WLS) (Site-specific Portion)	8" diameter HDPE (double wall)	17,750

There will be an extensive quantity of 8 KV power, 600 V power, and Control and Instrumentation electrical cable required to support the site-specific permanent plant systems. Table VIII identifies those quantities.

TABLE VIII
CABLE QUANTITIES FOR MAJOR SITE-SPECIFIC SYSTEMS

SYSTEM	8 KV Power (Linear Feet)	600 V Power (Linear Feet)	Control & Instrumentation (Linear Feet)
Circulating Water System (CWS)	69,741	97,960	12,439
Storm Drainage System (DRS)	-	-	-
Yard Fire Protection System (YFS)	0	245	1,320
Potable Water System (PWS)	0	4,000	300
Raw Water System (RWS)	161,340	69,686	8,932
Sanitary Drainage System (SDS)	0	2,000	1,000
Plant Gas System (PGS) (Site-specific Portion)	-	-	-
Waste Water System (WWS)	0	17,200	65,054
Liquid Radwaste System (WLS) (Site-specific Portion)	-	-	-

The Retail Power Distribution System and permanent yard lighting is the site-specific ZRS system. During construction, temporary power will be required for approximately 60 facilities and locations. Some of these facilities and installations will remain as permanent installations after construction is complete to support Duke Energy Carolinas' permanent plant facilities and

future plant outages. The 13.8KV construction primary loop will be installed around the perimeter of the site over head lines and underground duct banks. Drops off the loop will be run to pad mounted and pole mounted transformers located around the site. These transformers will step down the power to 480V/277V/120V/208V/240V. The transformers will feed various disconnect switches and distribution panels.

ELECTRICAL RETAIL POWER DISTRIBUTION SYSTEM AND YARD LIGHTING

COMMODITY	QUANTITY
Power Poles	282 each
700 AA Overhead Wire	166,000 linear feet
15 KV Cable	30,000 linear feet
Pad Mounted Transformers	24 each
Pole Mounted Transformers	31 each
Lighting Poles	43 each
Conduit/Duct	35,000 linear feet
Lighting Cable	72,000 linear feet

SITE SPECIFIC CIVIL/STRUCTURAL COMMODITIES

There will be approximately 145,488 cubic yards of concrete and 9,694 tons of reinforcing steel required to support the installation of the site specific buildings and structures. The largest concrete usage is the Circulating Water Cooling Tower basins, flumes, and mixing structures with a total of 64,520 cubic yards.

SITE SPECIFIC CONCRETE AND REINFORCING STEEL

COMMODITY	CONCRETE (Cubic Yards)	REINFORCING STEEL (Tons)
Permanent Structures	84,013	6,520
Permanent Construction Facilities	8,197	786
Temporary Construction Facilities	21,361	1,688
Underground Systems	2,246	35
Backfill/Deep Foundations	26,930	665
Electrical/Communication	2,800	-

CONSTRUCTION SEQUENCE

The first 24 months of construction, identified as month -24 through month -1, will be focused on development of the site, completion of major earthwork, installation of utilities, installation of MSE walls, installing construction facilities, installation of underground piping and ductbanks for site-specific systems, beginning assembly of major modules and preassemblies on-site, and preparing for placement of Nuclear Island basemat. This phase of the project is labeled Site Development. Site Development prepares the site for the construction and operation for both unit 1 and unit 2.

The unit 1 Nuclear Island Basemat is placed in Month +1, which begins the 48 month sequence for the construction of the unit 1 standard plant. All work is focused on the Nuclear Island for the first 9 months to complete the exterior walls to above elevation 590, which allows the

annular space between the MSE wall and NI exterior wall to be backfilled. This allows the basemat slabs for the adjacent Turbine, Annex, and Radwaste Buildings to be installed. Construction and start-up testing completes in month +48 with the milestone of Fuel Load. During this time, the Containment, Auxiliary, Annex, Radwaste, Diesel Generator, and Turbine buildings, along with components located in the unit 1 standard yard, are construction completed, tested by Start-Up, and turned over to Duke Energy Carolinas in preparation for unit 1 fuel load.

In parallel with the construction of the unit 1 standard plant, the balance of site specific systems and structures, such as cooling towers, water intake structures, which support unit 1 plant operation are completed by construction and tested by Start-Up. Also during this time, all permanent site support buildings, such as the Training and Simulator Building, Site Administration Building, and the Maintenance Building are completed and turned over to Duke Energy Carolinas for occupancy.

Initial unit 2 standard plant construction activities begin with placing the Nuclear Island Basemat. Once the Nuclear Island exterior walls are above elevation 590, the annular space between the MSE wall and NI exterior wall can be backfilled. This allows the basemat slabs for the adjacent Turbine, Annex, and Radwaste Buildings to be installed. In parallel with the construction of the unit 2 standard plant, the balance of site specific systems and structures, such as cooling towers and the balance of remaining underground system piping, which support unit 2 plant operation are completed by construction and tested by Start-Up.

CONSTRUCTABILITY REVIEWS INCORPORATED INTO THE DESIGN

WEC/Shaw is committed to providing a program that will validate the installation process and maintain the proper balance between ease of constructability, functionality, reliability, and maintainability. WEC/Shaw has a long-standing commitment to the application of innovative and effective management techniques and practices for enhancing the success of our projects. Consistent with theses objectives, WEC/Shaw applies a program of constructability review as a part of an integrated program to achieve maximum cost savings, reduce risk, and optimize schedule.

WEC/Shaw nuclear constructability review program is designed in response to the Construction Industry Institute (CII) guidelines for implementing a constructability program. Constructability reviews of the AP1000 design are currently in progress. Shaw Construction has a team of construction personnel located in the WEC design offices providing standard plant NSSS design reviews. Shaw Construction also has a team of construction personnel providing standard plant BOP design reviews, along with site-specific conceptual design reviews in the Shaw design office. Specific objectives of the reviews are excellence in the following areas:

- Compliance with Safety, Health and Environmental Program
- Quality Construction
- Timely completion
- Cost effectiveness
- Productivity
- Operability and maintainability
- Customer satisfaction

SITE DEVELOPMENT

The Site Development phase of the project consists of all activities associated with clearing and grubbing, trenching, excavation, MSE wall installations, common backfill, engineered backfill, as well as roads, utilities, temporary buildings, construction facilities, Turbine Building deep foundations, site information technology systems, and systems such as construction compressed air and construction bulk gas required to support the activities at the various shops and fabrication areas.

EXCAVATION AND BACKFILL

The Lee Nuclear Station site will require a total of approximately 3,840,315 cubic yards of material be excavated and approximately 3,494,534 cubic yards of backfill be placed during the construction phase of the project. This mass earthwork will be required during the site development phase of the project, and will begin almost immediately upon mobilization.

With the unit 1 and unit 2 Nuclear Island and Turbine Building areas currently over-excavated for the standard AP1000 construction sequence, a MSE wall will be erected outside the perimeter of the Nuclear Islands and brought up to elevation 590 feet concurrently with backfill being placed. This will essentially re-level the site, completely backfilling the Cherokee unit 2 area, and provide a minimal open excavation for the installation of the unit 1 and unit 2 Nuclear Island basemats.

Required work to bring existing unit 1 and unit 2 Nuclear Island foundations up to elevation 550 feet (bottom elevation of Standard Plant Nuclear Island Basemat) has been estimated. For unit 1 this includes additional soil and weathered rock removal and backfill in the NW corner of the Nuclear Island footprint, and backfill concrete from the top of the Cherokee unit 1 Nuclear Island basemat to elevation 550 feet. For unit 2, this includes additional excavation to competent rock, and backfill concrete from top of rock to elevation 550 feet.

For the Radwaste Building and Annex Building foundations, existing soil, not previously excavated by Cherokee, will be removed to top of rock, and engineered fill of imported, well graded crushed rock (the same as engineered fill outside of the MSE wall) will be installed under the building footprint to elevation 590 feet. This will support the Standard Plant design of slab on grade for these buildings.

The existing Cherokee unit 1 Turbine Building basemat (which will remain) is founded on rock, except at the southernmost end, which is supported on caissons. The caisson-supported area, however, extends beyond the footprint of the Lee unit 1 Turbine Building. Therefore, all columns of the Turbine Building, the condenser, and turbine pedestal will be supported on concrete piers extending down to the existing Cherokee unit 1 Turbine Building basemat. Engineered fill of imported, well graded crushed rock will be installed from the top of the existing Cherokee Turbine Building basemat up to the bottom of the unit 1 Turbine Building floor slab. This will support the Standard Plant design of slab on grade for this building. Similar concrete piers will be used to support the column loads of the unit 2 Turbine Building, and the

placement of engineered fill, with the piers and backfill building directly on competent rock in that area.

Outside of the Standard Plant areas, there are additional significant excavation and backfill activities:

- Excavation required for site drainage profile, including removal of portions of existing unit 1 and unit 2 Cooling Tower berm areas
- Excavation and backfill for Switchyard
- Excavation and backfill for Circulating Water piping, and other underground piping systems and ductbanks
- Removal of hill southeast of Met Tower #3 to improve wind patterns
- Excavation, backfill, and installation of temporary cofferdams for Raw Water Intake Structure (River Water), Sedimentation Basin Intake Structure (Make-up Pond A), and Low Flow Reservoir Intake Structure (Make-up Pond B)
- Excavation and backfill for temporary and permanent roads and parking lots, including the new permanent road to the Visitor's Center
- Excavation and backfill for permanent and temporary buildings
- Excavation and backfill for fabrication pads and laydown areas

EXCAVATION AND BACKFILL OF MAJOR COMMODITIES

COMMODITY	REQUIRED EXCAVATION (Cubic Yards)	REQUIRED BACKFILL (Cubic Yards)
Nuclear Island/Standard Plant	27,397	1,154,612
Unit 1 Northwest Depression	177,000	119,000
Permanent Buildings	164,844	30,854
Underground Piping/Duct Banks	719,896	643,118
Switchyard	490,000	-
Hill Northwest of U1 for MET Tower	531,000	-
Permanent/Temporary Roads	630,407	1,466,158
Site Drainage Profile	1,009,000	-
Yard	90,771	80,792
TOTAL	3,840,315	3,494,534

The construction compressed air and construction bulk gas systems will be required to facilitate module fabrication at the various fabrication shops and module assembly areas on the Lee Nuclear Station site. In order to provide these services to the various areas, it is planned to utilize the direct bury technique to form a network of utility corridors approximately 6,650 feet in length. This network of utility corridors will permit delivery of bulk construction gases such as argon, oxygen, and mapp from the Bulk Gas Storage Area and compressed construction air from the Air Compressor Building to the various fabrication shops, module assembly areas, and Standard Plant construction.

Additional areas will be required for use as lay-down areas, to facilitate crane access to the fabrication/assembly areas and to transport modules and components. Those areas are identified below.

LAY-DOWN AREAS, CRANE ACCESS AND HEAVY HAUL PATHS

DESCRIPTION	AREA IN ACRES UNIT 1 & COMMON	AREA IN ACRES UNIT 2 (1 Year Lag)
Structural Module Lay-down Area	14.8	7.4
Equipment Module Lay-down Area	2.7	2.7
Containment Vessel Lay-down Area	4.8	2.4
Heavy Haul Road	9.0	0.0
Outboard Crane Access to CA-01, -03, -04, and -20 Assembly Pads	3.0	0.0
Outboard Crane Access to Containment Vessel Assembly Pad	4.1	0.0
Crane Access for Lower Bowl reinforcing and Shield Building Roof Module assemblies	4.0	4.0
TOTAL AREA BY UNIT	42.4	16.5
TOTAL AREA REQUIRED FOR UNITS 1 AND 2	-	58.9

UNDERGROUND PIPING AND DUCTBANKS

There are numerous site-specific systems which will require underground piping and ductbanks be installed. A large percentage of this underground piping and ductbank will be required to be installed during the site development phase of the project. Installation of these will be closely coordinated with the excavation/backfill schedule.

Those systems are the Circulating Water System, the Raw Water System, the Storm Drainage System, the Potable Water System, the Sanitary Drainage System, the Waste Water System, the Retail Power Distribution System, and the Yard Fire Protection System. In addition, portions of the Liquid Radwaste System, the Plant Gas System, the Electrical Grounding System, and the Security System will be required during the site development phase of the project.

The site-specific underground piping systems will require approximately 207,618 linear feet of piping to be installed.

ELECTRICAL POWER

The Retail Power Distribution System and permanent yard lighting is the site-specific ZRS System. During construction, temporary power will be required for approximately 60 facilities and locations. Some of these facilities and installations will remain as permanent installations after construction is complete to support Duke Energy Carolinas' permanent plant facilities and

future plant outages. Temporary power is actually being installed as 'retail power' (i.e. will remain as a permanent installation).

Certain specific loads/services are strictly temporary and will be removed after construction completion; however, the majority of the installation will be permanent, providing retail power to all site permanent buildings. The Electrical Retail Power Distribution System will be paramount in the success of site development and the construction of the temporary and permanent site facilities.

Duke Energy Carolinas has two 44KV transmission lines entering the site tying back to one common source. There are two temporary substations on the site, an east substation and a west substation. The east substation is currently energized with one of the existing 44KV lines, but requires refurbishment by Duke Energy Carolinas prior to site development. Currently, the west substation is not energized, but will be energized by Duke Energy Carolinas after refurbishment but prior to site development.

The incoming 44KV supply will be stepped down to 13.8KV for connection to the construction primary loop. The step down transformers will be purchased and installed by Duke Energy Carolinas.

The 13.8KV construction primary loop will be installed around the perimeter of the site utilizing over head lines and underground duct banks. Drops off the loop will be run to pad mounted and pole mounted transformers located around the site. These transformers will step down the power to 480V/277V/120V/208V/240V. The transformers will feed various disconnect switches and distribution panels.

Permanent yard and roadway lighting was included in the conceptual design and estimate for the site-specific ZRS system. High mast lighting inside the Protected Area is included in the plant security system ("SES") design. Grounding is included in the plant grounding and lightning protection system ("EGS").

SITE INFRASTRUCTURE INTERFACES

For site development to be successful, numerous interfaces between Shaw and Duke Energy Carolinas will be required. This section will provide a detailed description of responsibilities as it pertains to interfaces with the Duke Energy Carolinas for particular infrastructure related items for the Lee Nuclear Station site.

Demolition of Existing Meteorological Tower #2 – The demolition of existing Meteorological Tower #2 that is located on the bermed area north of the planned location of the Unit #2 cooling towers on the Lee Nuclear Station site will be performed by Duke Energy Carolinas.

525KV and 230KV Switchyard – The installation of the 525KV and 230KV switchyard at the Lee Nuclear Station site will be performed by Duke Energy Carolinas with the exception of the initial excavation and grading. The initial excavation and grading will be performed by Shaw during site development.

Dry Cask Storage Pad – The Dry Cask Storage Pad will not be installed at the Lee Nuclear Station site at this time. The location has been included in the site layout to ensure the area will be available for future installation, be located inside the Protected Area boundary, and near the on-site rail spur.

Potable Water Supply – Duke Energy Carolinas will provide a connection point to a municipal water supply at the property line that parallels McKown's Mountain Road at a point near the existing entrance to the Lee Nuclear Station site. This connection point is to be provided prior to the start of site development.

Sanitary Drainage System – Duke Energy Carolinas will provide a connection point to a municipal sanitary sewage system at the property line that parallels McKown's Mountain Road at a point near the existing entrance to the Lee Nuclear Station site. This connection point is to be provided prior to the start of site development.

Electrical Power Distribution System (East and West Retail Power Substations) – Duke Energy Carolinas has two 44KV transmission lines entering the Lee Nuclear Station site tying back to one common source. There are two temporary substations on the site, an east substation and a west substation. The east substation is currently energized with one of the existing 44KV lines, but requires refurbishment by Duke Energy Carolinas prior to the start of site development. Currently, the west substation is not energized, but will be energized by Duke Energy Carolinas after refurbishment, but prior to the start of site development. The incoming 44KV supply will be stepped down to 13.8KV for connection to the construction primary loop.

Railroad – Duke Energy Carolinas will acquire the land right-of-way and install an approximate 7 mile section of railway from the rail siding in Gaffney, SC to the Lee Nuclear Station site. Duke Energy Carolinas will also install the rail line from the property line across the north side of the site to the east side of the site including spurs to facilitate unloading of the large engineered components on the existing storage slabs. This rail line will also provide turn around capability for the locomotive and rail cars. The rail line must be completed approximately by the end of month 12 of site development to allow first rail shipments of module sections arriving for on-site assembly.

Site Telephone and Information Technology (Internet) Capabilities – Duke Energy Carolinas will coordinate with the responsible provider(s) to furnish telephone and internet connections to the Lee Nuclear Station site.

MODULARIZATION PLAN

The AP1000 Construction execution plan and schedule are based on the modular construction approach. Prefabrication, preassembly, and modularization are construction techniques that are being used extensively in the standard plant.

A module results from a series of remote assembly operations, possibly involving prefabrication and preassembly. A module in its most complete form is a volume fitted with all structural

elements, finishes, and process components which are designed to occupy that space. Modules can be constructed off-site or constructed on-site in a special assembly area and then placed into position.

The AP1000 Module Management Plan (MMP) provides project plans and strategies for the life-cycle of module development including: design, procurement, fabrication, assembly, schedule, delivery, and outfitting of both structural and mechanical modules.

Features of the modular approach are.

- Early fabrication and site assembly of large NI structural Modules prior to first Nuclear concrete
- Employs the open top construction approach for module installation
- Requires early site development of module assembly areas
- Requires more heavy lift crane capacity for longer scheduled duration
- Requires large transporters to move modules from off stand locations

The AP1000 has 274 modules and over 100 equipment assemblies.

EXAMPLES OF MODULE CLASSIFICATIONS AND QUANTITIES

CLASSIFICATION	QUANTITIES
CA – Large Structural Modules	25
CB – Stay in place Forms Modules	35
CG – Stay in place Form / Framing	5
CH – Structural steel Modules	46
CS – Stairway Modules	37
KB - Equipment modules Auxiliary	25
KQ – Equipment modules Containment	4
KT - Equipment modules Turbine	14
KU - Equipment modules Common Service	9
Q – Piping Composite Modules Containment	9
R – Piping Composite Modules Aux Bldg	14
W – Piping Composite Turbine Bldg	52

Modules vary greatly in size and weights. Weights range from several hundred pounds for small equipment modules to over 750 tons for large structural modules.

ON-SITE FABRICATION PLAN

The AP1000 will require significant on-site assembly and preassembly of many large components. These include large modules and structural assemblies which, if fully assembled, would exceed allowable rail or truck shipping sizes. Smaller components or sub-assemblies will be fabricated off-site, and then final assembly will be performed in special assembly areas located on-site, but away from the standard plant area. The fully assembled modules will then be

transported by special self-propelled hydraulic trailers from the final assembly area to the lifting area of the ultra heavy lift crane.

In addition, other large structural assemblies, such as prefabricated reinforcing assemblies or pre-assembled roof assemblies will be assembled adjacent to the final building location, and then lifted with the ultra heavy lift crane.

EXAMPLES OF ASSEMBLIES WITH APPROXIMATE WEIGHTS

ASSEMBLIES	APPROXIMATE WEIGHT
Containment Vessel Lower Bowl	647 Tons
Containment Vessel Ring #1	776 Tons
Containment Vessel Ring #2	745 Tons
Containment Vessel Ring #3	766 Tons
Containment Vessel Head	647 Tons
Containment Structural Module CA-01	750 Tons
Containment Structural Module CA-02	28 Tons
Containment Structural Module CA-03	202 Tons
Containment Structural Module CA-04	36 Tons
Containment Structural Module CA-05	60 Tons
Auxiliary Building Structural Module CA-20	997 Tons
Lower Bowl Rebar Assembly	750 Tons
Shield Building Roof Assembly	900 Tons
Turbine Building Roof Assemblies	179 Tons
Turbine Pedestal Structural Assemblies	254 Tons
Floor and Wall Structural Assemblies	5 - 250 Tons
Nuclear Island Basemat Reinforcing Assemblies	50 Tons
Nuclear Island Wall Reinforcing Assemblies	50 Tons

NEW CONSTRUCTION TECHNIQUES

Many new construction techniques have been incorporated into the design and construction plan of the AP1000 units. While these are not all new to the construction industry, they are new with respect to how the previous generations of nuclear plants were built. These new techniques are targeted to significantly reduce the construction duration of the standard plant with respect to construction durations experienced by the previous generation of nuclear plants.

Listed below are some examples of new techniques being utilized:

- Modularization of major structural building components and mechanical equipment.
- Fabrication of modular components off-site in shops where repeatability of the process improves quality and reduces cost.
- Fabrication of sub-modules in off-site shops when shipping limitations of truck or rail prevent assembly of complete module.
- On-site assembly of sub-modules in areas specifically prepared for final assembly of sub-modular pieces. These areas are located outside the standard plant area to reduce craft

concentration working in the plant area. For example, module CA-20 will weigh in excess of 750 tons upon completion of on-site assembly and outfitting.

- Utilization of an ultra heavy lift crane for multiple lifts, allowing the size and weights of modules and structural pre-assemblies to be maximized.
- Pre-assembly of large reinforcing assemblies, such as the 600 ton lower bowl rebar assembly, and set into place with the ultra heavy lift crane.
- In lieu of constructing the containment vessel in-place utilizing conventional tank building methods, the 3,580 ton vessel will be pre-assembled on-site into five sections and set in place for final welding by the ultra heavy lift crane.
- Large bore piping will be shop fabricated to the greatest extent possible. Hot bending in the shop will reduce welds. Larger spool lengths without elbows will reduce field welding during installation.
- Laser templating of installed mechanical equipment nozzles and flanges will be utilized to provide input into piping fabrication.
- In lieu of hard copy paper documents, many construction records will be completed electronically in the field.
- Quality Control inspectors will utilize electronic notebooks in the field to record inspections, eliminating manual writing of Inspection Reports.
- A state of the art Information Management System will be utilized for the project, linking the entire work flow process, from design to construction to inspection to testing to final documentation.

CONSTRUCTION MANAGEMENT TOOLS

One key to successful construction will be a Site Information Management System implementing the most current technology available. This integrated system will implement those processes, technologies, practices, and principles that will ensure a successful project delivery.

This information management system will integrate the supporting systems of Engineering, Procurement, Construction, Start-Up, Quality Assurance, Project Controls, Project Management, Records Management, and also be capable of linking with Major Subcontractors and Clients.

The following are examples of systems anticipated to be integrated:

Engineering	SmartPlant Foundation
	PDS modeling
	OrtheGen
	ETap
	Auto Cad
	Micro Station
	Shaw Cable Manager
	IDF File Creation
	SpoolGen
	ShawMan
Construction	WinPCS
	Shaw University

Start-Up	STAR
Project Controls	Primavera P6
	ShawTrac
	ShawVision
Records Management	Documentum
Project Management	ShawDocs
Procurement	MARIAN

STAFFING

Successful construction staffing of the Project will be paramount to the success of the project. Shaw will manage all project construction. There are four separate categories which will comprise the over-all construction staffing for the project:

- Shaw direct hire craft labor
- WEC/Shaw specialty subcontractor labor
- Shaw non-manual personnel
- WEC non-manual personnel

Shaw direct hire labor – the majority of the construction work will be performed by Shaw direct hire labor. This will include all typical construction crafts – Electricians, Pipefitters, Boilermakers, Ironworkers, Sheetmetal Workers, Carpenters, Millwrights, Laborers, Painters, Insulators, Cement Finishers, Equipment Operators, I&C Technicians, and Truck Drivers.

WEC/Shaw specialty subcontractor labor – specialty subcontractors will also be used for specialty equipment and expertise, such as excavation, blasting, heavy transport, NSSS welding, etc. Also included in this category would be furnish/erect subcontracts for structures such as cooling towers, containment vessel, major modules, field erected tanks, etc.

Shaw non-manual personnel - this category includes all Shaw non-craft personnel required on-site. This would include Project Management, Construction Management, Field Engineering, Accounting, Administration, Human Resources, Material Control, Project Controls, Site Engineering, Quality Assurance, Quality Control, Safety, Procurement, Subcontracts, Start-Up, etc.

WEC non-manual personnel - this category includes all WEC personnel required on-site. This would include Project Management, Administration, Human Resources, Material Control, Project Controls, Site Engineering, Quality Assurance, Quality Control, Supply Chain, Pre-Operational Test, Start-Up, etc.

Based on current schedule, on-site construction staffing will begin during month -24 when Site Development phase begins, and ends in month +66 with the completion of unit 2 power ascension testing. Peak construction staffing of 4,250 personnel occurring in month +32 is presently estimated.

TRAINING

Proper training is essential to ensure that individuals assigned to the construction project are qualified to perform the tasks expected for their job description as well as being adequately informed of those job expectations.

The training program will be multi-faceted and will include the following:

- Project orientation training for all site employees
  - General Employee Training
  - Fitness for Duty
  - Safety Conscious Work Environment
  - Environmental Health and Safety
  - Quality Program
  - Problem Identification and Reporting
  - Dynamic Learning Center "hands on" safety training
- Procedural and Technical Training
  - Class room or lab training for procedures required to perform job functions
- Supervisory and Management Training
  - Targeted to Supervisors and Foremen
- Case Study Training
  - Lessons learned/ Event training
- Craft Workforce Development Training
  - Assesses individual skill levels
  - Verifies correct job placement
  - Provides additional on-site training to upgrade skills

QUALITY ASSURANCE PLAN

The Shaw Stone & Webster Standard Nuclear Quality Assurance Program (SWSQAP-1-74A) for the AP1000 standard plant was developed by the Quality Assurance ("QA") organization and approved by the NRC. The QA Manager is responsible for the implementation and maintenance of the SWSQAP in accordance with all regulatory commitments. This includes:

- Preparing and maintaining SWSQAP revisions for construction
- Approving, auditing and providing surveillance of Quality Control ("QC") and subcontractor QA/QC programs
- Developing and maintaining QA project procedures for controlling QA activities during construction and equipment procurement
- Providing QA support of project activities
- Ensuring that project oversight (i.e., audits, surveillance, and assessments) of activities controlled by the SWSQAP are performed

The QA Manager and his staff are independent of the construction personnel responsible for performing quality-affecting work and their work is independent of construction work scope, cost, and schedule considerations. The QA organization responsibilities consist of providing quality management, quality engineering, and quality verification support of the entire AP1000

standard plant, as well as construction management QA oversight of AP1000 standard plant construction subcontractors. During the latter part of construction, the WEC/Shaw QA/QC organization also supports construction acceptance testing and turnover to startup.

The QA organization will review and approve the QA programs of the construction subcontractors providing construction services for nuclear safety related SSC to ensure their QA programs meet the applicable QA requirements from 10 CFR Part 50 Appendix B and NQA-1. The construction subcontractors will be responsible for providing the required QA/QC oversight and inspections for construction activities, including providing qualified non-destructive examination (NDE) personnel. WEC/Shaw QA will maintain oversight of the construction subcontractor activities through audits, assessments, and field observations to assure subcontractor compliance with the technical and quality requirements.

The QA organization provides quality engineering support to the AP 1000 standard plant by providing QA reviews of project documents controlled by the SWSQAP for flow down of QA requirements, reviewing QA procurement documents, and administering the corrective action process (including periodic trending of findings). QA also implements the supplier evaluation program and qualifies the QA programs of subcontractors, equipment vendors, and suppliers of other goods and services for inclusion on the Approved Supplier List ("ASL").

The QA organization supports the Long Lead Procurement activities by providing review of procurement documents to assure that appropriate quality requirements are specified and that qualitative and quantitative acceptance criteria are specified.

The Construction Manager is responsible for implementation of the SWSQAP at the construction site. The WEC/Shaw QA Manager provides direct support to the Construction Manager through the Construction QA Manager on the construction site.

WEC/Shaw management, with significant support and oversight from Duke Energy Carolinas will ensure that construction employees (including subcontractors) shall not place cost and schedule ahead of quality or safety. Duke Energy Carolinas has spent years developing a culture that puts Safety and Quality first. The expectation is schedule adherence and excellent cost performance within a framework and culture that places Safety and Quality first. The Duke Energy Carolinas experience is that when placing Safety and Quality first, excellent schedule and cost performance can follow.

The Construction Field Engineer assigned responsibility for a structure, system, component (SSC) or activity shall be responsible for the quality, as well as conformance to cost and schedule commitments. The Field Engineer Manager/Supervisors shall assure and document that the work activities are accomplished in accordance with approved drawings, specifications, applicable codes, standards and contractual documents.

Any test laboratory work which is subcontracted will have results being monitored and documented by WEC/Shaw QA personnel.

Frontline inspection and documentation of non-safety related work is the responsibility of the installing organization in accordance with their WEC/Shaw approved Quality Assurance Program. WEC/Shaw Field Engineers will maintain oversight on a surveillance basis.

Appendix C-1

System Responsibility

Site Specific in Bold

SHAW Systems:

- Standard Plant Yard
- **Site Specific Yard**
- Annex Building
- Radwaste Building
- Diesel Building
- **Temporary Buildings**
- **Permanent Site Buildings**
- Auxiliary Steam Supply System
- Compressed and Instrument air Systems
- **Circulating Water System**
- Standby Diesel Fuel Oil System
- **Storm Drain System**
- Demineralized Water Treatment System
- Demineralized Water Transfer and Storage System
- Main AC Power System
- Non Class 1E DC and UPS System
- Communication Systems
- **Grounding and Lightning Protection System**
- Special Process Heat Tracing System
- Plant Lighting System
- Cathodic Protection System
- **Fire Protection System**
- Class 1E DC and UPS System
- Plant Gas Systems
- **Potable Water System-inside plant**
- Sanitary Drainage System
- Seismic Monitoring System
- Closed Circuit TV System
- Radiologically Controlled Area Ventilation System
- Nuclear Island Nonradioactive Ventilation System
- Containment Recirculation Cooling System
- Central Chilled Water System
- Annex/Aux Building Nonradioactive Ventilation System
- Hot Water Heating System
- Diesel Generator Building Heating and Ventilation System
- Radioactive Waste Drain System
- **Waste Water System**
- Onsite Standby Power System
- Condensate System

- Condenser Tube Cleaning System
- Turbine Island Chemical Feed System
- Condenser Air Removal System
- Condensate Polishing System
- Heater Drain System
- Secondary Sampling System
- Turbine Building Closed Cooling Water System
- Turbine Island Vents, Drains and Relief System
- Turbine Building Ventilation System

Westinghouse Systems:

- Shield Building
- Containment
- Auxiliary Building and Mat
- Steam Generator Blowdown System
- Component Cooling Water System
- Containment System
- Chemical and Volume Control System
- Diverse Actuation System
- Data Display and Processing System
- Fuel Handling and Refueling System
- Main & Startup Feedwater System
- Incore Instrumentation System
- Mechanical Handling System
- Main Steam System
- Operation and Control Centers
- Passive Containment Cooling System
- Plant Control System -3 reports
- Protection and Safety Monitoring System
- Primary Sampling System
- Passive Core Cooling System
- Reactor Coolant System
- Radiation Monitoring System
- Normal Residual Heat Removal System
- Plant Security System –allowance (Site Specific in SOY)
- Spent Fuel Pool Cooling System
- Steam Generator System
- Reactor System
- Special Monitoring System
- Simulator Training System –See alsoJS95
- Service Water System
- Main Control Room Emergency Habitability System
- Containment Hydrogen Control System
- Gaseous Radwaste System
- Liquid Radwaste System
- Solid Radwaste System

Toshiba Systems:

- Stator Water Cooling System
- Gland Seal System
- Generator Hydrogen and CO2 Systems
- Hydrogen Seal Oil System
- Main Turbine and Generator Lube Oil System
- Main Turbine System
- Main Turbine Control and Diagnostics System
- Main Generation System
- Excitation and Voltage Regulation System

Appendix C-2

AP1000 –Major Vendors
Equipment Supply List

Approved Supplier	Potential Components / Services to be Supplied
ABB Ltd	I&C equipment
Airtech Inc.	Gas packages
Ansaldo Nuclear	S/G, RV and Head, Containment Air Baffle, modules, containment vessel
Ansaldo Camozzi/Mangiarotti	S/G, RV and Head, PZR, PRHR Heat Exchanger, tanks
Aquatech International Corporation	Electrodeionization Units
Caterpillar Inc.	Diesel Generators
Chicago Bridge & Iron Company	Containment Vessel, Containment Air Baffle, Containment Erection
Control Components, Inc.	Valves
Copes Vulcan	Valves
Crane Nuclear, Inc.	Valves
Curtiss-Wright – Electro-Mechanical Corporation (EMD)	Reactor Coolant Pumps, CRDMS, BOP Pumps
Doosan Heavy Industries	S/G, RV and Head, Rx Internals, PZR, Rx coolant piping, PRHR Heat Exchanger, tanks
Dresser, Inc.	Valves
Emerson Process Management	I&C equipment
Emerson Process Management Fisher Control Valves	Valves
Emerson Process Management Rosemount	Instrumentation
EnerSys Inc.	Batteries, Battery chargers
Exide	
ENSA – Equipos Nucleares, S.A.	S/G, RV and Head, PZR, PRHR heat exchanger, Tanks
Flowserve Corporation	Valves, BOP Pumps
GEC Alsthom	Breakers
GE	
Toshiba	
ABB	
General Dynamics - Electric Boat	Modules
Gutor Electronic Ltd	Batteries, Battery chargers
Ingersoll-Dresser Pump Company	Pumps

Approved Supplier	Potential Components / Services to be Supplied
Holtec	Spent Fuel Racks
IHI	Tanks, RV and Head, RV Internals, SG, PRHR Heat Exchanger, PZR
IST Conax Corporation	Squib valves, containment electrical penetrations
IST Corporation	Incore Instruments
Joseph Oats	Containment Air Baffle, PZR, PRHR, Tanks
KSB Aktiengeselischaft	Various pumps, RCP
Major Tool & Machine, Inc	Rx Internals, Component Supports
Mitsubishi Heavy Industries	S/G, RV and Head, Turbine Generator, CRDMs, Rx Internals, RHR pumps
Mueller	Heat Exchangers
Northrop Grumman Newport News	Modules, Containment Vessel
Nuclear Logistics, Inc.	Batteries, Battery chargers
PaR Nuclear	Refueling Equipment, Fuel Handling Equipment, Polar Crane, other cranes
Parker Hannifin Corporation	Valves
Penn Iron Works	Reactor IHP
Penn State Tool & Die	Reactor IHP, RV Flow Skirt, Pipe Supports
Precision Custom Components	RV, Rx Internals
Robicon Corporation	Variable Frequency Drive Unit for RCPs
Sempell AG	Valves
Selzer	Pumps BOP
ITT Flygt	
Ruhr Pumpen	
Shaw Group, Inc	Piping (Supplier), Modules
SPX Cooling Technologies, Inc. (Marley)	Cooling towers
GEA	
SPX Corporation	Valves, Squib Valves
SSM	Containment Air Baffle
Swagelok Company	Valves, Fittings
Target Rock Corporation	Valves
Tioga Pipe Supply Company	Rx coolant piping
Toshiba Corporation	Turbine Generator, Electrical distribution, heavy components
Transco Products, inc.	Reflective Insulation
Tyco Flow Control	Valves
Union Pump Company	BOP Pumps

Approved Supplier	Potential Components / Services to be Supplied
Velan Valve Corporation	Valves
Weed Instrument Co., Inc.	Instrumentation
Weir Group PLC	Valves, BOP Pumps
WESCO – Westinghouse Electric Supply Co.	Transformers, load centers, switchgear
ABB T&D	
Siemens	
Eaton Cutler Hammer	
Powell	
GE	
Allen Bradley	
Westinghouse Electric, LLC	Rx Internals, CRDMs
Xomox Corporation	Valves
Zurn Company (Wilkins)	Cooling Tower

Appendix C-3

SCOPE OF WORK / SUPPLYAND DIVISION OF RESPONSIBILITY

“O” means the Owner and its representatives.

“X” means the Consortium/Contractor.

“Design Criteria” are the functional requirements and data required for the basic engineering of Site works, buildings, structures, modules systems or Equipment.

“Detail Design” means the engineering analyses, calculations and detail design drawings and specifications in accordance with the “design criteria” for the supply, erection and construction of Site works, buildings, structures, modules, systems or Equipment.

“Eq/Comp/Com Supply” means the procurement and supply of necessary material, components and Equipment specified for Site works, buildings, structures, modules and systems.

“Install /Construct” means the erection, installation or construction of all mechanical and electrical Equipment and systems and the completion of all temporary works, civil works including finishes and architectural treatments.

“Establish Requirements” specifies the party responsible for identifying and establishing the necessary activities that must be completed and provided.

“Provide For” establishes the party responsible for executing the scope including cost accountability and performance responsibility.

Where two organizations are shown for a specific task, the organization (O/X or X/O) first listed has lead responsibility and the second has responsibility to support.

The engineered programs ("Engineered Programs") required for the long term operation of the Facility need to be developed prior to power operation. In some cases, Owner may choose to utilize a program developed for and used by W. S. Lee Plant. For these Engineered Programs, Contractor will provide the design criteria with the program development and implementation provided by Owner. The design criteria provided by the Contractor will be the criteria established in the final design, fabrication and installation of the components.

PROJECT SERVICES	EST REQMENTS	PROVIDE FOR
Project Management	**X**	**X**
Field Engineering & Design (non NuStart)	**X**	**X**
Construction Management	**X**	**X**
Site Engineering	**X**	**X**
COLA and Licensing Support (T&M Basis as required)	**O**	**O/X**
Nuclear Safety/Licensing (follow – post NuStart)	**O/X**	**O/X**
Supply Chain Management/Expediting	**X**	**X**
QA/QC & required Inspections including Vendor surveillance	**X**	**X**
Construction Execution Plan	**X**	**X**
Construction & Startup Schedule	**X**	**X**
Information Management System (see Table 2.0 for deliverables)	**X**	**X**
3-D Model	**X**	**X**
Independent Nuclear/Third Party Inspections (Owner's discretionary)	**O**	**O**
AP1000 Site Documentation Control	**X**	**X**
Transportation of supplied Equipment & commodities	**X**	**X**
Construction Site Material Control/Warehousing	**X**	**X**
Project Control Services (Schedule and cost reporting)	**X**	**X**
Financial/Accounting	**X**	**X**
NRC Inspection Fees	**O**	**O**

OTHER SCOPE	EST REQMENTS	PROVIDE FOR
Spare Parts – Startup and Commissioning	**X**	**X**
Spare Parts – Recommended Spare Parts	**O/X**	**O**

TESTING, STARTUP	EST REQMENTS	PROVIDE FOR
O & M Training	**X/O**	**X/O**
Construction Testing	**X/O**	**X/O**
Pre-Operational Testing	**X/O**	**X/O**
Maintenance following System Turnover	**O/X**	**O**
Pre- Service Inspection (ASME Section XI)	**X/O**	**X/O**
Core Loading	**O**	**O/X**
Initial Criticality	**X/O**	**O/X**
In-Service Inspection	**O**	**O**
Test Reports	**X**	**X**
Testing and Operating Procedures	**X/O**	**X/O**
Special Tools, Laboratory, Calibration & Test Equipment (required for Startup & Testing)	**X**	**X/O**
Consumables First Fill	**X**	**X**

COMMISSIONING	EST REQMENTS	PROVIDE FOR
Plant Performance Tests	**X/O**	**O/X**

OPERATING PROGRAMS	Design Criteria	Program Development	Program Implementation
Engineered Programs – (Motor-Operated Valve Program, Containment Leak Rate Test, Equipment Qualifications, and similar programs)	**O/X**	**O**	**O**

GENERAL & ADMINISTRATIVE	EST REQMENTS	PROVIDE FOR
Inland Transportation – Permits/Expenses	**X/O**	**X**
Sales (Permanent Equipment) & Excise Taxes	**O/X**	**O**
Sales (non-Permanent Equipment and consumables)	**X**	**X**
Use Taxes	**O/X**	**O**
Construction Permits & Licenses	**X/O**	**TBD**
Operation Permits & Licenses	**O/X**	**TBD**
Performance Bond, if required	**O/X**	**X**
Craft Labor Taxes & Welfare	**X**	**X**
Contractors Personnel Expenses	**X**	**X**
Import Duties & Taxes	**X**	**X**

CONSTRUCTION TEMPORARY SERVICES	EST REQMENTS	PROVIDE FOR
Power to Site East and West Substations	**X**	**O**
Normal replacement items, fuel, oils and other consumables	**X**	**X**
Distribution of temporary power, including switchgear	**X/O**	**X**
Temporary power back-up diesels as needed	**X**	**X**
Fire Brigade system, local fire station involvement, etc.	**X/O**	**X**
Construction Sanitary Facilities	**X**	**X**
Solid waste, trash & garbage disposal	**X**	**X**
Temporary lay down areas	**X**	**X**
Construction Site Security	**X/O**	**X**
Nuclear Security - temporary	**O**	**O**
Construction lighting	**X**	**X**
Excavation spoil areas	**O/X**	**X**
Site communications (for construction)	**X/O**	**X**
Public address system (for construction)	**N/A**	**N/A**
Environmental monitoring during construction	**O/X**	**X**
Concrete batch plant	**X**	**X**
Lampson Crane & runway, yard cranes and construction vehicles	**X**	**X**
Construction Equipment Rentals/Leases	**X**	**X**
Material Laydown and Assembly	**X**	**X**
Temporary Water and Ice	**X**	**X**
First Aid and Staffing	**X**	**X**
Craft Facilities, Tools & Equipment	**X**	**X**
Industrial Safety Staffing	**X/O**	**X**
Construction Cleanup	**X**	**X**
Construction Training/Welder Qualification	**X**	**X**
Temporary Warehouse	**X**	**X**
Field Offices, Office Equipment & Computers	**X**	**X**
Construction Equipment Maintenance Shops/Fuel Storage	**X**	**X**

DESCRIPTION	SINGLE- POINT RESPONSIBILITY			
	Design Criteria	Detail Design	EQ/Comp Com. Supply	Install Construct
SITE INFRASTRUCTURE				
SITE DEVELOPMENT & PREPARATION				
All On-Site Permits including: regulatory, water discharge, water supply and environmental, dredging, waste disposal, etc (to be defined in greater detail per Agreement Exhibit "C")	**O**	**O/X**	**O/X**	
Environmental Impact Assessment and Statement (EIS)	**O**	**O**	**O**	
Lead Contamination Removal	**O**	**O**	**O**	**O**
Latent Ground Conditions	**X/O**	**O**	**O**	**O**
Evaluation of Detailed Geotechnical Reports- From COLA	**X/O**	**X**	**O/X**	
Soil Investigation & Borings - For Final Layout Plan	**O**	**O/X**	**O**	
Site Emergency Notification Equipment	**O**	**O**	**O**	**O**
Site Construction Entrance Roads	**O/X**	**X**	**X**	**X**
Permanent Nuclear Security Boundary	**O**	**O**	**O**	**O**
Construction Site Fencing to control access to construction areas	**O/X**	**X**	**X**	**X**
Establish Site Datums- Elevations & Azimuth	**X/O**	**X**		**X**
Removal of existing Cherokee undergrounds (Except Unit 2 Circ. Water Piping)	**O/X**	**O**	**O**	**O**
Removal of existing Cherokee concrete pads	**O/X**	**O**	**O**	**O**
Relocation or Removal of Existing Sewage Services	**O/X**	**X**	**X**	**X/O**
Excavate and Remove Buried Storage Tanks	**O**	**O**	**O**	**O**
Erosion, Sedimentation and Control Plan (Contractor is responsible for design, Plan development, implementation, monitoring and maintenance. Owner is responsible for permit submittal and reporting).	**O/X**	**X/O**	**X**	**X**
Site Clearing, Grubbing, Planting & Removal of Spoil (as required based on Site layout including Construction Facilities and Permanent Facilities, excluding land impacted solely by transmission line reroutes and additions and new facilities within Owner's scope).	**X**	**X**	**X**	**X**

DESCRIPTION	SINGLE- POINT RESPONSIBILITY			
	Design Criteria	Detail Design	EQ/Comp Com. Supply	Install Construct
Slope & Shore Protection including Rip-Rap, except for existing dams under Owner's control.	X	X	X	X
Temporary & Permanent Drainage & Flood Protection, if required	X	X	X	X
Temporary & Permanent Storm Water Ponds, if required	X/O	X	X	X
Construction Waste Water Retention & Disposal	X/O	X	X	X
Excavation, Backfill & Dewatering & Soil Dumps (Estimate is based upon all required borrow including Cat 1 and 2 being readily available, with the exception of imported engineered fill. Cost and schedule impacts for borrow sources for those other than above that require additional haul time or compaction to meet requirements are to the Owner's account)	X	X	X	X
Demolition of Existing Foundations and Structures for initial Site preparation, excluding Cherokee NI base mat and TB base mat	O	O	O	O
Pilings and Caissons if required	X	X	X	X
Temporary storage for contaminated outage tools and equipment	O	O	O	O
New Paint Storage Facility	X/O	X	X	X
Remove Equipment, Material, and Debris (excluding concrete debris to be disposed as part of foundation demolition)	O	O	O	O
Asbestos and Lead Abatement	O	O	O	O
ROADS				
Permanent Site Access Road and upgrade of alternate truck access road for construction	O/X	X	X	X
Internal Site Roads & Parking, Marking and Signage	O/X	X	X	X
Heavy Haul Road & Crane Lift Pathways	X	X	X	X
OFF SITE INTRASTRUCTURE				
Road/Rail/Waterway upgrades	X	O	O	O
RAILROAD				

DESCRIPTION	SINGLE- POINT RESPONSIBILITY			
	Design Criteria	Detail Design	EQ/Comp Com. Supply	Install Construct
Re-establishing rail line from Site boundary to Norfolk Southern main line at Gaffney siding.	O	O	O	O
Permanent On-Site Railway & Facilities	O/X	O	O	O
RAW, POTABLE & FIRE SUPPRESSION				
On-Site Potable Water Supply/YFS Make-up	O/X	X	X	X
Potable Water from municipal supply to Site boundary	O/X	O	O	O
On-Site Fire Suppression Ring (YFS)	X	X	X	X
Raw Water On-Site Distribution	X	X	X	X
Potable Water Distribution on-Site	X	X	X	X
PERMANENT INFRASTRUCTURE				
Duct Banks & Underground Cable to High Voltage Switchyard	O/X	O	O	O
Duct Banks & Underground Cable for Contractor Supplied AP1000 Plant	X	X	X	X
Land Line - Telephone & Internet to Site	O	O	O	O
Final Landscaping –to include all features required as part of final erosion and sedimentation control plan (e.g., seeding, mulching as required to control runoff)	X/O	X	X	X
Permanent Facility Signage	O	O	O	O
Plant Security – Outside of Protected Area	O	O	O	O

WBS	DESCRIPTION	SINGLE- POINT RESPONSIBILITY				NOTES	
		Design Criteria	Detail Design	Supplier	Install Constr	Scope	DOR
PERMANENT PLANT BUILDINGS AND STRUCTURES							
	CWS Cooling Towers with Basins	X/O	X	X	X		
	CWS Cooling Tower Discharge Flumes/Mixing Structures	X	X	X	X		
	Circulating Water Pump Houses	X/O	X	X	X		
	CWS Load Center Buildings	X	X	X	X		
	RWS River Water Intake Structure	X/O	X	X	X		
	Make-Up Pond A Intake Structure	X/O	X	X	X		
	Make-Up Pond B Intake Structure	X/O	X	X	X		

WBS	DESCRIPTION	SINGLE- POINT RESPONSIBILITY				NOTES	
		Design Criteria	Detail Design	Supplier	Install Constr	Scope	DOR
	RWS Clarifier Area (Mechanical/Electrical Building and 3 Tanks)	X/O	X	X	X		
	Waste Water Retention Basins	X/O	X	X	X		
	Hydrogen Storage Tanks	X/O	X	X	X		
	Switchyard Control Building	X/O	X	X	X		
	Waste Water Blow Down Sump	X	X	X	X		
	Administration Office Building and Plant Access Portal	X/O	X	X	X	30	h
	Lampson Crane T-Pads	X	X	X	X		
	Receiving Warehouse	X/O	X	X	X	34	h
	Maintenance Shops and Technical Support Center Building	X/O	X	X	X		h
	River Water Intake Load Center Building	X/O	X	X	X		
	Make-Up Pond B Load Center Building	X	X	X	X		
	Training/Simulator Building and In-Processing Center Building	X/O	X	X	X		h
	Visitor Center	X/O	X	X	X		h
	Raw Water Discharge Structure	X/O	X	X	X		
	Security Training Building	X/O	X	X	X		h
	Security Checkpoint Facility	X/O	X	X	X		h
	Vehicle Maintenance Shop	X/O	X	X	X		h
	Carpenter Shop	X/O	X	X	X		
	Construction Administration Building	X/O	X	X	X		h
	Mechanical and Structural Fabrication Shop	X/O	X	X	X		
	Warehouses 1 and 2	X/O	X	X	X	34	h
	Painting Facility	X/O	X	X	X		h
	Sandblasting Facility	X/O	X	X	X		h
	NDT Facility	X/O	X	X	X		h
	Weld Test Shop	X	X	X	X		
	Paint Storage Facility	X/O	X	X	X		h
	Outer Craft Shelter	X	X	X	X		

WBS	DESCRIPTION	SINGLE- POINT RESPONSIBILITY				NOTES	
		Design Criteria	Detail Design	Supplier	Install Constr	Scope	DOR
	Dry Cask Storage Facility	**O**	**O**	**O**	**O**		
	Low Level Radwaste Storage Facility	**O**	**O**	**O**	**O**		
	Helipad, if required	**N/A**	**N/A**	**N/A**	**N/A**		
	YFS Water Storage Tank and Pump	**X/OX**	**X**	**X**	**X**		
	500kV Switchyard	**O**	**O**	**O**	**O**		g
	230kV Switchyard	**O**	**O**	**O**	**O**		g
	Permanent Portions of Retail Power Distribution (ZRS)	**X/O**	**X**	**X**	**X**		i
	Site Retail Power Distribution – East & West Substations	**O/X**	**O**	**O**	**O**		i

AP1000 BUILDINGS & STRUCTURES

WBS	DESCRIPTION	SINGLE- POINT RESPONSIBILITY				NOTES	
		Design Criteria	Detail Design	Supplier	Install Constr	Scope	DOR
1100	Shield Building, complete structure & finishes	**X**	**X**	**X**	**X**	1	
	Containment Building, complete structure & finishes	**X**	**X**	**X**	**X**	1	
1200	Auxiliary Building, complete structure & finishes	**X**	**X**	**X**	**X**	1	
2000	Turbine Building, complete structure & finishes	**X**	**X**	**X**	**X**	1	
4000	Annex Building, complete structure & finishes	**X**	**X**	**X**	**X**	1	

WBS	DESCRIPTION	SINGLE- POINT RESPONSIBILITY				NOTES	
		Design Criteria	Detail Design	Supplier	Install Constr	Scope	DOR
5000	Radwaste Building, complete structure & finishes	**X**	**X**	**X**	**X**	1	
6000	Diesel Generator Building, complete structure & finishes	**X**	**X**	**X**	**X**	1	
SYSTEMS, EQUIPMENT, COMPONENTS & COMMODITIES							
ASS	Auxiliary Steam Supply System	**X**	**X**	**X**	**X**	1	
BDS	Steam Generator Blowdown	**X**	**X**	**X**	**X**	1	
CCS	Component Cooling Water System	**X**	**X**	**X**	**X**	1	
CAS	Compressed Air System	**X**	**X**	**X**	**X**	1	
CDS	Condensate System	**X**	**X**	**X**	**X**	1	
CES	Condenser Tube Cleaning System	**X**	**X**	**X**	**X**	1	
CFS	Turbine Island Chemical Feed System	**X**	**X**	**X**	**X**	2	
CMS	Condenser Air Removal System	**X**	**X**	**X**	**X**	1	
CNS	Containment System	**X**	**X**	**X**	**X**	1	
CPS	Condensate Polishing System	**X**	**X**	**X**	**X**	1	
CVS	Chemical & Volume Control System	**X**	**X**	**X**	**X**	1	
CWS	Circulating Water System	**X**	**X**	**X**	**X**	3	
DAS	Diverse Actuation System	**X**	**X**	**X**	**X**	1	
DDS	Data Display & Processing System	**X**	**X**	**X**	**X**	1	
DOS	Standby Diesel Fuel System	**X**	**X**	**X**	**X**	4	
DRS	Storm Drain System	**X**	**X**	**X**	**X**	5	
DTS	Demineralized Water Treatment System	**X**	**X**	**X**	**X**	1	
DWS	Demineralized Water Transfer & Storage System	**X**	**X**	**X**	**X**	1	
ECS	Main AC Power, complete plant electrical system	**X**	**X**	**X**	**X**	1	
EDS	Non Class 1E DC & UPS System	**X**	**X**	**X**	**X**	1	
EFS	Communications System, plant wide	**X/O**	**X/O**	**X/O**	**X/O**	7	a
EGS	Grounding & Lightning Protection System	**X**	**X**	**X**	**X**	8	
EHS	Special Process Heat Tracing System	**X**	**X**	**X**	**X**	1	
ELS	Plant Lighting System	**X**	**X**	**X**	**X**	9	

WBS	DESCRIPTION	SINGLE- POINT RESPONSIBILITY				NOTES	
		Design Criteria	Detail Design	Supplier	Install Constr	Scope	DOR
EQS	Cathodic Protection System, complete	X	X	X	X	10	
FHS	Fuel Handling & Refueling System	X	X	X	X	11	
FPS	Fire Protection System	X	X	X	X	1	
FWS	Main & Startup Feedwater System	X	X	X	X	1	
GSS	Gland Seal System	X	X	X	X	1	
HCS	Generator Hydrogen & CO2 Systems	X	X	X	X	1	
HDS	Heater Drain System	X	X	X	X	1	
HSS	Hydrogen Seal Oil System	X	X	X	X	1	
IDS	Class 1E DC and UPS System (Division A to D)	X	X	X	X	1	
IIS	Incore Instrumentation System	X	X	X	X	1	
LOS	Main Turbine & Generator Lube Oil System	X	X	X	X	1	
MES	Meteorological & Environmental Monitoring System	X/O	X/O	X/O	X/O	12	b
MHS	Mechanical Handling System	X	X	X	X	1	
MSS	Main Steam System	X	X	X	X	1	
MTS	Main Turbine System	X	X	X	X	1	
OCS	Operation & Control Centers	X	X	X	X	1	
PCS	Passive Containment Cooling	X	X	X	X	1	
PGS	Plant Gas System	X	X	X	X	13	
PLS	Plant Control System	X	X	X	X	14	
PMS	Protection & Safety Monitoring System	X	X	X	X	1	
PSS	Primary Sampling System	X	X	X	X	1	
PWS	Potable Water System	X	X	X	X	15	
PXS	Passive Core Cooling System	X	X	X	X	1	
RCS	Reactor Coolant System	X	X	X	X	1	
RDS	Gravity & Roof Drain Collection System	X	X	X	X	1	
RMS	Radiation Monitoring System	X	X	X	X	16	
RNS	Normal Residual Heat Removal System	X	X	X	X	1	
RWS	Raw Water System	X	X	X	X	17	
RXS	Reactor System	X	X	X	X	1	c

WBS	DESCRIPTION	SINGLE- POINT RESPONSIBILITY				NOTES	
		Design Criteria	Detail Design	Supplier	Install Constr	Scope	DOR
SDS	Sanitary Drainage System	X/O	X/O	X/O	X/O	19	d
SES	Plant Security System	X/O	X/O	X/O	X/O	20	e
SFS	Spent Fuel Pit Cooling System	X	X	X	X	1	
SGS	Steam Generator System	X	X	X	X	1	
SJS	Seismic Monitoring System	X	X	X	X	21	
SMS	Special Monitoring System	X	X	X	X	1	
SSS	Secondary Sampling System	X	X	X	X	1	
STS	Simulator Training System	X	X	X	X	22	f
SWS	Service Water System	X	X	X	X	1	
TCS	Turbine Bldg. Closed Cooling Water System	X	X	X	X	1	
TDS	Turbine Island Vents, Drains & Relief System	X	X	X	X	1	
TOS	Main Turbine Control & Diagnostics	X	X	X	X	1	
TVS	Closed Circuit TV System	X	X	X	X	23	
VAS	Radiologically Controlled Area Ventilation system	X	X	X	X	1	
VBS	Nuclear Island Non-radioactive Ventilation System	X	X	X	X	1	
VCS	Containment Recirculation Cooling System	X	X	X	X	1	
VES	Main Control Rm. Emergency Habitability System	X	X	X	X	1	
VFS	Containment Air Filtration System	X	X	X	X	1	
VHS	Health Physics & Hot Machine Shop HVAC System	X	X	X	X	1	
VLS	Containment Hydrogen Control System	X	X	X	X	1	
VRS	Radwaste Building HVAC System	X	X	X	X	1	
VTS	Turbine Building Ventilation System	X	X	X	X	1	
VUS	Containment Leak Rate Test Systems	X	X	X	X	24	
VWS	Central Chilled Water System	X	X	X	X	1	
VXS	Annex/Aux Bldg Non-radioactive Ventilation System	X	X	X	X	1	
VYS	Hot Water Heating System	X	X	X	X	1	
VZS	Diesel Gen. Bldg. Ventilation System	X	X	X	X	1	

WBS	DESCRIPTION	SINGLE- POINT RESPONSIBILITY				NOTES	
		Design Criteria	Detail Design	Supplier	Instal l Const r	Scope	DO R
WGS	Gaseous Radwaste System	**X**	**X**	**X**	**X**	1	
WLS	Liquid Radwaste System	**X**	**X**	**X**	**X**	25	
WRS	Radioactive Waste Drain System	**X**	**X**	**X**	**X**	1	
WSS	Solid Radwaste System	**X**	**X**	**X**	**X**	1	
WWS	Waste Water System	**X**	**X**	**X**	**X**	26	
YFS	Yard Fire Protection System	**X**	**X**	**X**	**X**	27	
ZAS	Main Generation System	**X**	**X**	**X**	**X**	1	
ZBS	Transmission Switchyard & Off-Site Power System	**O/X**	**O/X**	**O/X**	**O/X**	28	g
ZOS	On-Site Standby Power System	**X**	**X**	**X**	**X**	29	
ZVS	Excitation & Voltage Regulation System	**X**	**X**	**X**	**X**	1	

Additional Scope of Work Notes:		
Note	**System**	**Details**
1	See Table	If this note is applicable, the system is completely included within the Standard Plant. The system is to be supplied complete and inclusive of all Equipment, components and commodities including any specialty handling tools and Equipment as described in the DCD.
2	CFS	Note 1 applies, except that chemical selection and chemical treatment program is Site-specific.
3	CWS	Note 1 applies to standard portions of the Circulating Water System, i.e., all CWS Equipment within the Turbine Building. The portion outside the Turbine Building is Site-specific and will have the following characteristics (per unit): Three circulating water pumps in an open outdoor pump structure Three mechanical draft cooling towers with a designed flow rate of approximately 590,000 gpm Supply and discharge flow path will consist of two underground 120” pipe runs
4	DOS	Note 1 applies to diesel fuel oil supply Equipment within the Standard Plant.

Note	System	Details
5	DRS	Storm drain system is Site-specific. Contractor's Scope of Work includes all new construction and modifications required as a result of earthwork and construction activities otherwise within the Contractor's Scope of Work, including storm drains for Site-specific permanent structures. Contractor's Scope of Work also includes storm drain design and construction within the new switchyard.
6		Deleted
7	EFS	Note 1 applies to communication systems within the Standard Plant. Contractor's Scope of Work also includes design and Equipment necessary to interface with landline telephone services provider, e.g. AT&T. Owner to provide design requirements and equipment for interface with Owner's communication system.
8	EGS	All grounding and lightning protection is within the Contractor's Scope of Work except for the grounding mats and lightning protection devices for the new 525kV switchyard and the 230kV substation.
9	ELS	Lighting is to include all protected area and vehicle barrier lighting required for nuclear security as well as all roadway and parking lot lighting for new construction within the Contractor's Scope of Work.

<table>
<tr><th>Note</th><th>System</th><th colspan="2">Details</th></tr>
<tr><td>11</td><td>FHS</td><td colspan="2">Fuel handling Equipment is to be supplied complete and inclusive as described in the DCD and to include all specialty tools required to perform fuel handling and maintenance activities. FHS is to be complete and inclusive of, but not limited to, the following special tools and Equipment:</td></tr>
<tr><td></td><td></td><td>FHS Underwater Camera System
Portable Underwater Light
New RCC Handling Tool
New Fuel Assembly Handling Tool
Spent Fuel Assembly Handling Tool
Wet Annular Burnable Absorber Handling Tool
CR Drive Unlatch Tool
CR Drive Shaft Handling Tool
Irradiated Sample Handling Tool
Rod Control Cluster Handling Tool
Irradiation Sample End Plug Seating Jack
Refueling Mach / SF Handling Mach Load Test Fixture
Fuel Transfer Upender Pump (OC)
Refueling Pool Underwater Filter System
Integrated Head Storage Tank
Spent Fuel Cask Loading Pit Gate
Permanent Reactor Cavity Seal Ring
Reactor Vessel (RV) Stud Tensioners
RV Internals Lifting Rig</td><td>RV Upper Internals Storage Stand
Reactor Lower Internals Storage Stand
Reactor Vessel Head Lifting Jig
RV Stud Bolt Automatic Rotation Devices
RV Stud Bolt Nut Bolting Tools
RV Stud Bolt Air Balancers
RV Stud Bolt Lifting Wire Twist Return Jigs
RV Stud Bolt Wrenches
RV Stud Bolt Elongation Measurement Device
RV Stud Bolt Tensioner Electric Hoists
Thimble Plug Handling Tool
Generic Refueling Toolbox
RV Stud Hole Plug Handling Tool
RV Stud Hole Plugs
RV Stud Bolt Lifting Eyebolts
RV Stud Bolt Protection Caps
RV Guide Studs</td></tr>
<tr><td>12</td><td>MES</td><td colspan="2">The only Equipment included within the scope of this system is the necessary Equipment, cabling and installation activities necessary to feed data from the existing met tower to the Unit 1 and Unit 2 control rooms and the technical support center within the Maintenance Shops and Technical Support Center Building..</td></tr>
</table>

Note	System	Details
13	PGS	Bulk gas supply systems (including cryogenic tanks, vaporizer, pumps and control valves) may include permanent tanks purchased by the Contractor or leased equipment under a lease agreement that will transfer to the Owner.
14	PLS	The plant control system includes the Standard Plant Equipment as described in Note 1 plus controls for all Site-specific Equipment including but not limited to CWS, RWS, and YFS.
15	PWS	Note 1 applies to the Standard Plant potable water distribution headers and Equipment within the AP1000 Nuclear Power Plant power block. Additionally, Contractor's Site-specific Scope of Work includes a common permanent potable water supply system and all required valves, piping and controls. PWS will be supplied by the permanent municipal off-Site source. The Site-specific Scope of Work also includes the PWS to all new normally occupied Site-specific support buildings and facilities.
16	RMS	Note 1 applies to the radiation monitor system within the AP1000 Nuclear Power Plant power block.
17	RWS	The RWS is a Site-specific system and includes the River Water Intake Structure, Make-Up Pond A intake Structure, Make-Up Pond B intake Structure and distribution system. The Raw Water System includes all main pumps plus all valves, piping and other Equipment necessary to deliver necessary makeup flow to the circulating water system.
18		Not Used
19	SDS	Sanitary drains is a Site-specific system, and includes all Equipment, piping and lift stations necessary to transfer waste from all new permanent facilities and applicable construction temporary facilities to the Site boundary for municipal disposal.
20	SES	Site security system includes the standard design for the AP1000 power block out to and including the red zone fence, as developed jointly by the Contractor and Owner. Outside the red zone, the security scope includes all modifications and additions necessary to fully implement a combined protected area with all required surveillance and intrusion detection Equipment, all vehicle barriers (passive and active), and all required fencing and delay features. See note (e) for the division of responsibility.
21	SJS	Note 1 applies to seismic monitors and instrumentation with the AP1000 Nuclear Power Plant buildings.
22	STS	The simulator system is to include two standard AP1000 Nuclear Power Plant simulators, delivered and installed by the Contractor in the Training/Simulator Building.
23	TVS	The Scope of Work with respect to the closed circuit TV system is to be "as required" for monitoring of high radiation and contaminated work areas in the containment based on ALARA work requirements. All scope to be inside Standard Plant.
24	VUS	The Scope of Work includes all installed instrumentation and Equipment plus all special flanges, fittings and Equipment.

Note	System	Details
25	WLS	Note 1 applies to liquid waste system within the AP1000 Nuclear Power Plant buildings. Site-specific discharge path is to be routed via shielded piping with leak detection capability from the outside wall of each Unit to a common dilution point in the Broad River at Ninety Nine Mile Island Dam. Design is to meet NRC regulations 10 C.F.R. 20.1406 for tritium control.
26	WWS	Note 1 applies to that portion of the waste water system within the AP1000 Nuclear Power Plant buildings. Contractor's Site-specific Scope of Work is to include a single WWRB for each Unit. Each WWRB is to include sensors and controls as described in the DCD.
27	YFS	The yard fire protection system is Site-specific and will consist of a stand-alone fire protection system for structures and appurtenances outside of the AP1000 Nuclear Power Plant power block. Performance monitoring will be provided to the AP1000 Nuclear Power Plant control rooms as necessary.
28	ZBS	The switchyard and off-Site transmission system includes all Equipment from the high side of the generator step-up transformers and the high side of the reserve aux transformers through the switchyards to the off-Site transmission lines leaving the Site.
29	ZOS	Note 1 applies to the on-Site A/C power supply system within the AP1000 Nuclear Power Plant Scope of Work.
30	Admin Bldg	The Administration Office Building is the primary office located outside the protected area, and includes the attached Plant Access Portal (PAP).
31		Not Used
32		Not Used
33		Not Used
34	Warehou ses	Warehouse includes refurbishment of existing Warehouse 1 and 2 structures for the Site plus a new receiving warehouse. Warehouses 1 and 2 will be located inside the Protected Area following installation of the Unit 2 Protected Area. The receiving warehouse will be located outside the protected area fence.
35		Not Used
36		Not Used
37		Not Used
38		Not Used
Additional Division of Responsibility Notes		
a	EFS	Site communications - upgrades to existing equipment necessary to provide integrated Site communications will be designed and specified by the Contractor but procured and installed at the cost of the Owner.
b	MES	Upgrades to met tower #3 required to provide data to the Unit 1 and Unit 2 Control Rooms and the TSC will be designed and specified by the Contractor but procured and installed at the cost of the Owner.

Note	System	Details
c	RXS	Fuel assemblies, control rods, grey rods, and startup sources will be provided at the cost of the Owner.
d	SDS	Expansion or modification of the existing sewage treatment facility, if required, will be at the cost of the Owner.
e	SES	Contractor's Scope of Work within current Agreement includes all security additions and activities west of the existing western edge of the current protected area fence. Modifications required to Units 1 and 2 will be within Owner's Scope of Work pending conceptual design development and cost estimation by the Contractor.
f	STS	Contractor to supply, install and test each simulator. Owner to supply control room furnishings to mimic control room.
g	ZBS	For the switchyard and off-Site transmission, the Contractor is responsible for excavation, backfill, final grading, storm drains and catch basins. Owner is responsible for design, procurement and construction of the 525kV switchyard and 230KV switchyard.
h	Support Buildings	Owner will provide the functional requirements for the on-Site support buildings. Contractor will design and construct the facilities.
i	ZRS	Owner will provide power supply at the East and West Substations for the Retail Power distribution, which provides power to permanent Site buildings and construction temporary power. The Contractor will procure and construct the Retail Power Distribution.

Appendix C-4 : **AP1000 Standard Plant Division of Responsibility**

Legend for following sheets
W = Westinghouse
S = Shaw Nuclear Services
O = Owner
W(T) = Westinghouse lead with Toshiba involvement
N/A = Not Applicable

Buildings

Type	Title	Design Criteria	Basic Design	Detailed Design	Supply	Const. Mgmt.	Const. Erection	Const. Test
0	Standard Plant Yard	W/S	W	S	N/A	S	S	S
0	Site Specific Development	W/S/O	W/S/O	S/O	N/A	S	S	S
1000	Nuclear Island	W	W	W	N/A	S	S	S
1100	Containment	W	W	W	N/A	S	S	S
1200	Auxiliary Building	W	W	W	N/A	S	S	S
2000	Turbine Building	W	W(T)	S	N/A	S	S	S
4000	Annex Building	W	W	S	N/A	S	S	S
5000	Radwaste Building	W	W	S	N/A	S	S	S
6000	Diesel Building	W	W	S	N/A	S	S	S
	Construction Warehouse(s) / Temp const. facilities	S/O	S	S	N/A	S	S	S
8000	Service & Admin Building	S/O	S	S	N/A	S	S	S
	Trng/Simulator Building	W/O			TBD			
	Technical Support Center & Emergency							
	Operations Facility	O			O			

Note: Piping analysis is assigned by piping package, by building. The entity responsible for detailed building design is responsible for piping analysis within that building.

Systems

System	Title	Design Criteria	Basic Design	Final Design	Supply	Const. Mgmt.	Const. Erection (Note 1)	Field Const. Testing	Startup Testing Support Lead (Note 2)
ASS	Auxiliary Steam Supply System	W	W	S	N/A	S	S	S	S
BDS	Steam Generator Blowdown System	W	W	W	N/A	S	S	S/W	W/S
CAS	Compressed and Instrument Air Systems	W	W	S	N/A	S	S	S	S
CCS	Component Cooling Water System	W	W	W	N/A	S	S	S/W	W/S
CDS	Condensate System	W	W(T)	S	N/A	S	S	S	W(T)/S
CES	Condenser Tube Cleaning System	W	W(T)	S	N/A	S	S	S	S
CFS	Turbine Island Chemical Feed System	W	W(T)	S	N/A	S	S	S	S
CMS	Condenser Air Removal System	W	W(T)	S	N/A	S	S	S	W(T)/S
CNS	Containment System	W	W	W	N/A	W/S	W/S	W/S	W/S
CPS	Condensate Polishing System	W	W(T)	S	N/A	S	S	S	S
CVS	Chemical and Volume Control System	W	W	W	N/A	S	S	S/W	W/S
CWS	Circulating Water System	O/W	O	O/S	S	S	S	S	S

System	Title	Design Criteria	Basic Design	Final Design	Supply	Const. Mgmt.	Const. Erection (Note 1)	Field Const. Testing	Startup Testing Support Lead (Note 2)
DAS	Diverse Actuation System	W	W	W	N/A	S	S	S/W	W/S
DDS	Data Display and Processing System	W	W	W	N/A	S	S	S/W	W
DOS	Standby Diesel Fuel Oil System	W	W	S	N/A	S	S	S	S
DRS	Storm Drain System	O/W/S	S	S	N/A	S	S	S	S
DTS	Demineralized Water Treatment System	W	W	S	N/A	S	S	S	S
DWS	Demineralized Water Transfer and Storage System	W	W	S	N/A	S	S	S	S
ECS	Main AC Power System	W	W	S	N/A	S	S	S	S
EDS	Non Class 1E DC and UPS System	W	W	S	N/A	S	S	S	S
EFS	Communicatio n Systems	W	W	S	N/A	S	S	S	S
EGS	Grounding and Lightning Protection System	W	W	S	N/A	S	S	S	S
EHS	Special Process Heat Tracing System	W	W	S	N/A	S	S	S	S
ELS	Plant Lighting System	W	W	S	N/A	S	S	S	S
EQS	Cathodic Protection System	W	W	S	N/A	S	S	S	S
FHS	Fuel Handling and Refueling System	W	W	W	N/A	S	S	S/W	W/S
FPS	Fire Protection System	W	W	S	N/A	S	S	S	S

System	Title	Design Criteria	Basic Design	Final Design	Supply	Const. Mgmt.	Const. Erection (Note 1)	Field Const. Testing	Startup Testing Support Lead (Note 2)
GSS	Gland Seal System	W	W(T)	W(T)	N/A	S	S	S	W(T)/S
HCS	Generator Hydrogen and CO2 Systems	W	W(T)	W(T)	N/A	S	S	S	W(T)/S
HDS	Heater Drain System	W	W(T)	S	N/A	S	S	S	W(T)/S
HSS	Hydrogen Seal Oil System	W	W(T)	W(T)	N/A	S	S	S	W(T)/S
IDS	Class 1E DC and UPS System	W	W	S	N/A	S	S	S	W/S
IIS	Incore Instrumentation System	W	W	W	N/A	S	S	S/W	W/S
LOS	Main Turbine and Generator Lube Oil System	W	W(T)	W(T)	N/A	S	S	S	W(T)/S
MES	Meteorological and Environmental Monitoring System	O/W	O	O	O	O	O	O	O
MHS	Mechanical Handling System	W	W	W	N/A	S	S	S/W	By Bldg
MSS	Main Steam System	W	W	W	N/A	S	S	S	W
MTS	Main Turbine System	W	W(T)	W(T)	N/A	S	S	S	W(T)/S
OCS	Operation and Control Centers	W	W	W	N/A	S	S	S/W	W/S
OCS	Operation and Control Centers	W	W	W	N/A	S	S	S/W	W/S
PCS	Passive Containment Cooling System	W	W	W	N/A	S	S	S/W	W/S
PGS	Plant Gas Systems	W	W	S	N/A	S	S	S	S
PLS	Plant Control System	W	W	W	N/A	S	S	S/W	W(T)

System	Title	Design Criteria	Basic Design	Final Design	Supply	Const. Mgmt.	Const. Erection (Note 1)	Field Const. Testing	Startup Testing Support Lead (Note 2)
PMS	Protection and Safety Monitoring System	W	W	W	N/A	S	S	S/W	W/S
PSS	Primary Sampling System	W	W	W	N/A	S	S	S/W	W/S
PWS	Potable Water System (note 4)	W	W	S	N/A	S	S	S	W/S
PXS	Passive Core Cooling System	W	W	W	N/A	S	S	S/W	W/S
RCS	Reactor Coolant System	W	W	W	N/A	S	S	S/W	W/S
RDS	Gravity and Roof Drain Collection System	W	S	S	N/A	S	S	S	S
RMS	Radiation Monitoring System Note: Final Design for RMS in China is Shaw. This is the only system for which final design responsibility in China differs from the US. (See note 8)	W	W	W	N/A	S	S	S	W/S
RNS	Normal Residual Heat Removal System	W	W	W	N/A	S	S	S/W	W/S
RWS	Raw Water System	O/W	O	O/S	O/S	O/S	O/S	O/S	O/S
RXS	Reactor System	W	W	W	N/A	S	S	W/S	W/S
SDS	Sanitary Drainage System	W	W	S	N/A	S	S	S	S

System	Title	Design Criteria	Basic Design	Final Design	Supply	Const. Mgmt.	Const. Erection (Note 1)	Field Const. Testing	Startup Testing Support Lead (Note 2)
SES	Plant Security System (note 5)	O/W	O/W	O/W	O/W	O/S	O/S	O/W/S	O/W/S
SFS	Spent Fuel Pool Cooling System	W	W	W	N/A	S	S	S/W	W/S
SGS	Steam Generator System	W	W	W	N/A	S	S	S/W	W/S
SJS	Seismic Monitoring System	W	W	W	N/A	S	S	S	W/S
SMS	Special Monitoring System	W	W	W	N/A	S	S	S/W	W/S
SSS	Secondary Sampling System	W	W(T)	S	N/A	S	S	S	S
STS	Simulator Training System (See also JS95)	W	W	W	N/A	S	S	S/W	W/S
SWS	Service Water System	W	W	W	N/A	S	S	S/W	W/S
TCS	Turbine Building Closed Cooling Water System	W	W	S	N/A	S	S	S	S
TDS	Turbine Island Vents, Drains and Relief System	W(T)	W(T)	S	N/A	S	S	S	S
TOS	Main Turbine Control and Diagnostics System	W	W(T)	W	N/A	S	S	S/W	W(T)
TVS	Closed Circuit TV System (note 6)	W	W	S	N/A	S	S	S	S

System	Title	Design Criteria	Basic Design	Final Design	Supply	Const. Mgmt.	Const. Erection (Note 1)	Field Const. Testing	Startup Testing Support Lead (Note 2)
VAS	Radiologically Controlled Area Ventilation System	W	W	S	N/A	S	S	S	W/S
VBS	Nuclear Island Nonradioactive Ventilation System	W	W	S	N/A	S	S	S	W/S
VCS	Containment Recirculation Cooling System	W	W	S	N/A	S	S	S	W/S
VES	Main Control Room Emergency Habitability System	W	W	W	N/A	S	S	S/W	W/S
VFS	Containment Air Filtration System	W	W	S	N/A	S	S	S	W/S
VHS	Health Physics and Hot Machine Shop HVAC System	W	W	S	N/A	S	S	S	S
VLS	Containment Hydrogen Control System	W	W	W	N/A	S	S	S/W	W/S
VRS	Radwaste Building HVAC System	W	W	S	N/A	S	S	S	W/S
VTS	Turbine Building Ventilation System	W	W	S	N/A	S	S	S	S
VUS	Containment Leak Rate Test System	W	W	W	N/A	S	S	S	W/S
VWS	Central Chilled Water System	W	W	S	N/A	S	S	S	S

System	Title	Design Criteria	Basic Design	Final Design	Supply	Const. Mgmt.	Const. Erection (Note 1)	Field Const. Testing	Startup Testing Support Lead (Note 2)
VXS	Annex/Aux Building Nonradioactive Ventilation System	W	W	S	N/A	S	S	S	S
VYS	Hot Water Heating System	W	W	S	N/A	S	S	S	S
VZS	Diesel Generator Building Heating and Ventilation System	W	W	S	N/A	S	S	S	S
WGS	Gaseous Radwaste System	W	W	W	N/A	S	S	S/W	W/S
WLS	Liquid Radwaste System	W	W	W	N/A	S	S	S/W	W/S
WRS	Radioactive Waste Drain System	W	W	W	N/A	S	S	S	W/S
WSS	Solid Radwaste System	W	W	W	N/A	S	S	S/W	W/S
WWS	Waste Water System	W	W	S	N/A	S	S	S	W/S
ZAS	Main Generation System (Generator Portion)	W	W(T)	W(T)	N/A	S	S	S	W(T)/S
ZAS	Main Generation System (non-Generator Portion)	W	W	S	N/A	S	S	S	S
ZBS	Transmission Switchyard and Offsite Power System	O/W	O	O	O	O	O	O	O
ZOS	Onsite Standby Power System	W	W	S	N/A	S	S	S	S

System	Title	Design Criteria	Basic Design	Final Design	Supply	Const. Mgmt.	Const. Erection (Note 1)	Field Const. Testing	Startup Testing Support Lead (Note 2)
ZVS	Excitation and Voltage Regulation System	W	W(T)	W(T)	N/A	S	S	S	W(T)/S

Note 1: For Westinghouse designed systems, Westinghouse will have some responsibility for construction management and erection support.

Note 2: The Consortium startup organization will coordinate and perform system startup testing in accordance with EPC agreement. Column information is for input to the startup organization only.

Note 3: Main AC Power System includes load profile & short ckt analysis

Note 4: Potable water system up to the owner's interface

Note 5: The total plant security system is the Owner's resp. but will incorporate features that are part of the standard plant.

Note 6: TVS does not include security cameras (those are part of SES)

Note 7: CWS and DRS are site specific, not part of standard NRC certified design

Note 8: RMS does not include Commodity Locator Code JS25: Radiation Detection Packages, Personnel Contamination Monitors

Appendix C-5

Scope of Supply Matrix

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
AD01	Overhead Coiling Doors and Operators	W	S	S
AD02	Standard Metal Doors, Frames and Hardware	W	S	S
AD03	Special Doors	W	S	S
AD04	Windows and Sash	W	S	S
AD05	Fire Doors	W	S	S
AD10	Hatches - Concrete	W	S	S
AD20	Hatches - Stainless Steel	W	S	S
AE01	Architectural Equipment and Fixtures	W	S	S
AF01	Fire Protection Specialties	W	S	S
AJ01	Raised Flooring Systems	W	S	S
AM01	Masonry Walls and Structures	W	S	S
AP01	Plumbing Materials and Equipment(Other than Pipe and Fittings)	W	S	S
AS20	Security Barriers	W	S	S
AT01	Waterproofing Sealants and Membranes	W	S	S
AT02	Metal Siding	W	S	S
AT03	Roofing, Insulation and Flashing	W	S	S
AT07	Gutters and Roof Drains	W	S	S
AW01	Wood Walls and Structures	W	S	S
AX01	Paintings and Coatings (see note 2)	W	W/S	S
AX02	Flooring and Stair Treads	W	S	S
AX40	Gypsum Walls	W	S	S
AY01	Ceiling Systems	W	S	S
AY02	Miscellaneous Architectural Specialties	W	S	S
AY03	Louvers	W	S	S
AY04	Shield Building Air Inlet Louvers	W	S	S
AY20	Relief Panels	W	S	S
AY71	Containment Vessel To Basemat Seal El. 100'	W	S	S
AY72	Containment Vessel To El. 107' Floor Seal	W	S	S
AY73	Containment Vessel To Shield Bldg Seal El. 132'	W	S	S
CC01	Structural Concrete	W	S	S
CC02	Mudmats and Lean Concrete	W	S	S
CD01	Metal Q-Decking	W	S	S
CE01	Seismic Category I Embedments and Anchor Bolts	W	W	S
CE50	Non-Seismic Embedments and Anchor Bolts	W	S	S
CF01	Temporary Concrete Formwork	W	S	S
CP01	Aux Building Precast Concrete Panels (Excluding Shield Bldg)	W	W	S
CP02	Non-Safety Related Precast Concrete Panels	W	S	S

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
CP03	Shield Building Roof Precast Concrete Panels	W	W	S
CR01	Standard Reinforcing Bars and Material	S/W	S	S
CY01	Structural Grout	W	S	S
DB01	Class 1E 125 VDC Batteries	W	W	W
DB02	Non-1E 125 VDC Batteries	W	W	W
DB21	Class 1E 125 VDC Batteries - Metric Stds	NA	NA	NA
DB22	Non-1E 125 VDC Batteries - Metric Stds	NA	NA	NA
DC01	Class 1E Battery Chargers	W	W	W
DC02	Non-1E Battery Chargers	W	W	W
DC21	Class 1E Battery Chargers – 380 V, 50 Hz, Metric Stds	W	NA	NA
DC22	Non-1E Battery Chargers - 380 V, 50 Hz, Metric Stds	W	NA	NA
DD01	Class 1E 125 VDC Distribution Panels	W	W	W
DD02	Non-1E 125 VDC Distribution Panels	W	W	W
DD21	Class 1E 125 VDC Distribution Panels - Metric Stds	W	NA	NA
DD22	Non-1E 125 VDC Distribution Panels - Metric Stds	W	NA	NA
DF01	Class 1E Fused Transfer Switch Boxes	W	W	S
DF02	Non-Class 1E Fused Transfer Switch Boxes	W	W	S
DF03	Class 1E Spare Battery Termination Boxes	W	W	S
DF21	Class 1E Fused Transfer Switch - Metric Stds	W	NA	NA
DF22	Non-1E Fused Transfer Switch - Metric Stds	W	NA	NA
DF23	Spare Battery Termination Box - Metric Stds	W	NA	NA
DK01	Class 1E 125 VDC Motor Control Centers	W	W	W
DK21	125 VDC Motor Control Centers - Metric Stds	W	NA	NA
DS01	Class 1E DC Switchboards	W	W	S
DS02	Non-1E DC Switchgear	W	W	S
DS11	Class 1E 125 VDC Switchboards - Metric Stds	W	NA	NA
DS12	Non-1E 125 VDC Switchgear - Metric Stds	W	NA	NA
DS22	Non-1E DC Switchboards	W	S	S
DS32	Non-1E 125 VDC Switchboards - Metric Stds	W	NA	NA
DT01	Class 1E Regulating Transformers	W	W	W
DT02	Non-1E Regulating Transformers	W	W	W
DT21	Class 1E Regulating Transformers - 50 Hz, Metric Stds	W	NA	NA
DT22	Non-1E Regulating Transformers - 50 Hz, Metric Stds	W	NA	NA
DU01	Class 1E UPS Inverters	W	W	W
DU02	Non-1E UPS Inverters	W	W	W
DU21	Class 1E Uninterruptible Power Supplies - 50 Hz, Metric Stds	W	NA	NA
DU22	Non Class 1E Uninterruptible Power Supplies - 50 Hz, Metric Stds	NA	NA	NA
DV01	Automatic Battery Monitors	W	W	W
DXXX	DC Electrical Equipment	W	NA	NA
EA01	Distribution Panels, Class 1E, 120 and 208 VAC 60 Hz	W	S	S

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
EA02	Distribution Panels, Non-1E, 12, 120 and 208 VAC, 60 Hz	W	S	S
EA03	Class 1E Fuse Panels	W	W	S
EA21	Distribution Panels, Class 1E, 220 VAC 50 Hz	NA	NA	NA
EA22	Distribution Panels, Non-1E, 220 VAC 50 Hz	W	NA	NA
EB01	Isolated Phase Bus Ducts	W	S	S
EB02	6.9KV Non-Segregated Phase Bus Ducts	W	S	S
EB03	480V Non-Segregated Bus Load Center Ties	W	S	S
EC01	Motor Control Centers, Non-1E 480 VAC, 60 Hz	W	S	S
EC21	Motor Control Centers, Non-1E 380 VAC, 50 Hz	W	NA	NA
ED01	Distribution Panels, 480/277 VAC, 60 Hz	W	S	S
ED21	Distribution Panels, 380/220 VAC, 50 Hz	W	NA	NA
EF02	Non-Security Communications Equipment	W	S	S
EF11	FHS Underwater Camera Equipment	W	W	W
EF52	Security-Related Communications Equipment	O	O	O
EG01	Plant Grounding and Lightning Protection Equipment	W	S	S
EG02	Main Generator Neutral Grounding Equipment (except transformer, see ET10)	W	S	S
EH01	Electrical Heat Tracing	W	S	S
EH02	Electrical Resistance Heaters	W	S	S
EH10	Duct-Mounted Electrical Heaters	W	S	S
EH20	Pressurizer Heater Assemblies	W	W	W
EJ01	Non-1E Junction and Terminal Boxes	W	S	S
EJ02	Class 1E Junction and Terminal Boxes	W	S	S
EK01	Load Centers, 480 VAC, 60 Hz	W	S	S
EK21	Load Centers, 380 VAC, 50 Hz	W	NA	NA
EL01	Lighting Fixtures and Equipment	W	S	S
EL91	Fuel Handling System Underwater Lights - Fixed	W	W	W
EL92	Fuel Handling System Underwater Lights -Portable	W	W	W
EM01	Non-1E Induction Motors, 250 HP and Smaller, 60 HZ	W	W	Supplied w/comp.
EM02	Non-1E Induction Motors, Larger Than 250 HP, 60 Hz	W	W	Supplied w/comp.
EM21	Non-1E Induction Motors, 250 HP and Smaller, 50 HZ	NA	NA	NA
EM22	Non-1E Induction Motors, Larger Than 250 HP, 50 Hz	NA	NA	NA
EN01	Cable Tray and Conduit Fire Protection Wrapping	W	S	S
EP01	Auxiliary Control Panels	W	S	S
EP02	Electrical Relay Panels	W	S	S
EQ01	Cathodic Protection	W	S	S
ER01	4 Inch Deep Cable Tray	W	S	S
ER02	Conduit and Fittings	W	S	S
ER10	4 Inch Deep Cable Tray Fittings	W	S	S
ER1A	Horizontal Crosses	W	S	S

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
ER1B	Horizontal Tees	W	S	S
ER1C	Reducers	W	S	S
ER1D	Horizontal Elbows	W	S	S
ER1E	Outside Vertical Elbows	W	S	S
ER1F	Inside Vertical Elbows	W	S	S
ER1G	Vertical Tees	W	S	S
ER1H	End Plates	W	S	S
ER1J	Connectors	W	S	S
ES01	Switchgear, Non-1E, 6.9 kV, 60 Hz	W	S	S
ES02	Class 1E 6.9 kV Reactor Coolant Pump Switchgear	W	W	W
ES03	Main Generator Circuit Breaker	W	S	W
ES21	Switchgear, Non-1E,10.5 kV, 50 Hz	NA	NA	NA
ET01	Main Step-up Transformers	W/O	W(T)	W(T)
ET02	Unit Auxiliary and Reserve Auxiliary Transformers	W	W	W
ET10	Neutral Grounding Transformer	W	W	W
ET30	Non-1E Dry Type Transformers for Power and Lighting	W	S	S
EV01	Adjustable Speed Drives (Main FW Pumps-No Longer Used)	NA	NA	NA
EV02	RCP Variable Frequency Drives, 6.9 kV, 60 Hz Input	W	W	W
EV22	RCP Variable Frequency Drives, 6.3 kV, 50 Hz Input	NA	NA	NA
EW00	Non 1E Low Voltage Power Cables	W	S	S
EW01	Non 1E Low Voltage Power Cable-600 V, 1/c	W	S	S
EW02	Non 1E Low Voltage Power Cable-600 V, 2/c	W	S	S
EW03	Non 1E Low Voltage Power Cable-600 V, 3/c	W	S	S
EW04	Non 1E Low Voltage Power Cable-600 V, 4/c	W	S	S
EW05	Non 1E Low Voltage Power Cable-600 V, 5/c	W	S	S
EW06	Non 1E Low Voltage Power Cable-600 V, 6/c (CRDM & DRPI Cables) EW06 has CRDM incontainment cables supplied by W RRAS up to the termination panel. EW06 also contains DRPI incontainment cables supplied by W RRAS up to the incontainment DRPI cabinets.	W	W	W
EW06	Non 1E Low Voltage Power Cable-600 V, 6/c (CRDM & DRPI Cables) EW06 has CRDM incontainment cables from termination panel to inside containment penetration and outside containment cables are commodity cable items that should be designed & supplied by Shaw. EW06 also contains DRPI incontainment cables from incontainment DRPI cabinets to inside containment penetration and outside containment cables are commodity cable items that should be designed & supplied by Shaw	W	S	S
EW07	Non 1E Low Voltage Power Cable-600 V, 7/c	W	S	S
EW09	Non 1E Low Voltage Power Cable-600 V, 9/c	W	S	S
EW21	Instrumentation Cable	W	S	S
EW30	Coaxial Cable	W	W	S
EW31	Fiber-optic cable (between JS90 equipment)	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
EW40	Non 1E Medium Voltage Power Cables	W	S	S
EW41	Non 1E Medium Voltage Power Cable-5kV, 1/c	W	S	S
EW50	1E Low Voltage Power Cables	W	S	S
EW51	1E Low Voltage Power Cable-600 V, 1/c	W	S	S
EW53	1E Low Voltage Power Cable-600 V, 3/c	W	S	S
EW54	1E Low Voltage Power Cable-600 V, 4/c	W	S	S
EW55	1E Low Voltage Power Cable-600 V, 5/c	W	S	S
EW57	1E Low Voltage Power Cable-600 V, 7/c	W	S	S
EW59	1E Low Voltage Power Cable-600 V, 9/c	W	S	S
EW60	1E Control Cables	W	S	S
EW70	Non 1E Control Cables	W	S	S
EY01	Containment Electrical Penetration Assemblies	W	W	W
EY03	Electric Welder Outlets	W	S	S
EY04	Electrical Protection Relay Panels This may need further breakdown for DOR	W	S	W(T)
EY20	Low Voltage Cable Terminations	W	S	S
EY30	Medium Voltage Cable Terminations	W	S	S
EZ01	Switchyard/Substation Equipment	O	O	O
FA01	Fuel Assemblies (see note 3)	W	W	W
FC01	Reactor Core Assembly (see note 3)	W	W	W
FC10	Burnable Absorbers (see note 3)	W	W	W
FC20	Primary Sources (see note 3)	W	W	W
FC30	Secondary Sources (see note 3)	W	W	W
FC40	Thimble Plugs	W	W	W
FG01	Grey Rod Cluster (see note 3)	W	W	W
FH01	Refueling Machine	W	W	W
FH02	Fuel Handling Machine	W	W	W
FH03	New Fuel Jib Crane	W	W	W
FH04	New Fuel Elevator and Hoist	W	W	W
FH05	Fuel Transfer Conveyor (OC)	W	W	W
FH50	New RCC Handling Tool	W	W	W
FH51	New Fuel Assembly Handling Tool	W	W	W
FH52	Spent Fuel Assembly Handling Tool	W	W	W
FH53	Wet Annular Burnable Absorber Handling Tool	W	W	W
FH54	Control Rod Drive Unlatching Tool	W	W	W
FH55	Control Rod Drive Shaft Handling Tool	W	W	W
FH56	Irradiated Sample Handling Tool	W	W	W
FH57	RCC Change Tool	W	W	W
FH58	Irradiation Sample End Plug Seating Jack	W	W	W
FH60	Refueling Machine / Spent Fuel Handling Machine Load Test Fixture	W	W	W
FM01	U02 Fuel (see note 3)	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
FM02	MOX Fuel (see note 3)	NA	NA	NA
FR01	Control Rod Cluster (see note 3)	W	W	W
FS01	New Fuel Storage Racks	W	W	W
FS02	Spent Fuel Storage Racks	W	W	W
FS03	RCC Storage Station	W	W	W
FS04	Spent Fuel Rack Insert for BPRA	W	W	W
FS05	Control Rod Drive Storage Racks	W	W	W
FS06	In-containment Fuel Storage Rack	W	W	W
FS07	Irradiated Tube Plug Seating Jack	W	W	W
FS08	Tool Storage Racks	W	W	W
FS09	Rod Control Cluster Assembly Change Fixture	W	W	W
FT01	Fuel Transfer Tube	W	W	W
FT20	Spent Fuel Shipping Casks	W	W	W
GH01	Information Management System	W	W	W
JC01	Operation and Control System Panels	W	W	W
JC02	Fire Protection System Panels	W	S	S
JC90	Operation and Control System Panel Mockups	W	W	W
JD01	Protection and Safety Monitoring System Cabinets	W	W	W
JD02	Plant Control System Cabinets	W	W	W
JD03	Incore Instrumentation System Cabinets	W	W	W
JD04	Special Monitoring System Cabinets	W	W	W
JD20	Squib Valve Controller Cabinets - Class 1E	W	W	W
JD21	Squib Valve Controller Cabinets - Non Class 1E	W	W	W
JD50	Standard Electronic Cabinet Enclosures	W	W	W
JE01	Non Class 1E Field Mounted Instrumentation (unassigned)	W	W	W
JE02	Non Class 1E Pressure Instruments	W	W	W
JE03	Non Class 1E Temperature Primary Elements	W	W	W
JE04	Non Class 1E Flow Elements	W	W	W
JE05	Non Class 1E Differential Pressure Transmitters	W	W	W
JE06	Non Class 1E Level Instruments	W	W	W
JE08	Non Class 1E Moisture Instruments	W	W	W
JE10	Non Class 1E Conductivity Instruments	W	W	W
JE11	Non Class 1E pH Elements	W	W	W
JE13	Non Class 1E Position and Proximity Switches	W	W	W
JE14	Non Class 1E Pressure Gauges	W	W	W
JE15	Non Class 1E Temperature Indicators	W	W	W
JE16	Non Class 1E Heated Junction Thermocouple Level Switches	W	W	W
JE17	Non Class 1E Pneumatic Pressure Controllers	W	W	W
JE18	Non Class 1E Temperature Controllers	W	W	W
JE19	Non Class 1E Pneumatic Level Controllers	W	W	W
JE20	Oil Monitoring	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
JE25	Non Class 1E Ultrasonic Flow Measurement Instruments	W	W	W
JE30	Non Class 1E Vibration Instruments (Part of FWS)	W	W	W
JE35	Non Class 1E Chemical Analysis Instruments	W	W	W
JE51	Class 1E Field Mounted Instrumentation(not yet allocated)	W	W	W
JE52	Class 1E Pressure Transmitters	W	W	W
JE53	Class 1E Resistance Temperature Detectors	W	W	W
JE54	NO TITLE	W	NA	NA
JE55	Class 1E Differential Pressure Transmitters	W	W	W
JE56	Class 1E Ultrasonic Level Transmitters	W	W	W
JE57	Class 1E Moisture Transmitters	W	W	W
JE58	Class 1E Chemical Analysis Instruments	W	W	W
JE59	Class 1E Differential Pressure Level Switches	W	W	W
JE66	Class 1E Heated Junction Thermocouple Level Switches	W	W	W
JE69	Class 1E Flow Elements - Venturi Type (PRHR Flow)	W	W	W
JE70	Class 1E Flow Primary Elements (ASME Section III)	W	W	W
JE71	RCS Flow Probes	W	W	W
JE90	Incore Instrument Detector Assemblies	W	W	W
JE92	Excore Detectors	W	W	W
JL01	Non-Safety Related I&C Panels	W	W	W
JL02	Safety Related I&C Panels	W	W	W
JL03	Fire Protection Panels	W	S	S
JL04	Fluid Systems Test Panels	W	W	W
JM01	Instrument Mounting Plate Assemblies	W	S	S
JN01	Fire Protection Instrumentation	W	S	S
JP00	Reactor Trip Subsystems, General	W	W	W
JP01	Reactor Trip, Group 1, Integrated Prot. Cabinet, Division A	W	W	W
JP02	Reactor Trip, Group 1, Integrated Prot. Cabinet, Division B	W	W	W
JP03	Reactor Trip, Group 1, Integrated Prot. Cabinet, Division C	W	W	W
JP04	Reactor Trip, Group 1, Integrated Prot. Cabinet, Division D	W	W	W
JP05	Reactor Trip, Group 2, Integrated Prot. Cabinet, Division A	W	W	W
JP06	Reactor Trip, Group 2, Integrated Prot. Cabinet, Division B	W	W	W
JP07	Reactor Trip, Group 2, Integrated Prot. Cabinet, Division C	W	W	W
JP08	Reactor Trip, Group 2, Integrated Prot. Cabinet, Division D	W	W	W
JP10	Engineered Safety Features Subsystems, General	W	W	W
JP11	Engineered Safety Features, Group 1, Integrated Prot Cabinet, Div A	W	W	W
JP12	Engineered Safety Features, Group 1, Integrated Prot Cabinet, Div B	W	W	W
JP13	Engineered Safety Features, Group 1, Integrated Prot Cabinet, Div C	W	W	W
JP14	Engineered Safety Features, Group 1, Integrated Prot Cabinet, Div D	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
JP15	ESF, Group 2, Integrated Prot Cabinet, Div A	W	W	W
JP16	ESF, Group 2, Integrated Prot Cabinet, Div B	W	W	W
JP17	ESF, Group 2, Integrated Prot Cabinet, Div C	W	W	W
JP18	ESF, Group 2, Integrated Prot Cabinet, Div D	W	W	W
JP20	Nuclear Instr. Signal Processing and Control (NISPAC) Subsystems, Gen	W	W	W
JP21	NISPAC 1, Integrated Protection Cabinet, Division A	W	W	W
JP22	NISPAC 1, Integrated Protection Cabinet, Division B	W	W	W
JP23	NISPAC 1, Integrated Protection Cabinet, Division C	W	W	W
JP24	NISPAC 1, Integrated Protection Cabinet, Division D	W	W	W
JP25	NISPAC 2, Integrated Protection Cabinet, Division A	W	W	W
JP26	NISPAC 2, Integrated Protection Cabinet, Division B	W	W	W
JP27	NISPAC 2, Integrated Protection Cabinet, Division C	W	W	W
JP28	NISPAC 2, Integrated Protection Cabinet, Division D	W	W	W
JP30	Reactor Trip Logic Subsystems, General	W	W	W
JP31	Reactor Trip Logic, Integrated Prot. Cabinet, Division A	W	W	W
JP32	Reactor Trip Logic, Integrated Prot. Cabinet, Division B	W	W	W
JP33	Reactor Trip Logic, Integrated Prot. Cabinet, Division C	W	W	W
JP34	Reactor Trip Logic, Integrated Prot. Cabinet, Division D	W	W	W
JP40	Engineered Safety Features Actuation Subsystems, General	W	W	W
JP41	ESF Actuation Subsystem 1, ESF Actuation Cabinet, Division A	W	W	W
JP42	ESF Actuation Subsystem 1, ESF Actuation Cabinet, Division B	W	W	W
JP43	ESF Actuation Subsystem 1, ESF Actuation Cabinet, Division C	W	W	W
JP44	ESF Actuation Subsystem 1, ESF Actuation Cabinet, Division D	W	W	W
JP45	ESF Actuation Subsystem 2, ESF Actuation Cabinet, Division A	W	W	W
JP46	ESF Actuation Subsystem 2, ESF Actuation Cabinet, Division B	W	W	W
JP47	ESF Actuation Subsystem 2, ESF Actuation Cabinet, Division C	W	W	W
JP48	ESF Actuation Subsystem 2, ESF Actuation Cabinet, Division D	W	W	W
JP50	Protection Logic Subsystems, General	W	W	W
JP51	Protection Logic Subsystem, Division A	W	W	W
JP52	Protection Logic Subsystem, Division B	W	W	W
JP53	Protection Logic Subsystem, Division C	W	W	W
JP54	Protection Logic Subsystem, Division D	W	W	W
JP60	Communication Subsystems, General	W	W	W
JP61	Communication Subsystem, Integrated Prot. Cabinet, Division A	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
JP62	Communication Subsystem, Integrated Protection Cabinet, Division B	W	W	W
JP63	Communication Subsystem, Integrated Protection Cabinet, Division C	W	W	W
JP64	Communication Subsystem, Integrated Protection Cabinet, Division D	W	W	W
JP65	Communication Subsystem, ESF Actuation Cabinet, Division A	W	W	W
JP66	Communication Subsystem, ESF Actuation Cabinet, Division B	W	W	W
JP67	Communication Subsystem, ESF Actuation Cabinet, Division C	W	W	W
JP68	Communication Subsystem, ESF Actuation Cabinet, Division D	W	W	W
JP70	Qualified Data Processing Subsystems, General	W	W	W
JP71	Qualified Data Processing, Division B	W	W	W
JP72	Qualified Data Processing, Division C	W	W	W
JP80	PMS Multiplexing Subsystems, General	W	W	W
JP81	PMS Main Control Room Multiplexing, Division A	W	W	W
JP82	PMS Main Control Room Multiplexing, Division B	W	W	W
JP83	PMS Main Control Room Multiplexing, Division C	W	W	W
JP84	PMS Main Control Room Multiplexing, Division D	W	W	W
JP85	PMS Remote Shutdown Room Multiplexing, Division A	W	W	W
JP86	PMS Remote Shutdown Room Multiplexing, Division B	W	W	W
JP87	PMS Remote Shutdown Room Multiplexing, Division C	W	W	W
JP88	PMS Remote Shutdown Room Multiplexing, Division D	W	W	W
JP90	PMS Automatic Test Subsystems, General	W	W	W
JP91	PMS Automatic Test Subsystem, Integrated Protection Cabinet, Division A	W	W	W
JP92	PMS Automatic Test Subsystem, Integrated Protection Cabinet, Division B	W	W	W
JP93	PMS Automatic Test Subsystem, Integrated Protection Cabinet, Division C	W	W	W
JP94	PMS Automatic Test Subsystem, Integrated Protection Cabinet, Division D	W	W	W
JP95	PMS Automatic Test Subsystem, ESF Actuation Cabinet, Division A	W	W	W
JP96	PMS Automatic Test Subsystem, ESF Actuation Cabinet, Division B	W	W	W
JP97	PMS Automatic Test Subsystem, ESF Actuation Cabinet, Division B	W	W	W
JP98	PMS Automatic Test Subsystem, ESF Actuation Cabinet, Division D	W	W	W
JQ01	Data Display and Processing System Cabinets	W	W	W
JQ20	Ovation Operator Workstations	W	W	W
JQ30	Computation / Application Servers	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
JQ31	Software Servers	W	W	W
JQ32	Historical Data Storage Servers	W	W	W
JQ33	Data Link Servers	W	W	W
JQ34	Gateway Servers	W	W	W
JR20	Nuclear Instrument Racks	W	W	W
JS01	Seismic Monitoring Equipment	W	S	S
JS02	Fire Detection Equipment	W	S	S
JS03	Plant Security Equipment (see Security Infrastructure Tab)	NA	NA	NA
JS04	Acoustic Leak Monitoring Equipment	NA	NA	NA
JS05	Metal Impact Monitoring Equipment	W	W	W
JS06	Hydrogen Monitoring Equipment	NA	NA	NA
JS07	Radiation Monitoring Equipment, General	W	W	W(T)
JS08	Vibration Monitoring Equipment (RCP)	W	W	W
JS09	Meteorological Monitoring Equipment	O/W	O	O
JS10	Non-1E Gas Monitoring Panels (ZOD-001)	W	S	S
JS10	Non-1E Gas Monitoring Panels (ZOD-002)	W	W	W
JS11	Process Stream Chemistry Analyzers	W	S	S
JS21	Radiation Detection Pkgs - Process Monitors	W	W	W
JS22	Radiation Detection Pkgs - Effluent Monitors	W	W	W
JS23	Radiation Detection Pkgs - Airborne Monitors	W	W	W
JS24	Radiation Detection Pkgs – Area Monitors	W	W	W
JS25	Radiation Detection Pkgs - Personnel Contamination Monitors	W	W	W
JS30	ILRT Temporary Instrumentation Package	W	S	S
JS40	Rod Position Indication System Package	W	W	W
JS90	I&C System Packages	W	W	W
JS91	PMS System Package	W	W	W
JS92	PLS and DDS System Package	W	W	W
JS93	DAS System Package	W	W	W
JS94	IIS System Package	W	W	W
JS95	Training Simulator (See also System STS)	W	W	W
JT01	Class 1E Instrument Tubing and Fittings	W	S	S
JT02	Non-Class 1E Instrument Tubing and Fittings	W	S	S
JT90	Incore Instrumentation Guide Tubes	W	W	W
JU02	Local Control Station Annunciator System	NA	NA	NA
JW01	NIS Preamplifier Panels	W	W	W
JW02	NIS Power Range High Voltage Distribution Panels	W	W	W
JW03	MCR/RSW Transfer Switch Panel	W	W	W
JW04	QDPS Thermocouple Reference Junction Panel	W	W	W
JY01	Instrument Maintenance and Test Equipment	W	W	W
JY02	Chemical Laboratory and Chemistry Equipment	O	O	O
JY03	Radio-Chemistry Laboratory Equipment	O	O	O

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
JY04	Health Physics and Counting Equipment	O	O	O
JY05	QDPS Display Equipment	W	W	W
JY06	MCR Display Equipment (Wall Panel Information System)	W	W	W
JY50	Reactor Trip Switchgear	W	W	W
JZ01	Class 1E Instrument Manifolds	W	S	S
JZ02	Non-Class 1E Instrument Manifolds	W	S	S
MA01	Centrifugal Fans	W	S	S
MA20	CRDM Cooling Fans	W	W	W
MB01	Steam Generators	W	W	W
MB02	Lube Oil Heater (included in MS80)	W	W(T)	W(T)
MB10	Recirculation Heaters - PCS	W	W	W
MB10	Recirculation Heaters - PWS	W	S	S
MB70	Water Heaters (PWS)	W	S	S
MD01	Non-Safety Related Isolation, Balancing &Control Dampers	W	S	S
MD03	Fire and Smoke Dampers	W	S	S
MD04	Non-Safety Related Ductwork and Expansion Joints	W	S	S
MD05	Safety Related Ductwork and Expansion Joints	NA	NA	NA
MD06	Registers, Diffusers and Grilles	W	S	S
MD07	Non-Safety Gravity/Relief Dampers	W	S	S
MD20	Security Dampers	W	S	S
MD27	Safety-Related Gravity/Relief Dampers	W	W	S
ME01	CDS Turbine Condenser	W	W(T)	W(T)
ME02	PXS Passive RHR Heat Exchanger	W	W	W
ME03	Direct Heat Transfer Heat Exchanger - CDS Deaerator Feedwtr Htr & Stor Tank (see KT96)	W	W(T)	W(T)
ME04	MSS Moisture Separator Reheater	W	W(T)	W(T)
ME05	ASS Auxiliary Boiler Deaerator	W	S	S
ME10	Shell and U-Tube Heat Exchangers, ASME Section III Class 1, 2, and 3	W	W	NA
ME1C	RNS Normal RHR Heat Exchangers	W	W	W
ME20	Shell and U-Tube Heat Exchangers, ASME Section VIII	W	W	NA
ME2A	BDS Steam Generator Blowdown Heat Exchangers	W	W	W
ME2B	Stage 1 Feedwater Heaters	W	W(T)	W(T)
ME2C	Stage 2 Feedwater Heaters	W	W(T)	W(T)
ME2D	Stage 3 Feedwater Heater	W	W(T)	W(T)
ME2E	Stage 4 Feedwater Heater	W	W(T)	W(T)
ME2F	Stage 6 Feedwater Heater	W	W(T)	W(T)
ME2G	Stage 7 Feedwater Heater	W	W(T)	W(T)
ME2L	VYS Heat Exchangers	W	S	S
ME2M	WGS Gas Cooler	W	W	W
ME2N	WLS RC Drain Heat Exchanger	W	W	W
ME2P	WLS Vapor Condenser	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
ME2Q	CVS Makeup Miniflow Heat Exchangers	W	W	W
ME2R	CVS Regenerative Heat Exchanger	W	W	W
ME2S	CVS Letdown Heat Exchanger	W	W	W
ME30	Plate Heat Exchangers, ASME Section VIII	W	W	NA
ME3A	CCS Component Cooling Water Heat Exchangers	W	W	W
ME3B	SFS Heat Exchangers	W	W	W
ME3C	TCS Heat Exchangers	W	W	W
ME52	Fuel Oil Coolers	W	S	S
ME71	CWS Natural Draft Hyperbolic Cooling Tower	W	S	S
MEXX	Heat Exchangers	W	NA	NA
MG01	Main Turbine Generator	W	See MS80	See MS80
MG02	Control Rod Drive Motor-Generator Set	W	W	W
MG03	SEE MS40 On-Site Standby Diesel Generator and Auxiliary Equipment	W	See MS40	See MS40
MG20	Main AC Generator	W	See MS80	See MS80
MG30	Transportable AC Generators (See MS90)	NA	NA	NA
MG31	See MS90 (Ancillary Diesel Generator Packages)	NA	NA	NA
MH01	Containment Polar Crane	W	W	W
MH02	Spent Fuel Shipping Cask Crane	W	W	W
MH09	Traction-Type Elevators	W	S	S
MH11	Rack and Pinion Type Elevators	W	S	S
MH17	Reactor Coolant Pump/Motor Maintenance Cart	W	W	W
MH18	Hydraulic Lift Platform	W	S	S
MH19	Shield Bldg Annulus Personnel Baskets and Hoists	W	W	W
MH20	Bridge Cranes - Turbine Bldg	W	W(T)	W
MH20	Bridge Crane - Annex Bldg Crane Z0D-004 (being bid by PAR)	W	S	W
MH20	Annex Building Hot Machine Shop Crane	W	S	W
MH20	Rail Car Bay Crane and Console (Aux Bldg)	W	W	W
MH20	Mobile Systems Facilities Crane (Radwaste Bldg)	W	S	W
MH30	Jib Cranes (SGs)	W	W	W
MH40	Hoists and Monorails (Other than ASME Type 1)	W	S	S
MH40	Hoists and Monorails (ASME Type 1)	W	W	W
MH50	Scissor Lifts	W	S	S
MH60	Filter Transfer Casks	W	W	W
MI01	Reactor Internals	W	W	W
MI02	Reactor Driveline	W	W	W
MK01	Air Compressors & Aux. Eq.(not in design as of Aug '06)	NA	NA	NA
MK02	Vacuum Pumps & Aux. Eq. (not in design as of Aug '06)	NA	NA	NA
ML01	Main Steam Piping Penetrations	W	W	W
ML02	Main Feedwater Piping Penetrations	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
ML03	Fuel Transfer Tube Penetration	W	W	W
ML05	Room Penetrations	W	NA	NA
ML10	Containment Piping Penetrations with Flued Heads	W	W	W
ML11	Containment Air Filtration Penetrations	W	W	W
ML12	Pipe Anchors in Brk Exclusion Zone of NI	W	W	S
MN01	Metal Reflective Insulation (Steam Generators, Reactor Coolant Pumps, Pressurizer, hot legs, cold legs, Pressurizer Surge Line) To be installed by Vendor	W	W	W
MN02	Non-Metallic Equipment and Piping Insulation	W	S	S
MN03	Reactor Vessel Head Reflective Metal Insulation (includes IHP and Reactor Vessel Flange Insulation) To be installed by Vendor.	W	W	W
MN10	Metal Reflective Insulation (Other than MN01, MN03, MN20) To be installed by Vendor	W	W	W
MN20	Reactor Vessel Insulation System (also called Reactor Cavity Insulation) To be installed by Vendor.	W	W	W
MN50	HVAC Duct, Damper, and Accessories Insulation	W	S	S
MP01	RCS Canned-Motor Reactor Coolant Pumps & Maint. Cart - ASME Section III	W	W	W
MP02	FWS Main Feedwater and Feedwater Booster Pumps (as a package) (See also MS45)	W	W (spec MP02)	W
MP03	CDS Condensate Pumps (Vertical Deepwell, Multi-Stage) See also MS46	W	S (spec MP03)	S
MP04	SWS Service Water Pumps (Vertical Wetpit)	W	W (spec MP04)	W
MP05	CWS Circulating Water Pumps (Vertical Wetpit)	W	S (spec MP05)	S
MP06	CVS Makeup Pumps (Horizontal Multi-Stage Centrifugal)	W	W (spec MP06)	W
MP07	FWS Startup Feedwater Pumps (Horizontal Multi-Stage Centrifugal)	W	W (spec MP07)	W
MP08	RNS Centrifugal Normal RHR Pumps - ASME Section III	W	W (spec MP08)	W
MP09	RWS Clearwell Pumps	W	O (spec MP09)	O
MP10	Non-Safety Horizontal Single Stage Non-ANSI Centrifugal Pumps (Specification only)	W	W Spec APP-MP10-Z0-001	NA
MP1F	RWS Raw Water Pumps	W	O (also a datasheet in spec MP10)	O
MP1G	VWS Water Chiller Pumps	W	S (datasheet in spec MP10)	S

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
MP1H	TCS Turbine Building Closed Cycle Cooling System Pumps	W	S (datasheet in spec MP10)	S
MP1J	CCS Component Cooling Water Pumps	W	W (datasheet in spec MP10)	W
MP20	Non-Safety Horizontal Single Stage ANSI and Canned Motor Centrifugal Pumps (specification only)	W	W Spec APP-MP20-Z0-001	NA
MP2A	Auxiliary Boiler Feed Pumps (part of Aux Boiler Package)	W	NA	NA
MP2D	HDS MSR Shell Drain Pumps	W	S (datasheet in spec MP20	S
MP2H	PWS Potable Water Supply Pumps	W	S (datasheet in spec MP20)	S
MP2K	SFS Spent Fuel System Cooling Pumps	W	W (datasheet in spec MP20)	W
MP2M	VWS Air-Cooled Chiller Pumps	W	S (datasheet in spec MP20)	S
MP2N	VYS Hot Water Pumps	W	S (datasheet in spec MP20)	S
MP2Q	BDS Stm Gen Drain & Recirc Pump	W	W (datasheet in spec MP20)	W
MP30	Non-Safety Vertical Single Stage ANSI and Canned Motor Centrifugal Pumps (specification only)	W	W Spec APP-MP30-Z0-001	NA
MP3A	Auxiliary Boiler Makeup Pumps (part of Aux Boiler Package)	W	NA	NA
MP3D	DWS Demin Transfer Pumps (part of CORS package)	W	NA	NA
MP3P	PCS Recirculation Pumps (this CLC will change to MP2x)	W	W (datasheet in spec MP20)	W
MP3R	PWS Potable Water Jockey Pump (this CLC will change to MP2x)	W	S (datasheet in spec MP20)	S
MP3T	WLS Degasifier Separator Pumps (this CLC will change to MP2x)	W	W (datasheet in spec MP20)	W
MP50	Air-Operated (Pneumatic) Double Diaphragm Pumps (22 pumps in this CLC - not listed individually in DOR)	W	W Spec APP-MP50-Z0-001	W
MP60	Canned Motor Submersible Pumps (specification only - for containment sump pumps only)	W	W (Spec) APP-MP60-Z0-01)	NA

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
MP6A	WLS Reactor Coolant Drain Pumps (this CLC will change to MP3x)	W	W (datasheet in spec MP30)	W
MP6B	WLS Containment Sump Pumps	W	W (spec MP60)	W
MP6C	WWS Basin Transfer Pumps (this CLC will change to MP3x)	W	S (datasheet in spec MP30)	S
MP90	Progressive Cavity Positive Displacement Pumps (WSS Resin Transfer Pump)	W	W Spec APP-MP90-Z0-001	W
MP91	Liquid Ring Vacuum Pumps (WLS Degasifier Vacuum Pumps)	W	W Spec APP-MP91-Z0-001	W
MP92	Vacuum Pressure Pumps (WGS Sample Pumps)	W	W Spec APP-MP92-Z0-001	W
MR01	Self Contained Breathing Apparatus	W	W	W
MR02	Forklifts	W	S	S
MR40	High Activity Radwaste Handling Casks	W	NA	NA
MR50	Radwaste Shipping Casks	W	NA	NA
MS01	Water-Cooled Chillers	W	S	S
MS02	Air-Cooled Chillers	W	S	S
MS03	Decontamination Equipment	W	S	S
MS04	Turbine Lube Oil Package (included in MS80)	W	W(T)	W(T)
MS05	Air Compressor Packages	W	S	S
MS06	Compressed Air Dryer Packages	W	S	S
MS07	Diesel Oil Transfer Packages	W	S	S
MS08	CORS Packages	W	S	S
MS09	Water Treatment Units	W	S	S
MS10	Air Handling Units	W	S	S
MS11	Air Filtration Units	W	S	S
MS12	General Area Room Coolers	W	S	S
MS13	Condenser Tube Cleaning Equipment	W	S	S
MS14	Containment Recirculation Fan Cooling Units	W	S	S
MS15	Resin Sampler Package	W	W	W
MS16	CAS Air Tank Package	W	S	S
MS17	Potable Water Chlorinator	NA	NA	NA
MS18	Condenser Air Removal Package	W	S	S
MS19	Condensate Polishing Package	W	S	S
MS20	PSS Grab Sampling Unit	W	W	W
MS21	SSS Secondary Sampling Equipment	W	S	S
MS22	BDS Electrodeionization Packages	W	W	W
MS25	CVS Zinc Injection Package	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
MS29	Refueling Pool Underwater Filter System	W	W	W
MS30	Chemical Treatment Units	W	S	S
MS31	Raw Water System Package	W	O	O
MS32	Fire Pump Packages	W	S	S
MS33	Turbine Gland Seal Condenser Package	W	W(T)	W(T)
MS34	Sanitary Waste Treatment Plant	O/W	O	O
MS35	Main Turbine EHC Fluid Package (included in MS80)	W	W(T)	W(T)
MS36	Containment Temporary Air Supply Package	W	S	S
MS37	HCS Generator Gas Dryer Unit (included in MS80)	W	W(T)	W(T)
MS38	HSS Hydrogen Seal Oil Unit (included in MS80)	W	W(T)	W(T)
	Generator Stator Cooling Water Unit (included in MS80)	W	W(T)	W(T)
MS39	Material Handling Load Cell Units	NA	NA	NA
MS40	Diesel Generator Units	W	S	S
MS41	Diesel Generator Starting Air Packages	W	See MS40	See MS40
MS42	Diesel Generator Radiator Packages	W	See MS40	See MS40
MS45	Feedwater Pump Packages	W	W	W
MS46	Condensate Drain Packages	W	S	S
MS50	PGS Plant Gas Packages	W	NA	NA
MS51	PGS Nitrogen Package	W	S	S
MS52	PGS Hydrogen Package	W	S	S
MS53	PGS Carbon Dioxide Package	W	S	S
MS60	Auxiliary Boiler Package	W	S	S
MS70	Induced Draft Cooling Tower Package	W	W	W
MS80	Main Turbine Generator Package	W	W(T)	W(T)
MS90	Post 72 Hour Temporary Power Supply Units (Ancillary Diesel Generator Packages)	W	S	S
MS93	Self-Contained Breathing Apparatus Refill Station	W	S	S
MSXX	Packaged Systems	W	NA	NA
MT01	PXS Core Makeup Tanks	W	W	W
MT02	PXS Accumulator Tanks	W	W	W
MT03	PXS In-containment Refueling Water Storage Tank (IRWST)	W	W	W
MT04	PCS Ancillary Water Storage Tank	W	W	W
MT05	PCS Water Distribution Bucket and Weir Components	W	W	W
MT07	See MZ04	W	NA	NA
MT10	ASME Section III, Class 2 and 3 Shop-Fabricated Tanks	W	W	NA
MT20	Non-Safety Shop-Fabricated Pressurized Tanks	W	W/S	NA
MT2A	CAS Air Receiver	W	S	S
MT2B	ASS Auxiliary Boiler Blowdown Flash Tank	W	S	S
MT2C	HDS MSR Tube Drain Tanks (included in ME04)	W	W(T)	W(T)
MT2D	HDS MSR Shell Drain Tanks (included in ME04)	W	W(T)	W(T)

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
MT2F	PCS Chemical Additive Tanks	W	W	W
MT2L	VYS Surge Tank	W	S	S
MT2M	Chemical Addition Tanks for CCS	W	W	W
MT2M	Chemical Addition Tanks for VWS and VYS	W	S	S
MT2M	Chemical Addition Tanks for TCS	W	S	S
MT2Q	RC Drain Tank	W	W	W
MT2T	VWS Air-Cooled Chiller Expansion Tanks	W	S	S
MT30	Non-Safety Shop-Fabricated Atmospheric Pressure Tanks	W	W	NA
MT3A	CCS Component Cooling Surge Tank	W	W	W
MT3F	CVS Boric Acid Batching Tank	W	W	W
MT3G	CVS Chemical Mixing Tank	W	W	W
MT3K	WLS Effluent Holdup Tanks	W	W	W
MT3L	WLS Waste Holdup and Monitor Tanks	W	W	W
MT3N	WLS Chemical Waste Tank	W	W	W
MT3P	WWS Waste Oil Storage Tank	W	S	S
MT3S	VWS Expansion Tank	W	S	S
MT3T	TCS Surge Tank	W	S	S
MT3U	WLS Chemical Addition Pots	W	W	W
MT3V	DOS Fuel Oil Day Tanks	W	S	S
MT3W	DOS Ancillary Fuel Oil Tank	W	S	S
MT40	NFPA 22 Tanks	NA	S	NA
MT4A	FPS Primary Fire Water Tank	W	S	S
MT4B	Fire Water / Clearwell Storage Tank	W	S	S
MT50	Non-Safety Field-Erected Tanks	W	S/W	NA
MT5A	CVS Boric Acid Tank	W	W	W
MT5B	DOS Fuel Oil Storage Tanks	W	S	S
MT5C	DWS Condensate Storage Tank	W	S	S
MT5D	DWS Demin Water Storage Tank	W	S	S
MT5E	LOS Clean Oil Storage Tank (included in MS80)	W	W(T)	W(T)
MT5F	LOS Dirty Oil Storage Tank (included in MS80)	W	W(T)	W(T)
MT5G	PWS Potable Water Storage Tanks	W	S	S
MT70	WLS Containment Sump	W	NA	NA
MT71	WWS Basins and Sumps	W	S	S
MT72	Aux Building Equipment and Floor Drain Sump (WRS)	W	W	W
MT73	IRWST Return Gutter	W	W	W
MT74	DOS Dikes	W	S	S
MT92	Vent Overflow Drum	NA	NA	NA
MT96	FHS Pits	W	NA	NA
MT97	Spent Fuel Pool	W	NA	NA
MT98	Fuel Transfer Canal	W	NA	NA
MT99	Refueling Cavity	W	NA	NA

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
MTXX	Tanks	W	NA	NA
MV01	Reactor Vessel Equipment - ASME Section III	W	W	W
MV10	Integrated Head Package - ASME Section III	W	W	W
MV11	Control Rod Drive Mechanism - ASME Section III	W	W	W
MV20	Pressurizer - ASME Section III	W	W	W
MV30	CVS Mixed Bed and Cation Demineralizers	W	W	W
MV40	High Pressure Cartridge Filters (Reactor Coolant Filters)	W	W	W
MV50	Containment Vessel - To be installed by Vendor	W	W	W
MV60	ASME Section VIII Demineralizers, Guard Bed, and Delay Beds	W	W	NA
MV6A	BDS Steam Generator Blowdown Demineralizer Units	W	NA	NA
MV6D	SFS Demineralizers	W	W	W
MV6E	WLS Ion Exchangers	W	W	W
MV6F	WLS Charcoal (Deep Bed) Filters	W	W	W
MV6G	WGS Guard Bed	W	W	W
MV6H	WGS Delay Beds	W	W	W
MV70	ASME Section VIII Separators and Degasifiers	W	W	W
MV7G	WGS Moisture Separator	W	W	W
MV7H	WLS Degasifier Column	W	W	W
MV7J	WLS Degasifier Separator	W	W	W
MV7K	WWS Oil Separator	W	S	S
MV80	ASME Section VIII Filters	W	NA	NA
MV8A	CAS Prefilters	W	NA	NA
MV8B	CAS Air Intake Filters	W	NA	NA
MV8C	CAS After Filters	W	NA	NA
MV90	Cartridge Filters -CVS, SFS, WLS	W	W	NA
MV94	Resin Mixing Pulse Damper	W	NA	NA
MV95	Dewatering Pulse Damper	W	NA	NA
MV96	Resin Samplers	W	NA	NA
MV98	Resin Sampler Cylinders	W	NA	NA
MV99	Spent Resin Tanks (with Internal Eductors and Screens)	W	W	W
MV9A	Low Pressure Cartridge Filters	W	W	W
MV9B	Low Pressure Bag Filters	W	W	W
MVXX	Vessels	W	NA	NA
MW01	Spargers	W	W	W
MY01	Unit Ventilators	W	S	S
MY02	Circulating Water Trash Screens - CWS	W	S	S
MY02	PCS Trash Screen	W	W	W
MY03	IWRST Screens	W	W	W
MY04	Containment Recirculation Screens	W	W	W
MY05	Containment Hatches	W	NA	NA
MY06	Spent Fuel System Gates	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
MY07	PXS ph Adjustment Baskets	W	W	W
MY08	Refueling Canal Gate	W	W	W
MY10	HVAC Filters(not packaged units)	W	S	S
MY15	Diesel Generator Disposable Air Intake Filters	W	S	S
MY20	Humidifiers	W	S	S
MY30	Reactor Cavity Seal Ring	W	W	W
MY40	Main Turbine Reheat and Exhaust Piping (included in MS80)	W	W(T)	W(T)
MY50	Hot Water Unit Heaters	W	S	S
MY51	All Electric Unit Heaters	W	S	S
MY70	Silencers	W	NA	NA
MY7B	Steam Generator Relief Silencers	W	W	W
MY80	Hydrogen Recombiners	W	W	W
MY90	Irradiated Sample Tube Special Equipment	W	W	W
MY95	Laboratory Hood Vents	W	S	S
MZ01	Reactor Vessel Stud Tensioners	W	W	W
MZ02	Reactor Vessel Internals Lifting Rig	W	W	W
MZ03	Reactor Upper Internals Storage Stand	W	W	W
MZ04	Integrated Head Package Storage Stand/Tank	W	W	W
MZ05	Reactor Lower Internals Storage Stand	W	W	W
MZ06	Reactor Vessel Head Lifting Jig	W	W	W
MZ11	Reactor Vessel Stud Handling Equipment	W	NA	NA
MZ13	Thimble Plug Handling Tool	W	W	W
MZ14	Button Height Measurement Tool	W	W	W
MZ15	Fuel Assembly Loading Guide	W	W	W
MZ16	Fuel Assembly Loading Guide - L-Shaped	W	W	W
MZ17	Generic Refueling Toolbox	W	W	W
MZ19	Portable RCS Vent Vacuum Skid	W	W	W
MZ1A	RV Stud Bolt Tensioners	W	W	W
MZ1B	RV Stud Bolt Nut Bolting Tools	W	W	W
MZ1C	RV Stud Bolt Air Balancers	W	W	W
MZ1D	RV Stud Bolt Lifting Wire Twist Return Jigs	W	W	W
MZ1E	RV Stud Bolt Wrenches	W	W	W
MZ1F	RV Stud Bolt Elongation Measurement Device	W	W	W
MZ1G	RV Stud Hole Plugs	W	W	W
MZ1H	RV Stud Hole Plug Handling Tool	W	W	W
MZ1J	RV Stud Bolt Tensioner Electric Hoists	W	W	W
MZ1K	RV Stud Nut & Washer Conveyance Rack	W	W	W
MZ1L	RV Stud Bottom and Top Plug Spanner	W	W	W
MZ1M	RV Stud Bolt Lifting Eyebolts	W	W	W
MZ1P	RV Stud Bolt Protection Caps	W	W	W
MZ1Q	RV Stud Bolt Hole Brushing Tool	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
MZ1R	RV Stud Bolt Cleaning Tool	W	W	W
MZ1S	RV Guide Studs	W	W	W
MZ2A	Startup Feedwater Pump Special Spanners and Hex Bar Wrench	W	W	W
MZ3A	SG Manhole Handling Equipment	W	W	W
MZ3B	SG Manhole Flange-Face Protection Plates	W	W	W
MZ3C	SG Manhole Duct Flanges	W	W	W
MZ3D	SG Manhole Temporary Lids	W	W	W
MZ3E	SG Drain Plugs	W	W	W
MZ3F	SG Manhole Stud Bolt Tensioner	W	W	W
MZ3G	CCS HX Bolt Tightener (Rachet Spanner)	W	W	W
MZ3H	SFS HX Bolt Tightener (Rachet Spanner)	W	W	W
MZ3J	CVS Makeup Pump Thrust Collar Nut Tool	W	W	W
MZ3K	CVS Makeup Pump Internal Casing Insertion/Withdrawal Tool	W	W	W
MZ3L	CVS Makeup Pump Thrust Collar Movement Adj Tool	W	W	W
MZ3M	CVS Makeup Pump Thrust Collar Withdrawal Tool	W	W	W
MZ3N	RNS Pump Impeller Disassembly/ Mounting Jig	W	W	W
MZ3P	Service Water Pump Packing Withdrawal Tool	W	W	W
MZ3Q	RNS Pump Disassembly / Mounting Table	W	W	W
MZ41	Machine Shop Drill Press	W	S	S
MZ42	Machine Shop Band Saw	W	S	S
MZ43	Machine Shop Power Hacksaw	W	S	S
MZ44	Machine Shop Universal Grinder	W	S	S
MZ45	Machine Shop Lathe	W	S	S
MZ46	Machine Shop Milling Machine	W	S	S
MZ47	Pedestal Grinder	W	S	S
MZ48	Hydraulic Press	W	S	S
MZ49	Welding Platten	W	S	S
MZ50	Valve Lapping Machine	W	S	S
NS01	Integrated Head Package Shield Plate	W	W	W
NS11	Reactor Cavity Neutron Shield (supplied w/ MN20)	W	W	W
PF01	Automatic Sprinklers and Water Sprays	W	S	S
PH01	RCS Pipe Supports	W	NA	NA
PH04	Mechanical Shock Arrestors(Snubbers) Note: Entity with detailed system design responsibility	W	See note in Description	S
PH20	Standard Large Bore Pipe Supports * The System detailed designer will provide loads to the Building Detailed designer. Shaw has the lead on all hanger design specifications.	W	See * in Description to left	S
PH50	Standard Small Bore Pipe Supports * The System detailed designer will provide loads to the Building Detailed designer. Shaw has the lead on all hanger design specifications.	W	See * in Description to left	S

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
PL01	RCS Piping	W	W	W
PL02	Standard Plant Piping - ASME III	W	W	S
PL03	Standard Plant Piping - ANSI B31.1	W	W	S
PL20	Valve Packing Material	W	NA	NA
PP01	Plumbing and Drainage Pipe and Fittings	W	S	S
PP02	Plumbing Materials	W	S	S
PV01	Motor Operated Globe and Gate Valves, ASME Section III, Class 1, 2, & 3	W	W	W
PV02	1" & 2" Manually Operated Globe and Check Valves, ASME Sec III Cl 1, 2, & 3	W	W	W
PV03	3" & Larger Man Operated Gate, Globe and Check Vlvs, ASME Sec III Cl 1,2,3	W	W	W
PV10	Ball and Plug Valves, ASME Sect. III Classes 1, 2, & 3	W	W	W
PV11	Butterfly Valves, ASME Section III Classes 2 and 3	W	W	W
PV13	Solenoid-Operated Globe Valves, ASME Section III Classes 1, 2, and 3	W	W	W
PV14	Air Op Globe Valves, ASME Sec III Class 1, 2, & 3	W	W	W
PV15	Pressure Regulating Globe Valves, ASME Section III Classes 2 and 3	W	W	W
PV16	Auxiliary Relief Valves, ASME Sect. III Classes 2 & 3	W	W	W
PV17	Instrumentation Valves, Safety Related	W	W	W
PV18	Vacuum Breaker Valves, ASME Sect. III, Class 1, 2, & 3	W	W	W
PV31	Motor Operated Gate and Globe Valves, ASME B16.34	W	W	W
PV32	1" & 2" Manually Operated Globe and Check Valves, ASME B16.34	W	W	W
PV33	3" & Larger Manually Operated Gate, Globe, & Check Vlvs, ASME B16.34	W	W	W
PV40	Ball and Plug Valves, ASME B16.34	W	W	W
PV41	Butterfly Valves, ASME B16.34	W	W	W
PV43	Solenoid-Operated Globe Valves, ASME B16.34	W	W	W
PV44	Air Operated Globe Valves, ASME B16.34	W	W	W
PV45	Pressure Regulating Globe Valves, ASME B16.34	W	W	W
PV46	Auxiliary Relief Valves, ASME B16.34	W	W	W
PV47	Instrumentation Valves, Non-Safety Related	W	W	W
PV48	Vacuum Breaker Valves, ASME B16.34	W	W	W
PV50	NFPA Code Valves	W	S	S
PV53	National Plumbing Code Valves	W	S	S
PV54	Three-Way ASME B16.34 Valves	W	W	W
PV55	Automatic Recirculation Valves	W	W	W
PV62	Pressurizer Safety Valves	W	W	W
PV63	Pressurizer Spray Valves	W	W	W
PV64	Main Steam Isolation Valves (MSIV)	W	W	W
PV65	Main Steam Safety Valves (MSSV)	W	W	W

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
PV66	Main Steam Power Operated Relief Valves (MSPORV)	W	W	W
PV67	Feedwater Isolation Valves (FWIV)	W	W	W
PV68	Feedwater Check Valves (FWCV)	W	W	W
PV69	Feedwater Control Valves (FCV)	W	W	W
PV70	Squib Valves, ASME Section III Class 1, 2, & 3 PV70 is the main designator for squib valves. The valve data report is PV70-Z0r-001, which contains three data sheets, PV70-Z0D-100, -101, -102. PV7A, PV7B, PV7C may still be used for drawing purposes, but until we get into the design just refer to PV70 for squib valves.	W	W	W
PV71	Turbine Control and Stop Valves (included in MS80)	W	W(T)	W(T)
PV72	Turbine Interceptor and Reheat Stop Valves (incl in MS80)	W	W(T)	W(T)
PV73	Extraction Steam Non-Return Valves	W	W	W(T)
PV74	Large Circulating Water Butterfly Valves	W	S	S
PV75	Moisture Separator Reheater Safety/Relief Valves (included in MS80)	W	W(T)	W(T)
PV76	Turbine Bypass Valves (Steam Dump)	W	W	W
PV77	Pinch Valves	W	W	W
PV78	Needle Valves	W	W	W
PV7A	8" Low Pressure Squib Valves (see PV70 above)	W	W	W
PV7B	8" High Pressure Squib Valves (see PV70 above)	W	W	W
PV7C	14" High Pressure Squib Valves (see PV70 above)	W	W	W
PV95	Electric Motor-Operated Valve Actuators	W	NA	NA
PVXX	Valves	W	NA	NA
PY01	Inline Piping Strainers, Screens, and Filters, ASME III	W	S	S
PY02	Inline Piping Strainers, ANSI/ASME B31.1	W	S	S
PY03	Inline Piping Temporary Strainers	W	S	S
PY04	Inline Piping Filters, ANSI/ASME B31.1	W	S	S
PY05	Automatic Strainers, ANSI/ASME B31.1	W	S	S
PY06	Skimmer / Strainers	W	W	W
PY10	Inline Piping Component Gaskets	W	S	S
PY15	Metallic Expansion Joints, ASME III	W	NA	NA
PY20	Metallic Expansion Joints, ANSI/ASME B31.1	W	S	S
PY25	Flow Restricting Orifices, Flanges & Bolts, ASME Section III (For FE's)	W	W	S
PY25	Flow Restricting Orifices, Flanges & Bolts, ASME Section III (Restrict Orifices)	W	S	S
PY30	Flow Restricting Orifices Flanges & Bolts, ANSI B31.1 (For FE's)	W	W	S
PY30	Flow Restricting Orifices, Flanges & Bolts, ANSI B31.1 (Restrict Orifices)	W	S	S
PY35	Steam Traps, ASME III	W	S	S
PY40	Steam Traps ANSI/ASME B31.1	W	S	S

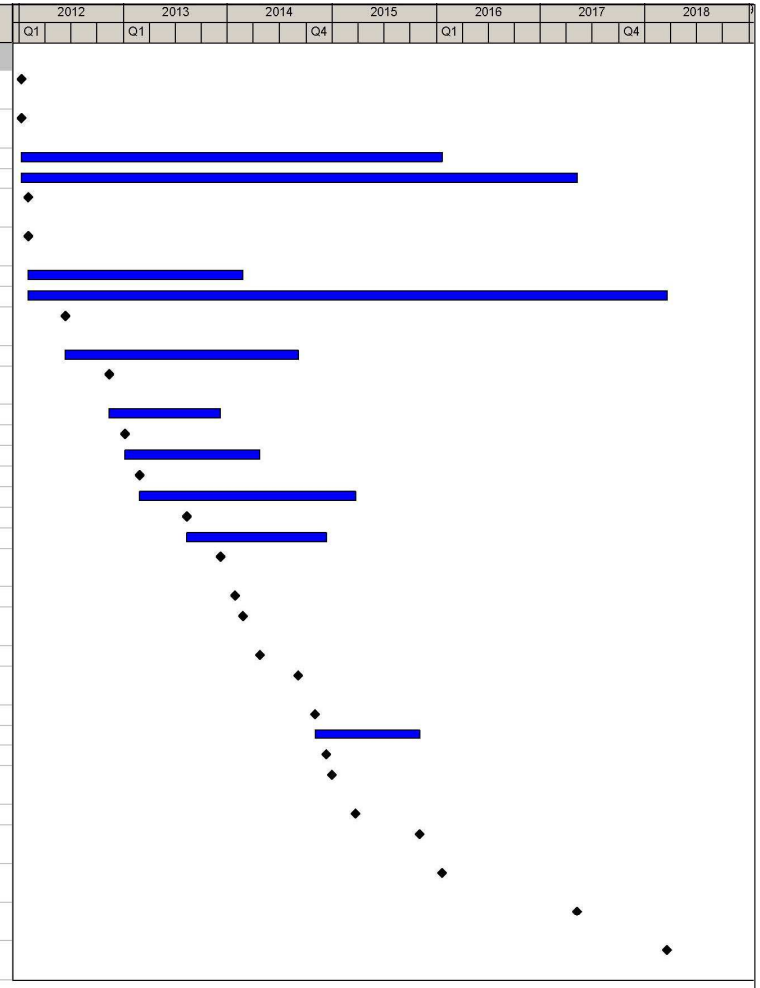
Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
PY45	Drain Traps, ANSI/ASME B31.1	W	S	S
PY50	Flexible Metal Hose, ASME III	W	NA	NA
PY51	Flexible Metal Hose, non-ASME	W	S	S
PY55	Non-Metallic Expansion Joints	W	S	S
PY60	Spent Fuel Pool Skimmer	W	W	W
PY70	Instrumentation Hydraulic Isolators	W	S	S
PY72	Thermowells	W	S	S
PY80	Pulsation Dampers	W	S	S
PY81	Eductors	W	S	S
PY86	Equipment Drains	W	S	S
PY87	Floor Drains	W	S	S
PY88	Fire Hydrants	W	S	S
PY89	Fire Hose Stations	W	S	S
PY90	Temporary Strainers	W	S	S
PY91	Spectacle Flanges	W	S	S
PY92	Flame Arrestors	W	NA	NA
PY93	Automatic Vent Unit	W	S	S
PY95	Rupture Discs	W	W	W
PY96	Mechanical Connections/Quick Disconnects	W	W	W
Q611	360 Deg Horiz. Circular Trunk Elec Svcs Walkway SSW ** W (may be considered "outfitting" by containment vessel supplier or Shaw)	W	W	see ** comm. Code Q611
Q612	360 Deg Horiz. Circular Trunk Elec Svcs Walkway WSW	W	W	see ** comm. Code Q611
Q613	360 Deg Horiz. Circular Trunk Elec Svcs Walkway West	W	W	see ** comm. Code Q611
Q614	360 Deg Horiz. Circular Trunk Elec Svcs Walkway WNW	W	W	see ** comm. Code Q611
Q615	360 Deg Horiz. Circular Trunk Elec Svcs Walkway NNW	W	W	see ** in comm. Code Q611
Q616	360 Deg Horiz. Circular Trunk Elec Svcs Walkway North	W	W	see ** in comm. Code Q611
Q616	360 Deg Horiz. Circular Trunk Elec Svcs Walkway North	W	W	see ** in comm. Code Q611
Q617	360 Deg Horiz. Circular Trunk Elec Svcs Walkway NNE	W	W	see ** in comm. Code Q611
Q618	360 Deg Horiz. Circular Trunk Elec Svcs Walkway ENE	W	W	see ** in comm. Code Q611

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
Q619	360 Deg Horiz. Circular Trunk Elec Svcs Walkway East	W	W	see ** in comm. Code Q611
Q620	360 Deg Horiz. Circular Trunk Elec S Svcs Walkway ESE	W	W	see ** in comm. Code Q611
Q621	360 Deg Horiz. Circular Trunk Elec Svcs Walkway SSE	W	W	see ** in comm. Code Q611
Q622	360 Deg Horiz. Circular Trunk Elec Svcs Walkway South	W	W	see ** in comm. Code Q611
SB01	Containment Air Baffle	W	W	S
SB02	Containment Air Baffle - Upper Portion	W	NA	NA
SH21	Electrical Cable Tray Supports	W	S/W	S
SH22	Electrical Conduits and Junction Box Supports	W	S/W	S
SH25	Seismic Category I Cable Tray Supports	W	S/W	S
SH30	Instrument and Instrument Tubing Supports	W	S/W	S
SH40	HVAC Ductwork and Duct Supports	W	S/W	S
SH50	Jet Impingement Shields	W	S/W	S
SH60	Pipe Whip Restraints	W	S/W	S
SH70	Large Bore Ganged Pipe Supports	W	S/W	S
SH80	Small Bore Ganged Pipe Supports	W	S/W	S
SL01	Structural Steel Liner Plates	W	NA	NA
SN01	Fireproofing On Structural Steel ** Entity responsible for building design	W	See ** in Descr.	S
SP01	Spring Mounted Turbine/Condenser Platform	W	W	S
SP02	Platforms, Walkways and Stairways	W	NA	NA
SS01	Standard Structural Steel ** Entity responsible for building design	W	See ** in Descr.	S
SS20	Non-Safety Standard Structural Steel ** Entity responsible for building design	W	See ** in Descr.	S
SS30	Reactor Coolant System Support Components	W	W	W
SY01	Containment Personnel and Equipment Hatches -- Structural	W	NA	NA
VL01	Lubricants ** Entity responsible for building design	W	See ** in Descr.	To be addressed as part of the Startup organization

Commodity Locator Code	Description	Design Criteria	Design Spec.	Supply
VL02	Cleaning and Flushing Materials	W	To be addressed as part of the Startup organization	To be addressed as part of the Startup organization
VL20	Process Chemicals	W	Entity responsible for component supply	To be addressed as part of the Startup organization
VL40	Demineralizer Resins	W	Entity responsible for component supply	To be addressed as part of the Startup organization
VW01	Welding Materials	W	Entity responsible for detailed system design	W - RCS loop piping S - all other
W591	Heater Bay Vertical Pipe Chase (El. 109' - 161')	W	W	S
XD01	Site Drainage/Sewer Equipment	W	S/O	S/O
XF01	Site Fencing	W	S/O	S/O
XF20	Site Gates	W	S/O	S/O
XL01	Area Fences and Gates	W	S/O	S/O
XR01	Railroad Track and Ballast	W	O	O
XS01	Road and Parking Area Base and Surfaces	W	S/O	S/O
XY01	Yard Area Pool Liners and Membranes	W	S	S
Subtotal =	880			
	Notes:			
	1. For the purposes of this table, design specification means development of the specification used to procure the item. For many of the items in this table, especially commodities, the routing, sizing and supporting will be performed by the system or building detailed design entity.			
	2. For AX01, Westinghouse will develop a requirements document for coating systems and Shaw will develop the detailed specifications used for both application and procurement of the material.			
	3. Fuel items, not part of standard plant EPC contract			

Appendix C-6:
Schedule

Activity ID	Activity Name	Start	Finish
Lee Station Site Specific		10-Jan-12	19-Mar-18
L1YARDWORKSM	SITE PREPARATION & YARD WORK START MILESTONE	10-Jan-12	
L1TEMPBLDSM	START - TEMPORARY BUILDINGS START MILESTONE	10-Jan-12	
L1TEMPBLDG	TEMPORARY BUILDINGS	10-Jan-12	21-Jan-16
L1YARDWORK	SITE PREPARATION & YARD WORK/SYSTEMS	10-Jan-12	09-May-17
L1PERMBLDGSM	START - PERMANENT BUILDINGS START MILESTONE	03-Feb-12	
L1CWSPIPE1SM	START - INSTALL CIRC WATER PIPING UNIT 1	03-Feb-12	
L1CWSPIPE1	INSTALL CIRC WATER PIPING UNIT 1	03-Feb-12	24-Feb-14
L1PERMBLDG	ERECT PERMANENT BUILDINGS & FACILITIES	03-Feb-12	19-Mar-18
L1CWSPIPE2SM	START - INSTALL CIRC WATER PIPING UNIT 2	12-Jun-12	
L1CWSPIPE2	INSTALL CIRC WATER PIPING UNIT 2	12-Jun-12	04-Sep-14
L1TRAINCTSM	START - TRAINING CENTER START MILESTONE	13-Nov-12	
L1TRAINCTR	ERCET TRAING CENTER/SIMULATOR	13-Nov-12	05-Dec-13
L1COOLTWR1SM	START - COOLING TOWERS UNIT 1	04-Jan-13	
L1COOLTWR1	ERECT COOLING TOWERS UNIT 1	04-Jan-13	23-Apr-14
L1SWITCHYDSM	START - SWITCHYARD	26-Feb-13	
L1SWITCHYD	ERECT SWITCHYARD	26-Feb-13	23-Mar-15
L1COOLTWR2SM	START - COOLING TOWERS UNIT 2	12-Aug-13*	
L1COOLTWR2	ERECT COOLING TOWERS UNIT 2	12-Aug-13	12-Dec-14
L1TRAINCTFM	FINISH - TRAINING CENTER FINISH MILESTONE		05-Dec-13
L1YARDSYSFM	FINISH - YARD SYSTEMS FINISH MILESTONE		27-Jan-14*
L1CWSPIPE1FM	FINISH - INSTALL CIRC WATER PIPING UNIT 1		24-Feb-14
L1COOLTWRFM	FINISH - COOLING TOWERS UNIT 1		23-Apr-14
L1CWSPIPE2FM	FINISH - INSTALL CIRC WATER PIPING UNIT 2		04-Sep-14
L1ADMINBDSM	ADMIN BUILDING START MILESTONE	04-Nov-14	
L1ADMINBL1	ADMINISTRATION BUILDINGS	04-Nov-14	04-Nov-15
L1COOLTWR2FM	FINISH - COOLING TOWERS UNIT 2		12-Dec-14
L1YARDBLDFM	FINISH - YARD MISC BUILDINGS & STRUCTURES		30-Dec-14*
L1SWITCHYDFM	FINISH - SWITCHYARD		23-Mar-15
L1ADMINBDFM	FINISH - ADMIN BUILDING FINISH MILESTONE		04-Nov-15
L1TEMPBLDFM	FINISH - TEMPORARY BUILDINGS FINISH MILESTONE		21-Jan-16
L1YARDWORKFM	FINISH - SITE PREPARATION & YARD WORK FINISH MILESTONE		09-May-17
L1PERMBLDGFM	FINISH - PERMANENT BUILDINGS FINISH MILESTONE		19-Mar-18

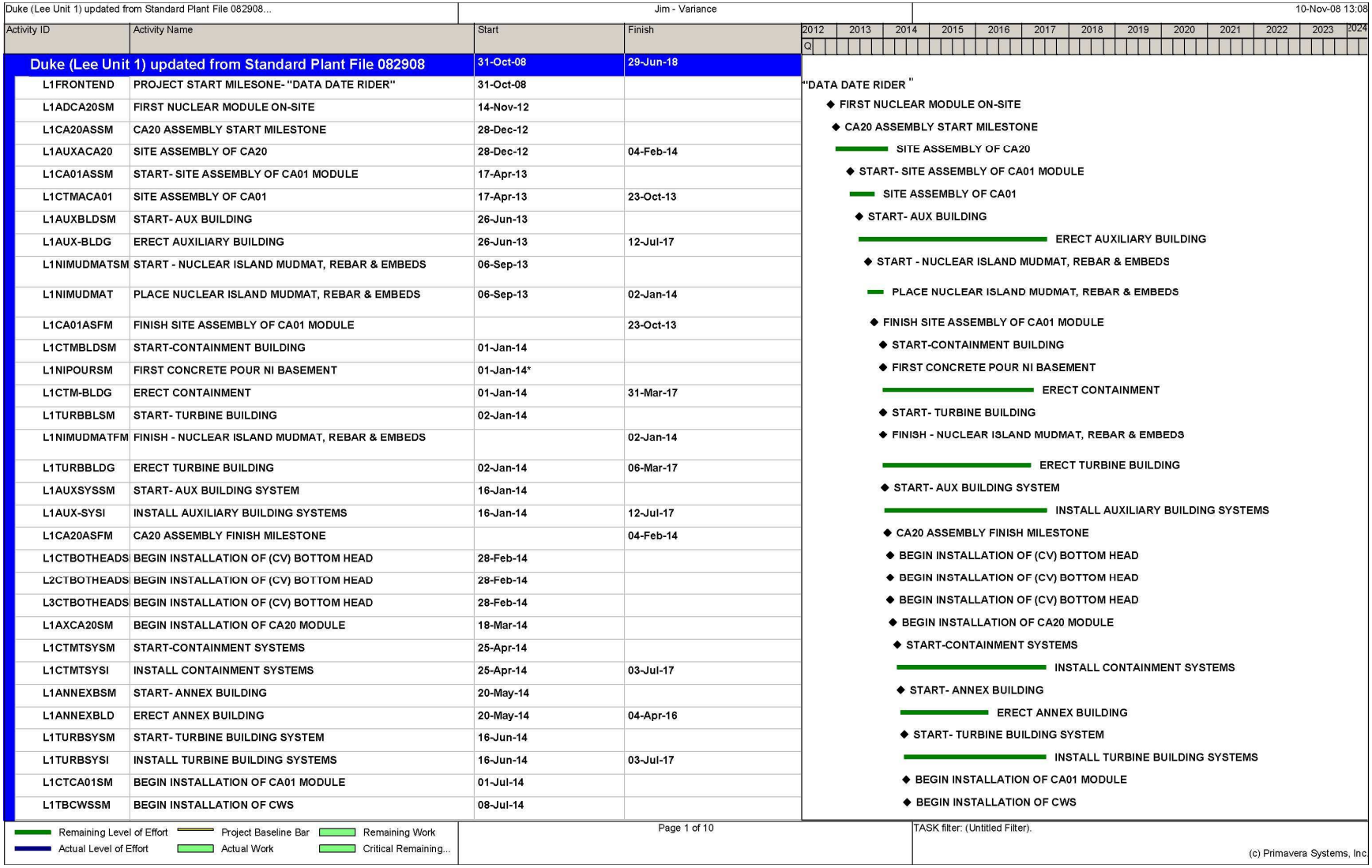


Remaining Level of Effort
Actual Work
Remaining Work
Critical Remaining Work
Milestone

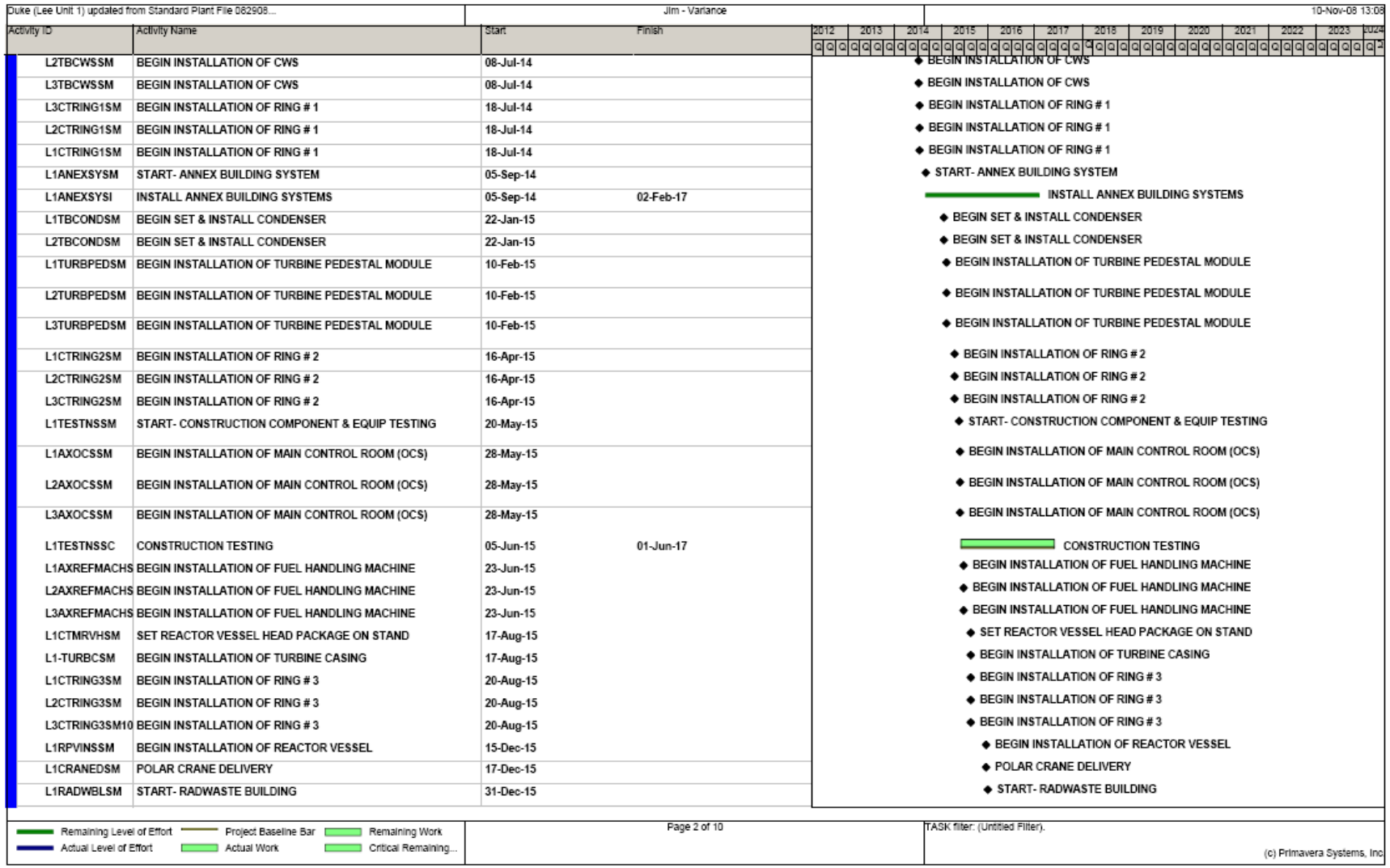
Standard Plant

Critical Path # 1

10-Nov-08 15:54



Activity ID	Activity Name	Start	Finish
	Duke (Lee Unit 1) updated from Standard Plant File 082908	**31-Oct-08**	**29-Jun-18**
L1FRONTEND	PROJECT START MILESONE- "DATA DATE RIDER"	31-Oct-08	
L1ADCA20SM	FIRST NUCLEAR MODULE ON-SITE	14-Nov-12	
L1CA20ASSM	CA20 ASSEMBLY START MILESTONE	28-Dec-12	
L1AUXACA20	SITE ASSEMBLY OF CA20	28-Dec-12	04-Feb-14
L1CA01ASSM	START- SITE ASSEMBLY OF CA01 MODULE	17-Apr-13	
L1CTMACA01	SITE ASSEMBLY OF CA01	17-Apr-13	23-Oct-13
L1AUXBLDSM	START- AUX BUILDING	26-Jun-13	
L1AUX-BLDG	ERECT AUXILIARY BUILDING	26-Jun-13	12-Jul-17
L1NIMUDMATSM	START - NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS	06-Sep-13	
L1NIMUDMAT	PLACE NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS	06-Sep-13	02-Jan-14
L1CA01ASFM	FINISH SITE ASSEMBLY OF CA01 MODULE		23-Oct-13
L1CTMBLDSM	START-CONTAINMENT BUILDING	01-Jan-14	
L1NIPOURSM	FIRST CONCRETE POUR NI BASEMENT	01-Jan-14*	
L1CTM-BLDG	ERECT CONTAINMENT	01-Jan-14	31-Mar-17
L1TURBBLSM	START- TURBINE BUILDING	02-Jan-14	
L1NIMUDMATFM	FINISH - NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS		02-Jan-14
L1TURBBLDG	ERECT TURBINE BUILDING	02-Jan-14	06-Mar-17
L1AUXSYSSM	START- AUX BUILDING SYSTEM	16-Jan-14	
L1AUX-SYSI	INSTALL AUXILIARY BUILDING SYSTEMS	16-Jan-14	12-Jul-17
L1CA20ASFM	CA20 ASSEMBLY FINISH MILESTONE		04-Feb-14
L1CTBOTHEADS	BEGIN INSTALLATION OF (CV) BOTTOM HEAD	28-Feb-14	
L2CTBOTHEADS	BEGIN INSTALLATION OF (CV) BOTTOM HEAD	28-Feb-14	
L3CTBOTHEADS	BEGIN INSTALLATION OF (CV) BOTTOM HEAD	28-Feb-14	
L1AXCA20SM	BEGIN INSTALLATION OF CA20 MODULE	18-Mar-14	
L1CTMTSYSM	START-CONTAINMENT SYSTEMS	25-Apr-14	
L1CTMTSYSI	INSTALL CONTAINMENT SYSTEMS	25-Apr-14	03-Jul-17
L1ANNEXBSM	START- ANNEX BUILDING	20-May-14	
L1ANNEXBLD	ERECT ANNEX BUILDING	20-May-14	04-Apr-16
L1TURBSYSM	START- TURBINE BUILDING SYSTEM	16-Jun-14	
L1TURBSYSI	INSTALL TURBINE BUILDING SYSTEMS	16-Jun-14	03-Jul-17
L1CTCA01SM	BEGIN INSTALLATION OF CA01 MODULE	01-Jul-14	
L1TBCWSSM	BEGIN INSTALLATION OF CWS	08-Jul-14	



Duke (Lee Unit 1) updated from Standard Plant File 082908... | Jim - Variance | 10-Nov-08 13:08

Activity ID	Activity Name	Start	Finish
L2TBCWSSM	BEGIN INSTALLATION OF CWS	08-Jul-14	
L3TBCWSSM	BEGIN INSTALLATION OF CWS	08-Jul-14	
L3CTRING1SM	BEGIN INSTALLATION OF RING # 1	18-Jul-14	
L2CTRING1SM	BEGIN INSTALLATION OF RING # 1	18-Jul-14	
L1CTRING1SM	BEGIN INSTALLATION OF RING # 1	18-Jul-14	
L1ANEXSYSM	START- ANNEX BUILDING SYSTEM	05-Sep-14	
L1ANEXSYSI	INSTALL ANNEX BUILDING SYSTEMS	05-Sep-14	02-Feb-17
L1TBCONDSM	BEGIN SET & INSTALL CONDENSER	22-Jan-15	
L2TBCONDSM	BEGIN SET & INSTALL CONDENSER	22-Jan-15	
L1TURBPEDSM	BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE	10-Feb-15	
L2TURBPEDSM	BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE	10-Feb-15	
L3TURBPEDSM	BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE	10-Feb-15	
L1CTRING2SM	BEGIN INSTALLATION OF RING # 2	16-Apr-15	
L2CTRING2SM	BEGIN INSTALLATION OF RING # 2	16-Apr-15	
L3CTRING2SM	BEGIN INSTALLATION OF RING # 2	16-Apr-15	
L1TESTNSSM	START- CONSTRUCTION COMPONENT & EQUIP TESTING	20-May-15	
L1AXOCSSM	BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)	28-May-15	
L2AXOCSSM	BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)	28-May-15	
L3AXOCSSM	BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)	28-May-15	
L1TESTNSSC	CONSTRUCTION TESTING	05-Jun-15	01-Jun-17
L1AXREFMACHS	BEGIN INSTALLATION OF FUEL HANDLING MACHINE	23-Jun-15	
L2AXREFMACHS	BEGIN INSTALLATION OF FUEL HANDLING MACHINE	23-Jun-15	
L3AXREFMACHS	BEGIN INSTALLATION OF FUEL HANDLING MACHINE	23-Jun-15	
L1CTMRVHSM	SET REACTOR VESSEL HEAD PACKAGE ON STAND	17-Aug-15	
L1-TURBCSM	BEGIN INSTALLATION OF TURBINE CASING	17-Aug-15	
L1CTRING3SM	BEGIN INSTALLATION OF RING # 3	20-Aug-15	
L2CTRING3SM	BEGIN INSTALLATION OF RING # 3	20-Aug-15	
L3CTRING3SM10	BEGIN INSTALLATION OF RING # 3	20-Aug-15	
L1RPVINSSM	BEGIN INSTALLATION OF REACTOR VESSEL	15-Dec-15	
L1CRANEDSM	POLAR CRANE DELIVERY	17-Dec-15	
L1RADWBLSM	START- RADWASTE BUILDING	31-Dec-15	

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024

BEGIN INSTALLATION OF CWS
BEGIN INSTALLATION OF CWS
BEGIN INSTALLATION OF RING # 1
BEGIN INSTALLATION OF RING # 1
BEGIN INSTALLATION OF RING # 1
START- ANNEX BUILDING SYSTEM
INSTALL ANNEX BUILDING SYSTEMS
BEGIN SET & INSTALL CONDENSER
BEGIN SET & INSTALL CONDENSER
BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE
BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE
BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE
BEGIN INSTALLATION OF RING # 2
BEGIN INSTALLATION OF RING # 2
BEGIN INSTALLATION OF RING # 2
START- CONSTRUCTION COMPONENT & EQUIP TESTING
BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)
BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)
BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)
CONSTRUCTION TESTING
BEGIN INSTALLATION OF FUEL HANDLING MACHINE
BEGIN INSTALLATION OF FUEL HANDLING MACHINE
BEGIN INSTALLATION OF FUEL HANDLING MACHINE
SET REACTOR VESSEL HEAD PACKAGE ON STAND
BEGIN INSTALLATION OF TURBINE CASING
BEGIN INSTALLATION OF RING # 3
BEGIN INSTALLATION OF RING # 3
BEGIN INSTALLATION OF RING # 3
BEGIN INSTALLATION OF REACTOR VESSEL
POLAR CRANE DELIVERY
START- RADWASTE BUILDING

Remaining Level of Effort | Project Baseline Bar | Remaining Work
Actual Level of Effort | Actual Work | Critical Remaining...

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TASK filter: (Untitled Filter).

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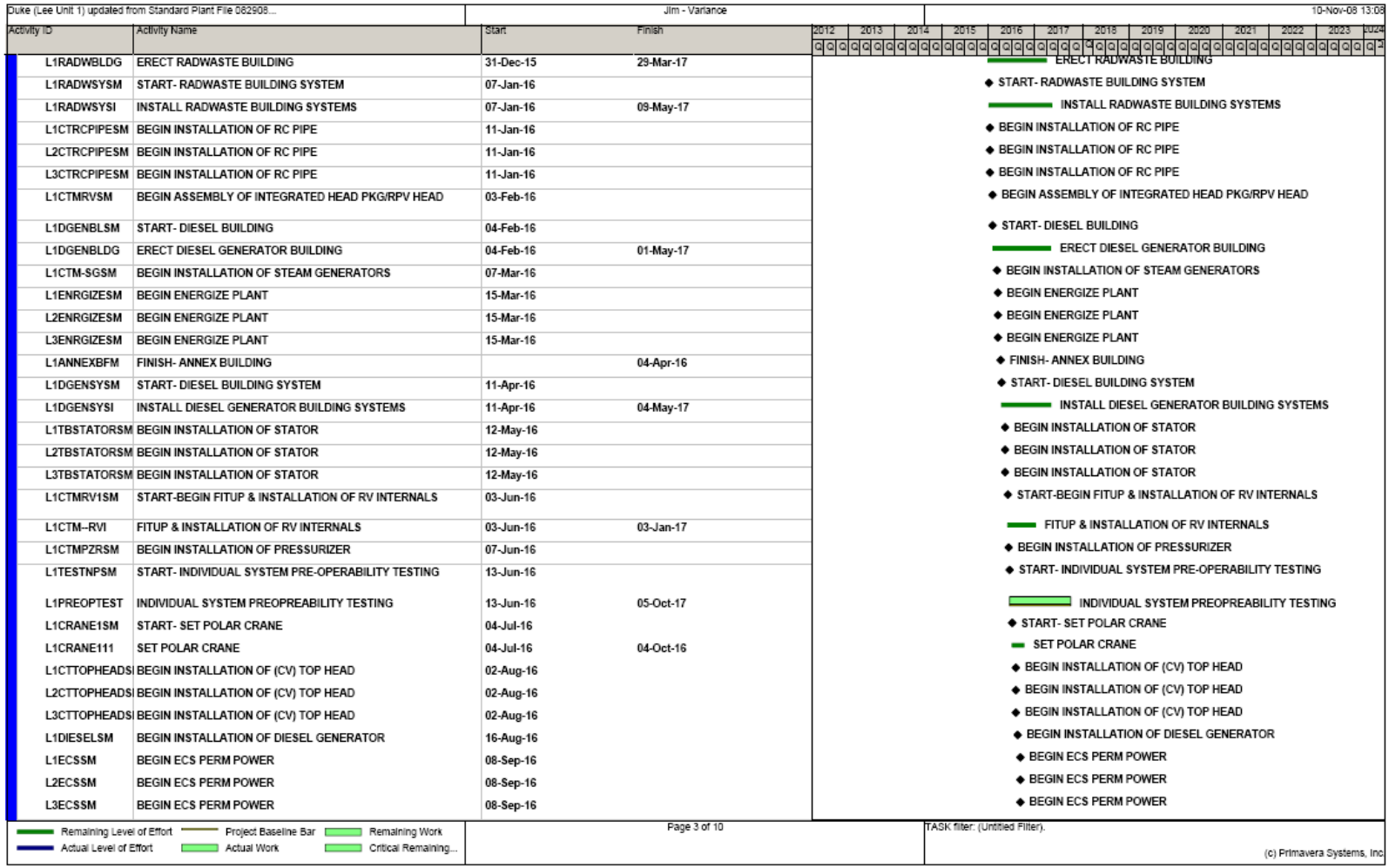
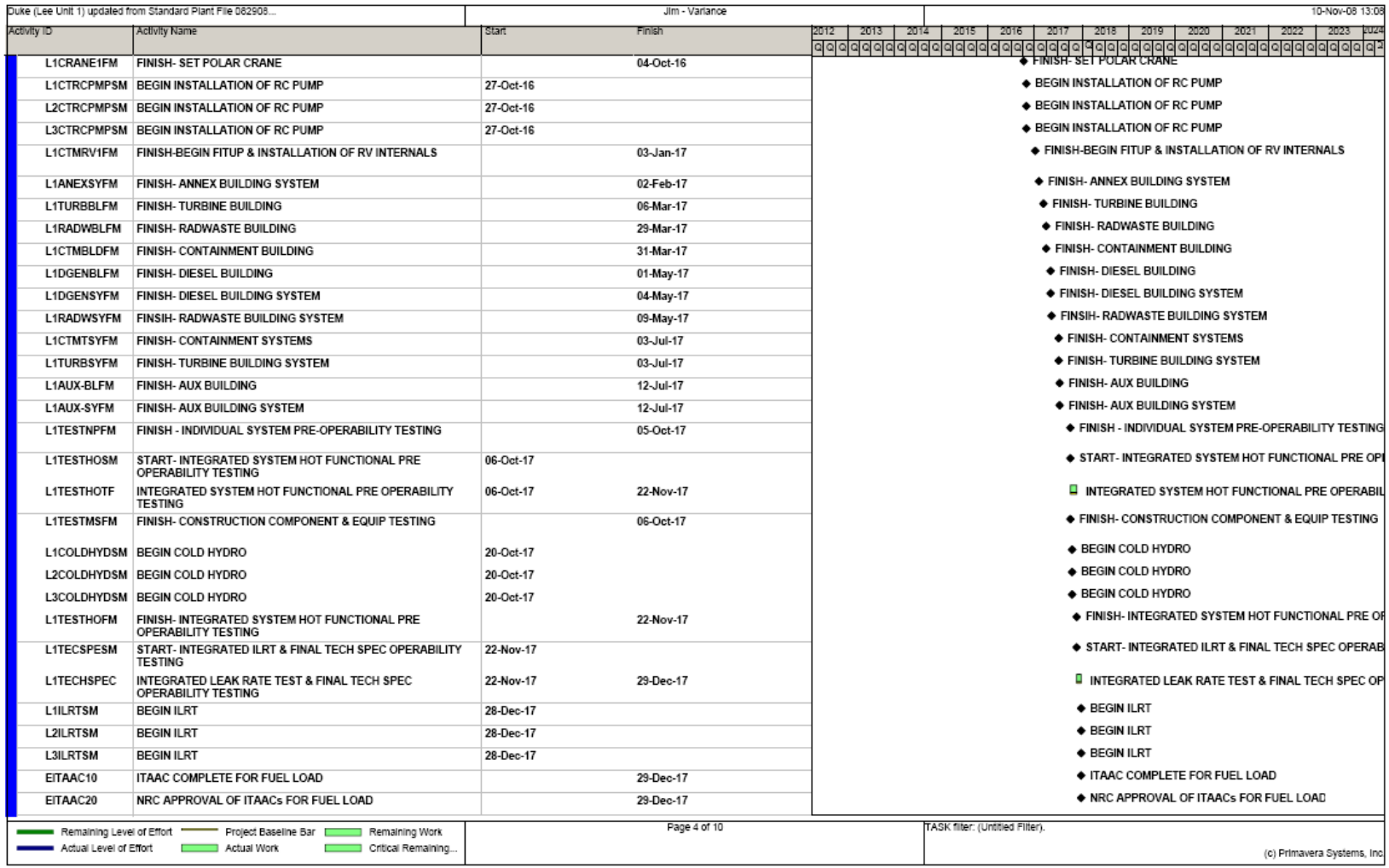


Activity ID	Activity Name	Start	Finish
L1RADWBLDG	ERECT RADWASTE BUILDING	31-Dec-15	29-Mar-17
L1RADWSYSM	START- RADWASTE BUILDING SYSTEM	07-Jan-16	
L1RADWSYSI	INSTALL RADWASTE BUILDING SYSTEMS	07-Jan-16	09-May-17
L1CTRCPIPESM	BEGIN INSTALLATION OF RC PIPE	11-Jan-16	
L2CTRCPIPESM	BEGIN INSTALLATION OF RC PIPE	11-Jan-16	
L3CTRCPIPESM	BEGIN INSTALLATION OF RC PIPE	11-Jan-16	
L1CTMRVSM	BEGIN ASSEMBLY OF INTEGRATED HEAD PKG/RPV HEAD	03-Feb-16	
L1DGENBLSM	START- DIESEL BUILDING	04-Feb-16	
L1DGENBLDG	ERECT DIESEL GENERATOR BUILDING	04-Feb-16	01-May-17
L1CTM-SGSM	BEGIN INSTALLATION OF STEAM GENERATORS	07-Mar-16	
L1ENRGIZESM	BEGIN ENERGIZE PLANT	15-Mar-16	
L2ENRGIZESM	BEGIN ENERGIZE PLANT	15-Mar-16	
L3ENRGIZESM	BEGIN ENERGIZE PLANT	15-Mar-16	
L1ANNEXBFM	FINISH- ANNEX BUILDING		04-Apr-16
L1DGENSYSM	START- DIESEL BUILDING SYSTEM	11-Apr-16	
L1DGENSYSI	INSTALL DIESEL GENERATOR BUILDING SYSTEMS	11-Apr-16	04-May-17
L1TBSTATORSM	BEGIN INSTALLATION OF STATOR	12-May-16	
L2TBSTATORSM	BEGIN INSTALLATION OF STATOR	12-May-16	
L3TBSTATORSM	BEGIN INSTALLATION OF STATOR	12-May-16	
L1CTMRV1SM	START-BEGIN FITUP & INSTALLATION OF RV INTERNALS	03-Jun-16	
L1CTM--RVI	FITUP & INSTALLATION OF RV INTERNALS	03-Jun-16	03-Jan-17
L1CTMPZRSM	BEGIN INSTALLATION OF PRESSURIZER	07-Jun-16	
L1TESTNPSM	START- INDIVIDUAL SYSTEM PRE-OPERABILITY TESTING	13-Jun-16	
L1PREOPTEST	INDIVIDUAL SYSTEM PREOPREABILITY TESTING	13-Jun-16	05-Oct-17
L1CRANE1SM	START- SET POLAR CRANE	04-Jul-16	
L1CRANE111	SET POLAR CRANE	04-Jul-16	04-Oct-16
L1CTTOPHEADSI	BEGIN INSTALLATION OF (CV) TOP HEAD	02-Aug-16	
L2CTTOPHEADSI	BEGIN INSTALLATION OF (CV) TOP HEAD	02-Aug-16	
L3CTTOPHEADSI	BEGIN INSTALLATION OF (CV) TOP HEAD	02-Aug-16	
L1DIESELSM	BEGIN INSTALLATION OF DIESEL GENERATOR	16-Aug-16	
L1ECSSM	BEGIN ECS PERM POWER	08-Sep-16	
L2ECSSM	BEGIN ECS PERM POWER	08-Sep-16	
L3ECSSM	BEGIN ECS PERM POWER	08-Sep-16	



Duke (Lee Unit 1) updated from Standard Plant File 082908...

Jim - Variance

10-Nov-08 13:08

Activity ID	Activity Name	Start	Finish
L1CRANE1FM	FINISH- SET POLAR CRANE		04-Oct-16
L1CTRCPMPSM	BEGIN INSTALLATION OF RC PUMP	27-Oct-16	
L2CTRCPMPSM	BEGIN INSTALLATION OF RC PUMP	27-Oct-16	
L3CTRCPMPSM	BEGIN INSTALLATION OF RC PUMP	27-Oct-16	
L1CTMRV1FM	FINISH-BEGIN FITUP & INSTALLATION OF RV INTERNALS		03-Jan-17
L1ANEXSYFM	FINISH- ANNEX BUILDING SYSTEM		02-Feb-17
L1TURBBLFM	FINISH- TURBINE BUILDING		06-Mar-17
L1RADWBLFM	FINISH- RADWASTE BUILDING		29-Mar-17
L1CTMBLDFM	FINISH- CONTAINMENT BUILDING		31-Mar-17
L1DGENBLFM	FINISH- DIESEL BUILDING		01-May-17
L1DGENSYFM	FINISH- DIESEL BUILDING SYSTEM		04-May-17
L1RADWSYFM	FINSIH- RADWASTE BUILDING SYSTEM		09-May-17
L1CTMTSYFM	FINISH- CONTAINMENT SYSTEMS		03-Jul-17
L1TURBSYFM	FINISH- TURBINE BUILDING SYSTEM		03-Jul-17
L1AUX-BLFM	FINISH- AUX BUILDING		12-Jul-17
L1AUX-SYFM	FINISH- AUX BUILDING SYSTEM		12-Jul-17
L1TESTNPFM	FINISH - INDIVIDUAL SYSTEM PRE-OPERABILITY TESTING		05-Oct-17
L1TESTHOSM	START- INTEGRATED SYSTEM HOT FUNCTIONAL PRE OPERABILITY TESTING	06-Oct-17	
L1TESTHOTF	INTEGRATED SYSTEM HOT FUNCTIONAL PRE OPERABILITY TESTING	06-Oct-17	22-Nov-17
L1TESTMSFM	FINISH- CONSTRUCTION COMPONENT & EQUIP TESTING		06-Oct-17
L1COLDHYDSM	BEGIN COLD HYDRO	20-Oct-17	
L2COLDHYDSM	BEGIN COLD HYDRO	20-Oct-17	
L3COLDHYDSM	BEGIN COLD HYDRO	20-Oct-17	
L1TESTHOFM	FINISH- INTEGRATED SYSTEM HOT FUNCTIONAL PRE OPERABILITY TESTING		22-Nov-17
L1TECSPESM	START- INTEGRATED ILRT & FINAL TECH SPEC OPERABILITY TESTING	22-Nov-17	
L1TECHSPEC	INTEGRATED LEAK RATE TEST & FINAL TECH SPEC OPERABILITY TESTING	22-Nov-17	29-Dec-17
L1ILRTSM	BEGIN ILRT	28-Dec-17	
L2ILRTSM	BEGIN ILRT	28-Dec-17	
L3ILRTSM	BEGIN ILRT	28-Dec-17	
EITAAC10	ITAAC COMPLETE FOR FUEL LOAD		29-Dec-17
EITAAC20	NRC APPROVAL OF ITAACs FOR FUEL LOAD		29-Dec-17

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024

Remaining Level of Effort
Actual Level of Effort
Project Baseline Bar
Actual Work
Remaining Work
Critical Remaining...

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TASK filter: (Untitled Filter).

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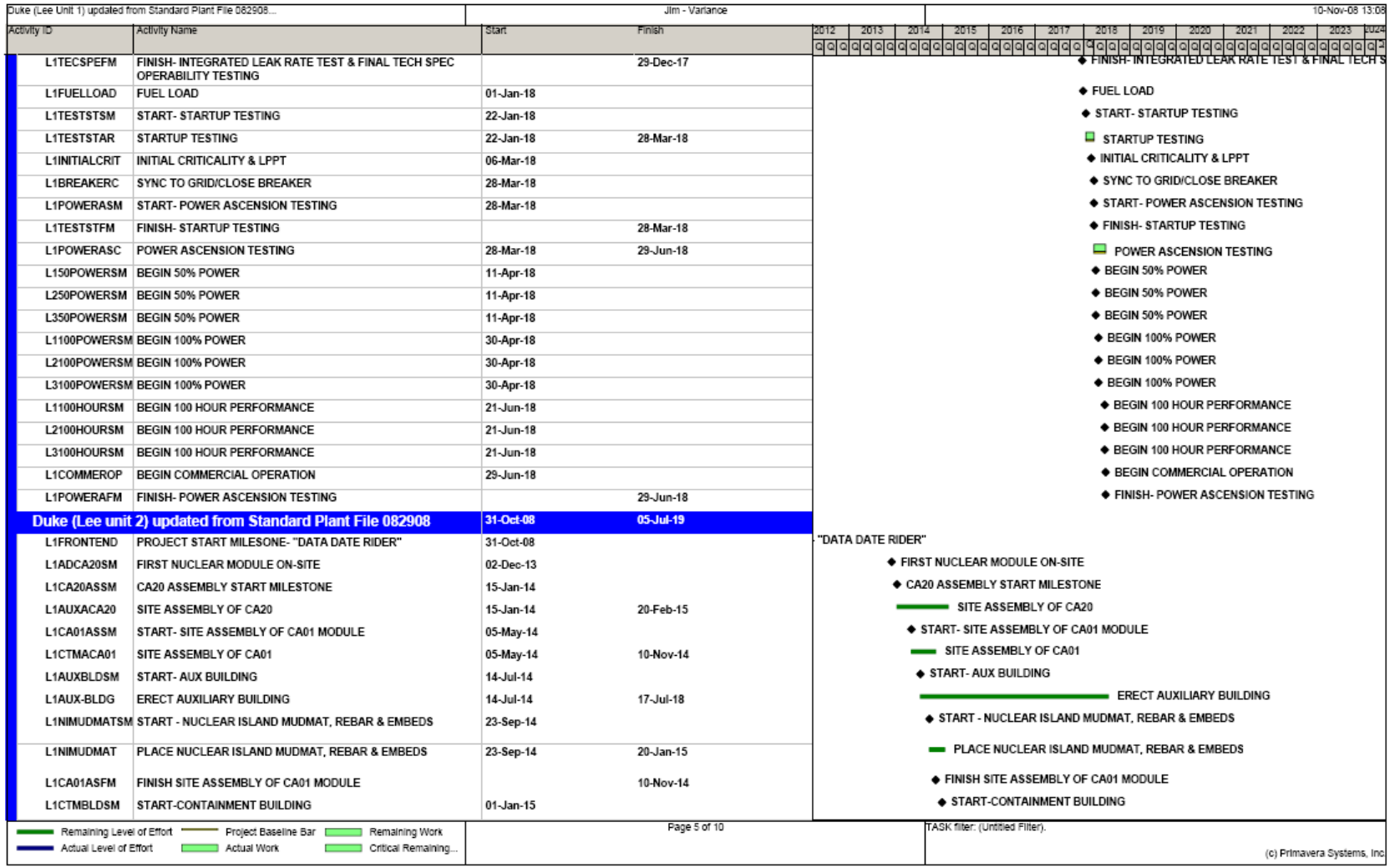
Duke (Lee Unit 1) updated from Standard Plant File 082908...
Jim - Variance
10-Nov-08 13:08
Activity ID
Activity Name
Start
Finish
2012
2013
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2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
L1TECSPEFM FINISH- INTEGRATED LEAK RATE TEST & FINAL TECH SPEC OPERABILITY TESTING 29-Dec-17
L1FUELLOAD FUEL LOAD 01-Jan-18
L1TESTSTSM START- STARTUP TESTING 22-Jan-18
L1TESTSTAR STARTUP TESTING 22-Jan-18 28-Mar-18
L1INITIALCRIT INITIAL CRITICALITY & LPPT 06-Mar-18
L1BREAKERC SYNC TO GRID/CLOSE BREAKER 28-Mar-18
L1POWERASM START- POWER ASCENSION TESTING 28-Mar-18
L1TESTSTFM FINISH- STARTUP TESTING 28-Mar-18
L1POWERASC POWER ASCENSION TESTING 28-Mar-18 29-Jun-18
L150POWERSM BEGIN 50% POWER 11-Apr-18
L250POWERSM BEGIN 50% POWER 11-Apr-18
L350POWERSM BEGIN 50% POWER 11-Apr-18
L1100POWERSM BEGIN 100% POWER 30-Apr-18
L2100POWERSM BEGIN 100% POWER 30-Apr-18
L3100POWERSM BEGIN 100% POWER 30-Apr-18
L1100HOURSM BEGIN 100 HOUR PERFORMANCE 21-Jun-18
L2100HOURSM BEGIN 100 HOUR PERFORMANCE 21-Jun-18
L3100HOURSM BEGIN 100 HOUR PERFORMANCE 21-Jun-18
L1COMMEROP BEGIN COMMERCIAL OPERATION 29-Jun-18
L1POWERAFM FINISH- POWER ASCENSION TESTING 29-Jun-18
Duke (Lee unit 2) updated from Standard Plant File 082908 31-Oct-08 05-Jul-19
L1FRONTEND PROJECT START MILESONE- "DATA DATE RIDER" 31-Oct-08
L1ADCA20SM FIRST NUCLEAR MODULE ON-SITE 02-Dec-13
L1CA20ASSM CA20 ASSEMBLY START MILESTONE 15-Jan-14
L1AUXACA20 SITE ASSEMBLY OF CA20 15-Jan-14 20-Feb-15
L1CA01ASSM START- SITE ASSEMBLY OF CA01 MODULE 05-May-14
L1CTMACA01 SITE ASSEMBLY OF CA01 05-May-14 10-Nov-14
L1AUXBLDSM START- AUX BUILDING 14-Jul-14
L1AUX-BLDG ERECT AUXILIARY BUILDING 14-Jul-14 17-Jul-18
L1NIMUDMATSM START - NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS 23-Sep-14
L1NIMUDMAT PLACE NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS 23-Sep-14 20-Jan-15
L1CA01ASFM FINISH SITE ASSEMBLY OF CA01 MODULE 10-Nov-14
L1CTMBLDSM START-CONTAINMENT BUILDING 01-Jan-15
FINISH- INTEGRATED LEAK RATE TEST & FINAL TECH S
FUEL LOAD
START- STARTUP TESTING
STARTUP TESTING
INITIAL CRITICALITY & LPPT
SYNC TO GRID/CLOSE BREAKER
START- POWER ASCENSION TESTING
FINISH- STARTUP TESTING
POWER ASCENSION TESTING
BEGIN 50% POWER
BEGIN 50% POWER
BEGIN 50% POWER
BEGIN 100% POWER
BEGIN 100% POWER
BEGIN 100% POWER
BEGIN 100 HOUR PERFORMANCE
BEGIN 100 HOUR PERFORMANCE
BEGIN 100 HOUR PERFORMANCE
BEGIN COMMERCIAL OPERATION
FINISH- POWER ASCENSION TESTING
"DATA DATE RIDER"
FIRST NUCLEAR MODULE ON-SITE
CA20 ASSEMBLY START MILESTONE
SITE ASSEMBLY OF CA20
START- SITE ASSEMBLY OF CA01 MODULE
SITE ASSEMBLY OF CA01
START- AUX BUILDING
ERECT AUXILIARY BUILDING
START - NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS
PLACE NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS
FINISH SITE ASSEMBLY OF CA01 MODULE
START-CONTAINMENT BUILDING
Remaining Level of Effort
Actual Level of Effort
Project Baseline Bar
Actual Work
Remaining Work
Critical Remaining...
Page 5 of 10
TASK filter: (Untitled Filter).
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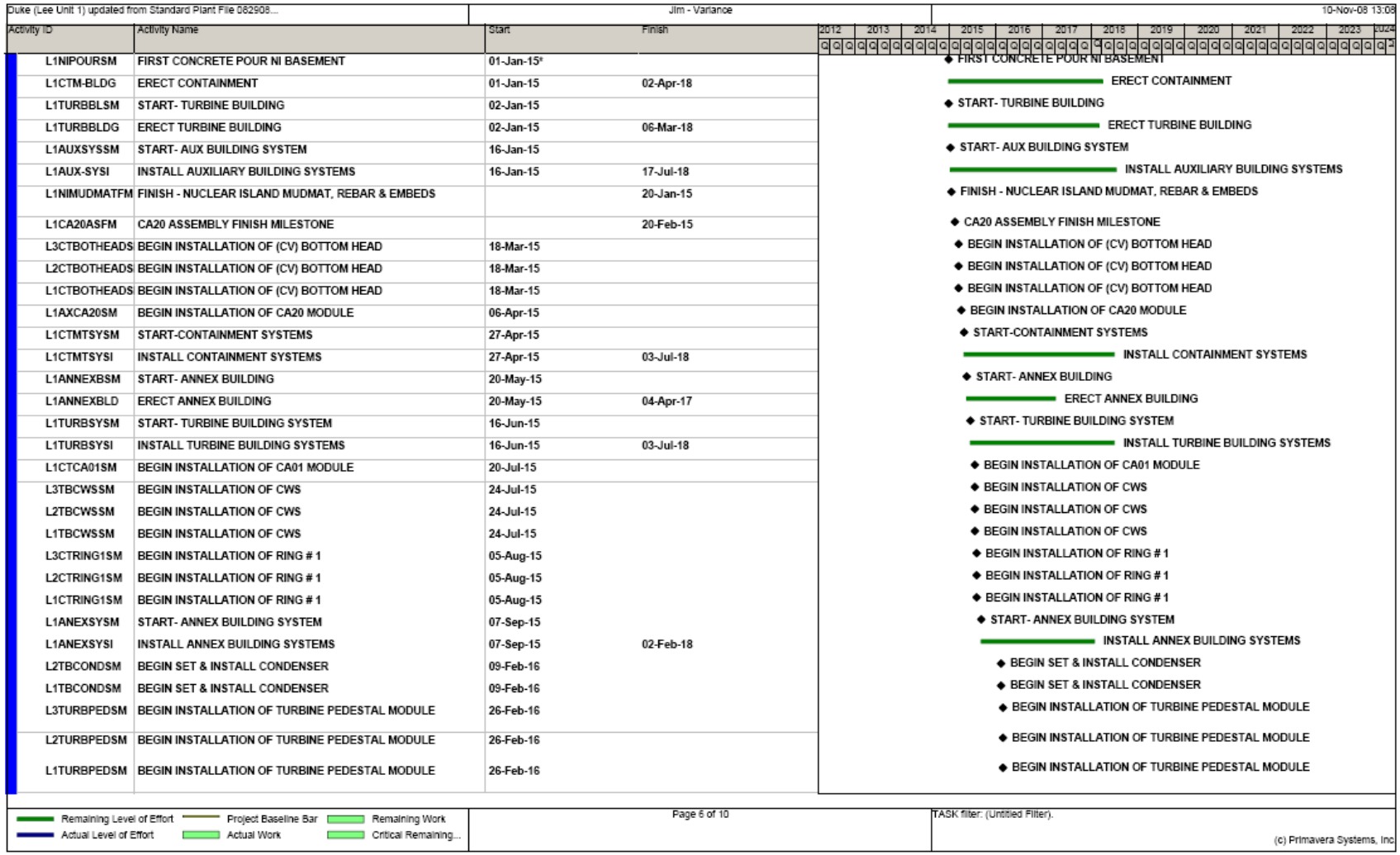

Duke (Lee Unit 1) updated from Standard Plant File 082908...

Jim - Variance

10-Nov-08 13:08

Activity ID	Activity Name	Start	Finish
L1NIPOURSM	FIRST CONCRETE POUR NI BASEMENT	01-Jan-15*	
L1CTM-BLDG	ERECT CONTAINMENT	01-Jan-15	02-Apr-18
L1TURBBLSM	START- TURBINE BUILDING	02-Jan-15	
L1TURBBLDG	ERECT TURBINE BUILDING	02-Jan-15	06-Mar-18
L1AUXSYSSM	START- AUX BUILDING SYSTEM	16-Jan-15	
L1AUX-SYSI	INSTALL AUXILIARY BUILDING SYSTEMS	16-Jan-15	17-Jul-18
L1NIMUDMATFM	FINISH - NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS		20-Jan-15
L1CA20ASFM	CA20 ASSEMBLY FINISH MILESTONE		20-Feb-15
L3CTBOTHEADS	BEGIN INSTALLATION OF (CV) BOTTOM HEAD	18-Mar-15	
L2CTBOTHEADS	BEGIN INSTALLATION OF (CV) BOTTOM HEAD	18-Mar-15	
L1CTBOTHEADS	BEGIN INSTALLATION OF (CV) BOTTOM HEAD	18-Mar-15	
L1AXCA20SM	BEGIN INSTALLATION OF CA20 MODULE	06-Apr-15	
L1CTMTSYSM	START-CONTAINMENT SYSTEMS	27-Apr-15	
L1CTMTSYSI	INSTALL CONTAINMENT SYSTEMS	27-Apr-15	03-Jul-18
L1ANNEXBSM	START- ANNEX BUILDING	20-May-15	
L1ANNEXBLD	ERECT ANNEX BUILDING	20-May-15	04-Apr-17
L1TURBSYSM	START- TURBINE BUILDING SYSTEM	16-Jun-15	
L1TURBSYSI	INSTALL TURBINE BUILDING SYSTEMS	16-Jun-15	03-Jul-18
L1CTCA01SM	BEGIN INSTALLATION OF CA01 MODULE	20-Jul-15	
L3TBCWSSM	BEGIN INSTALLATION OF CWS	24-Jul-15	
L2TBCWSSM	BEGIN INSTALLATION OF CWS	24-Jul-15	
L1TBCWSSM	BEGIN INSTALLATION OF CWS	24-Jul-15	
L3CTRING1SM	BEGIN INSTALLATION OF RING # 1	05-Aug-15	
L2CTRING1SM	BEGIN INSTALLATION OF RING # 1	05-Aug-15	
L1CTRING1SM	BEGIN INSTALLATION OF RING # 1	05-Aug-15	
L1ANEXSYSM	START- ANNEX BUILDING SYSTEM	07-Sep-15	
L1ANEXSYSI	INSTALL ANNEX BUILDING SYSTEMS	07-Sep-15	02-Feb-18
L2TBCONDSM	BEGIN SET & INSTALL CONDENSER	09-Feb-16	
L1TBCONDSM	BEGIN SET & INSTALL CONDENSER	09-Feb-16	
L3TURBPEDSM	BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE	26-Feb-16	
L2TURBPEDSM	BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE	26-Feb-16	
L1TURBPEDSM	BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE	26-Feb-16	

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024

FIRST CONCRETE POUR NI BASEMENT
ERECT CONTAINMENT
START- TURBINE BUILDING
ERECT TURBINE BUILDING
START- AUX BUILDING SYSTEM
INSTALL AUXILIARY BUILDING SYSTEMS
FINISH - NUCLEAR ISLAND MUDMAT, REBAR & EMBEDS
CA20 ASSEMBLY FINISH MILESTONE
BEGIN INSTALLATION OF (CV) BOTTOM HEAD
BEGIN INSTALLATION OF (CV) BOTTOM HEAD
BEGIN INSTALLATION OF (CV) BOTTOM HEAD
BEGIN INSTALLATION OF CA20 MODULE
START-CONTAINMENT SYSTEMS
INSTALL CONTAINMENT SYSTEMS
START- ANNEX BUILDING
ERECT ANNEX BUILDING
START- TURBINE BUILDING SYSTEM
INSTALL TURBINE BUILDING SYSTEMS
BEGIN INSTALLATION OF CA01 MODULE
BEGIN INSTALLATION OF CWS
BEGIN INSTALLATION OF CWS
BEGIN INSTALLATION OF CWS
BEGIN INSTALLATION OF RING # 1
BEGIN INSTALLATION OF RING # 1
BEGIN INSTALLATION OF RING # 1
START- ANNEX BUILDING SYSTEM
INSTALL ANNEX BUILDING SYSTEMS
BEGIN SET & INSTALL CONDENSER
BEGIN SET & INSTALL CONDENSER
BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE
BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE
BEGIN INSTALLATION OF TURBINE PEDESTAL MODULE

Remaining Level of Effort
Actual Level of Effort
Project Baseline Bar
Actual Work
Remaining Work
Critical Remaining...

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TASK filter: (Untitled Filter).

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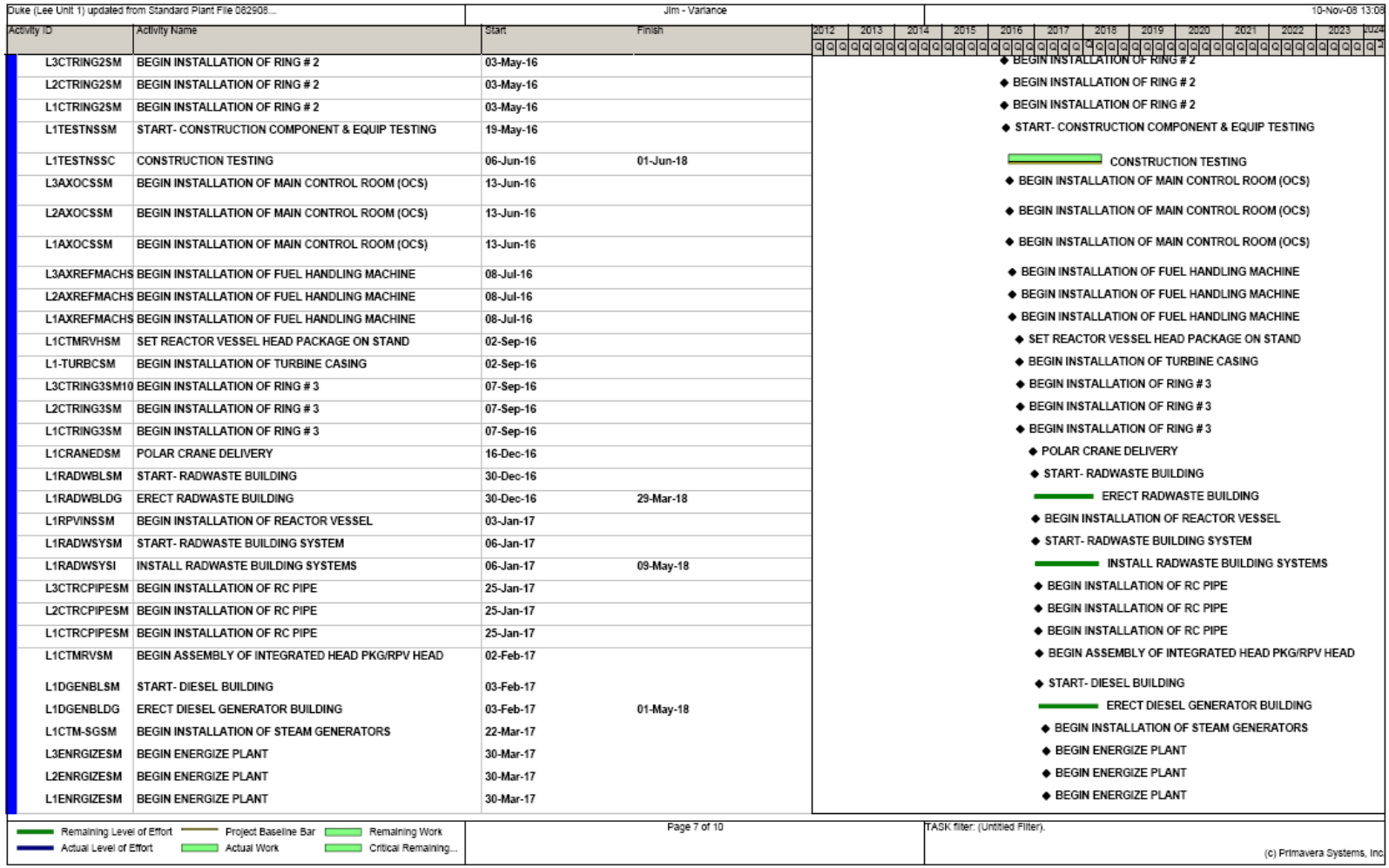

Duke (Lee Unit 1) updated from Standard Plant File 082908...

Jim - Variance

10-Nov-08 13:08

Activity ID	Activity Name	Start	Finish
L3CTRING2SM	BEGIN INSTALLATION OF RING # 2	03-May-16	
L2CTRING2SM	BEGIN INSTALLATION OF RING # 2	03-May-16	
L1CTRING2SM	BEGIN INSTALLATION OF RING # 2	03-May-16	
L1TESTNSSM	START- CONSTRUCTION COMPONENT & EQUIP TESTING	19-May-16	
L1TESTNSSC	CONSTRUCTION TESTING	06-Jun-16	01-Jun-18
L3AXOCSSM	BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)	13-Jun-16	
L2AXOCSSM	BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)	13-Jun-16	
L1AXOCSSM	BEGIN INSTALLATION OF MAIN CONTROL ROOM (OCS)	13-Jun-16	
L3AXREFMACHS	BEGIN INSTALLATION OF FUEL HANDLING MACHINE	08-Jul-16	
L2AXREFMACHS	BEGIN INSTALLATION OF FUEL HANDLING MACHINE	08-Jul-16	
L1AXREFMACHS	BEGIN INSTALLATION OF FUEL HANDLING MACHINE	08-Jul-16	
L1CTMRVHSM	SET REACTOR VESSEL HEAD PACKAGE ON STAND	02-Sep-16	
L1-TURBCSM	BEGIN INSTALLATION OF TURBINE CASING	02-Sep-16	
L3CTRING3SM10	BEGIN INSTALLATION OF RING # 3	07-Sep-16	
L2CTRING3SM	BEGIN INSTALLATION OF RING # 3	07-Sep-16	
L1CTRING3SM	BEGIN INSTALLATION OF RING # 3	07-Sep-16	
L1CRANEDSM	POLAR CRANE DELIVERY	16-Dec-16	
L1RADWBLSM	START- RADWASTE BUILDING	30-Dec-16	
L1RADWBLDG	ERECT RADWASTE BUILDING	30-Dec-16	29-Mar-18
L1RPVINSSM	BEGIN INSTALLATION OF REACTOR VESSEL	03-Jan-17	
L1RADWSYSM	START- RADWASTE BUILDING SYSTEM	06-Jan-17	
L1RADWSYSI	INSTALL RADWASTE BUILDING SYSTEMS	06-Jan-17	09-May-18
L3CTRCPIPESM	BEGIN INSTALLATION OF RC PIPE	25-Jan-17	
L2CTRCPIPESM	BEGIN INSTALLATION OF RC PIPE	25-Jan-17	
L1CTRCPIPESM	BEGIN INSTALLATION OF RC PIPE	25-Jan-17	
L1CTMRVSM	BEGIN ASSEMBLY OF INTEGRATED HEAD PKG/RPV HEAD	02-Feb-17	
L1DGENBLSM	START- DIESEL BUILDING	03-Feb-17	
L1DGENBLDG	ERECT DIESEL GENERATOR BUILDING	03-Feb-17	01-May-18
L1CTM-SGSM	BEGIN INSTALLATION OF STEAM GENERATORS	22-Mar-17	
L3ENRGIZESM	BEGIN ENERGIZE PLANT	30-Mar-17	
L2ENRGIZESM	BEGIN ENERGIZE PLANT	30-Mar-17	
L1ENRGIZESM	BEGIN ENERGIZE PLANT	30-Mar-17	

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024

Remaining Level of Effort
Actual Level of Effort
Project Baseline Bar
Actual Work
Remaining Work
Critical Remaining...

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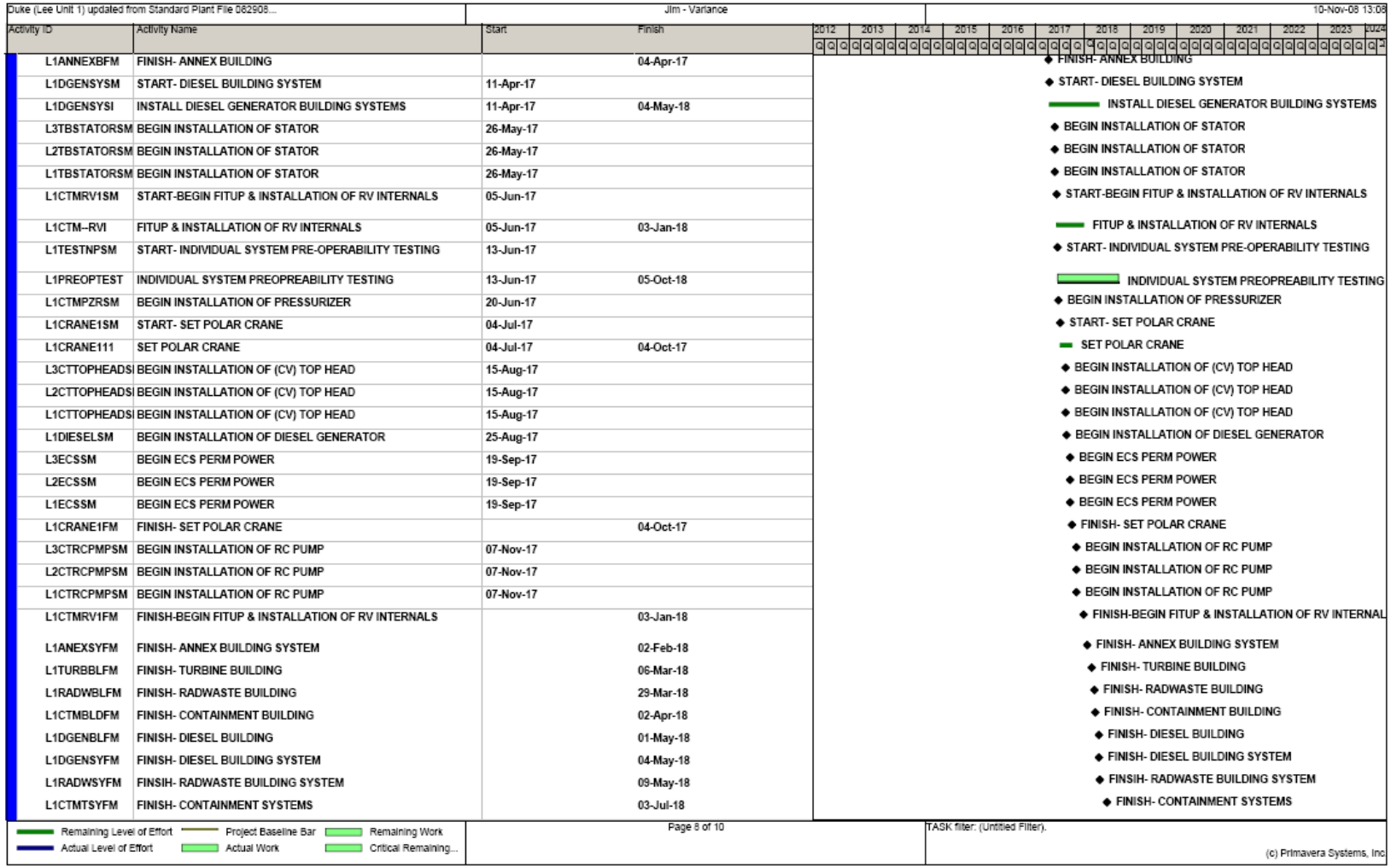
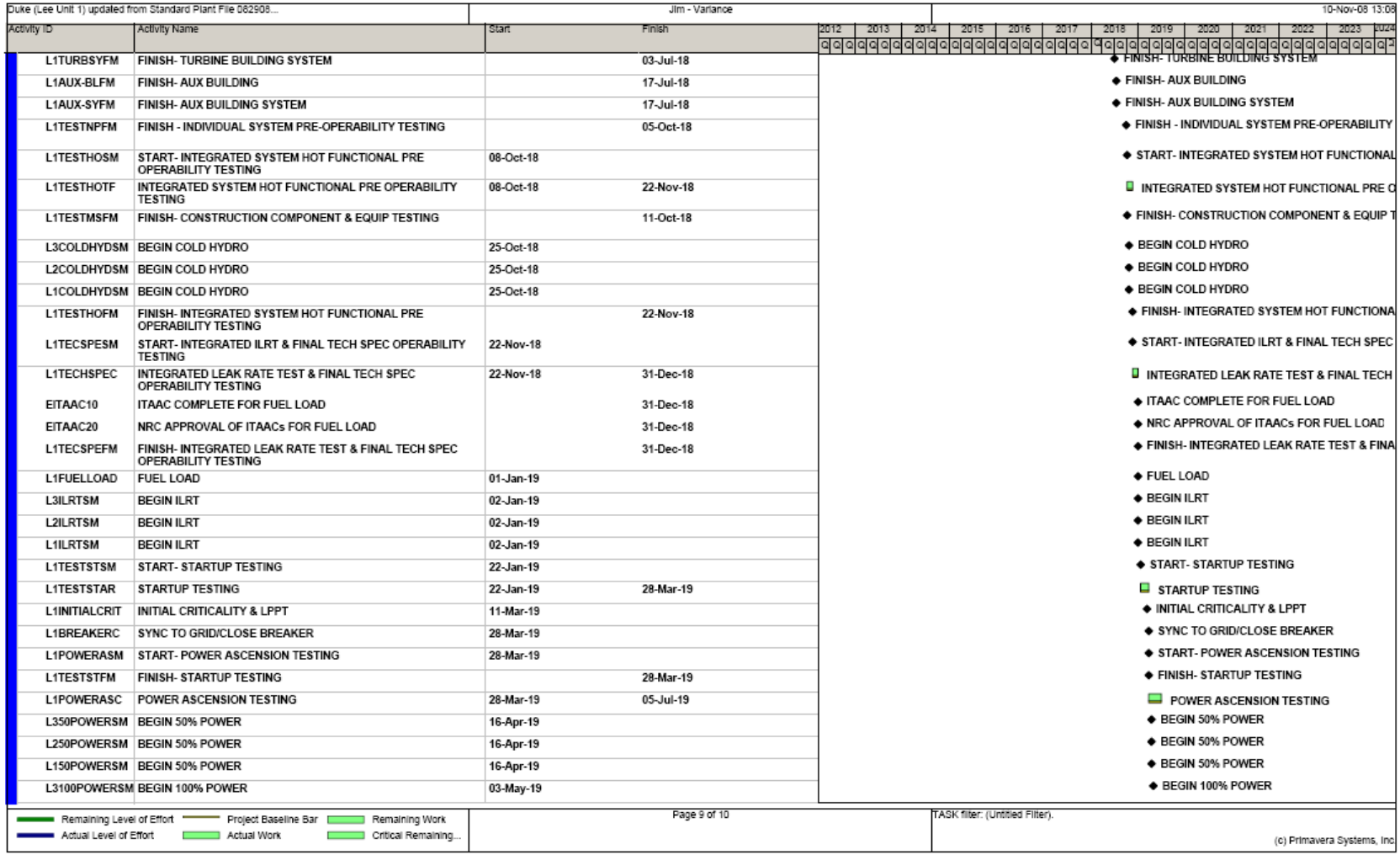


Activity ID	Activity Name	Start	Finish
L1ANNEXBFM	FINISH- ANNEX BUILDING		04-Apr-17
L1DGENSYSM	START- DIESEL BUILDING SYSTEM	11-Apr-17	
L1DGENSYSI	INSTALL DIESEL GENERATOR BUILDING SYSTEMS	11-Apr-17	04-May-18
L3TBSTATORSM	BEGIN INSTALLATION OF STATOR	26-May-17	
L2TBSTATORSM	BEGIN INSTALLATION OF STATOR	26-May-17	
L1TBSTATORSM	BEGIN INSTALLATION OF STATOR	26-May-17	
L1CTMRV1SM	START-BEGIN FITUP & INSTALLATION OF RV INTERNALS	05-Jun-17	
L1CTM--RVI	FITUP & INSTALLATION OF RV INTERNALS	05-Jun-17	03-Jan-18
L1TESTNPSM	START- INDIVIDUAL SYSTEM PRE-OPERABILITY TESTING	13-Jun-17	
L1PREOPTEST	INDIVIDUAL SYSTEM PREOPREABILITY TESTING	13-Jun-17	05-Oct-18
L1CTMPZRSM	BEGIN INSTALLATION OF PRESSURIZER	20-Jun-17	
L1CRANE1SM	START- SET POLAR CRANE	04-Jul-17	
L1CRANE111	SET POLAR CRANE	04-Jul-17	04-Oct-17
L3CTTOPHEADSI	BEGIN INSTALLATION OF (CV) TOP HEAD	15-Aug-17	
L2CTTOPHEADSI	BEGIN INSTALLATION OF (CV) TOP HEAD	15-Aug-17	
L1CTTOPHEADSI	BEGIN INSTALLATION OF (CV) TOP HEAD	15-Aug-17	
L1DIESELSM	BEGIN INSTALLATION OF DIESEL GENERATOR	25-Aug-17	
L3ECSSM	BEGIN ECS PERM POWER	19-Sep-17	
L2ECSSM	BEGIN ECS PERM POWER	19-Sep-17	
L1ECSSM	BEGIN ECS PERM POWER	19-Sep-17	
L1CRANE1FM	FINISH- SET POLAR CRANE		04-Oct-17
L3CTRCPMPSM	BEGIN INSTALLATION OF RC PUMP	07-Nov-17	
L2CTRCPMPSM	BEGIN INSTALLATION OF RC PUMP	07-Nov-17	
L1CTRCPMPSM	BEGIN INSTALLATION OF RC PUMP	07-Nov-17	
L1CTMRV1FM	FINISH-BEGIN FITUP & INSTALLATION OF RV INTERNALS		03-Jan-18
L1ANEXSYFM	FINISH- ANNEX BUILDING SYSTEM		02-Feb-18
L1TURBBLFM	FINISH- TURBINE BUILDING		06-Mar-18
L1RADWBLFM	FINISH- RADWASTE BUILDING		29-Mar-18
L1CTMBLDFM	FINISH- CONTAINMENT BUILDING		02-Apr-18
L1DGENBLFM	FINISH- DIESEL BUILDING		01-May-18
L1DGENSYFM	FINISH- DIESEL BUILDING SYSTEM		04-May-18
L1RADWSYFM	FINSIH- RADWASTE BUILDING SYSTEM		09-May-18
L1CTMTSYFM	FINISH- CONTAINMENT SYSTEMS		03-Jul-18



Duke (Lee Unit 1) updated from Standard Plant File 082908...

Jim - Variance

10-Nov-08 13:08

Activity ID	Activity Name	Start	Finish
L1TURBSYFM	FINISH- TURBINE BUILDING SYSTEM		03-Jul-18
L1AUX-BLFM	FINISH- AUX BUILDING		17-Jul-18
L1AUX-SYFM	FINISH- AUX BUILDING SYSTEM		17-Jul-18
L1TESTNPFM	FINISH - INDIVIDUAL SYSTEM PRE-OPERABILITY TESTING		05-Oct-18
L1TESTHOSM	START- INTEGRATED SYSTEM HOT FUNCTIONAL PRE OPERABILITY TESTING	08-Oct-18	
L1TESTHOTF	INTEGRATED SYSTEM HOT FUNCTIONAL PRE OPERABILITY TESTING	08-Oct-18	22-Nov-18
L1TESTMSFM	FINISH- CONSTRUCTION COMPONENT & EQUIP TESTING		11-Oct-18
L3COLDHYDSM	BEGIN COLD HYDRO	25-Oct-18	
L2COLDHYDSM	BEGIN COLD HYDRO	25-Oct-18	
L1COLDHYDSM	BEGIN COLD HYDRO	25-Oct-18	
L1TESTHOFM	FINISH- INTEGRATED SYSTEM HOT FUNCTIONAL PRE OPERABILITY TESTING		22-Nov-18
L1TECSPESM	START- INTEGRATED ILRT & FINAL TECH SPEC OPERABILITY TESTING	22-Nov-18	
L1TECHSPEC	INTEGRATED LEAK RATE TEST & FINAL TECH SPEC OPERABILITY TESTING	22-Nov-18	31-Dec-18
EITAAC10	ITAAC COMPLETE FOR FUEL LOAD		31-Dec-18
EITAAC20	NRC APPROVAL OF ITAACs FOR FUEL LOAD		31-Dec-18
L1TECSPEFM	FINISH- INTEGRATED LEAK RATE TEST & FINAL TECH SPEC OPERABILITY TESTING		31-Dec-18
L1FUELLOAD	FUEL LOAD	01-Jan-19	
L3ILRTSM	BEGIN ILRT	02-Jan-19	
L2ILRTSM	BEGIN ILRT	02-Jan-19	
L1ILRTSM	BEGIN ILRT	02-Jan-19	
L1TESTSTSM	START- STARTUP TESTING	22-Jan-19	
L1TESTSTAR	STARTUP TESTING	22-Jan-19	28-Mar-19
L1INITIALCRIT	INITIAL CRITICALITY & LPPT	11-Mar-19	
L1BREAKERC	SYNC TO GRID/CLOSE BREAKER	28-Mar-19	
L1POWERASM	START- POWER ASCENSION TESTING	28-Mar-19	
L1TESTSTFM	FINISH- STARTUP TESTING		28-Mar-19
L1POWERASC	POWER ASCENSION TESTING	28-Mar-19	05-Jul-19
L350POWERSM	BEGIN 50% POWER	16-Apr-19	
L250POWERSM	BEGIN 50% POWER	16-Apr-19	
L150POWERSM	BEGIN 50% POWER	16-Apr-19	
L3100POWERSM	BEGIN 100% POWER	03-May-19	

Remaining Level of Effort
Actual Level of Effort
Project Baseline Bar
Actual Work
Remaining Work
Critical Remaining...

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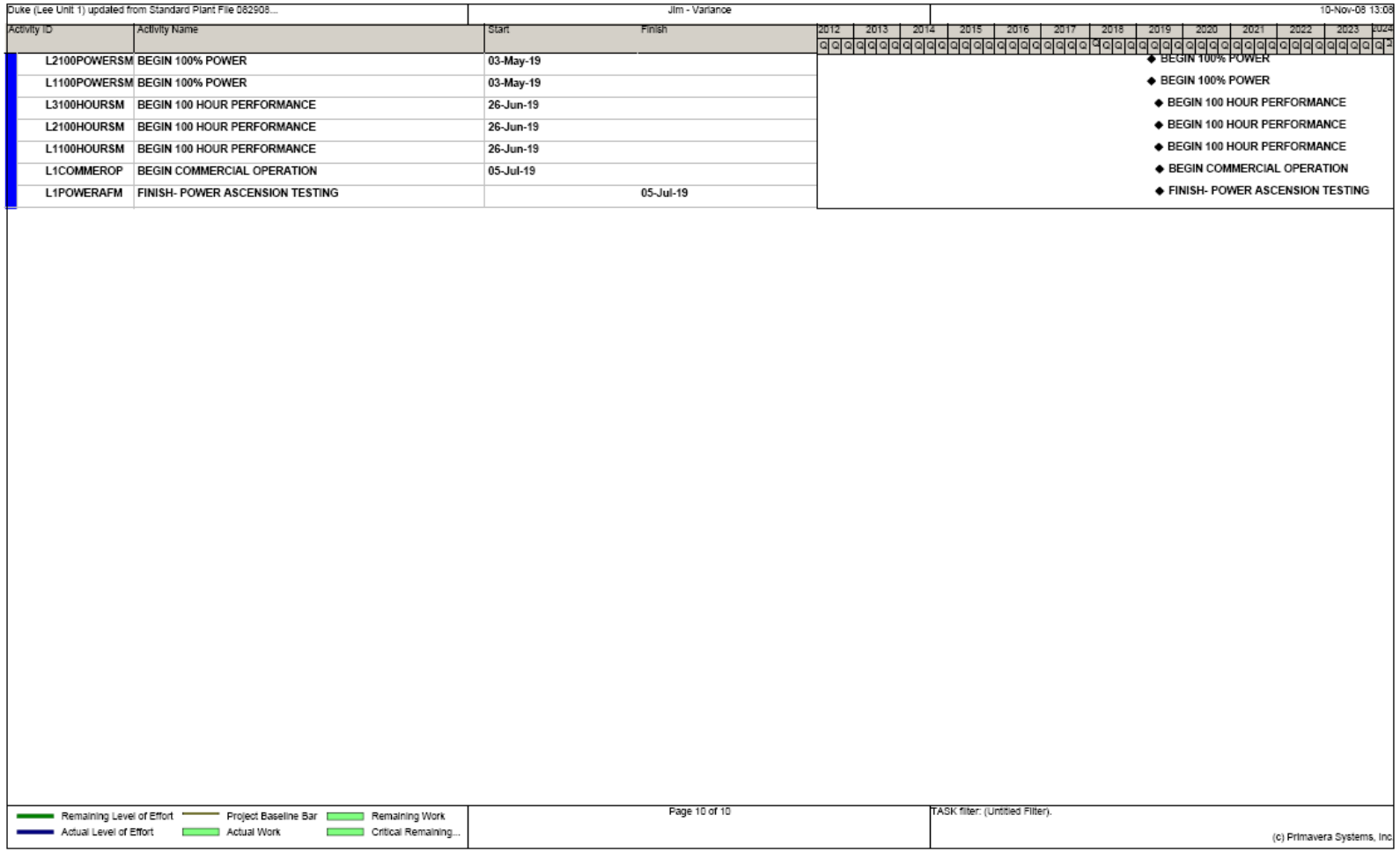
Duke (Lee Unit 1) updated from Standard Plant File 062908...
Jim - Variance
10-Nov-08 13:08
Activity ID
Activity Name
Start
Finish
2012
2013
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2015
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2021
2022
2023
2024
L2100POWERSM BEGIN 100% POWER 03-May-19
L1100POWERSM BEGIN 100% POWER 03-May-19
L3100HOURSM BEGIN 100 HOUR PERFORMANCE 26-Jun-19
L2100HOURSM BEGIN 100 HOUR PERFORMANCE 26-Jun-19
L1100HOURSM BEGIN 100 HOUR PERFORMANCE 26-Jun-19
L1COMMEROP BEGIN COMMERCIAL OPERATION 05-Jul-19
L1POWERAFM FINISH- POWER ASCENSION TESTING 05-Jul-19
BEGIN 100% POWER
BEGIN 100% POWER
BEGIN 100 HOUR PERFORMANCE
BEGIN 100 HOUR PERFORMANCE
BEGIN 100 HOUR PERFORMANCE
BEGIN COMMERCIAL OPERATION
FINISH- POWER ASCENSION TESTING
Remaining Level of Effort
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Project Baseline Bar
Actual Work
Remaining Work
Critical Remaining...
Page 10 of 10
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WLS/II/C/2 Operating and Maintenance Plans

C.II.2 Operating and Maintenance Plans: Describe the plans for operating and maintaining the project, including the proposed providers, their expected staffing requirements, parts inventory, major maintenance schedules, estimated annual downtime, and any performance guarantees and related liquidated damages provisions.

Response:
Response to WLS/II/C/2 contains the following sub-sections:

Introduction
APOG
Permanent Plant Staffing Plan
Permanent Plant Training Plan
Permanent Plant Procedures
Permanent Plant Staffing Plan Details

Introduction:
Attached as **Appendix 22 [File name: 33 Appendix 22 WLS/II/D/4 O&M.doc]** is a preliminary draft Term Sheet for a Project Development and Operation and Maintenance Agreement between Duke Energy Carolinas and its proposed wholly-owned special purpose subsidiary, Nuclear Newco, LLC ("Newco"), which is ultimately expected to own the Lee Nuclear Station (the "Development and O&M Agreement"). (For a full discussion of the proposed arrangements between Duke Energy Carolinas and Newco, please see the responses contained in Sections D and E of this Part II Application.) Pursuant to the Development and O&M Agreement, Duke Energy Carolinas would operate and maintain the Lee Nuclear Station, for which both Newco and Duke Energy Carolinas would be licensees.

Lee Nuclear Station will become the fourth site under the control of Duke Energy Carolinas, Nuclear Generation Department, and, the eighth and ninth reactors of the DEC nuclear fleet. The contemplated Management Plan for the site is described in response WLS/II/D/5.

Duke's operating philosophy for its current fleet (and the planned philosophy for the Lee Units) is to self perform day-to-day operation and maintenance activities for the station. Details on the planned staffing, including training and development needs of the staffing are included further below (see ***Permanent Plant Staffing Plan***). Duke augments the day-to-day operation with contracted resources for refueling outage maintenance and other peaking resource needs. Augmented resources are obtained primarily through standing contracts, supplemented with specialty contracts for specialty services.

For Lee Nuclear Station the Summary of Alliance Agreement described in **Appendix 19 [File name: 30 Appendix 19 WLS/II/D/4 Alliance.doc]**; the Summary of Fuel Fabrication, Technology and Related Services Agreement described in **Appendix 20 [File name: 31 Appendix 20 WLS/II/D/4 Fuel.doc]**; and the Summary of Spent Nuclear Fuel Disposal Contract described in **Appendix 21 [File name: 32 Appendix 21 WLS/II/D/4 Spent Fuel.doc]** are additional important ingredients for the successful operation of the Lee Nuclear Station.

The Summary Alliance Agreement attached as **Appendix 19 [File name: 30 Appendix 19 WLS/II/D/4 Alliance.doc]**, describes the operational support Duke Energy Carolinas has been negotiating with WEC to support operation of Lee Nuclear Station after construction and startup testing, supplementing the site workforce. Duke Energy Carolinas intends to sign the O&M agreement simultaneously with the execution of the EPC contract. The agreement will be a key contract that will ensure continuity from the construction and startup testing phases into the operating period. The primary service areas that will be supported by WEC, the nuclear steam supply system (NSSS) supplier, will be:

- Steam Generator Services
- Reactor Coolant Pump and Motor Services
- Turbine Generator Services
- Instrument and Controls Services
- Reactor Services
- Inspection Services
- Passive Residual Heat Removal Heat Exchanger Services

Pursuant to the terms of this services agreement, experienced personnel will be utilized to ensure preventative maintenance programs are established and implemented from the earliest period supporting equipment reliability in these key areas. This agreement will also guarantee access to technical expertise should problems develop or unusual operating conditions require attention.

In most of the primary service areas, the support will largely be refueling outage activity coverage. Experienced WEC crews will perform the preventative maintenance activities supporting high equipment reliability. Duke Energy Carolinas will have dedicated oversight leaders in each of these areas, and a knowledge and experience transfer will take place between the WEC experts and the Duke Energy Carolinas experts.

Refueling outages are planned for every 18 months. Annual capacity factors are expected to be in excess of 90% based on WEC studies and based on existing Duke fleet operating experience. Adequate spare parts will be inventoried based on WEC/SN recommendations supplemented with Duke and APOG experience. As owner operator there are no performance guarantees or liquated damages beyond those include in the EPC contract.

APOG

Duke Energy Carolinas led the development of, and has entered into, a joint venture relationship with other utilities planning on building and operating a WEC AP1000 nuclear station, for the purpose of sharing developmental costs associated with the operation of the new passive reactors. The joint venture has been organized as APOG. To date, five utilities are members of the venture. The APOG utilities are all engaged in design reviews, and NRC license application review in support of future construction.

APOG member companies provide representatives to an Executive Steering Team, an Engineering Team, an Operations Team with two sub-teams for Procedure Development and Training Development, a Procurement Team, a Licensing Team, a Schedule Team, an Information Management System (“IMS”) Team, a Layout Team and a Labor Team. These teams focus on consistency of design, construction, and operation. Members of the WEC/SN

consortium interact with utility representatives to ensure coordination and support is timely. By utilizing a unified approach, fewer resources have been dedicated to the AP1000 development effort by each utility. The AP1000 utilities have shared the work for such items as document development, design review, and NRC license application question response. A benefit of the close coordination is a constant reminder to work for AP1000 consistency of design and program development. The drive for consistency should provide large benefits following the construction phase, into the testing phase of plant startup, and then during power operations.

Permanent Plant Staffing Plan

The operational timeline for the Lee Nuclear Station was developed looking back from the commercial operation date to determine the steps necessary to have the appropriate number of personnel trained and available to take control and operate the plant.

Based on that study and the NRC requirement to have previously licensed operators on staff to initially startup and run the plant, the plan is to take 30 currently or previously licensed operators and six SRO Certified Instructors from the current fleet to be the nucleus of the operations group. In order to backfill those positions within the current fleet it will be necessary to hire and train approximately 36 non-licensed operators beginning in 2010 to fill the pipeline for Lee Nuclear Station.

Hiring and training for Lee Nuclear Station will progress through the years 2014 to 2017 until all necessary operational positions are filled by fuel load, which is expected to be early 2018 under current planning assumptions. The staffing plan has been developed such that adequate office areas and work areas are provided for the workforce at the Lee Nuclear Station. The staffing plan also included representatives from the corporate office groups that are assigned permanently at the Lee Nuclear Station such as Human Resources, Supply Chain, and Information Technology.

The staffing summary identifies the year the staff should be mobilized to the Lee Nuclear Station to support training, personnel development, pre-operational testing, facility security access control and protection, fuel loading, startup testing, and finally power operation. This staffing process is underway with key operational planning positions currently on board the project. Significant staff additions are currently planned for 2012, as shown in the Table below, with yearly staffing additions concluding in 2018 when the first unit at Lee Nuclear Station obtains commercial status. The staffing plan also includes development of the additional personnel needed for startup of the second Lee Nuclear Station unit also.

The staffing plan will utilize personnel from the current Duke Energy Carolinas operating fleet as well as new hires. A plan to utilize technicians from the local community will be developed in cooperation with local community colleges and technical schools to obtain technically qualified personnel.

The staffing plan currently does not identify any contract personnel; however, as discussed earlier, an O&M services agreement is contemplated with WEC to provide continuing support

for key service areas during power operation. The contract personnel will perform a key role in technology understanding and personnel development.

Staffing Summary

	2012	2013	2014	2015	2016	2017	2018
Staff Numbers							
VP Staff	3	8	10	15	15	15	15
Station Total							490
Chemistry			1	20	31	50	50
MNT			1	55	115	160	160
OPS	16	33	70	115	160	170	170
RP				14	28	50	50
WC				12	37	60	60
Engineering Total							115
Design Engr						31	31
Doc Control						5	5
Plant Engr				52	73	73	73
Project Mgmt					6	6	6
Safety Assurance Total							215
EP				3	5	5	5
ES&H				4	12	12	12
Reg Compliance				5	8	8	8
Performance Improvement				3	10	10	10
Security				15	68	180	180
Support Total							152
Business				1	5	8	8
Site Services				2	21	40	40
Training	11	20	29	40	40	40	40
HR & Medical				6	6	6	6
Supply Chain				5	31	31	31
Special Projects					0	0	0
Contractors					0	0	0
IT		3	3	5	11	11	11
In-Processing				4	4	4	4
QA/QC				12	12	12	12
Site Total	30	64	114	388	698	987	987

Permanent Plant Training Plan

The training programs supporting the Lee Nuclear Station will be developed using the systematic approach to training process endorsed by the Institute of Nuclear Power Operations ("INPO"). The methodology ensures that effective training programs are developed in keeping with the current nuclear industry standards.

In 2007 and 2008 the AP1000 utilities completed a plan to perform a Job Analysis for each of the accredited programs needed at the new AP1000 advanced reactor sites. The Job Analysis included experts from the utilities operating fleet. The completed Job Analysis is the first stage of training program development. Currently the Job Analysis is further developed into a Task Analysis which defines more clearly the tasks needed in each discipline to support the AP1000 plant. The Task Analysis is then used to develop learning objectives, lesson plans, and other supporting training material.

A series of meetings have been held with representatives of the NRC concerning the experience requirements for startup of the new advanced reactors. The requirements have been identified in NEI 06-13 such that there will be certainty regarding the experience requirements for licensed operators supporting startup. Further discussion with the NRC will be held to describe the examination process and the examination standards for the operators of the AP1000 fleet.

Operator training simulators have received significant oversight by the AP1000 utilities. A strategy to establish a simulator for instructor certification has been established. A requirements document has also been produced by the utilities to support WEC simulator development to ensure that the final delivered simulator to each site will meet ANSI 3.5 standards supporting operator examinations by the NRC.

Permanent Plant Procedures

The procedure development process has been started. The first procedures developed by WEC included the Emergency Procedures and Abnormal Procedures. The procedures have been developed per established writers' guides. AP1000 utilities representatives provide procedure development comments concerning technical aspects of the procedures in addition to human factors and writers guide comments. The final product will be verified and validated on the simulator or in the plant. A Human Factors Testing session is also planned for the AP1000 to confirm control room design and gather input from licensed operators from the AP1000 utilities operating plants. Because Operating procedures are needed to develop the operator training program, that effort was started first. However, a rigorous process will also be established to develop I&C procedures, maintenance procedures, chemistry procedures and engineering programs. All the procedures will be utilized in the training programs to ensure personnel are trained to support startup testing and power operations

Permanent Plant Staffing Plan Details:
Historical Perspective and Generic Staffing Considerations

A number of resources were consulted to gain insights into the staffing needs to support a twin AP1000 nuclear site. Some of those sources are listed in the references section of this plan.

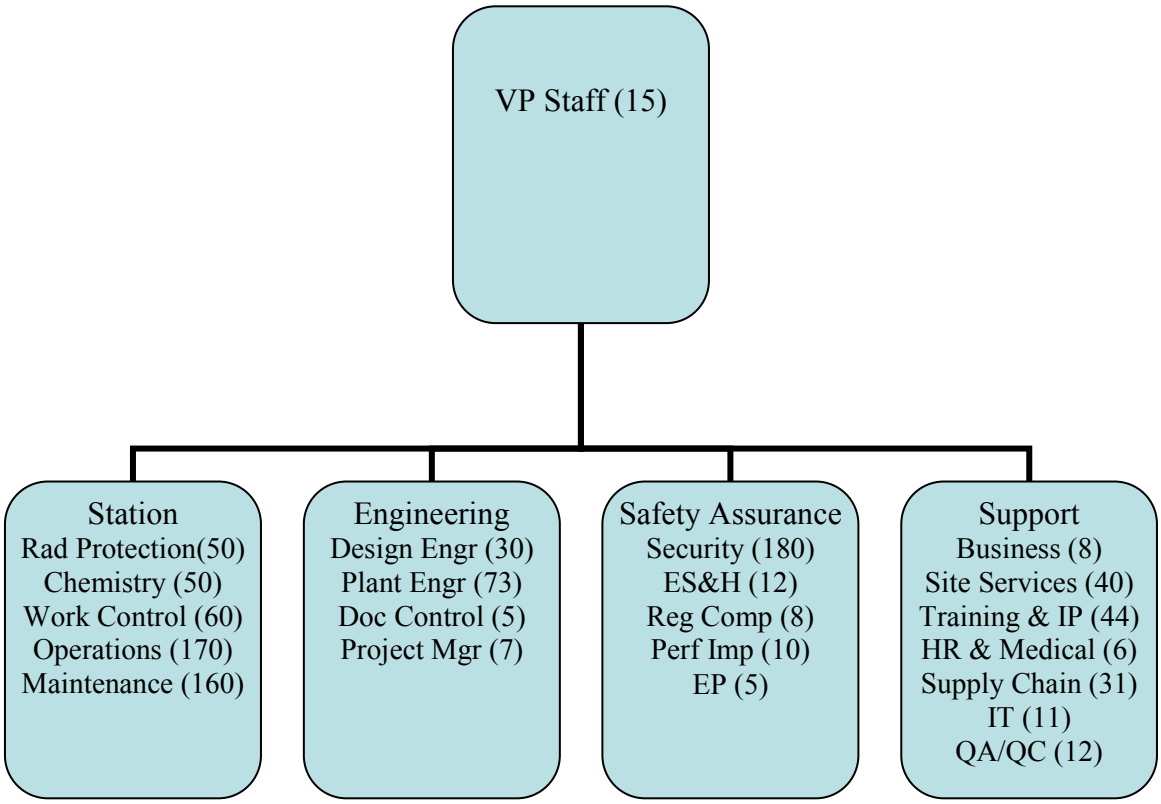
The primary source of feedback was obtained from the current staffing levels in place at the current Duke Energy nuclear sites. Many of the processes in place at the current Duke nuclear fleet will be utilized at the Lee Nuclear Station. The staffing levels that support these fleet processes establish a basis for the initial staffing plan proposed for the Lee Nuclear Station.

That initial staffing plan has been adjusted to account for AP1000 design differences and anticipated future organizational strategies. Some of those staffing drivers are listed to provide insights:

- The AP1000 instrument and control system involves a digital foundation that may influence the number of technicians needed for site support. Initial staffing levels will be comparable to the current fleet levels, but as experience with systems grows, reductions in support levels may be possible.
- There are no safety related pumps utilized in the AP1000 because of the passive design, so pump crews will be smaller.
- The twin AP1000 units are physically separated by a distance of 850 feet, so there are no shared power production systems and many support facilities are not common facilities. Radiation Protection staff must support two single point access points, one for each unit. The control rooms are separate so there are no opportunities to leverage the number of reactor operators. It will be difficult for chemistry technicians to support both units because of the distance between units. The unit separation will cause some team staffing levels to be higher.
- Fewer mechanical modifications are anticipated for the AP1000 units, especially during the early operating period. Contract support will be used for this type of support if needed.
- Duke Energy staffing philosophy embodies a strategy that utilizes the use of in-house nuclear experts, and less on contract support. Over the long view of nuclear operation, reliance on retained experts, and developing experienced engineers and support teams has proven to be a key to safe, cost efficient operations.
- Duke Energy and the other AP1000 utilities have formed a joint venture. This joint effort could result in shared support resources in the future. The Lee staffing plan does not include any anticipated reductions as a result of this joint venture formation at this time. This consideration can be re-evaluated at a later time.
- Shaw/Westinghouse will be utilized for some support services. Reactor Services and Digital Control System Services are two areas where anticipated support have caused reductions in the Lee staffing plan.

Permanent Plant Staffing Plan Details:
Lee Nuclear Station Organization Summary for Startup and Operation

A total of 987 positions have been identified to support operation at the Lee Nuclear Station. Some of these positions will report directly to the Lee Site Vice-president and some of the positions will report to corporate managers. The Lee Nuclear Station Staffing Plan must include the resources aligned directly to site management in addition to the resources aligned to corporate managers that work at the Lee site. A summary is provided below:



The VP Staff includes the following positions: Site VP, Station Manager, Engineering Manager, Safety Assurance Manager, Business Manager, Site Services Manager, Training Manager, Human Resources Manager, Supply Chain Manager, Information Technology Manager, Communications Manager, VP administrative position, Station Manager administrative position and two visitors center staff positions.

Permanent Plant Staffing Plan Details: Operations Team Analysis

The Operations organization consists of 170 positions for Lee Nuclear Station. The following positions have been identified:

The Typical Operations Shift Team is projected to include 15 individuals for each of the five shifts for a single unit. For the two units 30 will be needed per shift. A total of 150 shift personnel are needed to staff each shift. A typical shift for one unit will consist of the following:

1 Operations Shift Manager (OSM) (Senior Reactor Operator, SRO)
1 Work Control SRO
1 Plant SRO
1 Control Room SRO/STA (Shift Technical Advisor)
1 Relief SRO
2 Reactor Operators (ROs)
2 Relief Reactor Operators
6 Non-licensed Operators (NLOs)

The Operations management and support organization is projected to be twenty. These positions include: the Operations Manager, the Operations Work Process Manager (OWPM), the Operations Shift Manager, the Support Operations Manager (procedures, surveillance testing, program management) and a staff of 13 in addition to three administrative personnel. A breakdown of the thirteen support personnel include the following:

-four OWPM SROs or previously licensed personnel
-one Human Performance Champion who is an SRO
-four Procedure Writers who are SROs or were previously SROs
-one Surveillance Program Administrators who is an SRO
-one Training SPOC who is an SRO
-two Evolution/Testing experts who are SROs

The Operations staffing levels include the following assumptions:

- Each shift will be self-relieving.
- NLOs conduct Operations testing activities, a separate testing team is not provided.
- No additional staffing levels are provided for individuals in NLO learner classes or License classes.
- The staffing plan includes a provision for an Operations Shift Manager (OSM) for each unit, however, Technical Specifications minimum shift staffing levels allows operation with one OSM for both units.
- All SROs are qualified as STAs so any on shift SRO can provide the STA function during an emergency. Usually the WCC SRO will provide the STA function.
- Based on attrition, staffing levels above the organization defined in this staffing plan are needed to provide a feeder group to support management development, NLO, RO, and SRO attrition, Work Control attrition, Emergency Planning attrition, Operations Training Department attrition, and Engineering Department development.

- Per FSAR Table 13.1-202, Minimum On-Duty Operations Shift Organization for Two-Unit Plant, the following minimum staffing numbers are provided:

FSAR Chapter 13 Operations Minimum Staffing Levels			
OPS Position	All Units Shutdown	One Unit Operating	Two Units Operating
OSM	1	1	1
SRO	0	1	2
RO	2	3	4
NLO	3	3	4

- The Operations minimum staffing levels described in the FSAR, Table 13.1-202, equal or exceed the requirements included in the Lee Nuclear Station Emergency Plan, Table II-2, Plant Staff Emergency Functions.
- The Operations minimum staffing levels described in the FSAR, Table 13.1-202, equal or exceed the requirements included in Technical Specifications 5.2.2.
- The Fire Brigade shall include at least 5 qualified individuals. Five NLOs for the site are normally the minimum required members of the Fire Brigade. The members of the SPOC team are also expected to be fire brigade members or MERT responders to add capability for emergency response. However, the SPOC team members are not normally credited as the minimum staffing levels for the Fire Brigade. Fire Brigade commitments for staffing are included in FSAR 13.1.2.1.5.

Permanent Plant Staffing Plan Details: Maintenance Team Analysis

The Maintenance organization consists of 160 positions for the two AP1000 units at the Lee Nuclear Station. The following positions have been identified:

Maintenance Organization Total = 160
1 Maintenance Manager
1 Administrative
1 Program Support

1 Maintenance Manager, Services
25 SPOC
10 Fuel Handling & Reactor Services
4 Test Equip

1 Maintenance Manager, I&E
10 Breaker, Motor, Relay
10 NSSS Inst.
10 Protection Monitoring System
10 Radiation Monitors & Turbine
4 Tech Support

1 Maintenance Manager, Rotating Equipment
12 DG & Pumps

5 Cranes
6 HVAC
3 Tech Support

1 Maintenance Manager, Civil/Valves
5 Builders/Insul/Scaffold
7 MOVs
7 General Valves
6 AOVs
4 Hangers
8 Heat Exchangers
4 Shop
3 Technical Support

The Maintenance Team staffing levels include the following assumptions:

- Because the AP1000 utilizes digital protection systems and control systems, many teams will need to develop digital technology knowledge and abilities.

The Single Point of Contact (SPOC) teams are predominantly I&C technicians. These teams respond primarily to emergent I&C repairs in the plant and provide operations assistance to I&C related issues. If additional skills are determined to be needed for back-shift immediate support, a call out by the SPOC team leader is made.

- Emergent repairs and operations assistance is expected to be predominantly I&C related. If additional skills are determined to be needed for back-shift immediate support, a call out by the SPOC team leader will be made.
- Per the Lee Nuclear Station Emergency Plan, Table II-2, Plant Emergency Functions, there are no requirements for on shift emergency repair and correction action personnel: therefore a shift maintenance team is not required by the Emergency Plan. However, one mechanical technician, and one instrument and electrical technician is proposed to be a 75 minute responder to the plant upon the declaration of an Emergency Classification.
- SPOC repair capability is not required by the proposed Technical Specifications.
- The members of the SPOC team are expected to be fire brigade members or MERT responders to strengthen emergency response capability. However, the SPOC team members are not normally credited as the minimum staffing levels for the Fire Brigade. Fire Brigade commitments for staffing are included in FSAR 13.1.2.1.5.
- The Duke Energy nuclear fleet utilizes a multi-skilled team to efficiently address maintenance needs. With fewer handoffs, crews have been found to be more efficient and individuals on the crews less frustrated. While it is a challenge for supervisors to provide oversight for multi-skilled teams, ownership for component health and system health are greatly increased. For assessment teams or external audit teams the maintenance managers and supervisors need to be comfortable describing the team multi-discipline approach to solving maintenance needs.
- Because maintenance teams are sometimes made up of I&C, electrical and mechanical technicians, special attention to qualification and continuing training will be needed within a particular discipline.

- Contract personnel will have to be used to augment the teams during heavy maintenance periods.
- If an Alliance Agreement is utilized for support of some maintenance services at the Lee Nuclear Station, it may be possible to reduce the size of some maintenance teams.
- Maintenance team support is provided within the Work Control organization for procedure development, scheduling support, program development, payroll and time-keeping, contract development and budget planning. This division or support is utilized within the Duke Energy nuclear fleet and is continued as a Lee staffing philosophy.
- Teams have not been included within the Maintenance organization for mechanical modification implementation support. It is anticipated that this support will be provided by Nuclear Major Projects and contract personnel. The modification support could also be provided utilizing an Alliance Agreement with a Westinghouse/Shaw consortium or some other contract services agreement.

Permanent Plant Staffing Plan Details: Radiation Protection Team Analysis

The Radiation Protection (RP) organization consists of 50 individuals for the Lee Nuclear Station two AP1000 Units. The following positions are included in the staffing plan.

1 RP Manager
1 RP Survey and Control (S&C) General Supervisor
1 RP Waste/Shipping General Supervisor
1 RP Procedure/Program Development Supervisor
4 RP Staff Engineers
4 RP Administrative Support Personnel
2 RP ALARA Specialists
36 RP Technicians

The RP Team staffing levels include the following assumptions:

- Additional support is needed using support from the other Duke Nuclear Sites or contract services during heavy maintenance periods.
- On shift support is needed for support of the Operations team and the Maintenance SPOC teams. The normal shift compliment is three RP technicians. The RP technicians that rotate on shift are normally expected to be members of the fire brigade or MERT to strengthen emergency response capability.
- Per the Lee Nuclear Station Emergency Plan, Table II-2, Plant Staff Emergency Functions, a minimum of two RP technicians are needed per shift for the site for personnel monitoring, survey and control and access control into radiation areas. The Emergency Plan also requires another qualified individual to perform on site surveys during accident conditions. This person does not have to be an RP technician. A Chemistry technician, a SPOC technician or an NLO can be qualified to perform these duties.
- Per Technical Specifications, 5.2.2.c and FSAR Table 13.1-202, a Radiation Protection Technician shall be on site whenever fuel is in the reactor.

Permanent Plant Staffing Plan Details: Chemistry Team Analysis

The Chemistry organization consists of 50 individuals for the two units at Lee Nuclear Station. The following positions are included in the staffing plan.

1 Chemistry Manager
1 Procedure/Program Development Supervisor
6 Support Chemistry Staff
1 Primary Chemistry Supervisor
14 Primary Chemistry Technicians
1 Secondary Chemistry Supervisor
12 Secondary Chemistry Technicians
1 Radwaste Supervisor
9 Radwaste technicians
4 Environmental

The Chemistry Team staffing levels include the following assumptions:

- The Chemistry team will provide the oversight needed for primary and secondary systems to maintain component health by minimizing corrosion and chemical attack. The Chemistry team also operates the liquid radwaste systems. The Chemistry team also monitors all liquid effluent from the site as required by environmental regulations and SCDHEC permits. The Lee Nuclear Station Chemistry team is organized like the other Duke nuclear sites to continue the BEST philosophy for process development. The Business Excellence Steering Teams (BEST) philosophy is the approach used by Duke Energy Carolinas Nuclear Generation to facilitate communication of lessons learned, sharing of best practices, tackling of common issues, and ensuring standard approaches, between the sites. BEST teams exist at all managerial levels and at many supervisory levels across the existing nuclear fleet.
- On shift support is needed for support of the Operations team. The normal shift compliment includes two Chemistry technicians, one primary and one secondary. There are times when the radwaste team will have to support back-shifts. During startup and shutdown, additional support will be needed also. The chemistry technicians that rotate on shift are normally expected to be members of the fire brigade or MERT to strengthen emergency response capability.
- Per the Lee Nuclear Station Emergency Plan, Table II-2, Plant Staff Emergency Functions, there are no requirements for a Chemistry technician; however, one is required to be a 75 minute responder. The Emergency Plan also requires another qualified individual to perform on site surveys during accident conditions. This person does not have to be an RP technician. A Chemistry technician, a SPOC technician or an NLO can be qualified to perform these duties.
- Per FSAR Table 13.1-202, one Chemistry Technician shall be on site when a unit is operating above cold shutdown conditions.
- Per TS 5.2.2, there are no requirements for Chemistry technician minimum staffing levels.

Permanent Plant Staffing Plan Details: Work Control Team Analysis

The Work Control organization consists of 60 positions for the two units at Lee Nuclear Station. The following positions have been identified:

1 Work Control Manager
1 Outage Manager
1 On-line Manager
30 On-line support personnel (schedulers, planners, coordinators)
7 Work Window Managers
1 Program Development/Execution Support Supervisor
17 Program Development/Procedure Development Personnel
2 Administrative Personnel

The Work Control team staffing levels include the following assumptions:

- The Work Control organization coordinates all the scheduling and coordination functions at the site. The Work Control team also includes the maintenance procedure writers, the maintenance planners, and program support personnel. Many sites in the industry organize this effort in a number of ways, various organizations can be found across the country. The staffing plan for Lee utilizes the organization structure used at the other Duke Energy nuclear sites. The consistency between sites supports the BEST philosophy for developing processes.
- Work Control supervision includes the Work Control Manager, who reports to the Station Manager, an Outage Manager, and a Scheduling Manager. One Outage Manager provides consistency for leading outage planning standards for the two Lee units. Work Window managers provide detailed oversight and coordination during outage preparation and implementation. While the units are at power, the on-line maintenance schedule is developed by Work Week Managers to ensure oversight and coordination of daily work. The Scheduling Manager provides oversight of the work planning process, the scheduling tool and related programs, and the site surveillance program. A Program Support Supervisor is also provided to ensure programs have oversight and ownership.
- For efficient use of the cranes and maintenance work areas inside the Containment Building during refueling outages, a Reactor Building Coordinator position has been identified in the Work Control Group.
- While some maintenance task planning is performed by the maintenance teams, planners are identified on the Work Control team to ensure preventive maintenance activities are prepared in accordance with standard templates with consistent detail.
- Work Control Schedulers are provided to maintain integrated site schedules. Ownership for standard schedules and optimized use of the scheduling tools is provided by the Work Control Schedulers during outage periods and on-line power operations.
- The Maintenance Procedure Writers are managed in the Work Control team. Having the Maintenance Procedure Writers in Work Control helps align the tasks that are planned, the schedule and the program support oversight in a single location somewhat independent of the Maintenance craft teams. Centralizing the support organization in the

Work Control team has allowed the Maintenance team to focus on maintenance crew development and training oversight.

- The Work Control Organization provides support for the Emergency Response Organization. The Operations Support Center Coordinator position is provided by the Work Control Manager and other members of the Work Control team.

Permanent Plant Staffing Plan Details: Engineering Team Analysis

The Engineering organization consists of 115 personnel for Lee Nuclear Station. The following positions have been identified:

1 Engineering Manager (Included in VP Staff)
30 Design Engineering Team
7 Project Management Team
5 Document Control Team
70 Plant Engineering Team
3 Admin

The Engineering Team staffing levels includes the following assumptions:

- The Engineering team at Lee Nuclear Station utilizes the organization structure used at the other Duke Energy nuclear sites. The consistency between sites supports the BEST philosophy for developing processes.
- The Engineering Manager at Lee Nuclear Station is responsible for all the engineering support programs, maintaining the design bases of the site structures, systems and components (SSCs), and for configuration management oversight at the site. Even though all site employees must be cognizant of the importance of configuration control, engineering must provide oversight such that the design bases of SSCs is reflected in plant drawings, databases and the as-built plant aligns with plant drawings.
- There may be occasions when contract support may be needed to support Engineering. It is anticipated that an AP1000 Owners Group will be utilized to leverage support of some engineering programs.
- A Westinghouse Alliance Agreement will be developed to provide engineering support for a number of programs such as I&C Program Support, Modification Design and Safety Analysis Support. The design team may not need to be 30 dedicated personnel.
- The Document Management team is responsible for maintaining the records vault at the site. Drawings, procedures, completed procedures, and all retained records are the responsibility of the Engineering organization.
- Initially there is not a need for Major Projects representation at the Lee Nuclear Site. As the site matures and components become obsolete, there will be a need for a Major Projects team.
- There are no modification implementation technicians included in the staffing plan. Drawing and model updates will be completed by contract resources.
- Engineering support of the Emergency Response Organization is required in the TSC and the OSC. Engineering management will be expected to fill key roles for equipment assessment and system analysis. The Emergency Plan describes the required roles.

Implementing procedures describe additional capability expected from the engineering team.

The staffing plan for the operational departments of the plant such as maintenance, operations and engineering are complete. However, a staffing plan for departments such as quality assurance, business management, and emergency planning are not complete at this time. Currently, the plans are to complete a Duke Energy specific staffing study by the end of 2009.

WLS/II/C/3 Decommissioning Plan

C.II.3 Decommissioning Plan: Provide a detailed description of the project decommissioning, deconstruction and disposal plans, the anticipated costs, and arrangements to ensure the necessary funding will be available when needed.

Response:

As reported in WLS/I/C/2/Major Project Plans – d) Decommissioning Plan

Pursuant to US NRC regulations in 10 CFR 50.33 and the guidance provided in NUREG-1577, Rev 1, *Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance,* the decommissioning financial assurance funding, as described in this section, provide reasonable assurance that funding will be available to decommission Lee Nuclear Station when required. As such, this section constitutes the decommissioning report required by 10 CFR 50.75 (b) and constitutes the decommissioning plan requested by DOE for purposes of applying for the Federal Loan Guarantee.

Lee Nuclear Station is a two-unit PWR (units 1 and 2) that is to be built in accordance with the Westinghouse AP1000 certified design. The AP1000 design has a per unit thermal power rating of 3400 MWt. The decommissioning cost estimate calculated in accordance with 10 CFR 50.75(c) and using NUREG-1307, Revision 12, is computed on a per-unit basis (in 2006 dollars) as described in this section.

Pursuant to the requirements of 10 CFR 50.75(c)(1)(i), for a PWR equal to 3400 MWt, the minimum amount required to demonstrate reasonable assurance of funds for decommissioning is $ 105 million (in 1986 dollars).

The amount is adjusted for inflation to 2006 dollars using an overall adjustment factor equal to $0.65(L) + 0.13(E) + 0.22(B)$.

The factors *L* and *E* are escalation factors for labor and energy, respectively, and are determined from regional data provided by the U.S. Bureau of Labor Statistics (BLS). The factor *B* is an escalation factor for waste burial and is taken from NRC report NUREG-1307, *Report on Waste Burial Charges*, Revision 12, which included an update to reflect 2006 dollars.

The use of 2006 dollars throughout this subsection is consistent with the information provided in NUREG-1307.

The escalation factor for labor costs, *L,* for the South Region, as provided by the BLS and reported in NUREG-1307, Table 3.2, is 2.04.

The escalation factor for energy cost, *E*, is a weighted average of industrial electric power, Px and light fuel oil, Fx. The formula for this weighted average for a PWR is identified in NUREG-1307, Section 3.2, *Energy Adjustment Factors*, as 0.58Px + 0.42Fx. The values of Px and Fx are calculated from the Producer Price Indexes (PPI) of industrial electric power and light fuel

provided by BLS. The PPI values provided by BLS for industrial electric power are 167.8 for December 2006 and 114.2 for January 1986. The PPI values provided for light fuel oils are 200.4 for December 2006 and 82.0 for January 1986. The values of Px and Fx are equal to the ratio of the December 2006 Producer Price Indexes to the corresponding indexes for January 1986 for industrial electric power and light fuel oils, respectively.

$$E = 0.58(Px) + 0.42(Fx)$$
$$= 0.58(167.8/114.2) + 0.42(200.4/82.0)$$
$$= 0.58(1.4694) + 0.42(2.4439)$$
$$= 1.879$$

The escalation factor for waste burial, *B*, for a member of the Atlantic Compact with a PWR using direct disposal by vendors at the South Carolina (Barnwell) Site is 8.600, as provided in Table 2.1 of NUREG-1307, Revision 12. The adjusted per-unit minimum decommissioning fund amount (MDF) required to demonstrate reasonable assurance of funds for the decommissioning of the Lee Nuclear Station is $363.5 million (in 2006 dollars) per unit, as calculated below.

$$MDF = \$105 \text{ million } [0.65(L) + 0.13(E) + 0.22(B)]$$
$$= \$105 \text{ million } [0.65(2.04) + 0.13(1.879) + 0.22(8.600)]$$
$$= \$105 \text{ million } [3.46227]$$
$$= \$363.5 \text{ million (in 2006 dollars) per unit}$$

This cost estimate is updated annually using the adjustment factor described in 10 CFR 50.75 (c)(2).

Pursuant to 10 CFR 50.75(e)(1), the funding method used to provide financial assurance that sufficient funds will be available at the time of decommissioning is the method identified in 10 CFR 50.75(e)(1)(ii), an external sinking fund. A trust agreement will be established for the Lee Nuclear Station Units 1 and 2 at the time each unit commences power operations. An initial contribution will be made to the trust fund, and continuing contributions will be made, as needed, using the revenues obtained from plant operation. The new trust fund will become a part of the existing Duke Energy Corporation Master Decommissioning Trust Agreement. This existing trust agreement provides financial assurance for the decommissioning costs for the existing operating plants owned and operated by Duke Energy Carolinas. The funds currently provide the funding for Oconee units 1, 2 and 3; McGuire units 1 and 2; and Duke Energy Carolinas, LLC's share of Catawba units 1 and 2. The decommissioning funding status for these existing operating plants is reported to the NRC every two years; the most recent report was submitted to the Commission on April 2, 2007. Material revisions to the existing Master Decommissioning Trust Agreement are provided to the Commission as a part of the required status reporting. The funding requirements of 10 CFR 50.75 will continue to be satisfied through the Master Decommissioning Trust Agreement. A certification containing a copy of the financial instrument used to provide decommissioning funding assurance in an amount not less than that calculated from the formula given in 10 CFR 50.75 will be submitted to the Commission no later than 30 days after the Commission publishes a notice of intent to operate in the Federal Register under 10 CFR 52.103(a).

In accordance with 10 CFR 50.75(e), Duke Energy Carolinas, will submit a report containing a certification updating the information described in 10 CFR 50.75(b)(1). Additionally, in accordance with 10 CFR 50.75(f)(1), Duke Energy Carolinas will periodically report on the status of decommissioning funding for the Lee Nuclear Station.

In accordance with 10 CFR 50.75(g), Duke Energy Carolinas will retain records of information important to the safe and effective decommissioning of the Lee Nuclear Station until the termination of the license.

Under the proposed ownership structure, at the appropriate time the COL for the Lee Nuclear Station will be transferred to Newco, which will be deemed the "owner" under the license, while Duke Energy Carolinas will remain on the license as the "operator." Newco will enter into a Project Development and Operation and Maintenance Agreement with Duke Energy Carolinas, pursuant to which Duke Energy Carolinas will operate and maintain the Lee Nuclear Station. Under this arrangement, Newco will be responsible for decommissioning of Lee Nuclear Station Units 1 and 2 and will be responsible for funding of the Decommissioning Trust Fund for those units. Appropriate arrangements will be made at that time for any amendment of the Duke Energy Corporation Master Decommissioning Trust Agreement to implement Newco's decommissioning responsibilities.

Duke Energy Carolinas included the estimated impact of funding the Decommissioning Trust on the project in the financial model provided in its Part II response.

WLS/II/C/4 Permits and Approvals

C.II.4 Permits and Approvals: The applicant shall provide a complete list of federal, state and local permits and approvals required to site, construct, implement and operate the project, including environmental authorizations or reviews necessary to commence construction. For approvals already received, provide the filing and approval dates and parties involved; for those not yet received, provide the filing date, steps to be taken to obtain them, and expected date(s) they will be obtained.

Response:

Nuclear Regulatory Commission

- *COLA submittal* - The Lee Nuclear Station COL application was submitted on schedule to the NRC on December 12, 2007. The NRC's 60-day sufficiency review concluded with acceptance and docketing of the application on February 25, 2008.

- *NRC review* - On April 2, 2008, the NRC published a schedule for the full review of the application, indicating scheduled completion of the environmental review in March 2010 and scheduled completion of the safety review in February 2011.

- *Hearings* - Issuance of the combined license is scheduled to occur following the conclusion of public hearings. The typical planning assumption for public hearings is 12 months, but as a result of the ASLB's denial of BREDL's request for hearing, a contested hearing may not occur. A mandatory hearing is still required under current regulations, but that hearing is expected to be of a much shorter duration. The NRC has not published an estimated schedule absent a contested hearing; however, the ASLB's denial of BREDL's request for hearing increases likelihood of receiving a COL by 1Q12.

- *AP1000 DCD* - The current Lee Nuclear Station COL schedule is constrained by the AP1000 DCD revision (which is incorporated by reference into the Lee Nuclear Station COL application and must be approved first) and the Bellefonte COL application (which, as the AP1000 reference plant, contains standard content common to all AP1000 COL applications). On February 15, 2008, the NRC issued a letter to WEC establishing its review schedule, supporting issuance of a final safety evaluation report in March 2010. WEC has subsequently submitted Revision 17 of the AP1000 DCD to the NRC for approval; this revision consists in large part of conforming changes that the NRC has reviewed previously. Duke Energy Carolinas expects the NRC's revised schedule for review of the AP1000 DCD, and the NRC's schedule for issuing the Bellefonte COL, will both support the Lee Nuclear Station licensing schedule.

Public Service Commission of South Carolina

- *SC Project Development Application* - On June 9, 2008, a Project Development Order was issued by the Public Service Commission of South Carolina approving Duke Energy Carolinas' decision to incur project development costs for the Lee Nuclear Station through December 31, 2009, as reasonable and prudent.

- *Combined SC CPCN and Base Load Review Application* – Duke Energy Carolinas expects to file a combined application for a Certificate of Environmental Compatibility and Public Convenience and Necessity and Baseload Review in the first quarter of 2010. This process is expected to take approximately nine months, resulting in an approval date in the fourth quarter of 2010. Once approved, recovery of prudent project expenditures is reasonably assured. Also upon approval, project financing costs will be recovered through rates in South Carolina as the facility is constructed (this recovery mechanism is subject to annual adjustment to reflect the growing capital expenditures).

North Carolina Utilities Commission

- *NC Project Development Application* – On June 11, 2008, a Project Development Order was issued by the North Carolina Utilities Commission approving Duke Energy Carolinas' decision to incur project development costs for the Lee Nuclear Station through December 31, 2009, as reasonable and prudent.

- *NC Need Determination and Cost Estimate/Schedule Approval for an Out-of-State Generating Facility* – Duke Energy Carolinas expects to file this application during the third quarter of 2010. This proceeding is designed for the North Carolina Utilities Commission to confirm the need for an out-of-state generating facility intended to serve North Carolina retail customers, and to approve the cost estimate and construction schedule. This regulatory process is expected to take approximately six months.

In addition to the above, the permits listed in the Table below are also needed to move the project forward. The background work required to develop the permit applications is currently in progress. The early estimate of approval dates is shown for each permit.

Permit Name	Estimate of Approval Date	Governing Body
Water Quality Permits		
Monitoring Well Permits	07/03/06	SCDHEC
NPDES Permit	12/18/09	SCDHEC
SCDHEC Construction in Navigable Waters Permit (Issued in conjunction with NPDES)	12/15/09	SCDHEC
NPDES Permit to Construct Wastewater Treatment Facility	12/11/10	SCDHEC
NPDES Construction Storm Water Permit	PTC	SCDHEC
Sec 404 Dredge & Fill Permit Issued (Post EIS)	03/15/10	COE

Permit Name	Estimate of Approval Date	Governing Body
401 Water Quality Certification issued with 404 Permit	03/15/10	SCDHEC
Public Water Supply System (SC R. 61-58.)	PTC	SCDHEC
Conveyance Permit Issued (Post EIS)	05/13/10	FERC
NPDES Permit - Concrete Batch Plant (SC R. 61-9)	PTC	SCDHEC
NPDES Operations Storm Water Permit	PTO	SCDHEC
Operations SPCC Plan (40 CFR 112, SC R. 61-9)	PTO	SCDHEC
Air Quality Permits		
Bureau of Air Quality Title V Construction Permit (SC R. 61-62) (Permanent air emitting equipment to be installed for plant operations)	PTC	SCDHEC
Bureau of Air Quality Construction Permit (SC R. 61-62) (All contractor construction sources)	PTC	SCDHEC
Concrete Batch Plant BAQ Permit (SC R. 61-62)	PTC	SCDHEC
Bureau of Air Quality Title V Operating Permit (SC R. 61-62)	Note 10	SCDHEC
Miscellaneous Permits		
Process Waste Disposal/RCRA ID Number (SC R. 61-79, and SC R. 61-104)	09/21/07	SCDHEC
Engineering Report (International Building Codes Sec. 1704)	PTC	CCBS
Building Permit	PTC	CCBS
DOT Highway Encroachment (if McKowns Mountain Road altered)	PTC	SCDDOT
Federal Aviation Administration § 77.15 Permit for construction cranes (14 CFR 77)	PTC	FAA
Federal Aviation Administration § 77.15 Permit for containment (14 CFR 77)	PTC	FAA
SC Radioactive Material License (SC R. 61-63) (Non-Destructive Examination Contractor must provide evidence of a valid license.)	PTC	SCDHEC
Blasting Permit (Chapter 71 1976 Code Section 23-36-80, as amended)	PTC	State Fire Marshall
Mine Operating Permit (SC R. 48-20) (Reuse of bedrock excavated from site)	PTC	SCDHEC
Pollution Prevention and Waste Minimization Plan (SC R. 61-79 and 61-104)	PTO	SCDHEC

Notes:

1. PTC: Prior to Construction
2. PTO: Prior to Operations
3. CCBS: Cherokee County Building Safety
4. COE: Corps of Engineers
5. SCDHEC: South Carolina Department of Health and Environmental Control
6. SCDOT: South Carolina Department of Transportation
7. FERC: Federal Energy Regulatory Commission
8. FAA: Federal Aviation Administration
9. PSCSC: Public Service Commission of South Carolina
10. Convert Construction Permit at Operations

WLS/II/C/5 Engineer's Report

C.II.5 Engineer's Report: Include as an appendix an independent engineering report prepared by an engineer with experience in the industry and familiarity with similar projects. The report should comprehensively evaluate the project's siting and permitting, engineering and design, contractual requirements and arrangements, environmental compliance, testing and commissioning, and operations and maintenance.

Response:

The Independent Engineer's Report prepared by Burns & Roe is provided in **Appendix 30 [File name: 41 Appendix 30 Independent Engineer Report.pdf]**.

WLS/II/C/6 Environmental Report

C.II.6 Environmental Report: The National Environmental Policy Act ("NEPA") requires all federal agencies to consider the potential impacts of their proposed actions. Discuss in detail expected timelines for project regulatory approvals, current NEPA status and state and local reviews, existing or anticipated legislation/regulation or litigation that could impact the project, current administrative or court proceedings, and the status of any appeals. Also describe the project's anticipated air pollution or greenhouse gas reduction benefits and ability to avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gases. The resulting Environmental Report ("ER") will not be point scored but will be used to prepare a critique and synopsis under 10 C.F.R. 1021.216' which will be considered by DOE in selecting projects for due diligence, underwriting and negotiation. The ER will also be used to assist DOE in determining the appropriate level of NEPA review and to facilitate DOE's preparation of any required EA or EIS.

The application must provide sufficient information to enable DOE to determine the level of NEPA review/approval that will be required for loan guarantee consideration (i.e., whether an environmental assessment ("EA") or an environmental impact statement ("EIS") is required). DOE will consider any environmental review and assessment of the project prepared by the NRC in support of the license application. If DOE determines that either an EA or an EIS, other than that produced by the NRC or other federal agency in respect of a given project, is necessary, the applicant will hire an independent engineering firm, satisfactory to DOE, with specific expertise in preparing the type of assessment and a report evaluating the potential environmental impacts of the project. Detailed information on required environmental information can be found in Attachment B. Required environmental information may be extracted from an applicant's environmental report submitted in support of an NRC license application.

Response:

PREVIOUSLY PROVIDED UNDER PART I, SECTION C3 POTENTIAL ENVIRONMENTAL IMPACTS

The environmental report submitted in support of Duke Energy Carolinas' NRC license application is currently being revised. The updated report will be sent to the DOE in early 2009 once the revision is completed.