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February 4, 2004

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S. C. PUBLIC SERVICE COMMISSION
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UTILITIES DEPARTMENT

The Honorable Bruce F. Duke
Executive Director
South Carolina Public Service Commission
Post Office Box 11649
Columbia, South Carolina 29211-1649

Re: Application of Chem-Nuclear Systems, LLC (SCPSC Docket No. 2000-366-A)
(Fiscal Year 2003-2004 Proceeding)

Dear Mr. Duke:

Enclosed herewith for filing with the Commission, please find twenty-five (25) copies of the prefiled testimony of Regan E. Voit, Carol Ann Hurst and Mark A. Childs on behalf of Chem-Nuclear Systems, LLC, a Division of Duratek, Inc., which testimony is filed pursuant to the Commission's Order No. 2003-739 in the above-captioned docket.

By copy of this letter, I am serving all counsel of record with a copy of the testimony.

Should you have any questions with respect to this testimony, please do not hesitate to contact me.

Very truly yours,

Robert T. Bockman

Robert T. Bockman

Enclosures

cc: The Honorable Max K. Batavia
The Honorable C. Earl Hunter
The Honorable Henry D. McMaster
Robert E. Merritt, Esquire
Catherine D. Taylor, Esquire
Hana Pokorna-Williamson, Esquire

BEFORE THE PUBLIC SERVICE COMMISSION
OF SOUTH CAROLINA

Docket No. 2000-366-A

IN RE: Application of Chem-Nuclear Systems, LLC, a Division of Duratek, Inc., for Adjustment in the Levels of Allowable Costs and for Identification of Allowable Costs	)	**CERTIFICATE OF SERVICE**

I, ElizaBeth A. Blitch, do hereby certify that I have this date served one (1) copy of the prefiled Direct Testimony of Regan E. Voit, Carol Ann Hurst and Mark A Childs for the Fiscal Year 2003-2004 proceeding in this docket upon the following statutory parties by causing said copies to be deposited with the United States Postal Service, first class postage prepaid and addressed as follows:

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Attorney General
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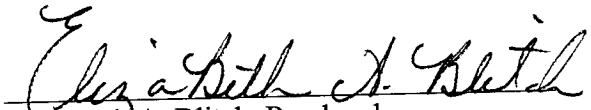

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February 4, 2004
Columbia, South Carolina

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S. C. PUBLIC SERVICE COMMISSION
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BEFORE

THE PUBLIC SERVICE COMMISSION

OF

SOUTH CAROLINA

Docket No. 2000-366-A
(Year 2004 Proceeding)

DIRECT TESTIMONY AND EXHIBITS

OF

REGAN E. VOIT

FOR

CHEM-NUCLEAR SYSTEMS, LLC,
A DIVISION OF DURATEK, INC.

Q. **PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.**

A. My name is Regan E. Voit. My business address is 140 Stoneridge Drive, Columbia, South Carolina. I am employed by Chem-Nuclear Systems, LLC ("Chem-Nuclear") and serve as its President.

Q. **PLEASE STATE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL EXPERIENCE.**

A. I graduated from the University of Virginia with a degree in aerospace engineering and received my MBA from the University of South Carolina. From 1972 to 1976, I served as a United States Naval officer on nuclear submarines. From 1976 to 1980, I worked for the United States Department of Energy at the

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Savannah River site. My responsibilities there were regulatory oversight of the reactor operations conducted at that facility. These first eight years of my nuclear industry career provided experience about radioactive waste issues from a waste generator's point of view. The next 23 years of my career have been in the radioactive waste management industry.

Q. **PLEASE DESCRIBE YOUR GENERAL DUTIES AND RESPONSIBILITIES.**

A. From 1980 to 1982, I was employed as a project manager for radioactive decontamination services by Chem-Nuclear. I was responsible for introducing personnel training and technician certification programs for field operations, and establishing detailed operational procedures to refine decontamination services. From 1982 to 1986, I worked as director of waste management services for a new company named NUS Process Services Corporation. There, I established administrative and quality assurance policies. From 1986 to 1989, I worked as vice president of operations for LN Technologies, a provider of services for chemical decontamination and chemical cleaning of radioactive systems, radioactive waste processing, and radioactive waste transportation. In 1990, I returned to Chem-Nuclear as director of projects with responsibility for the financial and technical performance of the major site remediation and decontamination/decommissioning projects performed for the federal government. In 1991, I took responsibility for the financial and technical performance of Chem-Nuclear's field services, where our technicians process, package and transport waste for disposal. In 1993, the financial and technical performance of Chem-Nuclear's radioactive and hazardous waste processing

facility in Kingston, Tennessee, was added to my field services responsibilities. In 1995, I was promoted to President of Chem-Nuclear.

I have been an active participant in many professional activities and associations over the years, including the American Nuclear Society, the Nuclear Energy Institute, and the Waste Management Conference Program Advisory Committee. I have served on the South Carolina Chamber of Commerce Board of Directors, on the Executive Committee for Excellence in Education, and as chairman of the Executive Advisory Committee for the South Carolina Quality Forum. I have also served as a business community representative at the request of our State Superintendent of Education on five advisory committees: the School Accreditation Advisory Committee, the Teacher Education Performance-Based Standards Committee, the 2000 Vision Steering Committee, the Governor's Workforce Education Interim Planning Committee, and a sub-committee of Governor Sanford's 2003 Management, Accountability and Productivity Commission.

In addition to my testimony concerning our overall application for identification of allowable costs, Mark Childs from Project Time & Cost Inc. ("PT&C") will provide testimony about development of the Operations and Efficiency Plan ("OEP") and Carol Ann Hurst, Chem-Nuclear's Controller, will provide testimony about the specific allowable costs and adjustments requested in our application.

Q. **WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A. My testimony presents:

- A summary of how the OEP was prepared. This document was required by Commission Order No. 2001-499, and we submitted it to the Commission on June 26, 2002.
- Our concurrence with the Commission's summary of the "collaborative review" of the OEP presented in Commission Order No. 2003-537 approving the collaborative review.
- An explanation of how the collaborative review recommendations were used to prepare our Application in this proceeding for identification of allowable costs.
- Information about special operational considerations which occurred in the State of South Carolina's Fiscal Year 2002-2003, and resulted in higher operations costs including more labor than was anticipated in the OEP or in Commission Order No. 2003-188.
- Our request to continue the Employee and Key Manager Retention Compensation Plans similar to the plans approved by the Commission in Commission Order No. 2003-188.
- Our request for recovering the remaining $123,698 cost for preparing the OEP, which was incurred in June 2002.

Q. **PLEASE SUMMARIZE THE PROCESS FOR PREPARATION OF THE OEP.**

A. PT&C was contracted to develop an independent comprehensive plan to support least-cost operating strategies for future years which addressed numerous matters, including personnel requirements for disposal services, operating methods, a

study of optimal vault and trench configurations, and any impacts on health, safety, environment, and compliance. Specifically, the OEP focused on the following major categories that Mark Childs describes more fully in his testimony:

1. Resource requirements for waste disposal, support services and administration of the Facility in correlation with the projected waste volume range for the anticipated future operational period.
2. The future period of operations defined by the Atlantic Compact Act, specifically Fiscal Year 2003 through Fiscal Year 2008 for waste received from national sources, and for Fiscal Year 2009 and beyond.
3. Fixed Costs and Variable Costs necessary to operate the Facility safely as waste receipt volumes decline.
4. Significant cost drivers, such as concrete vaults and new trench construction.
5. Trench and Vault Configuration engineering and economic analysis to optimize the site capacity.
6. Environmental Safety and Health ("ES&H") operational practices to ensure that no compromise occurs in maintaining the ES&H of the Facility, Chem-Nuclear's employees, the public, or the environment.

PT&C employed an Activity Based Costing ("ABC") methodology and standard cost engineering procedures to develop the OEP. This structured and disciplined approach to evaluating operations has widespread acceptance in industry and government as a useful tool for determining the costs associated with an

operation. Chem-Nuclear used the work breakdown structure presented in the OEP as a basis for structuring the new Costpoint Accounting System that the company is now using. Mark Childs' testimony discusses how the method was used to assess the Facility's operations and summarizes PT&C's findings.

Q. **WHAT WAS THE COLLABORATIVE REVIEW PROCESS FOR THE OEP?**

A. The collaborative review of the OEP was a process that resulted in a collective and useful understanding among the parties that participated in the review of the costs of operating the Barnwell Low Level Radioactive Waste Disposal Facility. Commission Order No. 2003-537 accurately defines the recommendations the parties made in the Report of the Collaborative Review of the OEP. I have attached a copy of the Report as Exhibit No. _____ (REV-1). Chem-Nuclear applied those recommendations without exception to prepare the Application in this case for identification of allowable costs for Fiscal Year 2003-2004.

Q. **HOW DID CHEM-NUCLEAR USE THE RECOMMENDATIONS OF THE COLLABORATIVE REVIEW?**

A. The allowable costs that Chem-Nuclear is requesting the Commission to identify for Fiscal Year 2003-2004 are divided into the three categories which were defined in the Report of Collaborative Review of the OEP. Those categories are fixed costs, variable costs, and irregular costs. The seven cost categories specified in the OEP were consolidated to establish these three. In the Report of the Collaborative Review, all parties agreed that these categories best define the

types of costs associated with operations of the Facility, and the Commission's Order No. 2003-537 recognized that "the breakdown and description of the type of costs" involved in our disposal operations "will be helpful in future reviews of those costs."

Q. PLEASE EXPLAIN THE USE OF FIXED COSTS.

A. The fixed costs in our Application for Fiscal Year 2003-2004 are the fixed costs identified in the Report of Collaborative Review of the OEP, adjusted for pay increases, correction of fringe rate, and adjusted for inflation on materials and supplies.

Fixed labor costs identified in the Report of Collaborative Review of the OEP were based on the 2002 labor costs used in the OEP. Each year these labor costs were increased by 3.5% for pay increases. In addition, the current fringe rate for Chem-Nuclear is about 41% and the Report of Collaborative Review of the OEP used a fringe rate of about 33.4%. Therefore, the total fixed labor and fringe costs in the Application for Fiscal Year 2003-2004 are about 7% higher than the total fixed labor and fringe costs specified in the Report of Collaborative Review of the OEP.

The Application for Fiscal Year 2003-2004 inflates the fixed material and supplies costs specified in the Report of Collaborative Review of the OEP by 4% to represent a modest inflation rate of 2% per year. Exhibit D of the Application reflects the total fixed costs that Chem-Nuclear proposed the Commission to identify as allowable costs.

Q. **PLEASE EXPLAIN VARIABLE COSTS.**

A. Variable material costs are defined in the Report of Collaborative Review of the OEP as the costs for concrete disposal vaults and the amortization of trench construction costs for disposal trenches built before Fiscal Year 2002-2003. The Application for Fiscal Year 2003-2004 uses the same method, based on actual data from Fiscal Year 2002-2003 to determine variable material costs rates to be applied prospectively in Fiscal Year 2003-2004.

The Report of Collaborative Review of the OEP specifies five variable waste dependent labor rates each based on different activities associated with the disposal of waste at the Facility. These rates were developed using a combination of data from the collaborative review of the OEP and independent variable data developed from shipments received at the disposal site. The rates include fringe costs in addition to direct labor costs. The Application for Fiscal Year 2003-2004 increases those variable labor rates by about 7% to account for the two years of pay increases and for the correction to fringe rate experienced since 2002 when the OEP was completed.

Q. **PLEASE EXPLAIN IRREGULAR COSTS.**

A. The Report of Collaborative Review of the OEP gives examples of the kinds of costs considered to be irregular. Irregular costs are typically not recurring costs. Some examples are costs associated with one-of-a-kind waste shipments, regulatory compliance projects or special site maintenance projects.

Carol Ann Hurst's testimony reviews Exhibit D of the Application for Fiscal Year 2003-2004 which provides the dollar value of the costs Chem-Nuclear is requesting.

Q. **WHAT SPECIAL OPERATIONAL CONSIDERATIONS AFFECT COSTS?**

A. Each year there are events that occur at the disposal site that cannot be predicted with 100% certainty. The OEP and the Collaborative Review of the OEP included reasonable assumptions about the basic activities that occur from year-to-year at the site. However, those basic activities do not cover variations in weather, or changes in the marketplace that might impact site operations. As a result, the amount of total Full Time Equivalents ("FTE's") needed and certain other costs (equipment rental to handle unusual circumstances) cannot be perfectly predicted. As part of the collaborative review process, all parties decided that costs associated with such considerations would be handled as irregular costs in the future.

As a consequence of the existence and affects of special operational considerations, some subjective assessment must be made to determine the reasonableness of costs associated with such special events. In Fiscal Year 2002-2003, three operational considerations affected allowable costs. Chem-Nuclear is requesting recovery of those costs in this proceeding. Those considerations are:

- Work started on storm water management improvement to prevent storm water runoff onto adjacent property.

- Work began to allow the Barnwell disposal facility to connect to newly available professionally managed public utilities to provide drinking water and manage sewage as encouraged by DHEC.
- Heavy rainfall received during the latter half of the Fiscal Year required:
  - Increased site maintenance costs including rental of pumps to move accumulated rainwater to an alternate holding location;
  - Additional work associated with active trench water management; and
  - Additional work to grade and maintain on-site roads and surface water management features.

Each of these activities contributed to additional labor and material costs that were not, and could not have been, predicted in the OEP. However, despite these special operational considerations, Chem-Nuclear was able to operate the site in Fiscal Year 2002-2003 with labor resources comparable to the resources projected by the OEP for a typical operating year experiencing similar waste volume as Fiscal Year 2002-2003. Because of these special operational considerations, Chem-Nuclear has requested recovery of all the labor and fringe costs identified in the Application for Fiscal Year 2002-2003 and other costs associated with these special operational considerations.

Q. **PLEASE DESCRIBE THE RETENTION COMPENSATION PLAN REFLECTED IN THE APPLICATION.**

A. The Retention Compensation Plan for Fiscal Year 2003-2004 is essentially the same as the one approved by the Commission for Fiscal Year 2002-2003. Modifications have been made in the description of the Plan to make it clear that

retained amounts would be forfeited even if a Chem-Nuclear employee were to transfer to a position with a company or division owned by the parent company, Duratek, Inc. Also, the table specifying the employee's earning potential based on the payment to the State of South Carolina was updated for Fiscal Year 2003-2004. That table now conforms to the table recommended by the South Carolina Budget and Control Board. Finally, two additional key managers were added to the retention compensation plan. They are: Senior Sales Manager and Agency Liaison Manager. The Retention Compensation Plan is included as Exhibit E of our Application.

Q. **DOES CHEM-NUCLEAR PROPOSE TREATMENT OF THE BALANCE OF THE COSTS OF PREPARATION OF THE OEP AS ALLOWABLE COSTS IN THIS PROCEEDING?**

A. Yes. Commission Order No. 2003-188 identified $123,698 of the costs for preparation of the OEP as allowable costs and stipulated that the remainder would be considered in a subsequent Commission proceeding. The OEP has been of material benefit to all parties in understanding the costs associated with operating the Facility. It has been effectively used to:

- Establish the basis for Chem-Nuclear to structure the new Costpoint Accounting System, which went into effect on July 1, 2002.
- Establish categories of allowable costs for operating the disposal site and to quantify those costs with concurrence of the Commission Staff, the South Carolina Budget and Control Board Staff, the South Carolina Department of Health and Environmental Control Staff, the South Carolina Consumer

Advocate and the Atlantic Compact Commission Staff. Those interested parties agreed that the OEP provides appropriate guidelines to establish allowable costs for operating the disposal site.

Based on these important uses of the OEP, Chem-Nuclear requests recovery of the remaining $123, 698 cost that was incurred in 2002 for preparing the OEP.

Q. **DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?**

A. Yes.

Hearing Exhibit No. ____ (REV-1)

REPORT OF THE COLLABORATIVE REVIEW

OF THE

OPERATIONS AND EFFICIENCY PLAN

PURSUANT TO

PUBLIC SERVICE COMMISSION

ORDER NO. 2003-188

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SUBMITTED BY CHEM-NUCLEAR SYSTEMS, LLC

June 16, 2003

PURPOSE

On April 14, 2003, the Public Service Commission (Commission) issued Order No. 2003-188. This Order directed Chem-Nuclear Systems, LLC (Chem-Nuclear) to file a statement regarding a collaborative review of the Operations and Efficiency Plan (Plan). Applicable text from the Order is as follows:

> *After due consideration of this matter, Chem-Nuclear is ordered, prior to June 30, 2003, to file a statement for approval by this Commission regarding a collaborative review of the OEP Plan. All parties in this Docket shall be provided an opportunity to participate in the collaborative review, which shall be chaired by the Commission. Further, the Executive Director shall appoint the appropriate Staff members to be on that review team. The purpose of the review shall be to determine if consensus can be met regarding the validation of the OEP Plan. All parties participating shall be provided with an opportunity to submit comments to the Commission in this matter. However, these comments must be submitted prior to June 30, 2003*

In response to the Commission's order, a meeting was held on April 19, 2003, and follow-up meetings were held on May 8 and June 12, 2003. The participants in the collaborative process included:

Public Service Commission	Bruce Duke, Deputy Director, - Meeting Chairman
	David Butler, Legal Counsel
	Jim Spearman, Research Department
	Bill Blume, Audit Department
	Norbert Thomas, Audit Department
SC Dept. of Health & Environmental Control	John Litton, Director, Division of Waste Management
	Henry Porter, Asst. Director, Division of Waste Management
	David Scaturo, Manager, Division of Waste Management

Budget & Control Board	John Clark, Director, Energy Office Bill Newberry, Mgr. Rad. Waste Disposal Program Bob Baird, consultant, URS
Atlantic Compact Commission	M. K. Batavia, P. E., Executive Director
Consumer Advocate	Hana Williamson
Chem-Nuclear	Regan Voit, President Jim Latham, VP Barnwell Operations Bill House, VP Regulatory Affairs Carol Ann Hurst, Controller Deborah Ogilvie, Public Information Director Mark Childs, consultant, Project Time & Cost Greg Dowd, consultant, Project Time & Cost

The Consumer Advocate was invited to participate in the meetings, but could not attend all the meetings due to budgetary constraints and scheduling conflicts. Draft documentation was provided to the Consumer Advocate to keep them apprised of the meetings.

STATEMENT OF CONSENSUS

The parties, after completing a collaborative review of the Plan, reached consensus that the information provided in the Plan is a valid representation of disposal site operations and that the plan can be used as a baseline for establishing a method for determining allowable costs in future Public Service Commission proceedings. The overall validation of the Plan is borne out by the following facts:

- The activities in the Work Breakdown Structure (WBS) are representative of the tasks required to operate the Barnwell disposal site.
- The proven methodologies used to develop the Plan are used and accepted by a number of industries and government organizations.

- The computer programs used in the development of the Plan are widely used and perform the desired functions accurately.
- The consultant to the Budget and Control Board (Baird) independently evaluated the costs for the work elements presented in the Plan.

The parties were able to identify three cost categories (variable costs, fixed costs, and irregular costs) for operating the Barnwell disposal site. The parties also reached consensus on recommendations provided for the Commission's consideration.

COLLABORATIVE REVIEW PROCESS

The first collaborative meeting was held on April 16, 2003. In preparation for the meeting, the Budget & Control Board had their consultant, Bob Baird of URS, review the WBS and cost estimates prepared by Project Time & Cost (PT&C) as part of the Plan. Baird submitted spreadsheets that compared his cost and time estimates with those prepared by PT&C. Review of the information, followed by discussion among the parties, formed the basis for identification of cost categories, which were then narrowed to the final of three. Once each work activity was categorized, then a review of the time estimates and the resulting dollars ensued, with particular emphasis on those activities where the differences were considerable.

By the end of the April 16 meeting, the parties agreed on most of the information in the Plan. It was agreed that the parties would review the remaining differences, and get back together via telephone to discuss the differences and try to reach consensus on them. Following the phone conference, Baird visited the Barnwell disposal site to review how the employees perform certain activities. Using data gathered at that May 7 visit, Baird prepared another spreadsheet for a meeting between the parties on May 8, 2003. The May 8 meeting included a collaborative review of those items upon which the parties had not yet reached consensus, and a review of a draft consensus report outline. A final review meeting was held on June 12, 2003.

OPERATIONS and EFFICIENCY PLAN

Purpose

The Operations and Efficiency Plan (Plan) was prepared in response to Commission Order No. 2001-499, issued June 1, 2001. The Order states, "In any event, we do believe that reductions in fixed and variable costs should result from reductions in the waste stream to the Chem-Nuclear facility. ... To quantify these future cost reductions, Chem-Nuclear shall provide to the Commission an operations and efficiency plan for the Barnwell facility... ." The order goes on to specify the requirements for the Plan. The table below identifies the salient requirements and describes the information provided in the Plan. The Request for Proposal was approved by the Commission in Order No. 2002-1, issued January 7, 2002.

Operations Efficiency Plan (Plan) Matrix

PSC Order Requirements	Plan Response	Plan Section
Operation and Efficiency Plan prepared by independent qualified party.	After competitive procurement, Project Time & Cost, Inc. was contracted to develop the Plan.	Executive Summary, Page i. 1.0 Introduction, Page 2 of 31.
Identify least-cost operating strategies for future years.	PTC used Activity Based Costing methodology to assess operations, develop cost estimate, and then develop the Plan. Operational cost projections for FY 2004 through FY 2009 show decreases in total costs over time.	4.0 Methodology, Page 5 of 31. 5.1 Operational Cost and Labor Projections, Page 15 of 31.
Personnel requirements for disposal services.	Labor projections for FY 2004 through FY 2009 show decreases in total labor over time.	5.1 Operational Cost and Labor Projections, Page 15 of 31.
Optimal vault and trench configurations.	In addition to the assessment of current vault and trench designs, alternative trench designs were evaluated by the PTC and Law Engineering and Environmental Services, Inc. A "per vault" cost comparison of the current and alternative designs was performed.	5.2 Trench Analysis, Page 16 of 31. Optimal Vault and Trench Configuration, Appendix B.
Review and appropriate evaluation of the work conducted by Mr. Bede.	It was concluded from review of Mr. Bede's direct and surrebuttal testimony to the Commission that the differences between the Richland, WA and Barnwell, SC facilities are substantial which make direct comparisons difficult.	5.3 Analysis of Bede Testimony, Page 19 of 31.

Plan Overview

In preparing the Plan, PT&C used an Activity Based Costing (ABC) method to develop a structured approach to costs associated with operating the Barnwell disposal site. The structured approach provided by the Plan allows all parties concerned to view present and future disposal site operations in a logical, organized manner. The WBS provided in the Plan presents the complete set of work activities required to operate the disposal site in logical and orderly groupings to facilitate cost estimating. Future use of a WBS structure like the one presented in the Plan would be a key element in creating detailed tracking, reporting and controlling of costs associated with operation of the disposal site. The structure provided by the Plan will also assist all parties in evaluating future costs against a standard of reasonable and prudent.

ABC Process Background

The ABC concept has been in use for decades. Its roots can be traced back to 1908 when Alexander Hamilton Church (Church was one of the more influential people in the accounting practice in the late 1800s) noticed how indirect expenses frequently amounted to 100% or more of direct wages. He suggested the use of special pools in assigning overhead costs to individual work elements. In the 1920s and 1930s many companies used ABC in allocating expenses associated with advertising, promotion, and distribution expenses. In the early 1960s General Electric started to look at activities that "caused" costs.

Currently, ABC has been utilized by the private sector, many Federal agencies, and state governments to assist them in capturing, understanding and analyzing costs. PT&C has used the ABC methodology in developing estimates for the US Department of Defense (DOD), the Department of Energy (DOE), the US Army Corps of Engineers (USACE), and other Federal clients.

Work Breakdown Structure (WBS)

A WBS is a hierarchical breakdown of work that organizes and defines the scope of an organization, project, or other undertaking. Each descending level in a WBS represents an increase in the level of definition of the work. Work is effort performed by people to transform, create products or to provide services that meet specified objectives. Just as the organization

hierarchically structures the people who perform work, so the work breakdown structure hierarchically structures the products or services to be produced and on which the people work.

The Plan WBS was constructed based on the way work is accomplished at the Barnwell disposal site and was not developed to define a group or department on the site. The initial objective was to provide a common framework to support scope development and definition, resource assignment, cost type identification, cost distribution, and cost analysis. In the long term the WBS can be used to support planning, budgeting, performance tracking, scenario analysis, and other management activities.

PT&C used an interactive process to develop the Plan WBS structure. PT&C began by visiting the Barnwell disposal site to learn about the Chem-Nuclear operation through observation of activities, document reviews, and interviews with employees. After PT&C developed the initial draft WBS structure, representatives returned to the Barnwell disposal site and presented the product to Chem-Nuclear management. Refinements were incorporated into the draft WBS and the final WBS structure was established. At this point, the WBS was not defined throughout the hierarchy; the lower level portions were defined and developed as part of the ABC process.

Plan Software

The Plan was developed using standard software applications (Word and Excel) from Microsoft and a software package developed by Building Systems Design, Inc (BSD) known as Composer Gold. Composer Gold is the commercial version of a software package also known as MCACES (Micro Computer Assisted Cost Estimating System) by the Federal government. This software package was designed in the late 1980's for construction cost estimating applications; therefore it is very flexible in parameter set-up and reporting capabilities. The MCACES software is used by the USACE and the DOD as the detailed estimating arm of the Tri-Service Automated Cost Estimating System (TRACES). The DOD, DOE, and Environmental Protection Agency (EPA) all use the MCACES software and require their contractors to use it on their projects. Through its long history and extensive use, the calculational functions of this software have been validated.

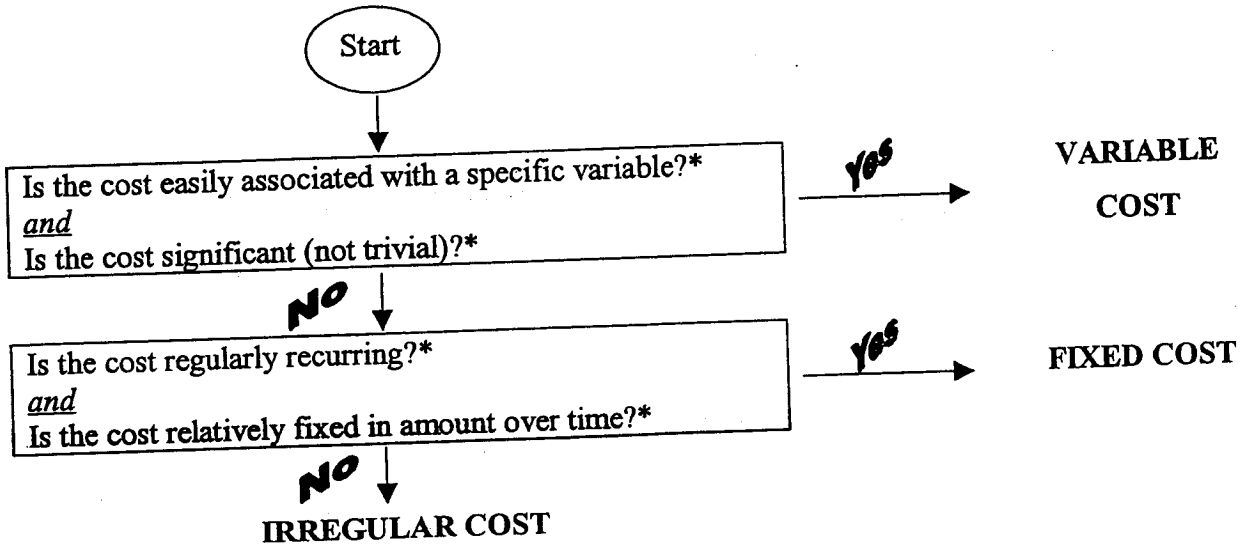
The parties agreed that the Plan ABC process provides a structure for a rigorous, disciplined and thorough evaluation of costs associated with disposal site operations. The parties agreed that the Plan established a good basis for identifying the costs of operating the Barnwell disposal site and the types of costs (fixed, irregular and variable).

Cost Categories

A spreadsheet of Barnwell disposal site costs was developed to tabulate the estimate. The WBS elements identified each activity and the associated cost type, expense category, and dollar estimates were included.

The Plan identified seven cost types, some of which are facility-specific and some could be seen as overlapping from one category to another. Through the collaborative review discussions, it was determined that three generic cost types represent all the WBS elements. A working definition in the figure below was developed and used to classify each of the costs as variable, fixed, or irregular. Fixed costs are regularly recurring and relatively constant over time. Variable costs are readily associated with a specific variable and change as the variable changes. Irregular costs occur on an intermittent basis and cannot be easily associated with a specific variable.

WORKING DEFINITIONS FOR PURPOSES OF COST CLASSIFICATION



*The two questions in each box establish qualitative tests and should be considered together. For example, if the cost is obviously and directly associated with an easily measurable variable (Box 1, Q1),

then the magnitude of the cost (Q2) is less important in determining whether it is a variable cost. Similarly, if the cost is huge (Q2), then it can still be a variable cost even though its association with a measurable variable is not as obvious and direct as some others (Q1).

Fixed Costs

The majority of the costs of Barnwell disposal site operations are fixed costs. Elements such as health and safety, security, licensing, environmental monitoring, training, administration, QA/QC, finance/accounting, human resources, continue independent of the amount of waste arriving at the site. Fixed costs may change over time due to pay raises or supplier increases which are beyond control of the site operator.

The parties agreed that the costs identified as fixed costs would not change significantly with changes in waste volumes received. Independent review of the fixed costs required to operate the Barnwell disposal site was performed by Baird using the Plan WBS, and the two estimates agreed by about 5% ($293,356) as a result of collaborative discussions among the parties since April this year. The annual audit by the Commission staff should find little change in these fixed costs through the years. The parties agreed that the fixed costs identified in the Plan and independently checked by Baird are valid and reasonable. The parties agreed that travel costs, agency liaison costs and marketing costs deserve increased attention in future proceedings. While the parties agreed to classify these costs as fixed costs at this time, it was noted that changes in market conditions for waste disposal and processing, as well as other factors, might affect the level of effort necessary in these specific areas. Appendix A lists the Plan fixed costs.

Variable Costs

The variable costs include certain materials costs and certain labor costs directly associated with the receipt and disposal of waste. The parties agreed that the costs identified as variable costs will likely decrease as the amount of waste received each year decreases in accordance with the Atlantic Low-Level Radioactive Waste Compact Implementation Act. The parties agreed that the methods already established by the Commission staff for determining the variable material cost rates (i.e., costs for concrete disposal vault purchases and trench amortization) are reasonable and appropriate and should remain in effect. Trench amortization

has been a method used to spread the cost of trench construction proportionally into a "per vault basis" so that part of the construction costs is assigned to each vault as it is used for the disposal of waste. As a result of the collaborative review process, the parties established variable waste dependent labor costs using information in the Plan.

Variable Material Costs

Several factors may affect the variable material costs each year. These factors include the cost of each type of vault, the number of each type of vault used, the amount of trench space used (determined by the size, shape and type of waste container received, and the number of vaults used in each trench). The following paragraph describes the method used over the past three years to establish a variable material cost rate for vaults and trench amortization.

The method established for determining variable costs rates for vaults and trench amortization involves examination of the volume of waste received by waste classification (Class A, Class B, Class C, and slit trench volume) and the volume of each waste classification disposed of in each respective trench.

The total cost for vaults used in a trench plus the total cost of trench amortization divided by t he total waste volume disposed in each trench provides a variable cost rate by trench. This variable cost rate for each trench multiplied by each waste classification volume yields a variable cost by trench by waste classification. The sum of these variable costs by trench for each waste classification provides the total variable cost for each waste classification. This amount divided by the respective waste classification volume yields a variable cost rate by waste classification.

The variable cost rate for each waste classification (Class A, Class B, Class C and all slit trench waste) multiplied by the volume of waste received in that classification can be used each year in a prospective manner to establish the total variable material costs associated with disposal vaults and trench amortization. Actual costs greater than the amounts calculated using these rates are the subject of additional justification in the application and audit process. If the variable material costs are less than the amount calculated, Chem-Nuclear only requests the lower actual costs be identified as allowable costs for the affected year. As a matter of simplification, the Commission staff recently recommended trench construction costs be incurred and expensed when the trench is constructed rather than amortized over use of the trench. For

newly constructed trenches this accounting practice has been adopted. For older trenches, the amortization method had to be retained.

Variable Waste Dependent Labor Costs

Variable waste dependent labor costs are included in the activities directly associated with waste acceptance, inspection, and disposal. While the volume of waste in various classifications has been useful in establishing variable cost rates for the material costs associated with vaults and trench amortization, collaboratively the parties agreed that variable labor rates could be more appropriately developed for specific work activities based on the following independent variables related to the amount of waste received for disposal:

- number of vaults used for disposal of waste
- number/type of shipments (vans, vertical casks, horizontal/slit trench casks)
- number of waste containers received

The labor costs associated with certain activities defined in various WBS elements described in the Plan are directly related to the amount of waste received as measured or indicated by one of these independent variables. The parties further agreed that the labor rates for a specific WBS activity or a group of WBS elements should be based on different independent variables.

Labor directly associated with each disposal vault includes inspection and handling. The concrete disposal vaults are fabricated by the supplier at a facility near the disposal site. Each vault has a unique serial number and is inspected by the site operator to ensure compliance with the approved drawings and specifications. The supplier delivers the acceptable vaults to a holding area adjacent to the disposal site. The site operator transfers the vaults to the disposal site and places them into the respective trenches as needed for offloading waste packages. The inspection and placement of vaults are similar regardless of vault type.

The type shipment is a better indicator than waste volume of the amount of labor costs involved in disposal of the waste received. For example, a vertical cask shipment could contain as little as one 55-gallon drum (7.5 cubic feet of waste volume) or as much as a 200 cubic foot liner of waste. In either case, approximately the same amount of labor cost could be incurred with activities such as receipt of the shipment, preparation of the cask for offload, offload and survey of the cask, and release of the cask and its trailer. While there is a variation in the amount of labor associated with different designs of casks, the overall labor costs for vertically offloaded

casks tend to be about the same. Similarly the labor required to offload a shipment of van loaded waste can vary, but many of the same activities are required regardless of the waste volume in that van shipment. Therefore using the number of shipments received is a more realistic independent variable on which to base variable labor costs than waste volume alone.

Horizontal cask shipments (slit trench offloads), on the other hand, require significantly more labor and handling considerations because of the high dose rate/high curie content waste shipped in these casks. The volume in these shipments is typically about 57 cubic feet and is clearly not proportional to the labor costs incurred to offload a slit trench shipment safely. The parties therefore chose to treat the number of horizontal cask shipments as a separate independent variable.

Each shipment is scheduled well in advance of arrival at the disposal facility. Shipment identification numbers are issued after receipt of waste information required for acceptance due to waste volume restrictions, waste approval requirements, and required regulatory notifications. Reporting to waste shippers and SC Department of Health and Environmental Control (DHEC) is required to confirm receipt. Most of the shipments require some type of waste form or other technical review by the site operator and about half of the shipments require an approval from DHEC. For example, all Class C shipments require DHEC approval. While there is a variation in the amount of labor associated with different shipment notifications and different waste approvals, the average labor costs for each shipment tends to be about the same. Therefore, it was agreed that the total number of shipments is the most appropriate variable for determining labor rates for these activities.

The disposal site license and regulations require detailed information be maintained on waste disposed at the site. The data is entered into the trench records database on the waste container level. The quantity of each radionuclide in each container, along with the waste class, waste description, container dose rate, volume, and the generator information is entered into the waste database. In the case of waste from processors and brokers, there can be multiple generators with multiple waste forms in the same container. Also, individual generators can have multiple waste forms in the same container. The data is tracked and entered on the sub-container level for each waste form and generator included. Since there is no straightforward

way to project or track the waste container subdivisions, the number of containers was agreed to be the most appropriate variable to determine labor rates for these activities.

Variable Waste Dependent Labor Rate Development

The Plan provides labor costs for WBS elements associated with a 70,000 cubic foot maximum waste volume scenario for fiscal year 2002/2003. The Plan also provides certain parameters or independent variables for this maximum volume scenario as indicated in the following table.

Fiscal Year	Maximum Volume	Total Shipments	Slit Trench	Cylindrical Vaults	Rectangular Vaults	Total Vaults
2002-2003	70,000 cu.ft.	562	12	448	82	542

Using actual data for a recent 18-month period (July 1, 2001 through December 31, 2002) as a comparison allowed for the development of appropriate additional independent variable values for the 70,000 cubic foot maximum scenario. The actual data for this 18-month period is summarized in the following table:

Shipment Type	Number of shipments	Volume (cubic feet)	Number of containers
Vans	164	21,671.1	975
Vertical Casks	434	55,639.04	586
Slit Trench (Horizontal Casks)	17	972.80	17
Total	615	78,282.94	1578

The following table uses the total number of shipments identified in the Plan (Table 4.2.2) for the maximum volume scenario for fiscal year 2002/2003. The number of containers and shipment types were ratioed from the actual 18-month values to the 70,000 cubic foot maximum volume scenario. For the purpose of determining variable waste dependent labor rates for certain activities, a combination of the Plan data and the developed independent variable values was used. The WBS variable labor elements are identified in the Plan. This table also

summarizes the variable waste dependent labor rates and the five independent variables developed using the 70,000 cubic foot maximum volume scenario for fiscal year 2002/2003.

WBS #s	Summary Description	Independent Variable	Cost (from PLAN)	Units of independent variable	Variable Labor Rate
5.11 and 07.03.02	Vault Labor	Total vaults	$28,115	542 vaults	$51.87 per vault
07.03.03	A, B&C Waste	Total shipments less slit trench	$425,652	550 shipments	$773.92 per vertical cask or van shipment
07.03.06 and 11.01.01	Slit Trench	Horizontal shipments	$69,859	12 horizontal shipments	$5,821.58 per horizontal shipment
07.03.05 and 9.02	Waste Acceptance	Total shipments	$94,019	562 shipments	$167.29 per shipment
07.03.04	Trench Records	Containers	$41,747	1448 containers	$28.83 per container

Starting in fiscal year 2003/2004, the Costpoint accounting system will be used to collect data in each of these variable cost categories to compare actual variable labor costs to the costs predicted by these rates based on Plan data. Prior to this time the accounting system was not structured in a way that actual data could be collected in these categories.

Other Variable Costs

The Plan describes other variable costs (Atlantic Compact Commission surcharges, payments to the Decommissioning Trust Fund and the Perpetual Care and Maintenance Fund). These costs are established on a per cubic foot basis and are included in the statutory requirements for operating the disposal site.

Irregular Costs

Through collaborative review, the parties identified some costs that tend to be irregular as defined above. Examples of ongoing irregular costs include trench construction, license renewal, large component disposal, insurance premiums, and surface water management improvements.

The parties agreed that the site operator cannot always forecast the costs identified as irregular as part of the annual application process. For those irregular costs that can be reasonably predicted as a result of a known and measurable effect, the Commission may identify them as allowable for the years in which they will be incurred. However, for those irregular costs that cannot be adequately forecasted in the application, the site operator will request reimbursement with the allowed operating margin for those costs in the next application prepared after the expense is incurred. Irregular costs can be tracked and controlled separately and are easily audited by the Commission staff in their annual audit.

USE OF THE OPERATIONS AND EFFICIENCY PLAN

The Plan provides a structure for managing, analyzing and communicating information about costs associated with operating the Barnwell disposal site. The WBS section with its hierarchical structure and cost detail provides a framework to align the company's accounting system to collect annual costs at a level of detail to allow better analysis. For fiscal year 2003/2004 and beyond, the accounting system can be aligned to accumulate costs in categories of fixed, variable, and irregular costs consistent with agreements reached during the collaborative review. The Plan also provides a logical method to communicate the various categories of costs incurred in operation of the Barnwell disposal site.

The method for determining waste-dependent labor rates resulting from this collaborative effort is a good approach. The parties participating in development of this approach request the Commission use this method for determining allowable waste dependent labor costs for fiscal year 2003/2004 and beyond. Changes in the low-level radioactive waste disposal market or regulatory changes could cause the rates established by this collaborative effort to not accurately forecast costs. If such a situation were to occur, one or more of the parties would request a waste dependent labor rate change in accordance with S.C. Code Ann. 1976 Section 49-46-40(B)(4)(supp. 2002). A combination of the Plan structure and actual costs would form the basis for such a request.

RECOMMENDATIONS OF THE PARTIES

Through the collaborative review process and use of the Plan, the parties identified and developed four recommendations for the Commission's consideration.

1. The parties established that the cost categories identified as "fixed costs" in Appendix A are valid. Therefore, the parties recommend that the Commission allow the operating company to be reimbursed only for the actual dollars spent plus, where applicable, the statutory operating margin for each of these identified fixed costs. The annual audit by the Commission staff will verify the actual costs incurred each year. The parties feel that the Commission staff should find little change in these costs through the years. For fiscal year 2003/2004 the parties recommend that the Commission, in its order, identify fixed costs based on the Plan costs adjusted for inflationary effects and corrected for the current fringe rates. This adjustment is recommended because the Plan used 2002 dollars and previously approved fringe rates.

2. The costs identified by the parties as "variable costs" will vary with the amount of waste, type of shipments, and the number of containers received at the Barnwell disposal site each year as described above. The variable costs associated with the amount of waste receipts include materials and waste dependent labor.

a. The parties recommend that the Commission continue to use the previously accepted method of establishing material rates by waste classification for vault purchases and trench amortization. The Commission staff can audit the costs incurred for materials and recommend that the Commission allow the operating company to be reimbursed only for the actual dollars spent plus, where applicable, the statutory operating margin.

b. The costs identified by the parties as variable waste dependent labor costs vary with the amount of waste received at the Barnwell disposal site. The parties recommend that the Commission establish the labor rates associated with each vault, van waste shipment, cask waste shipment, slit trench waste shipment, total shipments, and total containers received at the Barnwell disposal site. For fiscal year 2003/2004, the parties recommend

that the Commission identify waste dependent labor rates based on costs from the Plan costs adjusted for inflationary effects and corrected for the current fringe rates. This adjustment is recommended because the Plan used 2002 dollars and previously approved fringe rates. The Commission staff can audit the costs incurred for labor and recommend that the Commission allow the operating company to be reimbursed in accordance with those rates plus the statutory operating margin. The operating company will project the level of activity the Barnwell disposal site is expected to experience in any given year based on market conditions and the maximum waste receipts allowed by the Atlantic Compact Act.

3. The costs identified by the parties as "irregular costs" are likely to be different each year. Sometimes these costs can be included in the operating company's annual application. In those cases, the parties recommend that the Commission allow the operating company to be reimbursed only for the actual dollars spent plus, where applicable, the statutory operating margin for each of these identified irregular costs. The irregular cost estimate in the application should be included in the Commission's Order that authorizes allowable costs for a given fiscal year. When an irregular cost occurs during the year but before the annual Commission staff audit is completed, the Commission staff can audit the costs incurred and recommend that the Commission allow the operating company to be reimbursed only for the actual dollars spent plus, where applicable, the statutory operating margin for each of those identified irregular costs. If an irregular cost occurs after the Commission staff's annual audit, then the operating company would include that cost in the next annual application for consideration by the Commission as an allowable cost at the next hearing.

4. Operating efficiencies are important to cost reduction efforts. The parties agreed that Chem-Nuclear Systems should continue efforts to improve efficiencies in all aspects of operations.

SIGNATORY PAGE

CHEM-NUCLEAR SYSTEMS, LLC

Regan E. Voit, President

June 13, 2003
Date

SOUTH CAROLINA BUDGET & CONTROL BOARD

Frank W. Fusco, Executive Director

6/13/03
Date

ATLANTIC COMPACT COMMISSION

M. K. Batavia, P. E., Executive Director

June 13, 2003
Date

PUBLIC SERVICE COMMISSION STAFF

Bruce Duke, Deputy Director

6/13/03
Date

APPENDIX A

BARNWELL OPERATIONS FIXED COST SUMMARY

WBS Designation	Description	OEP Annual Cost ($)
01.01.01	Accounting Period Closing	$48,236
01.02.01	Quarterly State Reports	$2,187
01.03.01	Application to PSC	$5,542
01.04.01	Division Budget	$15,646
01.05.01	Hearings & Interrogatories	$19,035
01.06.01	Audits (PSC, KPMG)	$7,316
01.07.01	Misc Fin & Acct Activities	$25,730
01.08.01	Accounts Payable	$32,940
01.09	Billing Activity	$55,462
01.10	Collections	$18,245
01.11	Purchasing	$36,216
02	Human Resources (Routine)	$70,371
03	Information System Administration	$50,211
04	H P Training	$5,575
05	QA/QC	$106,405
06	Site Equip Maintenance	$126,034
07.01.02	Site Maintenance	$145,347
07.01.03	Radiation Protection Program	$173,445
07.02.01	Environmental Monitoring	$409,740

WBS Designation	Description	OEP Annual Cost ($)
07.02.01.02	Personnel Dosimetry	$25,160
08.01	Public Outreach	$34,688
08.02	Agency Liaison	$163,809
08.03	Marketing & Sales	$152,676
08.04	Business Administration	$221,297
09	Licensing	$87,445
10.01	Safety Program	$37,830
10.02	Safety Review Board	$64,236
10.03	EH&S Complaince Activities	$7,912
11.01	Capital Facility Operations Direct Costs	$655,701
11.02	Capital Facility Operations Indirect Costs	$597,945
11.02.08	Mgmt Fees/G&A Allocation	$686,000
11.02.09	Amortization of Deferred Costs (Operating Rights)	$625,000
11.03	Taxes, Licensing & Permit Fees	$800,694
12	Security	$226,891
	Grand Total	$5,740,965

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BEFORE

THE PUBLIC SERVICE COMMISSION

OF

SOUTH CAROLINA

S. C. PUBLIC SERVICE COMMISSION
RECEIVED
UTILITIES DEPARTMENT

Docket No. 2000-366-A
(Year 2004 Proceeding)

DIRECT TESTIMONY

OF

CAROL ANN HURST

FOR

CHEM-NUCLEAR SYSTEMS, LLC
A DIVISION OF DURATEK, INC.

Q. PLEASE STATE YOUR NAME AND GIVE YOUR BUSINESS ADDRESS.

A. Carol Ann Hurst, 740 Osborn Road, Barnwell, South Carolina.

Q. **BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

A. I am the Barnwell Site Controller for Chem-Nuclear Systems, LLC ("Chem-Nuclear").

Q **PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.**

A. I am a graduate of Palmer Business College with a one-year Executive Business degree and I have taken several college Accounting courses. Prior to my employment with Chem-Nuclear in 1978, I had a business of my own and later

worked in the accounting department at Carter Furniture Company in Barnwell. During the 25 years in which I have been employed by Chem-Nuclear, I have held other positions in the finance department. I became Assistant Controller in 1988 and Controller in 1990.

Q. **HAVE YOU PREVIOUSLY OFFERED TESTIMONY IN REGULATORY PROCEEDINGS?**

A. Yes. I testified before the South Carolina Public Service Commission in April 2001, January 2002, and February 2003.

Q. **WILL YOU BRIEFLY SUMMARIZE YOUR DUTIES WITH THE COMPANY?**

A. As Controller for the Chem-Nuclear's Barnwell Disposal Operations, I am responsible for the Facility's accounts payable, payroll entry, AP check processing, billing, and General Ledger transactions. The Facility's Finance Department provides information to the Corporate office for payments and prepares reports pertaining to taxes and surcharges which are made to the State of South Carolina. The Finance Department also provides quarterly and annual reports on allowable cost. Responsibilities also include closely related functions for purchasing, and collections of invoices that provide information to the accounting system. In addition, my responsibilities include maintaining accurate and complete accounting records including internal reports and analyses.

Q. **WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

A. In connection with this Docket and Chem-Nuclear's Application for Allowable Costs, filed on September 26, 2003, certain Exhibits B, C, D and E contained financial information. That information is intended to permit the Commission to identify allowable costs in accordance with the Atlantic Interstate Low-Level Radioactive Waste Compact Implementation Act ("Act"). The purpose of my testimony is to describe each of these exhibits and certain other accounting and financial information.

Q. **PLEASE PROCEED.**

A. Chem-Nuclear maintains financial books and records in accordance with General Accepted Accounting Principles ("GAAP"). The accounting software used by CNS in Fiscal Year 2002-2003 is Costpoint software, which Chem-Nuclear began using on July 1, 2002. Chem-Nuclear provided the Commission Staff with a description of the transition, related reports, and account mapping from the previous accounting system to Costpoint. The Commission approved the transition to the Costpoint Accounting System in Order No. 2003-439.

Chem-Nuclear maintains and relies upon an extensive system of internal accounting controls supported by GAAP and upon audits by both internal and external auditors. Our system of internal accounting controls is designed to provide reasonable assurance that all transactions are properly recorded in the books and records and assets are protected against loss or unauthorized use. Chem-Nuclear's system of internal accounting controls is reviewed annually by Duratek, Inc., its parent company, and by independent auditors, KPMG, in connection with their audit of Duratek, Inc.

Q. **PLEASE DESCRIBE EXHIBIT B OF THE APPLICATION.**

A. Exhibit B of the Application is a display of Chem-Nuclear's actual Allowable Costs for Fiscal Year 2002-2003.

Column 1 provides a description of the items included in the Chart of Accounts numbers.

Column 2 shows the Costpoint Chart of Account numbers.

Column 3 presents the Actual/Projected Chem-Nuclear costs.

Column 4 summarizes Chem-Nuclear's costs over or under the amounts identified in the Commission's Order No. 2003-188.

Column 5 presents the allowable costs amounts identified in Commission Order No. 2003-188.

Column 6 presents the additional amounts of allowable costs which CNS requests the Commission identify as allowable.

Q. **PLEASE DESCRIBE EXHIBIT C OF THE APPLICATION.**

A. Exhibit C is the narrative description of the adjustments that CNS requests the Commission to identify as allowable costs (Column 6 of Exhibit B). The summary of adjustments is as follows:

TOTAL FRINGE (F-113-OH): The total fringe expense in excess of Commission Order No. 2003-188 is $226,304. In that Order, the allowable fringe expense for Fiscal Year 2002-2003 was calculated by multiplying the assumed amount of total labor for the Facility by a fringe rate of 33.4%. That fringe rate was used because, prior to Fiscal Year 2002-2003, data was not available to isolate the actual fringe expense for the Barnwell disposal

site labor force. We also used that fringe rate to calculate the waste dependent fringe costs and the semi-variable fringe costs identified in the Order. Using the 33.4% fringe rate instead of actual fringe expenses resulted in an under-recovery of $226,304 for fringe expenses

DIRECT LABOR (5110-10): Direct labor costs in Fiscal Year 2002-2003 were $116,953 more than the amount identified in the Commission Order. In addition to merit pay increases, which took effect in April 2003, there were several projects during the year that contributed to this additional cost. Heavy rainfall experienced between February and June 2003 required additional site maintenance labor costs.

Disposal of the Maine Yankee Reactor Pressure Vessel in June required $6,033 in direct labor costs. Work to implement recommendations and report on the results from a peer level review of the Environmental Radiological Performance Verification study required $40,359 in direct labor costs. Work on the Western Swale project involved $13,235 in direct labor. An amount of $8,620 in direct labor costs were incurred to support activities associated with a specific waste shipment investigation as directed by DHEC. Construction and backfill work for Trenches 93, 94, 95, Slit Trench 20 and Slit Trench 21 involved $35,736 in direct labor costs. Also contributing to the direct labor costs in excess of the Commission's Order were Site Maintenance direct labor costs, which were $200,321 more in Fiscal Year 2002-2003 than the costs for comparable types of activities in

the previous fiscal year. The increased costs were primarily due to the excessive rainfall in Fiscal Year 2002-2003.

OVERTIME (5110-20): The direct overtime costs in Fiscal Year 2002-2003 were $8,018 more than the amount identified in the Commission's Order. Large component disposal required $3,612 in overtime costs. Building and equipment maintenance costs included $2,796 in overtime labor. Site maintenance overtime costs were $2,996.

Disposal operations during the second half of Fiscal Year 2002-2003 included $5,527 more direct overtime costs than in the first half. Those additional overtime costs were required because of additional waste shipments that required overtime to meet customer schedule commitments.

SUBCONTRACT LABOR (5510-10): Subcontract labor costs (temporary direct labor) were $61,858 more than the amount identified in the Commission's Order. The largest portion of these additional costs ($47,932) was related to the offload and handling of waste shipments during the increased tempo of operations that we experienced in the second half of the Fiscal Year. Additional temporary labor costs of $2,290 were incurred for the Trench 94 reconstruction effort. Site maintenance activities required $7,913 in temporary labor costs. Building and equipment maintenance temporary labor costs were $6,469.

DIRECT MATERIALS (5310-90): Costs for direct materials in Fiscal Year 2002-2003 were $331,342 higher than the amount identified by the

Commission in its Order. The following factors contributed to these increased costs.

Disposal of a large component (the Maine Yankee Reactor Pressure Vessel (RPV)) required use of a uniquely designed and fabricated skid. The skid is a large metal structure used to support the RPV and distribute its weight properly. The Maine Yankee RPV skid was specifically designed to meet the United States Department of Transportation ("DOT") tie-down requirements during water and land transit, and it was also designed to meet the Facility's soil bearing pressure requirements and the burial stability control requirements at the Facility. Metal Trades, Inc., fabricated the RPV skid at a total cost of $382,495. This total cost was split equally between the Duratek transportation business unit and the Chem-Nuclear disposal site, which resulted in substantial savings on disposal costs. Disposal of this RPV also involved costs of $7,557 in various other direct materials, for a total material cost of $198,804.

Oil and fuel costs in Fiscal Year 2002-2003 were $33,662. That amount is higher than might have been otherwise expected because of the additional fuel used to manage accumulated storm water on the site and the additional fuel used to maintain the site following rain storms and heavy rainfall.

Oily soil wastes are occasionally generated on the disposal site from equipment failures and hydraulic hose breaks. The soils are collected and sampled for radiological and petroleum products concentrations. In July

2002, seven drums of oily soils with radioactive contamination were shipped to an off site facility for thermal destruction. The radioactive concentrations in that soil were higher than allowed for disposal of the material in a hazardous waste landfill. Also, the petroleum products concentrations were higher than allowed for disposal as radioactive waste at the Facility. The cost of the processing by thermal destruction was $39,885.75.

Construction of Trench 95 and Slit Trench 21 involved $12,745 in direct material costs including drain sand and standpipes. The Western Swale construction project included material costs of $4,093 for silt fence, drain piping through a berm and concrete headwalls for the berm drain.

Equipment repairs included $5,139 for motor grader tires, $10,905 for various crane repair parts, and $8,760 for air conditioner repairs and component replacement. Site maintenance material costs were $13,409 for grass seed, fertilizer, weed killer, trench markers, pipe for pumping storm water, and monitoring well maintenance and repairs.

CONTRACT SERVICES (5310-19): Costs for contract services in Fiscal Year 2002-2003 were $441,734 higher than the amount identified in the Commission's Order. The following factors contributed to these increased costs:

The largest factor contributing to the additional cost was the disposal of the Maine Yankee RPV. After the RPV was transported to the Facility, the specialized heavy-haul transportation contractor was required to move the RPV onto the Facility and into its final disposal location. The

contractor's equipment also had to be broken down and demobilized from the site. The cost for additional contract services associated with the RPV was $207,532.

During Fiscal Year 2002-2003, Trenches 94 and 95 were constructed and made available for disposal of waste. An outside contractor constructed Trench 95 and the cost for that work was $109,052. Trench 94 had previously been used to manage some slightly contaminated soils at the Facility. Reconstruction of the trench to enable it to accept waste for disposal increased our ability to use more of the available on-site land areas for disposal of waste. Trench 94 was constructed largely using in-house labor with additional survey work done by a Registered Land Surveyor. The cost for the additional survey work was $15,696.

During Fiscal Year 2002-2003, CNS started work on the operational component of storm water management improvements for the site. The operational support work, called the Western Swale construction, involves construction of drainage features on the west side of the Facility. These new drainage features will collect and manage surface water exceeding the capacity of the disposal site storm water management ponds and other storm water runoff from disposal site support areas. These improvements are required to reduce active water management at the Facility and to minimize the current and future impact from surface water runoff to adjacent properties. Fiscal Year contract services costs related to this project

included installation of culverts and registered land survey grade control. Those costs were $84,117.

Additional Registered Land Surveyor costs of $41,319 were incurred during the second half of the Fiscal Year. Most of those additional costs were required to address site conditions resulting from heavy rainfall events.

EQUIPMENT LEASES (5230-10): Equipment leases in Fiscal Year 2002-2003 were $55,741 more than the amount identified in the Commission's Order. An additional pump was leased ($6,912) to manage accumulated surface water following heavy rains. A D-6 bulldozer was leased ($14,300) to assist in reconstructing Trench 94. That uniquely configured bulldozer was needed to avoid damaging the trench floor and drain sand that had previously been installed.

A 40-ton crane ($37,301) was leased while repairs were being attempted on our on-site 40-ton hydraulic crane. After Chem-Nuclear's crane was returned to service and the leased crane returned to the vendor, our crane failed again and was permanently removed from service as a safety measure. At that point, a 40-ton crane was not available, so a 50-ton hydraulic crane was leased ($22,838).

INSURANCE PREMIUMS (5680-10): Insurance premiums for Fiscal Year 2002-2003 were $161,619 more than the amount identified in the Commission's Order. Insurance premiums consist of a General Corporate Insurance Policy, which includes the American Nuclear Insurers (ANI) policy, General Liability Policies, Automobile Insurance and Professional

Liability Insurance. A Pollution Legal Liability insurance policy that has an annualized premium rate of $142,000 is included in the account. The total insurance premiums for the Fiscal Year are listed in the following table:

General Corporate Insurance	$101,484
Facility Nuclear	$278,860
Automobile Insurance	$ 20,832
Nuclear Liability	$142,080
Property-Nuclear & Non Nuclear	$181,952
Pollution/Legal Liability	$142,079

The insurance market and rates are primarily affected by current economic trends which increase risks, such as terrorist attacks and corporate instability. The effects of such general trends are increased rates, carriers exiting markets for certain coverage.

MISCELLANEOUS ODC (5690-10): Fiscal Year 2002-2003 costs for miscellaneous other direct costs (ODC) were $1,386 more than the amount identified in the Commission's Order. Expenses in this account included costs associated with processing monitoring well purge water for $1,850.

FEDERAL EXPRESS AND POSTAGE (5320-20): The amount of $1,804 in excess of the amount in the Commission's Order is a result of the number of letters and mailings to generators for special pricing and allocations.

INDIRECT LABOR: Indirect labor costs were $103,241 more than the amount identified in the Commission's Order. Included in the indirect labor costs are costs for the collaborative review of the Operations and Efficiency Plan directed by the Commission.

OVERTIME (7710-20): Indirect overtime costs were $324 more than the amount identified in the Commission's Order. Indirect overtime costs included $328 for Health Physics-related work.

TEMPORARY LABOR (7520-10): Indirect temporary labor costs were $252 in Fiscal Year 2002-2003. The Commission's Order identified no costs in this category. The actual indirect temporary labor costs incurred were for records retention work at the environmental laboratory.

DEPRECIATION (7270-10): Depreciation costs in Fiscal Year 2002-2003 were $19,774 more than the amount identified in the Commission's Order. Additional assets acquired during the year and timing of depreciation of assets contributed to this requested adjustment.

MACHINE/EQUIPMENT MAINTENANCE RENTAL (7240-90; 7230-10): The indirect machinery and equipment cost in Fiscal Year 2002-2003 was $17,411 more than the amount identified in the Commission's Order. This amount represents the cost of maintenance on a copier and maintenance to the heating and cooling system at the Environmental Lab, as well as small purchases of Health Physics equipment.

OFFICE SUPPLIES AND EXPENSE (73XX, 7690, 8310-16, and 8690-10): Office Supplies and Expense costs were $34,583 more than the amount identified in the Commission's Order. This general category of costs consists of seven chart of account numbers including office/computer supplies, miscellaneous supplies, postage/shipping and miscellaneous.

There were a number of purchases in those accounts in Fiscal Year 2002-2003 that had not been required in the previous year. Examples of required purchases in Fiscal Year 2002-2003 include an Automatic Electronic Defibrillator (AED) for safety equipment; a replacement microfilm recorder for disposal records management; sources, sample number labels, and sample tubes for the Environmental Laboratory; supplies for a regulatory-driven records management project in the Liaison area; supplies and replacement equipment for Health Physics-related activities; and replacement radios for the Security Department. These special purchases account for the additional incurred expense in this category.

TRAVEL (74XX, 84XX): Indirect travel for Fiscal Year 2002-2003 exceeded the amount in the Commission's Order by $5,160. The following table summarizes travel costs for Fiscal Year 2002-2003:

	In-State	Out-of-State
Marketing	1.3%	31.0%
Business Management	8.3%	30.2%
Training	0.4%	5.4%
Industry Conference	1.7%	3.4%
Other	8.0%	9.6%

Travel for Fiscal Year 2002-2003 was planned, and is undertaken to maximize the return for the expenditure incurred. We accomplish that objective by travel to the locations that afford Chem-Nuclear with the opportunity to interface with the most customers each trip. Fox example,

Chem-Nuclear's personnel use their attendance and participation in the key industry meetings to meet customers. Those meetings include the EPRI International LLW Conference, the American Nuclear Society Meeting, the Low Level Waste Forum, and the Department of Defense Meeting. At some of these meetings, Chem-Nuclear's representative is either on the Steering Committee or is a session organizer and a session chair. At each of those meetings, Chem-Nuclear's representative presents a Facility update paper. One of the purposes of those presentations is to reach all of our customers to ensure that they have the latest facts on the status of disposal at the Facility.

Regular/weekly issues status meetings are held with the SCB&CB. The Barnwell Disposal Administration Team meets monthly in Barnwell. All of the issues regarding disposal are discussed during these meetings and any problem areas are addressed and resolved.

BUILDINGS AND UTILITIES: The indirect building and utilities costs for Fiscal Year 2002-2003 were $58,236 more than the amount identified in the Commission's Order. Utility expenses increased about $11,000 during the Fiscal Year. However, the principal reason for the variance is that in the previous year this category received a combined credit to account for costs that were allocated to other business units. That credit came from the following accounts: real estate taxes, maintenance of office equipment, telephones, and utilities. Under the existing Costpoint Accounting System, these credits are taken from each respective account. Therefore, the amount on which the Commission's Order was based was lower than the actual

allowable costs in the category of Buildings and Utilities for the previous Fiscal Year.

MANAGEMENT G&A ALLOCATION (G804-DA, SCSS-D1, GLCL-DL, and S301-D2): The Management and General and Administrative ("G&A") Allocation amount for Fiscal Year 2002-2003 is $192,516 more than the amount identified in the Commission's Order.

During Fiscal Year 2002-2003, Duratek estimated general and administrative costs for July through December 2002 by applying a provisional rate to monthly financial results. In the first half of the fiscal year, the provisional rate was understated in comparison to actual costs for this period primarily due to systems infrastructure and internal control projects, which were adopted to meet new bank requirements and accounting rule changes.

Beginning January 2003, all financial results for Duratek are recorded at their actual costs each month. That procedure eliminates the issue of estimating G&A rates and clarifies costs under audit.

The method for determining the allocation amount was agreed to with the Commission Staff in prior years. Experience from prior year audits by the Staff also indicated that approximately 3.6% of the total allocation amount as unallowable. The G&A amount identified in Exhibit B ($843,751) and the adjustment amount identified above ($192,516) are only the allowable G&A allocations for Fiscal Year 2002-2003.

APPROVED RETENTION COMPENSATION PLAN: In Commission Order No. 2003-188, the Commission approved a Retention Compensation Plan for Chem-Nuclear's employees. For Fiscal Year 2002-2003, the criteria for payment of that plan were met and the employees were paid $89,364 in accordance with the Plan. The 29% operating margin was not applied to that amount.

Q. **PLEASE DESCRIBE EXHIBIT D TO THE APPLICATION.**

A. Exhibit D presents the Allowable Costs for Fiscal Year 2003-2004. Commission Order No. 2003-357 approved identification of costs in three general categories: fixed, variable and irregular. That Order included recommendations that the OEP costs be adjusted for inflationary effects, and corrected for current fringe rates. The adjustments were to be used as a basis for Fiscal Year 2003-2004 costs.

Labor costs identified in the OEP were in 2002 dollars. The labor cost adjustment is 3.5% per year for two years, or a total of 7%. The OEP costs were developed based on a fringe rate of 33.4%. The current fringe rate is about 41% for a net fringe rate adjustment of about 7%. Material costs increased by about 2% per year overall for a net material cost increase of 4%.

Q. **PLEASE DISCUSS THE ALLOWABLE COSTS FOR FISCAL YEAR 2003-2004 AS INCLUDED IN THE APPLICATION.**

A. FIXED COSTS: Based on information provided in the OEP and in the Report of the Collaborative Review of the OEP, fixed costs were summarized in Appendix A of the Report. Applying the adjustments that I have described brings the fixed costs for Fiscal Year 2003-2004 to $5,956,207. Those fixed costs include

$4,530,513 of costs to which the statutory 29% operating margin is applied, as well as $1,425,694 of "Other Allowable Costs" to which the 29% margin is not applied. These "Other Allowable Costs" include amortization of intangible assets, licenses, some taxes, and lease payments.

VARIABLE COSTS: Variable Material Costs: As discussed in the Report of the Collaborative Review, variable material costs consist of the costs for concrete disposal vaults and the amortization of trench construction costs for disposal trenches built before Fiscal Year 2002-2003. Based on actual data from Fiscal Year 2002-2003 and using the previously accepted method for identifying variable material cost rates, the rates to be applied prospectively in Fiscal Year 2003-2004 are reflected in the following table:

	Class A waste	**Class B waste**	**Class C waste**	**All Slit Trench Waste**
Variable cost rate ($/ft3) by waste Classification	$22.52	$24.58	$24.12	$178.85

VARIABLE WASTE DEPENDENT LABOR RATES: On pages 13 and 14 of the Report of the Collaborative Review of the OEP, variable labor rates were developed using a combination of OEP data and independent variable data developed from shipments received at the disposal site. The following table illustrates how these variable labor rates change when adjusted for inflationary effects and corrected for the current fringe rate as recommended in the Report of the Collaborative Review of the OEP.

WBS #	Summary Description	Independent Variable	Plan Cost	Units of Independent Variable	Plan/Review Variable Labor Rate for FY 2002-2003	Adjusted Variable Labor Rate for FY 2003/2004
5.11 and 07.03.02	Vault Labor	Total Vaults	$28,115	542	$51.87 per vault	$55.50 per vault
07.03.03	A, B & C Waste	Total Shipments less slit trench	$425,652	550	$773.92 per vertical cask or van shipment	$828.09 per vertical cask or van shipment
07.03.06 and 11.01.01	Slit Trench	Horizontal Shipments	$69,859	12 horizontal shipments	$5,821.58 per horizontal shipment	$6,229.09 per horizontal shipment
07.03.05 and 9.02	Waste Acceptance	Total shipments	$94,019	562 shipments	$167.29 per shipment	$179.00 per shipment
07.03.04	Trench Records	Containers	$41,747	1448 containers	$28.83 per container	$30.85 per container

IRREGULAR COSTS FOR FISCAL YEAR 2003-2004: Work on several projects that fall in the general category of "Irregular Costs" will occur in Fiscal Year 2003-2004. Those projects include disposal of three large components: Big Rock Point RPV; Connecticut Yankee RPV; and San Onofre Nuclear Generating Station (SONGS) RPV. Irregular costs for Fiscal Year 2003-2004 also include: costs to complete construction of the Western Swale Construction; costs for construction of Trench 96; costs for Trench 86 Modifications (entrance ramp and water management extension); and costs to complete installation of the sewer and water connections to newly available public utilities.

LARGE COMPONENT DISPOSAL COSTS: Costs to dispose of the Big Rock Point RPV (volume 3600 cubic feet) was estimated in the application table. This project is now complete and the actual cost was $70,114. These costs include costs for the heavy-haul contractor to move the RPV into its disposal location and costs for key management/supervision and technical support personnel.

Costs to dispose of the Connecticut Yankee RPV in Fiscal Year 2003-2004 were estimated to be approximately the same as the costs incurred to dispose of the Maine Yankee RPV in Fiscal Year 2002-2003, based on the roughly equal volume and weight of the two RPVs. That cost was estimated to be about $405,532. The current estimate of actual costs for the project is now $352,321.

The SONGS RPV disposal volume is about 5800 cubic feet, or approximately one-half of the Maine Yankee RPV volume. The costs for disposal of the SONGS RPV are, therefore, anticipated to be about $200,000.

Total large component disposal costs in Fiscal Year 2003-2004 were estimated in the Application to be $668,029. The current estimate is $622,435, and it includes the actual costs for the Big Rock project and the new estimated costs for the Connecticut Yankee project.

OTHER IRREGULAR PROJECT COSTS: Fiscal Year 2003-2004 costs to complete construction of the Western Swale project will be $142,765. Costs to construct Trench 96 will be about $113,375. The Water Management Extension and Ramp Modifications to Trench 86 will cost $65,104. The construction of the water and sewer installation will be $136,786. Total other irregular project costs for those four projects in Fiscal Year 2003-2004 will be $458,030.

Total irregular costs for disposal of three large components and four irregular projects in Fiscal Year 2003-2004 was estimated to be $1,126,059. Using the actual costs where available, the current estimate for the large components and the four irregular projects is $1,080,465.

REMAINDER OF COSTS FOR OEP: Commission Order No. 2003-188 identified $123,698 of the costs for preparation of the OEP, and stipulated that the balance would be considered in a subsequent Commission proceeding. The balance we propose to be identified as an allowable cost in this proceeding is $123,698.

"OTHER ALLOWABLE COSTS" AND "OTHER PAYMENTS": "Other Allowable Costs" include those costs identified as allowable by the Atlantic Compact Act and/or the Commission, but do not have the 29% operating margin applied to them. The amount of $1,425,694, comprising amortization of intangible assets, licenses, some taxes, and lease payments, was included in the fixed costs described previously. The remainder of these costs, disposal taxes (decommissioning fund and long term care fund), and retention compensation payments will be about $524,235 for Fiscal Year 2003-2004. The total "Other Allowable Costs" identified for Fiscal Year 2003-2004 are $1,949,929, on which 29% margin is not applied.

"Other Payments" include the administrative costs to support activities of the Budget & Control Board, the Commission, and the Atlantic Compact Commission. "Other Payments" identified for Fiscal Year 2003-2004 totals $940,000.

RETENTION COMPENSATION PLAN FOR FISCAL YEAR 2003-2004: The Retention Compensation Plan for Fiscal Year 2003-2004 is essentially the same as the one for 2002-2003. Modifications have been made in the description of the Plan to make it clear that retained amounts would be forfeited even if Chem-Nuclear's employee were to transfer to a position with a company or division owned by the parent company, Duratek, Inc. Also, the table specifying the employee's earning potential based on the payment to the State of South Carolina was updated for Fiscal Year 2003-2004. The retention compensation program was included in Exhibit E of the Application. Two additional positions were added to the key manager's retention compensation plan: Senior Sales Manager (Sales & Marketing) and Agency Liaison.

Q. **DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?**

A. Yes.

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BEFORE

THE PUBLIC SERVICE COMMISSION

OF

SOUTH CAROLINA

S.C. PUBLIC SERVICE COMMISSION
RECEIVED
UTILITIES DEPARTMENT

Docket No. 2000-366-A
(Year 2004 Proceeding)

DIRECT TESTIMONY AND EXHIBITS

OF

MARK A. CHILDS

FOR

CHEM-NUCLEAR SERVICES, LLC,
A DIVISION OF DURATEK, INC.

Q. **PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.**

A. My name is Mark A. Childs. I am Project Manager and Senior Environmental Cost Engineer with Project Time & Cost, Inc. ("PT&C"). My business address is One Paces West, Suite 1200, 2727 Paces Ferry Road, Atlanta, Georgia.

Q. **PLEASE DESCRIBE YOUR PRINCIPAL RESPONSIBILITIES WITH PT&C.**

A. My general responsibilities include coordination of loss control services for environmental, asbestos and waste contractors for a major client, as well as providing cost engineering, scheduling, project management and risk analysis.

Q. **PLEASE DESCRIBE GENERALLY YOUR ACADEMIC TRAINING AND PROFESSIONAL EXPERIENCE.**

RETURN DATE: 04 10
SERVICE: 04 10

A. I earned a B.S. degree in Agricultural Engineering from the University of Georgia in 1976. Prior to joining PT&C in 1992, I was employed successively by East Coast Engineering, ENSR Operations, and Westinghouse Electric Corporation in a variety of engineering and operational capacities. My experiences included project and contract management, cost estimation, construction and scheduling, with a specific expertise in public, industrial and commercial electrical construction. My professional registrations and certifications include CCE (1993) and PMP (1994), and I am a licensed electrical contractor in the State of Georgia. My resume, which is attached to this testimony as Exhibit _____ (MAC-1), describes my experiences and qualifications in further detail.

Q. **WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?**

A. My testimony describes PT&C's responsibilities in the planning, development and preparation of the "Operations and Efficiency Plan" ("OEP") for the Low-Level Radioactive Waste ("LLRW") Facility in Barnwell, South Carolina ("the Facility"), operated by Chem-Nuclear Systems, LLC, a Division of Duratek, Inc. ("Chem-Nuclear"). PT&C's Final Report, dated May 31, 2002, a copy of which is attached to this testimony as Exhibit _____ (MAC-2) represents the final OEP which we presented to Chem-Nuclear on that date. Chem-Nuclear filed the OEP with the Commission in June 2002, and Chem-Nuclear included the OEP with its Application in this proceeding.

Q. **PLEASE EXPLAIN BRIEFLY PT&C'S INITIAL INVOLVEMENT IN THE PREPARATION OF THE OEP.**

A. In June 2001, the Commission issued its Order No. 2001-499 in this Docket. Among other things, that Order required Chem-Nuclear to provide for the preparation of "an operations and efficiency plan prepared by an independent, qualified party." After a

competitive procurement process, Chem-Nuclear contracted with PT&C to develop the OEP for the Facility.

Q. **PLEASE DESCRIBE PT&C'S PLANNING FOR PREPARATION OF THE OEP.**

A. Our task required us to develop a comprehensive plan to support future least-cost operating strategies for the Facility which would address personnel requirements for disposal services, operating methods, a study of optimal vault and trench configurations, and any impacts on health, safety, the environment and regulatory compliance. In order to develop that plan, we designed our analysis to focus on a number of principal factors:

1. Resource Requirements – The OEP would define the resource requirements needed to accomplish the work scope for waste disposal, support services and administration of the Facility in correlation with the projected waste volume range for the anticipated future operational period.

2. Operational Period – The future period of operations defined by the Plan would consist of Fiscal Year 2003 through Fiscal Year 2008 for waste received from national sources. Beginning in Fiscal Year 2009, the only waste interred in the Facility will originate from the States that are members of the Atlantic Compact (South Carolina, New Jersey, and Connecticut) until the Compact limits are reached. Upon completion of the Atlantic Compact obligations, the Facility will only dispose of LLRW generated in South Carolina. Costs for Fiscal Year 2009 and beyond would be assumed to be stable until the conclusion of disposal activities.

3. Fixed Costs and Variable Costs – The OEP would identify and quantify the fixed, waste dependent, variable, and semi-variable costs that will be incurred to operate the Facility safely as waste receipt volumes decline.

4. Significant Cost Drivers – The OEP would include a time phase assessment of the costs of the operational components (e.g., concrete vaults and new trench construction), which are significant costs to operate the Facility.

5. Trench and Vault Configuration – The OEP would provide an engineering and economic analysis of existing trench capacity and projected waste volume amounts relative to optimization of the current capacity and the construction of future trenches.

6. Environmental Safety and Health – Any changes to current operational parameters in the OEP would be analyzed to ensure that no compromise would occur in the maintaining the environmental safety and health of the Facility, Chem-Nuclear's employees, the public, or the environment.

7. Testimony Analysis – The OEP would also include an appropriate analysis of the testimony provided by Mr. Barry C. Bede before the Commission during the April 2001 hearing.

Q. **WERE SOME FACTORS SPECIFICALLY EXCLUDED FROM PT&C'S PLANNING?**

A. Yes. First, we did not define the staffing level for the Facility. Instead, the OEP focused on the resource levels necessary to accomplish the disposal-related work of the Facility and presented our results in terms of man-hours and dollars. Second, we developed the OEP to focus on the LLRW disposal operations of the Facility and we excluded work that

is performed by other business units of Chem-Nuclear adjacent to the Facility. Third, PT&C did not undertake an analysis to determine "allowable costs."

Q. **WHAT IS THE OVERALL PURPOSE OF THE OEP?**

A. We designed the OEP to be a tool to identify fixed and variable costs and their relationships to waste volumes at the Facility. The initial OEP should be considered a baseline of the operations of Chem-Nuclear at the Facility from which variations may be measured and analyzed.

Q. **WHAT WAS PT&C'S APPROACH FOR THE DEVELOPMENT OF THE OEP?**

A. We used a four-phased approach to develop the OEP, based on the Activity Based Costing ("ABC") methodology and standard cost-engineering procedures. Those four phases were: assessment of operations, development of activity-based cost baseline, critical analysis and development of the OEP itself.

Q. **BEFORE YOU DESCRIBE THE FOUR PHASES, PLEASE EXPLAIN BRIEFLY THE ABC METHOLODOGY.**

A. General Electric Corporation used the ABC methodology in the early 1960's as a way to identify and allocate indirect costs to its products, thereby making it possible to determine profitability of various product lines more accurately. Utilization of the methodology has evolved and expanded over the years to where it is routinely used in both the public and private sectors to gain a better understanding of the cost components of a project or operation.

In the mid-1990s, PT&C gained a great deal of experience using the ABC methodology to assist the U.S. Department of Energy ("DOE") Environmental

Management Program and its contractors in estimating the costs of large, complex environmental cleanup projects. PT&C has also used the ABC methodology in the DOE complex to estimate more accurately the budgetary requirements for site operations at major DOE sites.

The basic ABC methodology that we employed is straightforward and can be broken down into the following steps:

1. Scope Definition – The first step is to define the desired objective of the endeavor. For example: "Operate a low-level radioactive waste disposal facility in accordance with all environmental, health and safety regulations" can be the scope of an endeavor.
2. Determine Tasks – The second step is to identify the series of tasks that must be accomplished to meet the objective of the endeavor. For example: "Dispose of A/B or C Waste" can be considered a task.
3. Identify Activities – The next step is to identify the activities that must be accomplished to complete the task. Examples of activities could include: Waste Receipt, Waste Inspection, Container Preparation, etc.
4. Resource Requirement – The next step is to identify all the resource requirements (labor, material, equipment, subcontractor) and associated costs needed to carry out each activity.
5. Compile Cost – After the activity level costs are determined, quantities can be adjusted and cost calculated and/or summarized at the activity, task, or other levels.

By using the ABC methodology and a database software system, it is possible to model costs for processes, products, operations, and other applications. The capabilities to

combine, segregate, and/or summarize data assists in the analysis of the cost as it relates to the scope of the endeavor. However, it is important that the level of detail and scope of the ABC methodology be kept reasonable; otherwise, the amount of data yield could become overwhelming and ineffective from a cost to benefit standpoint.

Q. **PLEASE DESCRIBE PHASE I – ASSESSMENT OF OPERATIONS.**

A. In this first phase, PT&C organized and defined the scope of the current operations at the Facility. To accomplish that, we developed a work breakdown structure ("WBS"), a technical scope, and a waste volume and shipment analysis.

Q. **WHAT IS A WORK BREAKDOWN STRUCTURE OR WBS, AND HOW WAS IT USED?**

A. A WBS is basically a hierarchical breakdown of work that organizes and defines the scope of an organization, project, or other undertaking. Each descending level in a WBS represents an increase in the level of definition of the work.

Work is effort performed by people to transform or create products or to provide services that meet specified objectives. Just as the organization hierarchically structures the people who perform work, so the work breakdown structure hierarchically structures the products or services to be produced and on which the people work. Examples of products and services at the Facility include: invoices (billings), reports, off-loading waste, trench maintenance, and sample analysis. WBS can also be used as a management tool for cost reporting and analysis.

Our initial objective was to provide a common framework to support: scope development and definition, resource assignment, cost type identification, cost

distribution, and cost analysis. After the WBS is established, it can be used to support planning, budget, performance tracking, scenario analysis, and other management activities.

PT&C used an interactive process to develop the WBS structure for the Facility. We began by visiting the Facility to learn about the operations through observation of activities, document reviews, and interviews with employees. PT&C then developed the initial draft WBS structure. Representatives returned to the Facility and presented it to Chem-Nuclear. Refinements were incorporated into the draft WBS and the final WBS structure was established. At that point, the WBS was not defined throughout the hierarchy; the lower level portions of it were defined and developed as part of the ABC process.

Q. **AFTER THE CONSTRUCTION OF THE WBS, WHAT WERE THE NEXT STEPS IN PHASE I?**

A. We proceeded with the development of the technical scope and with the waste volume and shipment analysis.

Q. **HOW WERE THOSE STEPS ACCOMPLISHED?**

We prepared a detailed scope of work which was a key component of an accurate estimate for the cost of operating the facility. To develop the scope of work, PT&C cost engineers, supported by our technical consultants, spent approximately two weeks at the Facility, documenting the current scope of operations in the terms of the WBS. To develop that information, the PT&C staff reviewed documentation, participated in site tours, observed waste handling operations, and met with site personnel.

With respect to the development of the waste volume and shipment analysis, PT&C defined the relationship between waste volumes, number of shipments, and type of waste to many existing operational components. In order to produce a meaningful plan, it was evident that basing the OEP just on the statutory maximum allowable waste volume would not accurately reflect the expected cost of operations.

Q. **PLEASE NOW DESCRIBE PHASE II – DEVELOPMENT OF ACTIVITY-BASED COST BASELINE.**

A. Using the WBS and the technical scope from Phase I, we developed a detailed "bottoms-up" ABC estimate to model Chem-Nuclear's planned operational scope and cost for Fiscal Year 2003. Upon completion of the initial draft ABC estimate, representatives from PT&C returned to the site for two days and conducted a line-by-line review with site personnel to ensure that the technical scope of operations and the resource assignments were accurately represented. Following that review, PT&C was able to balance and finalize the estimate, which yielded the model for planned Fiscal Year 2003 operations.

Q. **WHAT WERE YOUR ACTIVITIES IN PHASE III – CRITICAL ANALYSIS?**

A. After completing the ABC estimate, we were better able to understand the relationship between scope of operations and the associated cost. The Fiscal Year 2003 model was analyzed to determine which tasks and associated activities were essential to the Facility's operations and to identify those tasks which are waste volume dependent.

In addition to analyzing the ABC estimate, PT&C performed three additional analyses: an analysis of the projected waste volumes to be received by the Facility, a

review and analysis of the optimal vault and trench configurations, and an analysis of the work conducted by Mr. Barry C. Bede.

Q. **HOW DID YOU THEN GO ABOUT PHASE IV – DEVELOPMENT OF THE OEP ITSELF?**

A. Using the information developed during the first three Phases, PT&C constructed the OEP using the following steps:

1. Model Development – We used the scope, cost, and work product data collected during Phase I to develop an ABC model of the Fiscal Year 2003 operations budget for Chem-Nuclear. That work was developed using the Composer Gold cost estimating software.

2. Cost Identification – Using the WBS and the technical scope developed in Phase I, PT&C sorted the tasks from the Composer Gold estimate into cost categories: Waste Dependent, Waste Dependent Taxes and Fees, Fixed, Semi-Variable, Vault Costs, Trench, and Other Direct Costs. These cost components were set up and defined by PT&C in the OEP. (During the Collaborative Review of the OEP by the Commission Staff, Chem-Nuclear, and other parties, PT&C's cost category designations and definitions were realigned to encompass the cost definitions to which all the participants agreed, which the Commission's Order No. 2003-537 characterized as "helpful" and which Chem-Nuclear has used in its Application in this proceeding.)

3. Scenario Development – Using the output from the Composer Gold estimate, PT&C's cost engineers established three scenarios for each Fiscal Year (2003 through 2008) in which the Facility will be receiving waste on a national basis and

a long-term minimum operations scenario which was based on waste projection for Compact and in-state waste only for Fiscal Year 2009 and beyond. The Fiscal Year scenarios were based on projections for minimum, most likely, and the maximum waste volume. That methodology yielded an expected cost and resource requirement range for each Fiscal Year.

4. Analysis – In addition to preparation of the OEP, our scope of work required PT&C to provide an analysis of trench configuration alternatives and an analysis of the testimony presented by Mr. Barry C. Bede in April 2001. Consultants on the PT&C team with expertise in the subject matters performed those analyses and their results are included in the OEP. PT&C also used the trench configuration analysis and the waste volume projections in development of the anticipated trench cost components of the OEP.

5. Report – In the final step to develop the OEP, PT&C felt that, given the potential for volume fluctuation and the interrelationship of the waste volume, it would be preferable to assemble the estimated operational costs by component (labor, ODC's, vaults, trench construction, etc.) in a tabular format. The result provides a clear depiction of the cost relationships over an estimated range of assumed waste quantities.

In conclusion, the combination of the nuclear, environmental, and economic regulations governing Chem-Nuclear, the Facility and its operations coalesced to form a complex operational model for Chem-Nuclear's business. PT&C structured the OEP so that the costs for various aspects of the operation could be segregated for analytical, regulatory, and managerial purposes.

Q. **PLEASE SUMMARIZE THE RESULTS OF YOUR WORK AS CONTAINED IN THE DETAILS OF THE OEP.**

A. For the purposes of the OEP, we assumed that Chem-Nuclear would operate the Facility from Fiscal Year 2003 to Fiscal Year 2008 in a manner similar to current operations. That is, the Facility would be open daily to receive wastes and Chem-Nuclear's employees would support waste disposal operations and would bill part of their time to other Chem-Nuclear business units. Starting in Fiscal Year 2009, under current statutory limits the waste volume would be substantively reduced and the Facility would operate in a year-to-year mode until it no longer is cost effective to operate. The O&E plan did not project past Fiscal Year 2009 due to the uncertainties associated with the planning scenario.

Based on its analysis, PT&C determined that it would be best to project a waste volume range, rather than a specific number. Likewise the cost projections in the OEP are based on a range tied to volume. The waste volume and shipment projections for the period covered by the OEP are in Tables 4.2.1 and 4.2.2 on pages 10 and 11 of Exhibit No. _____ (MAC-2). We developed the operational cost and labor projections for the Facility for Fiscal Year 2004 through Fiscal Year 2009, using the data based on the Fiscal Year 2003 estimate model. Those projections are included in Tables 6.1.1 and 6.1.2 on page 28 of Exhibit No. _____ (MAC-2). The tables depict the estimated annual costs and resource requirements for three waste volume scenarios: maximum, most likely and minimum.

Q. **DID PT&C ORGANIZE COST AND RESOURCE REQUIREMENTS BY COST CATEGORY?**

A. Yes. Based on specific parts of the WBS, we organized costs into specific cost categories and by the three waste volume scenarios. The OEP defined the cost categories as follows:

- Waste Dependent – Waste dependent costs are those costs that will be incurred directly in proportion (or nearly in proportion) to the waste volume and/or the number of waste shipments received at the site. This category includes the disposal labor estimated in WBS element 1.07.03 to dispose of routine waste shipments, irradiated hardware, and one non-routine operation (every other year). The category does not include vault, tax and/or fee payments to the State of South Carolina.
- Waste Dependent Taxes and Fees – The cost category is composed of the taxes and/or fees that are charged on each cubic foot of waste interred and paid to the State of South Carolina. This cost category contains funds from disposal fees that Chem-Nuclear collects and pays to the State of South Carolina and the Atlantic Compact Commission. Included in this category are: disposal taxes for long term care of the Facility at $7 per cubic foot, a $30 per cubic foot fee collected and paid to the State of South Carolina, and a $4 per cubic foot fee that is collected and paid to the Atlantic Compact Commission.
- Fixed – Fixed costs are those costs of labor, materials, equipment, and other direct costs that are incurred in the normal operation of the site and remain relatively fixed. Significant cost drivers in this category include the laboratory operations,

business administration, cost for recovery of intangible assets, license fees, supervisory labor, etc.

- Semi-Variable – This category of cost includes those activities, which PT&C identified as being indirectly affected by the waste volume or the number of shipments received by the site; however, these costs are not directly proportional to waste receipt.
- Vault Costs – These costs are the costs of the vaults needed to dispose of the waste based on the projected number and types of shipments.
- Trench – Cost of trench construction has been estimated based on the information from the trench optimization study and our waste and shipment analysis. The volume of waste received by the Facility directly affects the schedule for trench construction in all of the scenarios and trench design selection will affect trench costs. It is assumed that the design, approval, procurement, construction, and acceptance by the Facility of a new trench will span a five-month period.
- Other Direct Costs – Other Direct Costs are costs incurred in operating the site. This category includes significant cost drivers from insurance, utility, depreciation, license, and property tax costs.

Q. **WERE THOSE COST CATEGORIES LATER REVISED?**

A. Yes. As a consequence of the "collaborative review" process which the Commission directed the interested parties to undertake, the costs were re-organized and re-categorized into three categories: fixed costs, variable cost and irregular costs. The derivation of those categories is explained more fully in the Report of the Collaborative Review and in Mr. Regan E. Voit's testimony in this proceeding.

Q. **PLEASE DESCRIBE BRIEFLY THE TRENCH ANALYSIS AND PT&C'S ANALYSIS OF MR. BEDE'S TESTIMONY.**

A. Law Engineering and Environmental Services ("Law") did the trench configuration analysis work and the results were provided in Section 5.2 of Exhibit No. _____ (MAC-2). The need for additional trench capacity is driven by the volume and type of waste received between 2003 and 2009. In the OEP, PT&C used the unit cost developed by Law for the trench construction cost estimates. The timing and frequency of trench construction was linked directly to waste volume and type assumptions.

The PT&C analysis of Mr. Bede's testimony is found in Section 5.3 of Exhibit No. _____ (MAC-2).

Basically Mr. Bede compared the operation of the Facility to the LLRW disposal facility at Hanford, Washington. He concluded that the operational cost should be comparable. However, in PT&C's review, we found that there were substantial climatic, physical, and regulatory differences between the two facilities. Those differences require different operational procedures, and, therefore, differences in resource requirements. Consequently, a direct comparison between the two facilities would not produce usable results.

PT&C did agree with some of Mr. Bede's work regarding recommendations the basis of volume projections, waste type, and trench designs for planning purposes.

Q. **DID PT&C INCLUDE ANY RECOMMENDATIONS IN THE OEP?**

A. Yes. The OEP contained a series of eight recommendations. They are found along with their explanations on pages 28 through 31 of Exhibit No. _____ (MAC-2). The recommendations are the following:

Recommendation #1: Chem-Nuclear and the State of South Carolina should commit to work to maintain and/or enhance the economic feasibility of the Facility.

Recommendation #2: Chem-Nuclear and the State of South Carolina should plan to begin closure activities concurrent with Disposal Facility operations in an effort to maintain a balanced workload.

Recommendation #3: Chem-Nuclear and the State of South Carolina should take actions that will stabilize the waste volume throughput.

Recommendation #4: Chem-Nuclear should determine the most efficient trench configurations only after determining the most likely waste projections.

Recommendation #5: Chem-Nuclear should commit to an annual review of their planning basis.

Recommendation #6: Chem-Nuclear should formalize a process wherein incremental cost efficiencies are identified and incorporated into the disposal operations.

Recommendation #7: While the Team advises against the implementation of a campaign type operation, Chem-Nuclear should periodically review the assumptions that support that recommendation.

Recommendation #8: Chem-Nuclear and the State of South Carolina should explore optional types of contracting terms.

Q. DOES THAT CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.