EXHIBIT C

ENTERGY v. SHUMLIN
Docket No. 1:11-cv-99

Expert Report of Bruce E. Hinkley

I. Introduction and Background

My name is Bruce Everett Hinkley. I am a senior nuclear industry consultant with over 30 years of nuclear facility/systems experience and until February 2011 was Vice President, Engineering and Regulatory Services with Beckman & Associates, Inc. I was employed with Beckman and Associates, Inc. for approximately four years. I have been an NRC licensee responsible for safety evaluation determinations as well as regulatory compliance. I have been a consultant to over 20 NRC-licensed nuclear power plants in nuclear safety and system assessments. My complete CV is included as Exhibit A.

I received a Bachelor of Science in Analytical Management from the United States Naval Academy in 1976 and completed graduate level nuclear engineering courses in 1977 as part of my training in the U.S. Navy Nuclear Training Program. I received my certification as a U.S. Navy Chief Engineer – Nuclear Submarines in 1979. I have been a member of the American Nuclear Society for over 20 years. I have performed over 30 technical and management level reviews of nuclear facilities and systems in the United States, Canada, South Africa, and the Philippines. I have also provided executive consulting services on a wide range of nuclear projects to the U.S. Department of Energy (DOE) since 2003. Similar projects that I have been involved with are: Brunswick Nuclear Plants 1 & 2 Improvement Plan & Restart, Maine Yankee Independent Safety Assessment & Restart, Dresden Nuclear Station Independent Safety Assessment, DOE Waste Treatment Project (WTP) Independent Review, Savannah River Tank 48 Waste Treatment Option Study, and Broad Based Review of the Technical Requirements Flowdown at DOE WTP. My experience focuses on nuclear conduct of operations, licensing and regulatory compliance, engineering design, nuclear safety, risk and reliability management, and quality programs.

Beckman & Associates, Inc. (BAA) is an engineering, licensing, and information technology consulting firm with offices in Belle Vernon, PA; Waleska, GA; and Las Vegas, NV. BAA provides a variety of services to the nuclear utility industry and government agencies including licensing and regulatory services, independent process and program reviews, independent design reviews, nuclear safety oversight, risk management, information technology management, and executive mentoring and training services. Nuclear plant support services provided by BAA also include expert testimony on matters relating to plant management, construction, licensing and performance issues in technical litigation and regulatory proceedings.

BAA was retained by the Vermont Department of Public Service (DPS) to assist in oversight and management of the Comprehensive Reliability Assessment (CRA) of the Entergy Nuclear Vermont Yankee generating facility (VY or VY plant) performed by Nuclear Safety Associates (NSA) per Act 189 of 2008. I became involved in this

undertaking in September, 2008. Specifically, I was tasked with supporting the Vermont State Nuclear Engineer, Uldis Vanags, and DPS related to the Act 189 required reliability assessment of the VY plant, including public meeting (VSNAP) presentations, direct observation of NSA inspection team activities (both on site at the VY plant and during off-site activities), reviewing the draft report for technical adequacy and consistency with Act 189 requirements, and supporting interface meetings with the Public Oversight Panel. As part of these duties, I also attend numerous meetings at the VY plant discussing various issues related to the reliability of the plant with VY employees. I have continued in this role as a consultant since leaving BAA as a full-time employee.

II. Facts and Data Considered in Forming Opinions/Developing Testimony

I have relied upon my personal experience participating in the Comprehensive Reliability Assessment and the Supplemental Assessment conducted by NSA. Additionally I have considered information contained within the respective reports from those assessments: Reliability Assessment of the Vermont Yankee Nuclear Facility, dated December 22, 2008, and Supplemental Report to the Comprehensive Reliability Assessment of the Vermont Yankee Nuclear Facility, dated April 30, 2010. I have considered the associated reports from the Public Oversight Panel: Report of the Public Oversight Panel on the Comprehensive Assessment of the Vermont Yankee Nuclear Plant, dated March 17, 2009, and the Supplemental Report of the Public Oversight Panel Regarding the Comprehensive Reliability Assessment of the Vermont Yankee Nuclear Power Plant, dated July 20, 2010. I also considered the following information: Act 189 of 2008, Act 160 of 2006, NRC letter from Collins to O'Brien dated July 11, 2008, and NRC letter from Klein to Governor Douglas dated April 11, 2008. Other specific materials considered included: Memorandum of Understanding, Docket No. 6545, dated March 4, 2002, and the NRC letter from Diaz to Dworkin dated May 4, 2004.

III. Statement of Opinions and Basis and Reasoning

A. Act 189 Reliability Assessment Relationship to NRC Inspection Activities on Safety

1. Overall relationship of reliability and safety

Reliability and safety are two different, but interrelated concepts. A highly reliable nuclear plant (i.e. high availability and capacity factors) typically reflects highly reliable nuclear safety system performance and strong licensee nuclear safety culture. A licensee's nuclear safety system performance generally will affect the level of reliability of the power plant. However, a plant can have excellent safety system and NRC regulatory compliance performance and still experience significant reliability problems because of the poor performance of non-safety related systems/equipment such as the condensate and main condenser, main transformer, and most of the cooling tower structures. For example, if the heat transfer across the main condenser is not optimal, it is not a safety issue, but it is a reliability issue because the efficiency and electrical generation output of the plant will suffer.

2. NRC – PSB Communications about reliability and safety

The NRC is the federal regulatory agency responsible for protecting the health and safety of the public through inspections and other activities that assess the licensee's adherence to safety regulations.

As early as 2004 there was correspondence between the NRC and the State of Vermont recognizing the interrelationship between safety, which the NRC regulates, and reliability, which is a legitimate state concern. In a letter dated May 4, 2004, the NRC responded to a request from the PSB that the NRC "conduct its review of the proposed power uprate in a way that would provide Vermont a level of assurance about plant reliability equivalent to an independent engineering assessment." *See* Diaz-Dworkin letter, May 4, 2004, at 1. The NRC stated that it would conduct a detailed engineering inspection "that we [the NRC] believe will be appropriate for addressing our responsibilities and is also responsive to the Board's concerns." *Id.* The NRC letter further stated that "NRC Regulations and its oversight process focus on nuclear safety, whether the facility is operating at power or shutdown. The NRC's statutory authority does not extend to regulating the reliability of electrical generation. The NRC recognizes, however, that there is some overlap between attributes that result in safe operation and those that contribute to overall plant reliability." The NRC concluded the letter by stating that "[t]he Commission believes that the results of NRC reviews and inspections, particularly the new engineering inspection, will assist in addressing the Board's concerns regarding the future reliability of Vermont Yankee." *Id.* at 3.

In 2008, the NRC and the State of Vermont further communicated about the interrelationship of safety and reliability of the VY plant. In a letter dated April 11, 2008, the NRC expressly recognized that there is overlap between safety and reliability. *See* Klein-Douglas letter, April 4, 2008, at 1. Specifically, NRC Commissioner Klein stated: "Regarding your concerns with plant reliability, NRC Regulations and its oversight process focus on nuclear safety and security, whether the facility is operating at power or shutdown. Thus the NRC's statutory authority does not extend to regulating the reliability of electrical generation from a nuclear plant. The NRC recognizes, however, that there is some overlap between licensee performance attributes that result in safe operation and those that contribute to overall plant reliability. Therefore, the NRC safety inspections of Vermont Yankee may aid the State of Vermont in assessing the reliability of the facility in generating electricity."

3. Act 189 Reliability Assessment

Act 189 called for a comprehensive reliability assessment of the Vermont Yankee Nuclear Power Station. Consistent with the requirements of Act 189, the Comprehensive Reliability Assessment and the subsequent Supplemental Assessment focused on the overall reliability of VY by assessing the reliability aspects of systems, individual components, and equipment as well as management processes. Security, compliance with regulations, license conditions, and impacts on radiological safety, clearly within the purview of the NRC, were never an area of review of the Act 189 assessment.

Following the enactment of Act 189, the NRC corresponded with then DPS Commissioner O'Brien to "clarify the NRC's role." *See* Collins-O'Brien letter, July 11, 2008. Specifically, NRC Region 1 Administrator Collins stated: "We acknowledge that NRC inspections may include reviews of plant systems, structures, and components, and licensee programs that may be of interest to the State in its consideration of the plant's reliability."

The NSA reliability assessment team reviewed various NRC inspection results and related documents as part of its overall assessment of plant reliability.

B. Conduct/Implementation of Comprehensive Reliability Assessment in Accordance with Act 189

1. Scope of Assessment

Prior to my engagement with the DPS in early September 2008, NSA submitted its initial detailed scope of work for the Reliability Assessment of the VY plant describing its approach/methodology and recommended systems for vertical evaluation in accordance with Act 189. The DPS, in consultation with the Public Oversight Panel (POP), reviewed the proposed scope of the assessment.

Following my engagement by DPS, I worked with the Vermont State Nuclear Engineer and the Director for Public Advocacy at the DPS to comment on the NSA proposed scope and approach to ensure that the NSA proposal met the requirements of Act 189. Parallel with this effort, the State Nuclear Engineer, NSA team members and I, in consultation with the POP, developed a matrix (Appendix D of Reliability Assessment of the Vermont Yankee Nuclear Facility by NSA dated 12/22/08) that was agreed to by DPS and the POP as reflecting the scope of work to be conducted by the NSA Team. In addition to specific system/technical program assessments, the NSA team also assessed management areas to identify issues which could potentially impact plant reliability. The NSA team also conducted an industry benchmarking study to compare VY staffing, performance, and Equipment Reliability Index (ERI) to other U.S. nuclear plants.

The focus of the assessment was on the overall reliability of VY and (i) how that was manifested by its management structure and culture, processes, procedures, and programs; and (ii) how selected systems, structures, and components related to reliability have been maintained or modified. As part of the assessment, the NSA team reviewed NRC inspection findings and ENVY's response to those findings. This review focused on the management culture and quality/corrective action programs of ENVY, reflecting the interrelation between NRC inspection results of licensee performance attributes and their connection to overall plant reliability.

The Act 189 assessment focused on reliability, not safety system performance. To that end, NSA provided specific definitions for measuring reliability in the assessment areas (Reliability Significance Definitions -- Appendix C of CRA Report):

- **Good Practice**: Managerial or technical area that was determined to be consistent with industry good practices that support plant and equipment reliability.

- **Meets Industry Standards**: Managerial or technical area that was determined to be consistent with industry standard practices that support plant and equipment reliability.

- **Watch Area**: Pertains to issues identified for which management is aware, however without appropriate focus, there exists a potential for future effect on plant and/or equipment reliability.

- **Challenge**: Increased management focus or additional corrective actions are recommended. If this does not occur, future plant and/or equipment reliability could be affected.

2. System analyses and technical focus areas

Six systems were selected in consultation with the POP for vertical slice investigation for the reliability assessment. The term "vertical slice" refers to the in-depth review of a selected system in several functional areas and/or with specified investigation criteria. This vertical investigation technique emphasizes the functionality of the selected system. The focus of the NSA assessments was on the system and hardware operation - consistent with the 13 criteria in Act 189 - and not on a review of programmatic requirements. The 13 specific reliability criteria were:

1. Initial Conditions
2. Procurement
3. Installation
4. Operation
5. Testing
6. Inspection
7. Maintenance
8. Repairs
9. Modifications
10. Redesign
11. Seismic Analysis
12. Training
13. Corrective Action Programs

When a weakness in a functional area/criteria was identified, the investigation was expanded to determine if a programmatic weakness existed. For example, if the selected system was the condensate/feedwater system and a weakness in motor operated valve torque switch settings was identified by the maintenance reviewer, then a review of programmatic controls for torque switches would be performed. This programmatic review is referred to as a horizontal investigation. In contrast to the vertical investigation, the horizontal investigation technique typically examines functional areas by selecting and observing activities in a given functional area across a variety of systems.

The reliability aspects of the six systems that were assessed by the NSA team using the vertical slice investigation methodology were:

1. Transformer and Switchyard System – Non-Safety Related
2. High Pressure Coolant Injection (HPCI) System – Safety Related
3. Residual Heat Removal (RHR) System – Safety Related
4. Condensate/Feedwater System (Including Condenser) – Safety and Non-Safety Related
5. Cooling Tower (CT) Structure – Safety and Non-Safety Related
6. Service Water (SW) System – Safety Related

In consultation with the POP, for the HPCI and SW systems, additional criteria were included from the Act 189 section 2-(2), which required that the reliability assessment "[i]dentify all relevant deviations, exemptions, or waivers, or any combination of these from any regulatory requirements to ENVY and from any regulatory requirements applicable to new reactors, and verify whether adequate operating margins are retained despite the cumulative effect of any deviations, exemptions, or waivers for the present power level for the proposed period of license extension." For these two systems, the differences between the VY Design Basis Document and the NRC's Standard Review Plan (NUREG-0800) "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition" were evaluated and the difference(s) were assessed for their potential effect on plant reliability.

The following sections summarize the assessment of each system:

a. Transformer and Switchyard System – Non-Safety Related

The Transformer and Switchyard System consists of all connected equipment located between the main generator terminals and the 345KV switchyard located approximately 200 yards northwest of the turbine building.

All 13 Act 189 reliability criteria were evaluated. Two issues were identified that could potentially affect the reliability of the Transformer and Switchyard System. The first issue was the change in ownership of the switchyard from ENVY to VELCO and its associated change in management plan related to maintaining reliability. The second issue dealt with the main transformer spare. Both of these issues are being followed by DPS as part of its ongoing monitoring of VY.

b. High Pressure Coolant Injection (HPCI) System – Safety Related

The HPCI System is an Emergency Core Cooling System (ECCS) and is designed to supply high-pressure coolant to the reactor core. The HPCI system remains in a standby condition during normal plant operations.

All 13 reliability criteria were evaluated as well as the additional criteria discussed in Act 189 section 2-(2). Consistent with the evaluation of other safety systems, there was recognition from the beginning by the NSA team and DPS that only reliability-affecting aspects of a safety system were to be reviewed. For example, in the CRA report section dealing with HPCI, Section 2.2.1 Criterion 1- Initial Conditions, page 118, paragraph 4 – "It should be noted that the HPCI

System is a safety-related system and as such is subject to strict controls by the NRC. Any deviations or exemptions from the original design basis are not permitted without prior approval by the NRC. Likewise the system is subject to Technical Specification limits and failure to comply with those limits could cause the unit to be shut down. Thus, non-compliance with these requirements could have an impact on unit availability . . . ."

To explain further, when certain specific performance parameters of a safety-related system or component (e.g. flow rate, discharge pressure, temperature, etc.) are not met, the licensee would enter into a Limited Condition for Operation (LCO) which is a regulatory mandated condition that restricts operation of the system (hence plant impact on reliability and availability of power) until the condition is corrected. Typically, these LCOs have restrictions as to length of time the condition can exist before the plant has to shut down. There are certain LCOs that may also require a reduction in reactor power as part of the regulatory requirements until the condition is corrected. Thus either a plant shut down or power reduction, due to the reduced performance of a safety system, would affect reliability.

To evaluate the Act 189 section 2-(2) criteria, the assessment was performed by comparing the General Design Criteria (GDC) that was applied to VY during its initial licensing period against the GDC that applies today as per NUREG-0800. Two exceptions were noted with the GDC comparison in that two of the current GDC criteria (numbers 5 and 27) were not applicable to VY. GDC 5 deals with multiple unit sites and GDC 27 applies to a different reactor plant design than VY (Pressurized Water Reactors rather than Boiling Water Reactors).

There were no issues identified that affected plant reliability.

c. Residual Heat Removal (RHR) System – Safety Related

The RHR system is designed to remove decay heat from the reactor under both operational and accident conditions.

All 13 reliability criteria were evaluated and no RHR system specific reliability concerns were identified. However, programmatic observations related to procedure usage and system engineering activities were identified that could potentially have an impact on plant reliability. These observations were monitored by DPS subsequent to the assessment and have been closed out based on changes implemented by ENVY.

d. Condensate and Reactor Feedwater System – Safety and Non-Safety Related

The Condensate and Reactor Feedwater System takes suction from the hotwells of the main condensers and delivers demineralized water to the reactor vessel at an elevated pressure and temperature.

All 13 reliability criteria were evaluated. Issues that could impact plant reliability were identified related to the main condenser performance relative to long-term reliability and also chemistry control issues and those issues were noted for subsequent monitoring.

e. Cooling Tower Structure – Safety and Non-Safety Related

The cooling tower provides cooling for the Circulating Water System (non-safety related) and the Alternate Cooling System (safety related function). There are two towers: the east tower is CT-1 and the west tower is CT-2. Each tower has 11 cells. A concrete cooling water basin below grade supports the tower frames. CT-2-1 is the safety related cell and CT-2-2, the adjacent cell, is referred to as the seismic cell since it is designed to withstand the same seismic loads as the safety related cell so that the failure of CT-2-2 would not impact the performance of CT-2-1.

All 13 reliability criteria were evaluated. Some issues were identified that could potentially affect plant reliability related to oversight of contractors performing work on the cooling towers and the overall standard of housekeeping around the cooling towers. These were programmatic issues already identified by ENVY and were in the corrective action system for resolution. The effectiveness of the resolution of these issues was noted for subsequent monitoring.

f. Service Water System – Safety Related

The service water (SW) system consists of two parallel headers to supply the turbine and the reactor auxiliaries. In normal operations, the SW system discharge is routed to the Circulating Water system discharge to the Connecticut River. However, when the river water temperature is below a specified limit, the SW discharge is aligned to flow through the cooling tower basin to preclude the basin water from freezing.

All 13 reliability criteria were evaluated as well as the additional criteria discussed in Act 189 section 2-(2). Regarding the section 2-(2) evaluation, the VY SW system was found to be in compliance with the current General Design Criteria in NUREG-0800, NRC SRP section 9.2.1 Station Service Water System as compared to the equivalent GDC applicable during initial plant licensing.

Per the assessment, "The main potential to reliability within the Service Water System is the ongoing MIC [Microbiological Induced Corrosion] issue." The issues related to SW MIC were noted for subsequent monitoring.

g. Seven technical focus areas

In addition to the six systems discussed above that were assessed via the vertical investigation methodology, there were seven technical focus areas that were evaluated:

1. Electrical System – Back up and Standby
2. Primary Containment System
3. Underground Piping Program Evaluation
4. Cable Separation Practices

5. Large Electric Motor Program Horizontal Review
6. Flow Accelerated Corrosion (FAC)
7. Reactor Building Crane/Hoists Maintenance and Testing

These evaluations were conducted with an emphasis on programs and processes through a review of documentation, personnel interviews, and physical equipment inspections. These technical focus areas had elements of both safety and reliability (non-safety related) aspects. Consistent with Act 189, for safety related focus areas, only the impacts on plant reliability were assessed. For example, related to the Emergency Diesel Generators (EDG) review as part of the overall assessment of the Electrical System (Section 2.7 of CRA Report), it is stated in the report (page 223, 4th paragraph): "The purpose of the NSA team review was to verify that the ENVY's actions to address the **NRC identified** (emphasis added) emergency diesel issues were adequate and that, based on its evaluation, reasonable assurance exists regarding the EDGs capability to provide quality and reliable power to the safety-related loads."

3. Supplemental Monitoring by DPS

Once the CRA report was completed, ENVY received the recommendations from the report and decided which would be implemented. For those recommendations adopted, ENVY entered them into its Corrective Action (CA) system to investigate, assign significance and priority levels, and track actions through their resolution. ENVY also developed "working document" matrices to track the status of actions related to the specific recommendations/issues and respective CA's. DPS and its consultants ("DPS assessment team") performed supplemental monitoring visits at VY as a part of the DPS continuing monitoring and documented their supplemental monitoring conclusions on individual Reliability Assessment Recommendation – Action Review Notes.

IV. Decommissioning

The decommissioning process begins when a licensee decides to cease operations permanently. The NRC regulates the radiological safety related to the decommissioning of the plant. There are legitimate state interests in decommissioning such as restoration of the site.

If ENVY shuts down the VY plant in March 2012 (or at any time thereafter) and decides to cease operations permanently, it can, and is obligated to, safely decommission the plant under NRC regulations. The State's review process related to relicensing of the VY plant will not affect the safe decommissioning of the plant when that occurs.

Before or within two years following cessation of operations, a licensee must submit a Post Shutdown Decommissioning Activities Report (PSDAR). If, in the future, ENVY makes a decision to cease operations permanently and decommission the plant, then the NRC will review the plant's decommissioning plan and schedule consistent with the NRC's decommissioning regulations as found in Chapter I of Title 10, "Energy," of the *Code of Federal Regulations* (CFR). Part 20, Subpart E provides the main decommissioning requirements. Additional guidance is included in NUREG 1700 - Standard Review Plan (SRP) for Evaluating Nuclear

Power Reactor License Termination Plans (LTP). The principal purpose of an SRP is to ensure the quality and uniformity of NRC staff reviews and to present a well-defined base from which to evaluate the requirements for terminating the license of a nuclear power plant. The SRP also makes information about regulatory matters widely available, so that interested members of the public and the nuclear industry can gain a better understanding of the staff's review process. Licensees may use the SRP to assist in developing an LTP. Each SRP presents the acceptance criteria for all areas of review for license termination, and identifies the matters to be reviewed, the basis for the review, and the conclusions that are sought. The LTP must be submitted at least two years before license termination.

V. Prior Testimony and Compensation

A. Expert testimony within past four years

Pre-filed testimony and testimony before the Vermont Public Service Board, Docket No. 7440, February 11, 2009 and May 29, 2009, respectively.

Pre-filed testimony (declarations) in connection with the preliminary injunction motion in present case.

B. Publications within the past ten years

Article: Bruce E. Hinkley, *Vermont Yankee License Renewal and the State of Vermont's Involvement*.

C. Compensation

$225.00 per hour.

/s/ Bruce E. Hinkley
Bruce E. Hinkley
August 8, 2011

Exhibit A

Bruce Hinkley résumé

BRUCE HINKLEY – Senior Technical Consultant

EDUCATION/QUALIFICATIONS
Bachelor of Science, U.S. Naval Academy, 1976
Nuclear Engineering Graduate Courses – U. S. Navy, 1977
Licenses and Registrations
Certified Chief Nuclear Engineer – U. S. Navy

PROFESSIONAL SUMMARY
Mr. Hinkley has over 30 years of nuclear industry experience as both a consultant and utility executive in the areas of project management, design engineering, operations, start-up testing/commissioning, quality programs, risk and reliability, causal analysis, and construction. As the president of the joint venture contracted to manage and direct the construction aspects of the restart of Pickering Units 1-4, he also functioned as the construction manager and project director. He has project managed the restart of several nuclear facilities as well as leading the development of the Pebble Bed Modular Reactor Estimate and Schedule in South Africa. Mr. Hinkley has made presentations to utility Boards of Directors, the Nuclear Regulatory Commission, Advisory Committee on Nuclear Waste and other public forums. Experience highlights include: Executive Management Consultant to the US DOE – Yucca Mountain Project/Hanford WTP/SRS Tank 48 Disposition; Project managed over 30 System/Management Assessments; Developed Systems Engineering Program – V.C. Summer and Brunswick Plant; Team Leader of Independent Review Team on Millstone issue with missing fuel rods; International experience in major nuclear project reviews/assessments –PBMR (South Africa), Pickering Units 1-4 (Canada), and Philippines Nuclear Power Plant – Philippines; Involved in the restart of the Brunswick 1& 2, Maine Yankee, Pickering Unit 4, and Dresden Units in both technical and senior management roles.

EXPERIENCE AND ACCOMPLISHMENTS
February 2011 to Present – Nuclear Industry Consultant
Mr. Hinkley is providing technical and management support services to the State of Vermont in its ongoing efforts related to the re-licensing of Entergy Vermont Yankee and ongoing activities as part of the monitoring of activities identified in the Act 189 Comprehensive Reliability Assessment and subsequent Supplemental Reliability Assessment. He is also providing management and technical support to Grinaker-LTA in South Africa in the development of their nuclear business unit focused on the construction of new nuclear plants.

October 2007 to February 2011 - Beckman & Associates (Waleska, GA)
Mr. Hinkley headed the engineering and regulatory services business area as well as providing consultant services to the DOE, NRC, and nuclear utility industry. Mr. Hinkley supported the State of Vermont in their oversight of the Entergy Vermont Yankee re-licensing efforts in the areas relating to reliability in aspects of nuclear plant design, licensing, maintenance, quality, and operations. He also completed oversight services at Hanford Waste Treatment Project (WTP) as a member of the Broad Based Review Steering committee and chairman of the oversight committee. In another assignment, he conducted an effectiveness review of the Corrective Action program associated with the WTP and an independent technical and quality review of a medical isotope provider in Canada. Mr. Hinkley was also the Project executive for commercial grade dedication efforts and the technical requirement flowdown project at Hanford and NRC Regulatory Guide Updates.
February 2006 to September 2007 -InfoZen, Inc. (Rockville, MD)-Vice President – Energy Business Unit

As Vice President, Energy Business Unit, responsibilities included the oversight and direction of two high visibility contracts with the EDO's office and the WIZARD (web based knowledge management system) project providing review support technology at the NRC as well as performing individual consulting for the Westinghouse Savannah River Company as a member of the Independent Review Team evaluating disposition alternatives for tank cleanup and closure. Most recently, Mr. Hinkley completed project managing and leading the Independent Review of Quality Programs for the DOE OCRWM Yucca Mountain Project and a business and technical analysis regarding new reactor technology for Murray and Roberts, Inc. in South Africa.

February 2001- February 2006 -Shaw/Stone & Webster

October 2005 – January 2006 - Executive Consultant – US DOE (Hanford)

Selected as a member of the Industry Expert Review Team to review the Hanford Waste Treatment Project. The review included evaluation of the technical adequacy and scalability of the science, effective translation of the science to engineering and design, and the ability to operate and maintain the proposed facilities economically to meet the critical mission needs of the DOE.

July 2004 – October 2005 - Executive Consultant – US DOE (Yucca Mountain)

Mr. Hinkley was assigned as an executive consultant to the DOE as part of the Management and Technical Support Contract at Yucca Mountain. In this role, he provided licensing and technical review support, project management program development, cost and schedule development and independent reviews, and design reviews of proposed spent fuel handling facilities and procedures.

December 2002- July 2004 - President – Canadian Nuclear Engineers and Constructors (CANEC), Joint Venture of S&W Canada, Canatom NPM, AECON, and Comstock Responsible for the leadership and direction of a $350M joint venture company. CANEC was responsible for the construction management, quality implementation of the pressure boundary program, field engineering, and project/technical support for the restart of Ontario Power Generation's Pickering "A" Units 1-4. Peak staffing exceeded 1500 with over 400 non-craft management and support personnel. Exceeded all safety & environmental goals.

May 2002 – December 2002 - Project Director – CANEC

Responsible for directing the construction, field engineering, quality control, and related support services to restart Pickering Units 1-4. Brought in by Stone and Webster to turnaround a challenged project and increase productivity through strong management and improved communication with the client. Activities included streamlining and improving quality and talent of key individuals, established standard reporting mechanisms, and created report cards to monitor individual areas of performance.

February 2001- April 2002 - Manager – Nuclear Engineering Services Projects

Responsible for all domestic nuclear engineering services projects in multiple office locations. Annual budget of over $50M. Responsible for engineering operational support to international projects. Executive sponsor for Exelon and Entergy clients. Completed assignments as the Project Director for the PBMR estimate and schedule for the demonstration plant project in South Africa and assisting Exelon as part of a senior review team involved with plant restart assessments and evaluations. Other activities included employee concerns investigations and independent technical and management assessments.

October 2000 to February 2001 - Analytical Management Services - President

Established and incorporated an independent consulting business to serve the nuclear industry in the areas of management and organizational transition, independent technical reviews, and business development.

March 2000 to October 2000 - Altran Corporation

Vice President – Engineering and Operations:

Responsible for leadership and operational coordination of a $20M engineering consulting company with multiple office locations across the United States and Canada. Responsibilities

include business development and marketing, strategic planning, operational process improvements, individual consulting activities, recruiting, and training and development of personnel. Member of executive management team. Major industries served were nuclear and fossil power generation, DOE, petrochemical, biomedical, and other industrial.

May 1997 – March 2000 - TRS Staffing Solutions – TEKToN Resources Division - Division President

As President for Tekton, Mr. Hinkley was responsible for the management and direction of the engineering and design staffing division of TRS Staffing Solutions (a subsidiary of Fluor Corporation). This included recruiting and training of staff, marketing, business plan development, management of 16 regional offices, budgeting and forecasting, and overall profit and loss responsibility.

April 1993 - May 1997 - Yankee Atomic Electric Company - Vice President (1996-1997)

Responsible for direction and oversight of engineering services to Maine Yankee, Vermont Yankee, Seabrook, Northeast Utilities, Boston Edison, and other affiliated companies. Individual assignments included: 10CFR50.54(f) Project Manager for Maine Yankee and Vermont Yankee; NRC ISA Response Team Manager for successful Maine Yankee assessment; Nuclear Safety Review Committee Member - Maine Yankee; Vice President – Engineering for Maine Yankee, January – May 1997.

Director – Engineering Services (April 1993 – December 1995)

Responsible for all Yankee service activities conducted with customers outside of New England. Individual consulting assignments included: Team leader and QA/Corrective Action Reviewer for the SWSOPI effort at V.C. Summer; Team leader for the 10CFR50.59 assessment for Northern States Power; Independent project oversight and surveillance/testing review in support of Millstone 2's SWSOPI self-assessment; Assessment team leader for the Prairie Island SWSOPI that included NRC presentations, briefings, and reports; Team Leader and Testing reviewer on the Maine Yankee (MY), Vermont Yankee (VY), and Connecticut Yankee (CY) Service Water Self Assessments; Response Team manager for the Vermont Yankee Design Engineering and QA/Corrective Action Assessment conducted by the NRC; Member of VY Inservice Testing Audit as a technical specialist on program management and effectiveness; Maintenance reviewer on the Seabrook Service Water System SSFA.

1990-1993 - Quadrex Energy Services - Senior Vice President and General Manager

Management consultant on the corporate improvement plan for a $30M radwaste processing facility; Expert testimony preparation for Westinghouse Electric Corporation's independent review of the readiness for plant operations for the Philippine Nuclear Power Plant.

1986-1990 - CYGNA Energy Services - Vice President and Regional Manager

Responsible for all engineering, technical, administrative, and business matters for the Boston, New Jersey, and Atlanta offices of Cygna Energy Services. Key projects included: six Safety System Functional Reviews; EPRI "Assessment of Effectiveness of Current ASME XI Testing for Detecting Component Degradation"; Development of the V.C. Summer System Engineering Program.; Senior Reviewer – Tech.Spec. Surveillance Testing Review - Boston Edison

1981 – 1986 - Carolina Power and Light Company

Senior Engineer to Manager of Technical Support: Assigned to the Brunswick Station. Responsibilities included outage management for all major engineering/construction projects (e.g., SW System Replacement, IGSCC Inspections and Repairs, MSIV and SRV Replacement), the ISI/IST program improvements, procurement engineering, ILRT/LLRT, development of work force management program, corporate modification and design commonality project, and regulatory projects. Selected as an INPO Industry Observer in 1986 for the Millstone 1 & 2 Evaluation.

1972 – 1981 - United States Navy

Completed Nuclear Power School and Submarine School. From 1979-1981 took the ship through an extensive shipyard overhaul period which included major missile system upgrades and reactor

system modifications. Received the Navy Achievement Medal for innovative leadership and direction related to the first of a kind modification to the reactor control rod drive system. Served as a member joint test group and training officer for all nuclear trained personnel. Successfully qualified as a certified Chief Nuclear Engineer.

Professional Affiliations and Awards

American Nuclear Society (ANS); American Legion; ANS Best Paper Award – 1985 and 1988; Master of Change Award – Fluor Daniel/TRS Staffing – 1998