RAS 14728

Arnie Gundersen
Fairewinds Associates, Inc
376 Appletree Point Road, Burlington, VT 05408
Telephone: 802-865-9955 Fax: 802-865-9933
Email: sailchamplain@gmail.com

MOX Limited Appearance Statement

September 14, 2007

Judges Michael C. Farrar (Chairman), Lawrence G. McDade, and Nicholas G. Trikouros
Atomic Safety & Licensing Board
MOX Limited Appearance Box
Atomic Safety and Licensing Board Panel
Mail Stop T-3F23
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Docket No. 70-3098-MLA

To: Atomic Safety & Licensing Board Judges:

The "Petitioners": Nuclear Watch South, the Blue Ridge Environmental Defense League, and Nuclear Information & Resource Service have filed Contention 2: Accidental Release of Radionuclides, requesting a hearing concerning faulty accident consequence assessments made for the MOX plutonium fuel factory proposed for the Savannah River Site. I am a nuclear safety expert witness writing as a private citizen in support of the aforementioned contention and am expanding the "Petitioners" concern to require an emergency plan as a condition of licensure.

My CV is attached. Briefly, I have a Bachelor and Master's Degree in Nuclear Engineering, have had a Reactor Operator's License, was formerly a Senior Vive President in the Nuclear Industry, and have 35 years of nuclear related experience at more than 70 reactors worldwide. I have testified in numerous public hearings held by Congress and by the NRC and have previously been accepted as an expert witness by the ASLB regarding nuclear safety issues at the Vermont Yankee Nuclear Power Plant. Let my thank you in advance for this opportunity to add comments to the MOX record on this urgent matter before this Board.

Template=SECY-038

SECY-02

DOE's MOX contractor, Shaw AREVA MOX Services concludes that offsite releases of radiation from MOX will not exceed 1 REM and therefore Shaw AREVA is not required to submit an emergency plan for the plutonium factory which is expected to process between 34 and 78 tons of weapons-grade plutonium into reactor fuel. My review of the documents indicates at least seven key areas where I believe that Shaw AREVA MOX Services miscalculated accident dose. First off, the Shaw AREVA MOX Services are not conservative and, in my opinion, the accident dose calculations are in fact wrong. My review of the application indicates that in addition to the analytical errors it contains, Shaw AREVA MOX Services has also applied non-conservative meteorological assumptions that I believe will cause the accident dose to exceed 1 REM by a significant margin. Given the fact that both Shaw AREVA MOX Services and the NRC have claimed to have previously reviewed all the documents and assessments on the record, it is a tremendous safety concern that a civilian like me should discover what I believe to be major calculational errors at this late date.

Moreover, I would like to alert the ASLB to the fact that the 1999 criticality incident at the fuel reprocessing plant in Tokaimura, Japan resulted in evacuations of nearby residents (out to several hundred meters) and warnings to stay inside out to 10 kilometers. As a matter of public policy, the severity of these incidents alone would seem to indicate that public health protection near any facility handling large amounts of highly toxic, fissionable plutonium must require an emergency response plan.

Most importantly, a careful look at the analysis submitted in the MOX operating license application shows that the MOX plutonium fuel factory *does indeed require* an emergency plan in order to conform with environmental and NRC regulations, as, *when properly calculated,* the projected doses will exceed 1 REM.

Issue 1, Meteorological Variability:

Given the uncertainties inherent in atmospheric dispersion calculations,

particularly those performed with straight-line Gaussian computer codes, 868 mrem and 1,000 mrem are, for all intents and purposes, the same number. One of the seminal texts in health physics, *Introduction to Health Physics* by Dr. Herman Cember, indicates that atmospheric dispersion calculations using a Gaussian plume are subject to significant uncertainties. Even assuming perfect input data (*i.e.*, source term, wind speed, wind direction, stability classification, etc.) actual results might be expected to be within a factor of 3 of the predicted value only *approximately* 68% of the time (*i.e.*, 1 standard deviation). The author of a commonly used DOE straight-line Gaussian code, HOTSPOT (current version is 2.06) indicates that one (1) standard deviation is a difference of a factor of 5 as opposed to a factor of 3. *Therefore, the applicants' calculated dose of 868 mrem might be as much as three to five times higher based upon meteorological uncertainty alone.*

Issue 2, Thyroid Committed Dose Equivalents:

The Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-400-R-92-001) indicates in Table 2-1 that offsite response organizations would be advised to evacuate members of the general public at a thyroid committed dose equivalent (CDE) of 5 rem, regardless of the magnitude of the TEDE dose, unless some impediment to evacuation exists. The MOX contractor's response indicates that the calculated thyroid dose, 5.46 rem CDE, associated with the criticality accident is of no consequence, since the TEDE dose is less than 1 rem (868 mrem).

In further support, the NRC's own consequence assessment code, *Radiological Assessment System for Consequence Analysis* (RASCAL), Version 3.0.5 (current version) says the following about this matter in its "Help" file:

> *"The total effective dose equivalent (TEDE) is the sum of the dose from 4-day effective ground shine corrected for ground roughness (0.7), cloud shine, and CEDE inhalation. The TEDE should be used for comparisons with the EPA early-phase PAGs. Use Acute Bone or Lung Dose for examination of early health effects."*

"Early Phase PAGs"

Doses (rem)		Normal Environmental Conditions		Hazardous Environmental Conditions	
TEDE	Thyroid	Gen Pop	High Risk	Gen Pop	High Risk
1	5	Evacuate	Shelter	Shelter	Shelter
5	25	Evacuate	Evacuate	Evacuate	Shelter
10	50	Evacuate	Evacuate	Evacuate	Evacuate

Issue 3, Near-field Dose and the ARCON96 Code:

The MOX contractor's response indicates and I acknowledge that the ARCON96 code has only been used to calculate near-field doses. I note, however, that NRC itself indicates that the ARCON96 code should not be assumed to be acceptable for purposes other than control room radiological habitability assessments. See the following quote from NRC Regulatory Guide 1.194, *Atmospheric Relative Concentrations for Control Room Radiological Habitability Assessments at Nuclear Power Plants*:

> *"ARCON96 is a general code for assessing atmospheric relative concentrations in building wakes under a wide range of situations. As such, the ARCON96 code provides some user options that are not considered appropriate for use in design basis evaluations for control room habitability assessments. Although the model implemented in ARCON96 was structured to address short-term atmospheric dispersion in typical reactor site building complexes, there may be atmospheric dispersion scenarios and source-receptor geometries for which the model would be inappropriate, e.g., extremely short duration releases, receptor distances shorter than about 10 meters, or control room outside air intakes located close to the base of tall elevated stacks."*
>
> *"Analysts should not assume that the use of the ARCON96 code as described in this guide is acceptable for purposes other than control room radiological habitability assessments. In particular, regulatory positions on atmospheric relative concentrations for toxic gas dispersion are provided in Regulatory Guide 1.78, Assumptions for Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release. Regulatory positions on atmospheric relative concentrations for offsite accident radiological consequence assessments are provided in Regulatory Guide 1.145, Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants."*

Issue 4, ARCON96 Computer Code Inputs:

The information provided by the MOX contractor does not indicate the averaging

period used to calculate 95% percentile meteorology, nor does it indicate how this averaging period compares to the estimated release duration for the incident(s) analyzed. Given NRC's statement that ARCON96 would be inappropriate for "extremely short duration releases" this information is particularly relevant.

In fact, a review of the user's guide for ARCON96 (NUREG/CR-6331 Rev. 1) shows a large number of input choices that must be made by the consequence assessor. An in-depth review of the input parameters and data is critical to this process as seemingly minor changes to input parameters may result in large changes in calculational results, therefore without access to the detailed calculations (including input parameters) it is impossible to determine the validity of applicant's ARCON96 results.

Issue 5, Facility Output:

NUREG-1767 (*Environmental Impact Statement on the Construction and Operation of a Proposed Mixed Oxide Fuel Fabrication Facility at the Savannah River Site, South Carolina*) explicitly assumes that only 34MT of plutonium will be processed in MFFF, as indicated in the following quote from the Executive Summary:

> "The proposed MOX facility would convert 34 metric tons (MT) (37.5 tons) of surplus weapons grade plutonium into MOX fuel. This facility would be built on 16.6 ha (41 acres) of land in the F-Area of the SRS. If the NRC approves the CAR, DCS plans to request a 10 CFR Part 70 license to possess and use special nuclear material at the proposed MOX facility. Such a license would allow DCS to operate the proposed MOX facility for 20 years. The facility would be designed for a maximum annual throughput of 3.5 MT (3.9 tons) of plutonium."

The citizen's groups contend that a new EIS (or a substantial supplemental EIS) will be required to adequately assess the environmental impact of processing additional plutonium through MFFF, and I support their contention. In my opinion, the recent (September 2007) Record of Decision (ROD) on *Storage of Surplus Plutonium Materials at Savannah River Site* and the associated *Plan for Alternative Disposition of Defense Plutonium and Defense Plutonium Materials That were Destined for the Cancelled Plutonium Immobilization Plant* would seem to invalidate the basic premise of both the

applicant's Environmental Report and the NRC Environmental Impact Statement. The documents submitted show that the nature of the additional defense plutonium materials *differs substantially* from that of the materials originally destined for MFFF. This substantial difference in the materials originally destined for MFFF *proves,* in my opinion, that a simple extrapolation from 34MT to 49MT is wholly insufficient to adequately characterize the environmental impact of operation of MFFF. Moreover, critical and significant additional process steps may also be required to make the additional plutonium materials acceptable for MFFF processing, which in my opinion may potentially create additional unanalyzed and *significant* accident scenarios.

Issue 6, FGR11 Dose Conversion Factors:

In its response, MOX contractor indicates that "[e]ffective dose equivalent factors were taken from Federal Guidance Report 11." FGR11 sets forth a system of limits for radioactive materials in the workplace. In the introduction, it is stated in FGR11 that:

> *"The purpose of the present Report (FGR11) is to set forth derived guides that are consistent with current Federal radiation protection guidance. They are intended to serve as the basis for regulations setting upper bounds on the inhalation and ingestion of, and submersion in, radioactive materials in the workplace. The Report also includes tables of exposure-to-dose conversion factors, for general use in assessing average individual committed doses in any population that is adequately characterized by Reference Man (ICRP 1975)." (p. 1)*

The general public is not adequately characterized by Reference Man (in particular, children and adult women are poorly represented by the Reference Man model) thus FGR11 dose conversion factors are inappropriate for use in calculating radiation doses to the general public.

Later in the document, when discussing the use of the values contained therein, it is stated in the FRG11 that:

> *"Many factors affect the actual doses to individual workers, as opposed to those calculated here for Reference Man. Age, sex, physiology, and behavior all may influence the uptake and retention of radionuclides. The application of the numbers in Tables 1 and 2 to situations other than normal occupational exposure (e.g., accidental over-exposure, or exposure of the general public) requires careful consideration of the*

possible effects of these factors." (p. 11)

Table 2 (in particular Table 2.1, *Exposure-to-Dose Conversion Factors for Inhalation*, which begins on p. 121) is the source of the "effective dose equivalent factors" that the MOX contractor used in its calculations of accident doses to the general public. As these factors are representative only of "Reference Man" and not of children or even adult women, they are inappropriate for this use.

Issue 7, Calculational Errors:

Applicant's calculation of TEDE dose for the assumed criticality accident (Table 3, p. 13 of Mixed Oxide Fuel Fabrication Facility Evaluation Pursuant to 10 CFR 70.22 (i)(1)(i)--Emergency Plan Assessment) erroneously assumes that the doses due to the release of 12,800 Ci of Kr-89 and 48,900 Ci of Xe-137 will be 0 -- apparently simply because FGR11 does not cite dose conversion factors for these two (2) nuclides.

Due diligence, *as required by law,* however, reveals other sources that do cite dose conversion factors for Kr-89 and Xe-137, calculated in a manner identical to those calculations applied in FGR11. Applying those dose conversion factors to the source terms that the Applicant cites in Table 3 results in an IOC submersion and TEDE dose of 1.16 rem due to Kr-89, and an IOC submersion dose and TEDE of 0.412 rem due to Xe-137. Adding these two "missing" dose lines to those already calculated by Applicant results in an IOC TEDE of 2.46 rem. *Incredulously, the critical conditions necessary for exemption from emergency plan requirements pursuant to 10 CFR 70.22 (i)(1)(i) are NOT MET and according to nuclear regulations, the Applicant MUST prepare an Emergency Plan.*

I acknowledge that the half-lives for Kr-89 and Xe-137 are short (3.14 minutes and 3.95 minutes respectively), and I also contend that these nuclides are long-lived enough to escape from MFFF and be transported to a person assumed to be 160 meters away.

Summation:

In summation, and for the seven reasons I have delineated above, it is my opinion and conclusion that federal statute and nuclear regulations necessitate that this Board require the applicant to submit an emergency plan in support of its application. Moreover, in my opinion and according to federal statute, it is obvious that the Applicant has failed to meet the requirements for an exemption to the development of an emergency plan pursuant to 10CFR 70.22. As a nuclear safety expert witness and a public citizen, I respectfully request that the NRC fulfill its statutory obligation and require the applicant to develop an emergency plan as a condition of licensure.

Thank you for this opportunity to submit my comments as a concerned member of the public.

Respectfully submitted,

Arnie Gundersen
376 Appletree Point Road
Burlington, Vermont 05408

Note: Emailed and faxed to service list. Signed original sent via US Mail.

CURRICULUM VITAE

Arnold Gundersen
June 2007

Family Data
Date of Birth:
Place of Birth:
Wife: Margaret Gundersen
Children: Eric, 27; Elida, 24
Home address: 376 Appletree Point Road, Burlington, VT 05408
Telephones: (802) 865-9955 Fax: (802) 865-9933 Cell (802) 238-4452
E-Mail/ Internet: sailchamplain@gmail.com

Education And Training

ME NE	Masters of Engineering Nuclear Engineering
	Rensselaer Polytechnic Institute, 1972
	U.S. Atomic Energy Commission Fellowship
	Thesis: Cooling Tower Plume Rise
BS NE	Bachelor of Science Nuclear Engineering
	Rensselaer Polytechnic Institute, 1971
	Cum Laude, 3.74 out of 4.0
	James J. Kerrigan Scholar
RO	Licensed Reactor Operator, U.S. Atomic Energy Commission
	License # OP-3014

Special Qualifications – including and not limited to:
Nuclear Safety Expert Witness; 37-years of nuclear industry experience and oversight; former nuclear industry Senior Vice President; nuclear engineering management assessment; prudency assessment; Employee Awareness Programs; nuclear power plant licensing and permitting production, assessment, and review; public communications, contract administration, assessment and review; former Licensed Reactor Operator; systems engineering, radioactive waste processes and storage issue assessment, technical patents, federal and congressional hearing testimony, decommissioning, waste disposal, source term reconstructions, thermal discharge assessment, aging plant management assessment

Special Remediation Expertise
Director of Engineering, Vice President of Site Engineering, and the Senior Vice President of Engineering at Nuclear Energy Services (NES).

- Department of Energy chose NES to write *DOE Decommissioning Handbook* because NES had a unique breadth and depth of nuclear engineers and nuclear physicists on staff.
- Personally wrote the "Small Bore Piping" chapter of the DOE's first edition Decommissioning Handbook, personnel on my staff authored other sections, and I reviewed the entire Decommissioning Handbook.
- Served on the Connecticut Low Level Radioactive Waste Advisory Committee for 10 years from its inception
- Managed groups performing analyses on dozens of dismantlement sites in order to thoroughly remove radioactive material from nuclear plants and their surrounding environs.
- Managed groups assisting in decommissioning the Shippingport nuclear power reactor. Shippingport was the first large nuclear power plant ever decommissioned. The decommissioning of Shippingport included remediation of the site after decommissioning.
- Managed groups conducting site characterizations (preliminary radiation surveys prior to commencement of removal of radiation) at the radioactively contaminated West Valley site in upstate New York.
- Personnel reporting to me assessed dismantlement of the Princeton Avenue Plutonium Lab in New Brunswick, NJ. The lab's dismantlement assessment was stopped when we uncovered extremely toxic and carcinogenic underground radioactive contamination.
- Personnel reporting to me worked on decontaminating radioactive thorium at the Cleveland Avenue nuclear licensee in Ohio. The thorium had been used as an alloy in turbine blades. During that project, previously undetected extremely toxic and carcinogenic radioactive contamination was discovered below ground after an aboveground gamma survey had purported that no residual radiation remained on site.

Publications

Co-author — DOE Decommissioning Handbook, First Edition
Authorship solicited by DOE

Patents

Energy Absorbing Turbine Missile Shield – U.S. Patent # 4,397,608 – 8/9/1983

Committee Memberships

ANSI N-198, Solid Radioactive Waste Processing Systems
Three Rivers Community College Nuclear Academic Advisory Board
Founding Member of Connecticut Low Level Radioactive Waste Advisory Committee (Member for 10 years)
Founding Member National Nuclear Safety Network

Honors

James J. Kerrigan Scholar 1967–1971
Tau Beta Pi (Engineering Honor Society), RPI, 1969

(1 of 5 in Sophomore class of 700)
B.S. Degree, Cum Laude, RPI (3.74 GPA) 1971
U.S. Atomic Energy Commission Fellowship, 1972
Publicly commended to U.S. Senate by NRC Chairman, Ivan Selin, in May 1993
"It is true...everything Mr. Gundersen said was absolutely right; he performed quite a service."

Teacher of the Year – 2000, Marvelwood School

Nuclear Consulting and Expert Witness Testimony

Peach Bottom Reactor Litigation
Evaluated extended 28-month outage caused by management breakdown and deteriorating condition of plant.

Commonwealth Edison
In depth review and analysis for Commonwealth Edison to analyze the efficiency and effectiveness of all Commonwealth Edison engineering organizations, which support the operation of all of its nuclear power plants.

Western Atlas Litigation
Evaluated neutron exposure to employees and license violations at this nuclear materials licensee.

Three Mile Island Litigation
Evaluated unmonitored releases to the environment after accident, including containment breach, letdown system and blowout. Proved releases were 15 times higher than government estimate and subsequent government report.

PennCentral Litigation
Evaluated license violations and material false statements by management at this nuclear engineering and materials licensee.

Federal Congressional Testimony
Publicly recognized by NRC Chairman, Ivan Selin, in May 1993 in his comments to U.S. Senate, "It is true...everything Mr. Gundersen said was absolutely right; he performed quite a service."

State of Connecticut
Assisted the State in drafting Whistle-blower Protection legal statutes, the strongest in the United States.

Nuclear Regulatory Commission (NRC)
Assisted the NRC Inspector General in investigating illegal gratuities paid to NRC Officials by Nuclear Energy Services (NES) Corporate Officers. In a second investigation, assisted the Inspector General in showing that material false statements (lies) by NES corporate president caused the NRC to overlook important license violations.

International Nuclear Safety Testimony
Worked for ten days with the President of the Czech Republic (Vaclav Havel) and the Czech Parliament on their energy policy for the 21st century. Continue to work with Czech Friends of the Earth on Czech Energy and Environmental Issues

State of Vermont Public Service Board
Expert witness retained by New England Coalition to testify to the Public Service Board on the reliability, safety, technical, and financial ramifications of a proposed increase in power (called an uprate) to 120% at Entergy's 31-year-old Vermont Yankee Nuclear Power Plant. April 2003 to present

U.S. Senators Jeffords and Leahy (2003 to 2005)
Provided the Senators and their staff with periodic overview regarding technical, reliability, compliance, and safety issues at Entergy Nuclear Vermont Yankee (ENVY).

10CFR 2.206 filed with the Nuclear Regulatory Commission
Filed 10CFR 2.206 petition with NRC requesting confirmation of Vermont Yankee's compliance with all General Design Criteria.

State of Vermont Legislative Testimony to Senate Finance Committee
Testimony to the Senate Finance Committee, 2006 regarding Vermont Yankee decommissioning costs, reliability issues, design life of the plant, and emergency planning issues.

Finestone v FPL
Plaintiffs' Expert Witness for Federal Court Case with Attorney Nancy LaVista, from the firm Lytal, Reiter, Fountain, Clark, Williams, West Palm Beach, FL.
This case involved twenty-six families in a cancer cluster alleging illegal radiation releases from nearby nuclear power plant caused children's cancers.
Production request, discovery review, preparation of deposition questions and attendance at Defendant's experts for deposition, preparation of expert witness testimony, preparation for Daubert Hearings, ongoing technical oversight, source term reconstruction.

U.S. Nuclear Regulatory Commission Atomic Safety and Licensing Board (NRC-ASLB) Expert witness retained by New England Coalition to provide Atomic Safety and Licensing Board with an independent analysis of the integrity of the Vermont Yankee Nuclear Power Plant condenser.

U.S. Senators Bernie Sanders and Congressman Peter Welch (2007)
Briefed Senator Sanders, Congressman Welch and their staff members regarding technical and engineering issues, reliability and aging management concerns, regulatory compliance, waste storage, and nuclear power reactor safety issues confronting the U.S. nuclear energy industry.

State of Vermont Environmental Court
Expert witness retained by New England Coalition to review Entergy and Vermont Yankee's analysis of alternative methods to reduce the heat discharged by Vermont Yankee into the Connecticut River. Provided Vermont's Environmental Court with analysis of alternative methods systematically applied throughout the nuclear industry to reduce the heat discharged by nuclear power plants into nearby bodies of water. This report included the review of condenser and cooling tower modifications.

Experience

Teaching and Academic Administration

Burlington High School
Mathematics Teacher – 2001 to present
Physics Teacher – 2004 to 2006

The Marvelwood School – 1996-2000
Chairman: Mathematics and Physics Department
Taught both mathematics and physics.
Director of Summer School and Director of Residential Life
Awarded Teacher of the Year – June 2000
Additional teaching experience: The Forman School, St. Margaret's School, and college level Advanced Nuclear Reactor Physics Lab at RPI (Rensselaer Polytechnic Institute).

Nuclear Engineering 1970 to 1990

Nuclear Energy Services, Division of PCC (Fortune 500 company) 1979 to 1990
Corporate Officer and Senior Vice President - Technical Services
Responsible for overall performance of the company's Inservice Inspection (ASME XI), Quality Assurance (SNTC 1A), and Staff Augmentation Business Units.
Senior Vice President of Engineering
Responsible for the overall performance of the company's Site Engineering, Boston Design Engineering and Engineered Products Business Units. Integrated the Danbury based, Boston based and site engineering functions to provide products such as fuel racks, nozzle dams, and transfer mechanisms and services such as materials management and procedure development.

Vice President of Engineering Services
Responsible for the overall performance of the company's field engineering, operations engineering, and engineered products services. Integrated the Danbury

based and field based engineering functions to provide numerous product and services required by nuclear utilities.

General Manager of Field Engineering
Managed and directed NES' multi-disciplined field engineering staff on location at various nuclear plant sites. Site activities included structural analysis, procedure development, technical specifications and training. Have personally applied for and received one patent.

Director of General Engineering
Managed and directed the Danbury based engineering staff. Staff disciplines included structural, nuclear, mechanical and systems engineering. Responsible for assignment of personnel as well as scheduling, cost performance, and technical assessment by staff on assigned projects. This staff provided major engineering support to the company's nuclear waste management, spent fuel storage racks, and engineering consulting programs.

New York State Electric and Gas Corporation (NYSE&G) — 1976 to 1979
Supervisor, Reliability Engineering
Organized and supervised reliability engineers to upgrade performance levels on seven operating coal units and one that was under construction. Applied analytical techniques and good engineering judgments to improve capacity factors by reducing mean time to repair and by increasing mean time between failures.
Lead Power Systems Engineer
Supervised the preparation of proposals, bid evaluation, negotiation and administration of contracts for two 1300 MW NSSS Units including nuclear fuel, and solid-state control rooms. Represented corporation at numerous public forums including TV and radio on sensitive utility issues. Responsible for all nuclear and BOP portions of a PSAR, Environmental Report, and Early Site Review.

Northeast Utilities Service Corporation (NU) — 1972 to 1976
Engineer
Responsible Nuclear Engineer assigned to Millstone Unit 2 during start-up phase. Lead the high velocity flush and chemical cleaning of condensate and feedwater systems and obtained discharge permit for chemicals. Developed Quality Assurance Category 1 Material, Equipment and Parts List. Modified fuel pool cooling system at Connecticut Yankee, steam generator blowdown system and diesel generator lube oil system for Millstone. Evaluated Technical Specification Change Requests.
Associate Engineer
Responsible Nuclear Engineer assigned to Montague Units 1 & 2. Interface Engineer with NSSS vendor, performed containment leak rate analysis, assisted in preparation of PSAR and performed radiological health analysis of plant. Performed environmental radiation survey of Connecticut Yankee. Performed chloride intrusion transient analysis for Millstone Unit 1 feedwater system. Prepared Millstone Unit 1 off-gas modification licensing document and Environmental Report Amendments 1 & 2.

Rensselaer Polytechnic Institute (RPI) — 1971 to 1972

Critical Facility Reactor Operator, Instructor

Licensed AEC Reactor Operator instructing students and utility reactor operator trainees in start-up through full power operation of a reactor.

Public Service Electric and Gas (PSE&G) — 1970

Assistant Engineer

Performed shielding design of radwaste and auxiliary buildings for Newbold Island Units 1 & 2, including development of computer codes.

Vetted as expert witness in nuclear litigations, federal, international, and state hearings including but not limited to: Three Mile Island, US Federal Court, US NRC ASLB, Vermont State Public Service Board, Czech Senate, Connecticut State Legislature, Western Atlas Nuclear Litigation, U.S. Senate Nuclear Safety Hearings, Peach Bottom Nuclear Power Plant Litigation, and OIG NRC.

Public Service, Cultural, and Community Activities

Sunday School Teacher, Christ Episcopal Church, Roxbury, CT
Parents Association Washington Montessori School
High School Guest Lecturer on Nuclear Safety Issues (30+ times)
Episcopal Marriage Encounter: Basic Training & Group Leadership Training, Presenting Team [with wife] – Provided weekend communication and dialogue workshops weekend retreats/seminars, Administrative Couple – supervised Connecticut Episcopal Marriage Encounter – 5 years
Co-Founder Parents Association Berkshire School
Co-Chair Annual Appeal Berkshire School
Featured Nuclear Safety Expert for Television, Newspaper and Radio, including but not limited to CNN (Earth Matters), The Crusaders, WPTZ VT, WZBG CT
Founding Board Member NNSN – National Nuclear Safety Network
Ongoing Public Testimony to Committees of the Vermont State Legislature
Tutoring of Refugee Students – Lost Boys of the Sudan and others
Certified Foster Parent State of Vermont – 2004 to 2007
Working with Burlington Electric Department (BED) on solar modifications to Burlington High School (BHS)
Mentoring former students regarding college and employment questions and applications.

From: sailchamplain@gmail.com
To: <hearingdocket@nrc.gov>, <pah@nrc.gov>, <mxc7@nrc.gov>
Date: Fri, Sep 14, 2007 12:53 PM
Subject: MOX Limited Appearance Statement

Attached please find my Limited Appearance Statement and my CV relating to the ongoing MOX hearings.

Mail Envelope Properties (46EABC87.BB3 : 2 : 35763)

Subject:	MOX Limited Appearance Statement
Creation Date	Fri, Sep 14, 2007 12:53 PM
From:	sailchamplain@gmail.com
Created By:	arnie@sailchamplain.net

Recipients

nrc.gov
HearingDocket (HearingDocket)

nrc.gov
PAH (Patricia Harich)

nrc.gov
MXC7 (Marcia Carpentier)

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Arnold Gundersen CV 6-07.pdf	43724	
Mime.822	297790	

Options

Expiration Date:	None
Priority:	Standard
ReplyRequested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

Junk Mail Handling Evaluation Results

Message is eligible for Junk Mail handling
This message was not classified as Junk Mail

Junk Mail settings when this message was delivered

Junk Mail handling disabled by User

Junk Mail handling disabled by Administrator
Junk List is not enabled
Junk Mail using personal address books is not enabled
Block List is not enabled

From: fairewinds@gmail.com
To: <hearingdocket@nrc.gov>, <pah@nrc.gov>, <mxc7@nrc.gov>
Date: Fri, Sep 14, 2007 1:36 PM
Subject: MOX Limited Appearance Statement

To the NRC Hearing Docket

As a paralegal, I am resending Arnold Gundersen's email, statement, and CV.

We have had a continual wind storm today and difficulty with emails crashing and not sending, and being returned later. We are not clear as to what document or documents you properly received from Mr. Gundersen.

Ms. Carroll will make sure that all documents are forwarded to the entire service list.

Please consider these attached documents as the final documents in the submittal package, and discard anything else which may have been corrupted in process. Please find Mr. Gundersen's original email attached.

Finally, signed hard copy will be sent via US Mail.

Please ring me: 802-865-9955 or reply email should you have any questions. Thank you.

Sincerely,
Margaret Gundersen, Certified Paralegal
///
Fairewinds Associates, Inc
802-865-9955 - office
802-304-1051 - fax
802-238-5053 - cell
fairewinds@mac.com <mailto:fairewinds@mac.com>

/

Begin forwarded message:

> *From: *Arnie Gundersen <sailchamplain@gmail.com
> <mailto:sailchamplain@gmail.com>>
> *Date: *September 14, 2007 12:53:11 PM EDT (CA)
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> pah@nrc.gov <mailto:pah@nrc.gov>, mxc7@nrc.gov <mailto:mxc7@nrc.gov>
> *Subject: **MOX Limited Appearance Statement*
> *Reply-To: *arnie@sailchamplain.net <mailto:arnie@sailchamplain.net>
>
> Attached please find my Limited Appearance Statement and my CV
> relating to the ongoing MOX hearings.
>

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//

/Margaret Gundersen
Certified Paralegal

Fairewinds Associates, Inc
802-865-9955 - office
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fairewinds@mac.com <mailto:fairewinds@mac.com> /

// //

Mail Envelope Properties (46EAC695.054 : 12 : 36948)

Subject:	MOX Limited Appearance Statement
Creation Date	Fri, Sep 14, 2007 1:36 PM
From:	fairewinds@gmail.com
Created By:	fairewinds@mac.com

Recipients

nrc.gov
HearingDocket (HearingDocket)

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MXC7 (Marcia Carpentier)

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PAH (Patricia Harich)

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Gundersen MOX LA Statement 9-14-07.pdf	172524	
Mime.822	306534	

Options

Expiration Date:	None
Priority:	Standard
ReplyRequested:	No
Return Notification:	None
Concealed Subject:	No
Security:	Standard

Junk Mail Handling Evaluation Results

Message is eligible for Junk Mail handling
This message was not classified as Junk Mail

Junk Mail settings when this message was delivered

Junk Mail handling disabled by User
Junk Mail handling disabled by Administrator
Junk List is not enabled
Junk Mail using personal address books is not enabled
Block List is not enabled

From: Glenn Carroll <atom.girl@mindspring.com>
To: Glenn Carroll <atom.girl@mindspring.com>, Hearing Docket <hearingdocket@nrc.gov>, "Michael C. Farrar, Chairman" <mcf@nrc.gov>, "Nicholas G. Trikouros" <ngt@nrc.gov>, "Lawrence G. McDade" <lgm1@nrc.gov>, Marcia Carpentier <mxc7@nrc.gov>, "Donald J. Silverman" <dsilverman@morganlewis.com>, "Vincent C. Zabielski, Esq." <vzabielski@morganlewis.com>, "Jody C. Martin" <jcm5@nrc.gov>, "Andrea Z. Jones" <axj4@nrc.gov>, Office of Commission Appellate Adjudication <ocaamail@nrc.gov>, Mary Olson <maryolson@main.nc.us>, Lou Zeller <bredl@skybest.com>
Date: Fri, Sep 14, 2007 2:01 PM
Subject: MOX Service List: FW: MOX Limited Appearance Statement

Serving for the Gundersens whose computer is affected by local high winds.
Please see below and attached MOX Limited Appearance Statement.

------ Forwarded Message
From: Margaret Gundersen <fairewinds@gmail.com>
Organization: Fairewinds Associates, Inc
Reply-To: fairewinds@mac.com
Date: Fri, 14 Sep 2007 13:36:03 -0400
To: hearingdocket@nrc.gov, pah@nrc.gov, mxc7@nrc.gov
Subject: MOX Limited Appearance Statement

To the NRC Hearing Docket

As a paralegal, I am resending Arnold Gundersen's email, statement, and CV.

We have had a continual wind storm today and difficulty with emails crashing and not sending, and being returned later. We are not clear as to what document or documents you properly received from Mr. Gundersen.

Ms. Carroll will make sure that all documents are forwarded to the entire service list.

Please consider these attached documents as the final documents in the submittal package, and discard anything else which may have been corrupted in process. Please find Mr. Gundersen's original email attached.

Finally, signed hard copy will be sent via US Mail.

Please ring me: 802-865-9955 or reply email should you have any questions. Thank you.

Sincerely,
Margaret Gundersen, Certified Paralegal
///
Fairewinds Associates, Inc
802-865-9955 - office
802-304-1051 - fax
802-238-5053 - cell
fairewinds@mac.com <mailto:fairewinds@mac.com>

/

Begin forwarded message:

> *From: *Arnie Gundersen <sailchamplain@gmail.com
> <mailto:sailchamplain@gmail.com>>
> *Date: *September 14, 2007 12:53:11 PM EDT (CA)
> *To: *hearingdocket@nrc.gov <mailto:hearingdocket@nrc.gov>,
> pah@nrc.gov <mailto:pah@nrc.gov>, mxc7@nrc.gov <mailto:mxc7@nrc.gov>
> *Subject: **MOX Limited Appearance Statement*
> *Reply-To: *arnie@sailchamplain.net <mailto:arnie@sailchamplain.net>
>
> Attached please find my Limited Appearance Statement and my CV
> relating to the ongoing MOX hearings.
>

--
//

/Margaret Gundersen
Certified Paralegal
Fairewinds Associates, Inc
802-865-9955 - office
802-304-1051 - fax
802-238-5053 - cell
fairewinds@mac.com <mailto:fairewinds@mac.com> /

// //

------ End of Forwarded Message

CC: <fairewinds@gmail.com>

Mail Envelope Properties (46EACC5F.272 : 4 : 37490)

Subject:	MOX Service List: FW: MOX Limited Appearance Statement
Creation Date	Fri, Sep 14, 2007 1:59 PM
From:	Glenn Carroll <atom.girl@mindspring.com>
Created By:	atom.girl@mindspring.com

Recipients

nrc.gov
HearingDocket (Hearing HearingDocket)
MCF (Mike Farrar)

nrc.gov
NGT (Nicholas Trikouros)

nrc.gov
LGM1 (Lawrence McDade)
JCM5 (Jody Martin)

nrc.gov
MXC7 (Marcia Carpentier)

nrc.gov
AXJ4 (Andrea Jones (OGC))

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