

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
before the
ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)	
)	
VERMONT YANKEE NUCLEAR)	Docket No. 50-271-OLA-4
POWER CORPORATION)	(Operating License
)	Extension)
(Vermont Yankee Nuclear)	
Power Station))	

RESPONSES TO APPLICANT'S INTERROGATORIES (Set No. 1) BY
VERMONT DEPARTMENT OF PUBLIC SERVICE

To the extent that a given interrogatory appears to seek a legal conclusion, it is objected to, and to the extent that such interrogatories are answered, it is not to be considered a legal answer.

To the extent that a given interrogatory appears to be asking Vermont's generic opinions about nuclear plants other than the Vermont Yankee Nuclear Power Station, other types of power plants, or other industrial facilities, Vermont objects in that such opinions are irrelevant to the admitted contention in this proceeding and Vermont espouses no knowledge of these other facilities.

Q.1 Please define what SOV contends is included within the scope of the term "program to maintain and/or determine and replace all components found to have aged to a point

where they no longer meet the safety standards applicable to this plant" as used by it in its Contention 7, and provide all of the bases for your definition.

A.1 For "maintain," the definition of NRC proposed amendment of 10CFR50.75, item 2 (b), is used. This is found on pages A.21 and A.22 of NUREG/CP-0099, "NRC Rulemaking of Maintenance of Nuclear Power Plants," November 1988. "Determine ... to have aged to a point" means a demonstration of qualified life, by provision of evidence to support the conclusion that components will be able to perform their safety functions in the end-of-life condition, in the environment that will exist when the safety function must be performed. The term, "components," means all structures, systems, and components (and their supporting systems) meeting the definition on pages 2 and 3 of NRC Draft Regulatory Guide DG-1001, "Maintenance Programs for Nuclear Power Plants," August 1989. "Aged" means any and all aging mechanisms, including, but not limited to, any mechanism identified as part of Contention VI of "State of Vermont Supplement to Petition to Intervene," October 30, 1989. The term, "safety standards applicable to this plant," is defined as the current licensing basis, as defined by "Nuclear Power Plant License Renewal; Public Workshop on Technical and Policy Consideration." This definition is found as item XX.3 (a) at 54 FR 41984, October 13, 1989.

Q.2 Please identify each of the "safety standards" that SOV contends is "applicable to this plant" as these terms are used by it in its Contention 7, and please define the measure of "reasonable assurance" as the term is used by SOV in its Contention 7.

A.2 Vermont objects to this interrogatory to the extent that it seeks a legal opinion. Notwithstanding and without waiving this objection, Vermont offers the following comments: "Safety standards" means the current licensing basis (see item Q.1 above) for each structure, system, and component of the plant. Applicant is responsible to know this current licensing basis, but Vermont has not been granted access to information by which it can know the current licensing basis. "Reasonable assurance" is used with the meaning given in 10 CFR 50.57 (a) (3).

Q.3 For each of the seven "specific weaknesses" enumerated by SOV in sub-paragraph "b" of its Contention 7, state each and every reason why SOV contends (if it does) that "weakness" would materially impact safety through the balance of the existing VYNPS license term, and also please state each and every reason why SOV contends (if it does) that "weakness" would materially impact safety through the balance of the extended VYNPS license term.

A.3 Vermont has not made a determination of the manner in which the weaknesses identified in sub-paragraph "b" of Contention VII would materially impact safety, either through the existing license term, or in the extended term, because Vermont is not responsible to maintain, nor has been granted access to the current licensing basis for the plant.

Q.4 Does SOV adopt as true and correct, as of the date of its publication, all of the findings and conclusions of the NRC staff contained in IR 89-80? If your answer is anything other than an unqualified affirmative, please identify each of the findings and conclusions of the NRC Staff contained in IR 89-80 that SOV contends is (or on the date of the publication thereof was) not correct, and for each such finding or conclusion, state all of the reasons why SOV contends the finding or conclusion is not correct.

A.4 No. Vermont has not made and cannot make a final determination regarding the findings and conclusions contained in IR 89-80 without review of the information reviewed by the Maintenance Team Inspectors.

Q.5 Does SOV agree that NRC Temporary Instruction 2515/97 ("NRC Maintenance Inspection Guidance") is an adequate assessment tool for use in determining the adequacy of a plant's maintenance program? If your response is anything other than an unqualified affirmative, then please identify each and every respect in which SOV contends that NRC Temporary Instruction 2515/97 ("NRC Maintenance Inspection Guidance") is not an adequate assessment tool for use in determining the adequacy of a plant's maintenance program, and, for such respect, state all of the reasons why SOV contends that it is not adequate.

A.5 Vermont has not reviewed NRC Temporary Instruction 2515/97, and to the extent that the request is for a judgement from Vermont that NRC Temporary Instruction 2515/97 is an adequate instruction, it is objected to in that it calls for a legal conclusion.

Q.6 Does SOV contend that a maintenance program can never be adequate if it has "weaknesses" as that term is used in IR 89-80?

- a. If your answer to the foregoing interrogatory is negative, then please explain all of the bases that SOV contends are properly applicable to the question of whether identified weaknesses are or are not negating of adequacy.
- b. If your answer is affirmative, does it not necessarily follow that, if a reviewer pronounces a maintenance program to be adequate, any suggestions for improvement he may simultaneously have identified are not "weaknesses?" Please explain the rationale for your answer.

A.6 The interrogatory is not answerable as given because it asks what the author meant by the word, "weakness," and this is unknown to Vermont. Nevertheless, Vermont believes the answer to the intended question is, No. Vermont would understand the term, "weaknesses," to negate adequacy when reasonable assurance (see Q.2 above) has not been demonstrated that protection of public health and safety will be provided. Vermont objects to this question to the extent that a legal definition of "weakness" is requested, since this will be determined at the end of the hearing by the Board.

Q.7 Does SOV concede that one cost of proceduralization is its tendency to suppress the application of initiative, judgment and discretion on the part of employees, and that, therefore, before a judgment can prudently be made to require proceduralization in any given situation a careful assessment must be made of the benefits and costs of doing so? Please state the reasons for your answer.

- a. Please describe in detail the complete extent, if any, to which SOV determined, assessed and evaluated the costs of the proceduralization that it advocates in this contention.

- b. Please provide the technical qualifications (education, employment history, licenses and certificates, experience, or other information which SOV contends establishes the qualifications of the person), of each person who assisted SOV in make the foregoing determinations, assessments and evaluations or upon who expertise SOV relies for the same, or state that SOV does not rely upon the expertise of any person for the determination.

A.7 No. Vermont has made no determination regarding the philosophy or costs of proceduralization.

Q.8 Does SOV contend that "clearly established management controls" can adequately compensate for a shortage of "qualified replacement personnel", as those terms are used by SOV in sub-paragraph "c" of its Contention 7? Please state each and every reason for your answer, and, for each such reason, please:

- a. State each and every fact on which your reason is based.
- b. Describe all of the evidence in SOV's possession or of which SOV has knowledge that SOV contends establishes each such fact.
- c. For each reason, either provide the technical qualification (education, employment history, licenses and certificates, experience, or other information which SOV contends establishes the qualifications of the person), of any person on whose expertise SOV relies for the reason or state that SOV does not rely upon the expertise of any person for the reason.

A.8 No. The following are reasons and facts for this answer:

- 1. A shortage of qualified replacement personnel is projected. This fact is established, for example, by "Outlook on Skilled Personnel," Inside N.R.C., October 9, 1989; U.S. Department of Energy, Manpower

Assessment Brief No. 7, DOE/ER-0373, June 1988;

"Energy-Related Scientists and Engineers, 1988-1994",
by Oak Ridge Associated Universities for the
Department of Energy, December 1989.

2. Without clearly established management controls the shortage of qualified replacement personnel cannot be compensated for. This fact is established by the importance placed on management by NRC in such vehicles as SALP evaluations and enforcement actions.
3. "Established" management controls, by themselves, cannot compensate for projected shortages of qualified replacement personnel. These controls must be implemented to be effective. This implementation must be demonstrated over a period of time in order to be shown to be effective.
4. "Clearly" established management controls does not necessarily imply "correctly" established management controls. The correct controls must be established and implemented to be effective.
5. Vermont relies on the expertise of Mr. H. Shannon Phillips, whose technical qualifications are identified in Attachment 1.

Q.9 Does SOV contend that it is always and categorically true that a maintenance program "based on the stability of maintenance staff, their skill in their professions, and their knowledge of plant system characteristics that come with long-term experience" will be less efficacious than a maintenance program based "on formally and clearly established management controls"?

- a. If your answer is other than an unqualified affirmative, please state each and every qualification necessary to obtain SOV's concurrence in the conclusion, and, for each such qualification, state all of the reasons why SOV requires such qualification prior to its adoption of the conclusion.
- b. If your answer is an affirmative, please state each and every reason why SOV so contends, and please describe the combined qualifications and experience of the persons upon whom SOV relies for its contention.

A.9 Vermont objects to this interrogatory to the extent that it seeks a legal opinion. Notwithstanding and without waiving this objection, Vermont answers in the affirmative. The reason for the affirmative answer is that the word, "always," in the question, implies a time continuum. Vermont holds, that as the plant reaches the extended period, there will be a shortage of qualified maintenance workers, and without established and implemented management controls, the maintenance program will not only be less efficacious but will be inadequate. Vermont relies on the expertise of Mr. H. Shannon Phillips, whose qualifications are included as Attachment 1.

Q.10 Does SOV contend that its concern regarding the availability of maintenance personnel is any different with respect to the year 2007 than it is with respect to the year 2012?

A.10 No, with the exception that the situation could be more

serious in 2012 because of the continuing decline of nuclear power.

- a. If your answer is anything other than an unqualified negative, please state each and every respect in which SOV contends that the concern applies differently to the year 2012 than it does with respect to the year 2007, each and every reason for each and every such respect, the degree of confidence that SOV contends can be reliably ascribed to predictions so far into the future, and the identification of any and all documents upon which SOV relies for its contention.

A.10.a The qualified negative answer is based upon the fact that, between 2010 and 2020, the current licenses for almost one-half of the nuclear generating capacity will expire. Also, no new nuclear orders have occurred since 1979, and there is no information to suggest that additional commercial nuclear plants will be ordered. If this occurs, it will be difficult to attract expertise to a waning industry. The situation will only worsen between 2007 and 2012. This situation will be exacerbated if the current trend toward understanding the health effects of ionizing radiation continues. The BEIR V document ("Health Effects of Exposure to Low Levels of Ionizing Radiation," National Research Council, 1990) indicates that the health effects of radiation are worse than previously expected. If this trend continues, the ability to attract

maintenance personnel who are willing to subject themselves to radiation exposure will be hampered.

- b. Does SOV contend that the basic skills and aptitude required of personnel who can be trained to be equally effective maintenance workers as presently exist at VYNPS are different from those required of personnel who can be trained to be effective maintenance personnel at coal-fired or oil-fired power plant or other large industrial facility (such as a paper mill)? If so, please state each and every respect in which SOV contends that the basic skills and aptitude required of maintenance personnel hires for any of these technologies differs from the others.

A.10.b Vermont objects the aspects of this interrogatory which call for comparison with coal-fired or oil-fired power plants, or other large industrial facilities. Such a comparison is irrelevant to this proceeding. Notwithstanding, and without waiving this objection, Vermont responds in the affirmative, with the following clarification. We interpret "basic skills and aptitude" broadly, and specifically including the willingness to subject oneself to radiation exposure and willingness to associate with a waning industry. We offer the following response:

1. Nuclear plants, while consisting of many of the same elements as other industrial facilities, are generally more complex. The interrelationships between ECCS and

other safety systems with the power producing systems of the plant adds complexity over oil- or coal- fired power plants. Nuclear maintenance personnel must be aware of these interrelationships.

2. Nuclear plants are subject to a much greater set of requirements, commitments and regulations than oil- and coal- fired power plants. Nuclear maintenance personnel must be aware of these requirements, commitments and regulations.
3. Nuclear plants must rely on a greater degree of proceduralization than oil- or coal- fired plants. The ability to follow procedures consistently and accurately is a different aptitude than the ability to understand how to pack valves or torque bolts.
4. The consequences of maintenance errors are greater in nuclear plants due to the safety and environmental impacts of released radioactivity. These consequences can result in plant shutdown, costly investigations, enforcement actions - all different than the consequences of errors in oil- and coal- plants. Thus, the nuclear maintenance worker must have an aptitude for performing maintenance in an error-free manner, to a greater degree than in oil- and coal- fired plants.
5. Nuclear plant workers are subject to stricter drug and alcohol consumption requirements and testing than

those in oil- or coal- fired plants.

6. The nuclear maintenance worker must be willing to subject himself to radiation exposure, an attribute different from oil- or coal- fired plants.

- c. Does SOV contend that the skills peculiar to a maintenance worker in a nuclear power plant would preclude him from working at a coal-fired or oil-fired power plant or other large industrial facility (such as a paper mill)?

A.10.c Vermont objects to this interrogatory which calls for comparison with coal-fired or oil-fired power plants, or other large industrial facilities. Such a comparison is irrelevant to this proceeding. Notwithstanding, and without waiving this objection, we respond, No.

- d. If so, please identify each and every skill that SOV contends would effect such a preclusion and all of the reasons why SOV contends that it would do so.

- e. Does SOV contend that the skills peculiar to a maintenance worker in a coal-fired or oil-fired power plant or other large industrial facility (such as a paper mill) would preclude him from working at a nuclear power plant?

A.10.e See the response to 10.b above. Non-nuclear maintenance workers are, of course, not "precluded" from becoming maintenance workers at Vermont Yankee, since Vermont Yankee may engage the services of whomever it wishes. However, because of the different skills and aptitudes

necessary in nuclear plants, we contend that not every maintenance worker in a coal- or oil- fired power plant or other large industrial facility would prove an acceptable maintenance worker at Vermont Yankee.

- f. If so, please identify each and every skill that SOV contends would effect such a preclusion and all of the reasons why SOV contends that it would so do.

A.10.f Again, no "preclusion" exists for maintenance workers from other industries to work at Vermont Yankee, since Vermont Yankee may engage the services of anyone it wishes. However, for aspects which bear upon the acceptability of maintenance workers from other industries, the ease of their transition, and their disposition to work at Vermont Yankee, see the response to 10.b above.

- Q.11 Please state each and every reason why SOV contends that the statement that it has labelled "false and unreliable" in sub-paragraph "g." of Contention 7 is "false and unreliable." Please describe the investigation that SOV performed, prior to making this accusation, of the procedures and processes actually employed at VYNPC for detecting and analyzing trends, insofar as they relate to aging.

A.11 The characterization of the statement in sub-paragraph "g." of Contention VII as "false and unreliable" is made based on its inconsistency with the finding on the NRC

Maintenance Team in IR 89-80, also quoted in sub-paragraph "g." Identifying this inconsistency is the extent of our investigation since Vermont has not been able to gain access to additional, related information.

Q.12 Does SOV adopt as true and correct, as of the date of its publication, all of the findings and conclusions of each of the LRS documents cited by SOV in its basis for Contention 7? If your answer is anything other than an unqualified affirmative, please identify each of the findings and conclusions of each of the LRS documents that SOV contends is (or on the date of the publication thereof was) not correct, and for each such finding or conclusion, state all of the reasons why SOV contends the finding or conclusion is not correct.

A.12 Vermont cited LRS documents in its basis for Contention VII because, on face, they contain a certain legitimacy, having been prepared by respectable individuals with experience in the nuclear field. The facts stated in the basis for Contention VII illustrate the conflict which exists between the degree of reliance that the applicant places on maintenance, surveillance and the determination qualified life of equipment in its application, and the actual state of these activities. While Vermont accords the existence of this conflict through the findings and conclusions contained in LRS documents, we cannot make a determination regarding all of the findings and conclusions without review of the information reviewed by the LRS reviewers, and contact with the personnel interviewed.

Q.13 Does SOV adopt as true and correct, as of the date of its publication, all of the findings and conclusions of each of the LERs cited by SOV in its basis for Contention 7? If your answer is anything other than an unqualified affirmative, please identify each of the findings and conclusions of each of the LERs that SOV contends is (or on the date of the publication thereof was) not correct, and for each such finding or conclusion, state all of the reasons why SOV contends the finding or conclusion is not correct.

A.13 Vermont cited LERs in its basis for Contention VII because, on face, they contain a certain legitimacy, having been prepared by respectable individuals with experience in the nuclear field, and having been filed with the Nuclear Regulatory Commission. The facts stated in the basis for Contention VII illustrate the conflict which exists between the degree of reliance that the applicant places on maintenance, surveillance and the determination qualified life of equipment in its application, and the actual state of these activities. While Vermont accords the existence of this conflict through the findings and conclusions contained in LERs, we cannot make a determination regarding all of these findings and conclusions. Vermont generally accepts as true and correct the portions of LER's describing the event and identifying the corrective action taken. Vermont cannot make a determination regarding the accuracy of the cause of events and the analysis of events without access to material available to the preparers of the LER

and specifically the current licensing basis for the components of the plant.

Q.14 Please describe each and every change to the VYNPS maintenance program or surveillance program that SOV contends, had such change been implemented earlier, would have precluded the occurrence of the matters described in the Licensee Event Report described in the foregoing interrogatory.

A.14 Vermont cannot identify changes which would have precluded the occurrence of the events described in the LER's without access to the details of the VYNPS maintenance program and surveillance program, and to the material available to the preparers of the LERs.

Q.15 Please identify every passage of every "INPO report" that SOV had in its possession when it submitted its Contention 7 and contends is meant to be referenced by the allegations contained in sub-paragraph "M" of SOV's Contention 7.

A.15 None.

Q.16 Please state each and every reason SOV contends that "no confidence exists" in VYNPC's statement that there is "no present safety problem from paint chips and no future loss of integrity," and, for each reason, please:

- a. State each and every fact on which your reason is based;
- b. Describe all of the evidence in SOV's possession or of which SOV has knowledge that SOV contends establishes each such fact.

- c. For each reason, either provide the technical qualification (education, employment history, licenses and certificates, experience, or other information which SOV contends establishes the qualifications of the person), of any person on whose expertise SOV relies for the reason or state that SOV does not rely upon the expertise of any person for the reason.

A.16 The statement in sub-paragraph "n." of Contention VIII that "no confidence exists" in the statement by the applicant that there is "no present safety problem from paint chips and no future loss of integrity" is made as a result of the statements in BVY 89-69, indicating a long awareness of paint chipping problems, and previous unsuccessful attempts at resolving the problems. Based on the continuing problem, Vermont is not confident that the present resolution will be effective in preventing future loss of integrity. Vermont has not been granted access to additional evidence other than BVY 89-69. Vermont relies on the expertise of Mr. H. Shannon Phillips, whose qualifications are included as Attachment 1.

Q.17 Please identify each person assisting SOV in the preparation of its answers to these interrogatories. For each such person, please:

- a. Identify the interrogatory answers prepared by that person or, if such person prepared only a portion of an answer, the portions of the answer provided by such person.
- b. Provide the technical qualifications (education, employment history, licenses and certificates, experience, or other information which SOV contends establishes the qualifications of the

person), if any, of such person in each area in which SOV contends such person to be technically qualified.

- c. Identify each and every report, paper or other document prepared by such person (whether or not in conjunction with other persons) and made available to SOV.

A.17 Mr. William Sherman assisted in the answers to questions 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17, and 18. Mr. Sherman's qualifications are provided as Attachment 2.

Mr. H. Shannon Phillips assisted in the answers to questions 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15, and 16. Mr. Phillip's qualifications are provided as Attachment 1.

Counsel assisted in the preparation of objections.

A.17.c Vermont objects to the request to identify each and every report, paper or other document as overbroad and burdensome. Further, Vermont objects to the production of such reports unless and until such person is identified as an expert witness in this case. Notwithstanding, and without waiving such objections, Vermont answers, none.

Q.18 If, in response to any of the foregoing interrogatories, SOV has responded that it cannot answer or that it cannot answer completely without the acquisition by it of additional information, then for each such response:

- a. Describe the additional information that SOV contends is required in order for it to answer to

answer completely the interrogatory.

- b. State each and every reason why SOV contends that the acquisition of such information is necessary in order for it to answer or to answer completely the interrogatory.
- c. State the steps that SOV is taking to acquire the information, and for each step, the anticipated date on which it will be completed.
- d. State the intentions, if any, of SOV concerning supplementation of its answer to the interrogatory, including (if supplementation is intended), the date on which it is anticipated that SOV will serve its supplemental response.

A.18 Vermont has not determined the additional information necessary to respond to interrogatories 2,3,4,5,7,10,11, 12,13,14,15, and 16. Vermont is following the schedule identified in the prehearing conference by telephone of March 8, 1990. We expect to have identified our first round of document production requests and interrogatories by April 26, 1990. Vermont intends to supplement these interrogatories to coincide with the second round of discovery, to begin approximately May 26, 1990. This schedule assumes that all requested information is provided without resort to motions to compel.

RESUME

HARRY SHANNON PHILLIPS, SR.

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GRANBURY, TEXAS 76048
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EDUCATION

Master of Science in Materials Engineering, Mississippi State University, 1971

Bachelor of Science in Chemistry and Math, University of North Alabama, 1962

Short Courses: 21 technical, 8 management, 3 contract administration, and 3 miscellaneous job related courses.

SUMMARY OF EXPERIENCE

Thirty-one years of general engineering and scientific experience includes: 12 years with the Nuclear Regulatory Commission (NRC), 15 years with 3 agencies of the Department of Defense (DOD), 1 year with Norton Abrasive Company, and 3 years with Reynolds Metals Company. These progressively responsible positions included 5 years DOD management experience, 2 years NRC management experience for national program (environmental qualification testing), 9 years NRC supervisory experience, 3 years experience as NRC lead project inspector, and 9 years specialized technical experience in these organizations. Three years as a research assistant was nonprofessional experience.

The type of specialized engineering and technical experience includes: environmental qualification of electrical and mechanical equipment; engineering evaluations, audits, and inspection of civil, electrical, and mechanical work activities during design, procurement, construction, and pre-operational testing of nuclear power plants; investigation of technical noncompliances/wrong-doing at nuclear power plants; quality assurance and reliability engineering for missile systems; contract administration of all types of DOD and NRC contracts; materials engineering responsibilities for all manufacturing processes, physical/chemical/nondestructive testing, and quality assurance of military products; electric, mechanical, material, and metrology testing to evaluate first article and production prototypes in missile systems/equipment/components and field failures; general utilities including low/high pressure steam plants, water plants, sewerage plants, and stream pollution; general and analytical chemistry to evaluate manufactured refractories and high temperature materials; and research and development of more efficient techniques to reduce aluminum oxide to aluminum metal.

UNITED STATES NUCLEAR REGULATORY COMMISSION (1977-1989)

EQUIPMENT QUALIFICATION SECTION CHIEF

Served for 2 years as project officer and manager who was responsible for establishing the NRC's program, in response to regulation 10 CFR 50.49, to assure that mechanical and electrical equipment for nuclear power plants was environmentally qualified through testing or analysis.

Met with company presidents to gain NRC access to their facilities and solicit their cooperation in establishing adequate EQ and QA programs. Planned program activities and directed the efforts of NRC EQ engineers and consultants, Sandia National Laboratories, to implement the NRC program. Evaluated program progress by reviewing reports and by accompanying NRC teams to the vendor sites (about 140-150 manufacturer and testing facilities) about 30% of the time. Where safety issues were identified, developed industry notifications (NRC Bulletins, Notices) such as: Bulletin 82-04, "Deficiencies in Primary Containment Electrical Penetration Assemblies," and Notice 84-44, "Environmental Qualification Testing of Rockbestos Cable." Was on the NRC Regional Emergency Response Team and participated in mock nuclear accidents which required communica-

tions with various Federal and State agencies. Routinely served as Regional Duty Officer during off hours and took reports of incidents and events at nuclear sites which were then forwarded to Headquarters at Bethesda, MD.

SENIOR RESIDENT INSPECTOR

Served as senior resident at two different nuclear sites for 9 years. Performed project management functions which included assessing plant completion and identifying the most opportune time for the NRC to observe work and scheduling technical reviews by nonresident engineers and inspectors. Advised NRC management of plant status/progress and of contacts with or events of interest to other Federal agencies such as the Environmental Protection Agency, Federal Bureau of Investigation, Department of Energy, Federal Energy Management Agency, and state/local government agencies. Provided testimony in hearings before the Atomic Safety and Licensing Boards, and congressional committees. Provided testimony and depositions in lawsuits between utilities and between a utility and a contractor; the latter resulted in a record settlement of several hundred million dollars concerning contested engineering and construction practices.

PROJECT INSPECTOR

Served as project inspector in midwestern NRC Regional Office for 3 years. Responsible for several nuclear power plants with duties that were much the same as for the resident inspector, except that the project inspector received more direct supervision from a supervisor who was at the same location while the resident was located hundreds of miles from the home office, supervision, and any technical support. The project inspector was also responsible for evaluating applicants for construction permits.

Both the resident and project inspectors were required to perform reviews of procedures and records and observe work in the following areas at nuclear power plants: (1) geotechnical and foundations, structural concrete, containment post tensioning, structural steel/supports, containment penetrations, (2) reactor coolant pressure boundary piping, reactor vessel and internals, safety related mechanical components, (3) heating, ventilation, and air-conditioning, (4) welding and nondestructive examination, (5) electrical cable, components, and instruments, (6) fire prevention and protection, (7) pre-service and in-service inspection (8) environmental protection, (9) low level radioactive waste storage, (10) construction and pre-operational testing, (11) operations maintenance and (12) NRC Bulletin, Notices, Generic Letters, and 50.55(e) deficiency reports.

DEPARTMENT OF DEFENSE (1963-1976)

QUALITY ASSURANCE DIVISION CHIEF-DEFENSE SUPPLY AGENCY

Served as division chief in a district office for 4 years. Managed petroleum and general commodity branches that were assigned 988 DOD, NASA, and Corps of Engineer contracts at 353 contractor facilities in Louisiana and south Texas. Responsible for two branch supervisors, 3 staff specialist, and 2 secretaries and indirectly responsible for a technical staff of 55 people who reported to the branch and section chiefs. Aerospace, aircraft, electrical/electronic, chemical/petroleum, clothing/textile, and mechanical work was inspected by specialist who were assigned throughout the 2 state area at suboffices and at contractor facilities. Management responsibilities for these operations involved contract administration, production, and quality assurance activities to assure that contractors were paid, met delivery schedules, and produced quality products of various types. Served on preaward panels which recommended multi-million dollar contract awards.

REGIONAL MATERIALS ENGINEER-DEFENSE SUPPLY AGENCY

Served as the senior materials engineer in a five state region for 2 years. Monitored the manufacturing and fabrication of electrical and mechanical systems, components, and parts for all military services and foreign procurements. Was responsible for special processes such as welding, soldering, plating and finishes, forming and heat treatment, shot peening, passivation, and impregnation of castings. Organic material processes included laminated materials and sandwich construction with fiber glass base for aircraft, plastic and foamed polyurethane for electronics, and other plastic forming. Served as nondestructive examination expert and Naval Nuclear Test Examiner.

GENERAL CHEMIST-ARMY MISSILE COMMAND

Served as either the lead or assistant lead materials engineer on projects to perform electrical, electronic, environmental, hydraulic, mechanical, and material testing on missile systems, components, and parts submitted to the Army Missile Command by prime and subcontractors. The majority of work assignments were for physical and chemical testing, metallurgical analyses and engineering evaluations of field failures. Knowledge of specialized equipment for alloy and compound identification included: metallograph, optical and X-ray spectrophotographs, X-ray diffraction, hardness testers, plating gauges, X-ray equipment, NDE equipment, and other equipment for chemical testing. The identification and measurement of platings and finishes was a specialty.

Some work was done for NASA and intelligence work was done relative to evaluating materials used in foreign missile systems. Did graduate work and research for master's degree.

GENERAL CHEMIST-ARMY SUPPORT MISSILE COMMAND

Served as general chemist for 2 years and performed engineering evaluations relative to the corrosion program for 40 low/high pressure steam plants. Also was responsible for overseeing chemical and biological testing of water and sewerage plants. A collateral duty was to assist in the U. S. Public Health with monitoring DDT and other harmful chemicals manufactured by contractors at Redstone Arsenal.

NORTON ABRASIVE COMPANY (1962-1963)

ANALYTICAL CHEMIST

Served as chemist for one year. Evaluations were performed to assure that refractories met specifications prior to shipment and product quality was maintained during manufacture.

REYNOLDS METALS COMPANY (1958-1962)

RESEARCH ASSISTANT

Served as a research and development assistant to engineers for three years. Gathered data during the operation of electrolytic cells to verify a more efficient process for reducing aluminum oxide to aluminum metal. Heat balances were measured on experimental cells. Fabricated cells and set up other types of experiments without detailed instructions. Skills in welding, cutting, pipe fitting, metal lathe turning, electrical wiring, and other machine and tool skills were necessary to complete work tasks. This hands-on experience has been most beneficial because it gives perspective to an engineer. The difference in putting a design on paper and actually accomplishing the job is not always well understood.

ACHIEVEMENTS AND HONORS

Using multiple linear regression equations and data collected compensated for the inter-elemental effects experienced when analyzing alloys with X-ray spectrophotograph.

Master's thesis was a study on the measurement of residual stresses in metal parts using X-ray diffraction.

Served on Steering Committee for Nondestructive Testing.

Hosted the National DOD Conference on Nondestructive Testing and published and distributed proceedings to 200 attendees.

Received DOD grant for graduate study. Recognized more than 20 times by cash awards, commendations, and letters of appreciation. Five awards were received within the last four years.

RESUME

WILLIAM K. SHERMAN

DEPARTMENT OF PUBLIC SERVICE
STATE OF VERMONT
120 STATE STREET
MONTPELIER, VERMONT 05602

EDUCATION

THE UNIVERSITY OF MICHIGAN, Ann Arbor, Michigan
Bachelor of Science (Mechanical Engineering), 1967

U.S. NAVAL NUCLEAR POWER SCHOOL
Marine Island, California, 1968

STONE & WEBSTER ENGINEERING CORP., Boston, MA
Continuing Education Division, Various Management
Training Courses

LICENSES

PROFESSIONAL ENGINEER - California, Massachusetts,
and Connecticut

EXPERIENCE

Aug 1988 -
present

STATE OF VERMONT, Department of Public Service,
Montpelier, Vermont

As STATE NUCLEAR ENGINEER, reviews status of the Vermont Yankee Nuclear Power Station on a daily basis. Discusses plant operation with plant management, operating personnel, federal and other state officials, interested groups, the legislature, and the news media. Performs regular site visits at Vermont Yankee. Maintains current knowledge of nuclear industry and Vermont Yankee activities. During emergencies, assumes responsibility for monitoring and evaluating plant conditions and efforts to return facility to a safe condition. Testifies before legislative committees on nuclear power issues. Coordinates state evaluation of Vermont Yankee rate and decommissioning filings before the Federal Energy Regulatory Commission (FERC).

Mar 1973-
Jan 1985

STONE & WEBSTER ENGINEERING CORP., Boston, MA.

In 13 years, held various positions involved with the engineering, construction, nuclear licensing and environmental licensing of large power generating facilities throughout the country. Final position was Lead Power Engineer for the Millstone Nuclear Power Station, Unit 3 (Northeast Utilities Service Company). Responsible for engineering and design of all nuclear and mechanical aspects of the 1200 MW station during construction period from 35% complete to 85% complete. This included overall technical and administrative supervision of engineering and design; interfacing with client, construction and vendor representatives; management of the group's budget and schedule; engineer training, upgrading and evaluation; and direction of ongoing nuclear and environmental licensing efforts.

Previous assignments included projects in Pennsylvania, Wisconsin, New York, and work in the areas of environmental qualification of safety-related equipment, decommissioning and long term storage of nuclear fuel, environmental site evaluations, standardization of nuclear design, and nuclear safety licensing.

Sep 1971 -
Feb 1973

EDS NUCLEAR, INC., San Francisco, California
Consultant to nuclear industry, activities related to D.C. Cook Nuclear Plant.

Aug 1967 -
Aug 1971

U.S. NAVY, Naval Nuclear Power School, Mare Island, California. Naval Officer. Four years of classroom teaching experience, providing instruction in the areas of Heat Transfer and Fluid Flow, Physics and Reactor Theory.

Additional
experience

COMPUTER EXPERIENCE - Specialized in computers in college. Worked as part-time consultant to the University of California, Berkeley, Computer Center while in Navy. Developed several personal-computer based status systems with Stone & Webster. Proficient in LOTUS 1-2-3, DBASE III.