RDB received 1/19/05

Chief, Rules and Directive Branch
Office of Administrative Services
Mailstop T-6D59
US Nuclear Regulatory Commission
Washington, DC 20555

12/7/04
69FR71437
(1)

January 11, 2005

Re: Millstone Nuclear Plant should be closed.

Dear Regulatory Commission Officer,

MPS-26-1 I write to you today on behalf of my family and close friends who all live near the Millstone Nuclear Plant. It has come to our attention that although the plant has already outlived its intended life span, it is slated for re-licensing for another 20 years. We strongly oppose this decision and regard it as shortsighted and foolhardy.

Nuclear power plants, risky even under the best conditions, should by no means be patched together to overextend their designed use. We simply roll the dice of fate every day we let this continue.

MPS-26-2 This is doubly alarming now that we face likely threats of terrorism on our own soil. Millstone is essentially a Weapon of Mass Destruction waiting to be detonated!

We wish, as our founding fathers did, to be free from remote tyranny. We will not let a remote tyrant (Bin Laden or the US NRC) risk our lives, health, environment and livelihoods.

We look forward to your reply and assurance that Millstone will not be re-licensed. Until then, I am

Sincerely Yours,

Lindsay Suter, AIA
Rogers Mill
16 Mill Road
North Branford, CT 06471
(203) 484-5059

E-RIDS=ADM-03
All=B.L. Enoch (RLE)

SESP Review Complete
Template=ADM-013

NRCREP - Response from "Comment on NRC Documents" Page 1

RDB received 1/25/05 (2)

From: Michael Hess <michael_d_hess@dom.com>
To: <nrcrep@nrc.gov>
Date: Tue, Jan 25, 2005 7:37 AM
Subject: Response from "Comment on NRC Documents"

2/9/04 69FR7137

Below is the result of your feedback form. It was submitted by

Michael Hess (michael_d_hess@dom.com) on Tuesday, January 25, 2005 at 07:37:42

(2)

Document_Title: Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 22, Regarding Millstone Power Station, Units 2 and 3

MPS-27-1 Comments: QUESTION: Can the report be modified to make clear that entrainment of 20% of the larvae production does not result in 20% reduction of adult fish because the larvae entrained is outside of the river and this larvae may have little or no impact on the total population of adult Niantic River Winter Flounder?

BACKGROUND: Section 4.1.1 seems to assume that the percentage of Niantic River Winter Flounder larvae that result in adult fish is the same, regardless of whether the larvae is allowed to reach fry stage in the river or whether the larvae is released to Niantic Bay and Long Island Sound. It would seem that larvae released to the bay and sound would experience a more hostile environment, even without Millstone. Therefore, larvae that have left the river would have significantly less impact on the adult population than larvae that remains in the river. Since Millstone can only entrain larvae that has left the river, the effect of entrainment would seem to be greatly exaggerated by simple comparisons as a percentage of larvae production, as discussed on page 4-15 of the report.

organization: Representing Self

address1: 82B Old Black Point Road

address2:

city: Niantic

state: CT

zip: 06357

country: USA

phone: (860) 444-4202

E-MAIL=ADM-03

SISP Review Complete

Template=ADM-013

Add=RL-Esch (RLE)

RDB Received 2/17/05

Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mailstop T-6D 59
US Nuclear Regulatory Commission
Washington, DC 20555-0001

2/9/04 69FR 71437 (3)

February 10, 2005

Commissioners:

MPS-28-1 The Green Party of New Haven opposes extension of operating licenses for Millstone's 2 and 3 nuclear power reactors in Waterford, Connecticut, owned by Dominion Nuclear Connecticut, Inc. for the following reasons:

MPS-28-2 1. After a hearing in Waterford on Jan.11, a fire broke out Jan.14 highlighting the vulnerability of these aging plants.

MPS-28-3 2. The draft Environmental Impact Statement (EIS) being prepared by the Nuclear Regulatory Commission (NRC) with respect to the license renewal does not address some highly-related issues such as the Evacuation Plan.

The current evacuation zone does not include the effect of a major release and its effect on Connecticut and its cities such as New Haven, only about 40 miles from the plant, nor does it consider the proximity of Long Island only a few miles away across the Sound where evacuation has been shown to be impossible.

MPS-28-4 3. Terrorism and sabotage are not included in the draft EIS even though these plants can be prime targets with their highly-radioactive spent fuel stored in unprotected pools or, as approved, in dry cask storage on the reactor site.

MPS-28-5 4. Environmental Justice issues were incorrectly discarded by not considering that the low-level radioactive wastes are shipped routinely to places such as Barnwell, S. Carolina, an area that has a predominately poor and African-American population.

MPS-28-6 5. There is a need for an independent epidemiological

SISP Review Complete

E-RIDS=ADM-03
Add = R.L. Emch (RLE)

Template = ADM-013

MPS-28-6 study of areas around the plant beyond Waterford and including New London County and parts of Long Island where cancer clusters have been identified. Radioactive and chemical contaminants are routinely released from the plants into air and water.

MPS-28-7 Dominion has a poor environmental record having been fined for having hidden violations of the Clean Air Act at another of its facilities.

MPS-28-8 Speaking for the New Haven Chapter of the Green Party, we feel the draft EIS, as proposed, is flawed, and thus a new process should be initiated with hearings that include all stakeholders and their concerns.

Sincerely,

Charlie Pillsbury
247 St. Ronan Street
New Haven CT 06511

Allan Brison
115 Everit Street
New Haven CT 06511

RDB received 01/5/05

12/9/04 69FR71437

From: "Dave Simpson" <david.simpson@po.state.ct.us>
To: <millstoneEIS@nrc.gov>
Date: Wed, Jan 5, 2005 3:11 PM
Subject: Millstone GEIS comments

Richard,

MPS-29-1 I reviewed the sections of the GEIS pertaining to entrainment and thought you folks did a very nice job, especially summarizing the available information and the debates/points of disagreement on models and analysis.

MPS-29-2 I have only a few minor comments on pages 2-25 and 2-26 reference is made to the Gulf of Maine stock - sure you meant southern New England.

MPS-29-3 pg 2-26 line 8 "The stock is at low biomass level and is considered to be OVER exploited" (NOAA 1998).

MPS-29-4 pg 2-25 "Commercial havrest is generally accomplished with trawl and seines". I'd scratch seines for our area. Virtually all landings are by trawl.

Thanks for sending us a copy of the report.

Dave

David Simpson
Supervising Fisheries Biologist
State of Connecticut
Department of Environmental Protection
Marine Fisheries Division
PO Box 719
Old Lyme, CT 06371

phone: (860)434-6043
fax: (860)434-6150
email: david.simpson@po.state.ct.us

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R.L. Emch (RLE)

RDB Received 2/28/05

10/9/04
69 FR 71437
(5)

From: <Lirrcomm@aol.com>
To: <MillstoneEIS@nrc.gov>
Date: Thu, Jan 6, 2005 3:07 PM
Subject: EIS for Millstone Power Stations Units 2 & 3

To Whom It May Concern:

MPS-30-1 I want to go on record as Opposing the renewal for licensing for Units 2 and 3.

MPS-30-2 I have grave concerns about the safety of this power plant. In the event of a terrorist attack, the impact to the tri state area would be devastating. I would hate to have something occur as it relates to terrorism and this Power
MPS-30-3 Plants, to find that my concerns are correct. In addition to my concerns, it appears the NRC down plays the impact of EMF on the people and the environment.

MPS-30-4 There are alternative ways to generate electricity and Connecticut should be looking for those ways. In these uncertain times decisions can't always be about profits & shareholders. It must be more about safety and alternative ways to generate clean and efficient energy.

There are 69 issues for which the GEIS reached generic conclusions, but if we can be objective about these 69 issues, they would be frightening.

I oppose the renewal of this licensing for Units 2 & 3.

Sincerely,
Marie Domenici
330 Oldfield Court
Mattituck, NY 11952
631 298 7103

E-EIS = ADM-03
all = R. Emch (RLE)

SISP Review Complete
Template = ADM-013

RDB Received 8/08/05

From: "Baran, Marie" <Marie.Baran@nrb.gov>
To: <MillstoneEIS@nrc.gov>
Date: Fri, Jan 7, 2005 2:38 PM

MPS-31-1 Until Long Island has and evaluation plan we should not have nuclear power plants operating within 100 miles of us. As I have learned, it's not if there will be an accident it's just when will it be. 911 should have taught us all that we are so vulnerable.

12/9/04
69FR 71437
(6)

Marie Baran

SISP Review Complete
Template=ADM-013

E-RIDS=ADM-03
Add=R. Emch (RLE)

RBB received 2/28/05

From: "Assemblywoman Pat Acampora" <acampop@assembly.state.ny.us>
To: <MillstoneEIS@nrc.gov>
Date: Mon, Jan 10, 2005 11:24 AM
Subject: Millstone License Renewal

10/9/04
69FR 71437
(7)

January 10, 2005

Mr. Richard Emch, Jr.
Division of Regulatroy Improvement Programs
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington DC 20555

I write concerning the United States Nuclear Regulatory Commission's consideration for the Millstone Power Stations, Units 2 and 3 License Renewal for the next twenty years. Unfortunately, I will be unable to attend the during the Tuesday, January 11th public discussion forum held in Waterford, Connecticut. The New York State Legislature is in session on that date and therefore, I will be in Albany.

MPS-32-1 I wish to share with you my serious concerns that Millstone's operation poses a serious risk to the residents of the North Fork of Long Island. Without an emergency plan in place that expands the current 10 mile radius to a 50 mile radius including the North and South Forks, there should be no consideration of renewing Millstone's contract. In the event of an accident or terrorist attack, Long Island is currently extremely vulnerable. We must ensure that safety of the residents of Eastern Long Island. Therefore, I strongly oppose renewing the contract of The Millstone Power Station.

Thank you for your consideration of this extremely important matter. I would also like to be informed in the future regarding public meetings and discussions concerning the Millstone Power Station.

Sincerely,

Patricia L. Acampora
MEMBER OF ASSEMBLY

CC: <dirrcomm@aol.com>

ERDS=AJ4-03
Ccc=R.L. Emch (RLE)

SESP Review Complete
Template=ADM-013

RBD Received 2/08/05

10/3/04

69FR 71437

(8)

From: Wayne Burgess <wayneburgess@snet.net>
To: NRC <MillstoneEIS@nrc.gov>
Date: Tue, Jan 11, 2005 10:49 AM
Subject: Renewal of the Millstone Power Station

January 11, 2005

To: MillstoneEIS@nrc.gov

From: Wayne J. Burgess-President

Southeastern Connecticut Central Labor Council, AFL-CIO

Re: Renewal of the Millstone Power Station operating license

MPS-33-1 The Southeastern Connecticut Central Labor Council, AFL-CIO has voted to support the renewal of the operating license for Millstone Power Station.

Many of our members and delegates have lived and worked in Southeastern Connecticut since Millstone Power Station started unit one. The Power Station has had some problems over the years. However, we believe the current management, Dominion Nuclear, Inc has demonstrated responsible behavior, has been a good member of the community and has worked to provide good jobs for citizens in Southeastern Connecticut.

Therefore we support the license renewal of units two and three at Millstone power station.

SESP Review Complete. Template = ADM-013

E-RIDS = ADM-03
Add = B. Emrich (RLE)

ADDressed - 2/28/05

From: "Barbara Doyle" <badoyle@comcast.net>
To: <MillstoneEIS@nrc.gov>
Date: Tue, Jan 11, 2005 11:14 AM
Subject: renewal

MPS-34-1 Hello NRC staff. I would like to not see a renewal of Units 2 & 3 at the Millstone Power Plant site in CT.

12/9/04
69FR 71437
(9)

MPS-34-2 Although I think that dry cask storage of radioactive waste at the plant is preferable to keeping the waste in a "wet" pool, the fact is that this is not a long term solution to the problem of disposing of the waste. We do not have a long term plan for dealing with the radioactive byproducts of nuclear power plants, so I would prefer that we not renew any nuclear power plant facility license.

Please keep in mind that any solution so far proposed to dealing with radioactive waste is expensive and should be considered part of the operating expense of any nuclear power plant. It is not a separate and unrelated cost to the running of such a facility and should not be presented to the public as so. I do not wish for my taxpaying dollars in any way to continue to support the license of new or renewal of any nuclear power facility.

Thank you, Barbara Doyle.

E-mail = ADM-03
Add = B. Emch (RLE)

SISP Review Complete
Template = ADM-013

RDB Received
01/18/05

From: Arlene <typewell@sbcglobal.net>
To: <MillstoneEIS@nrc.gov>
Date: Fri, Jan 14, 2005 11:40 AM
Subject: Millestone Nuclear Power Plant

MPS-35-1 I am a former Long Island resident and I strongly oppose the relicensing of the Millestone Nuclear Power
MPS-35-2 Plant, Units 2 and 3 to the year 2045. However, should the license be renewed, I believe it is imperative that the NCR expand the scope of its evacuation plant to a 50-mile radius to include all of Long Island. I implore you to consider this for the benefit and safety of the Long Island residents.

Arlene Farinacci
4812 W. 140th Street
Hawthorne, CA 90250

10/19/04
69FR 61137
(10)

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = B. Erich (RIE)

ADAMS received 4/28/05

From: <Caseathome@aol.com>
To: <MillstoneEIS@nrc.gov>
Date: Fri, Jan 14, 2005 3:43 PM
Subject: (no subject)

MPS-36-1 I am writing to voice my strong objection to the Millstone license renewal without making a plan for the evacuation of Long Island's north shore--within the 10 mile radius of Millstone This is unacceptable. My e-mail, in case you wish to respond is caseathome@aol. com.

10/9/14
69 FR 71437
(11)

SFSP Review Template
Template = NDU-013

E-RFDS = NDU-03
Acc = B. L. Emch (KLE)

RDB received
2/08/05

From: RANDAZZO <rafe1@optonline.net>
To: <MillstoneEIS@nrc.gov>
Date: Fri, Jan 14, 2005 4:28 PM
Subject: Millstone Power Plant - 10 Miles Off LI Sound - License Renewal

MPS-37-1 I am a Long Island resident and I strongly oppose the relicensing of the Millestone Nuclear Power Plant,
MPS-37-2 Units 2 and 3 to the year 2045. However, should the license be renewed, I believe it is imperative that the NCR expand the scope of its evacuation plant to a 50-mile radius to include all of Long Island. I implore you to consider this for the benefit and safety of the Long Island residents.

Janice Circo-Randazzo
213 Pine Road
Coram, NY 11727

10/9/04
69 FR 71437
(12)

SISP Review Complete
Template=ADM-013

E-RIDS=ADM-03
Add=B.L. Emch (BLE)

ADAMS Accession 05/05/25

From: VicBarb <vicbarb9@optonline.net>
To: Marie Domenici <lirrcomm@aol.com>, <MillstoneEIS@nrc.gov>
Date: Mon, Jan 17, 2005 4:27 PM

Sir:

MPS-38-1 I would like to protest your scheduling a vital public meeting on operations at the Millstone nuclear plant without adequately notifying the residents who would be effected if an accident should happen. I read the New York Times every day. No notice was published. It looks

MPS-38-2 like you didn't want anyone to know there was a meeting. It is my understanding that the Nuclear Commission in the State of Connecticut have no plants for notification of residents who reside in a ten to fifty mile radius in the event of a nuclear malfunction. A plan for evacuation of this area is vital. Without a plan for viable evacuation, the plant should be shut down.

Barbara & Victor DiPaola
vicbarb9@optonline.net

10/9/04
69FR 61137
(13)

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R. L. Emch (RLE)

RDB received 2/28/05

From: <BeaconHA@aol.com>
To: <millstoneEIS@nrc.gov>
Date: Mon, Jan 17, 2005 5:05 PM
Subject: Millstone Nuclear Projects

MPS-39-1 I urge you to not allow the Millstone nuclear facilities to operate for all the safety, toxic waste, public health and national security reasons cited by so many for so long and documented over the years by members of the scientific community who have no economic or other pecuniary interests in the Millstone projects. Bill Garrett, 520 Savoy Street, Bridgeport, CT

10/7/04
69FR 71437
(14)

CC: <NancyBurtonEsq@aol.com>, <upthesun@cshore.com>

E-RFDS = ADM-03
Acid = B.L. Enrick (RLE)

SFSP Review Complete
Template = ADM-013

BDB Received 2/28/05

From: <BeaconHA@aol.com>
To: <millstoneEIS@nrc.gov>
Date: Mon, Jan 17, 2005 5:05 PM
Subject: Millstone Nuclear Projects

MPS-39-1 *I urge you to not allow the Millstone nuclear facilities to operate for all* the safety, toxic waste, public health and national security reasons cited by so many for so long and documented over the years by members of the scientific community who have no economic or other pecuniary interests in the Millstone projects. Bill Garrett, 520 Savoy Street, Bridgeport, CT

10/9/04
69FR 71437
(14)

CC: <NancyBurtonEsq@aol.com>, <upthesun@cshore.com>

E-12 FDS = ADM-03

SISP Review Complete

Template = ADM-013

Add = R.L. Emch (RLE)

RDB Received 2/05/05

From: Maureen and Valerie <maureenandvalerie@yahoo.com>
To: <MillstoneEIS@nrc.gov>
Date: Mon, Jan 31, 2005 10:58 AM
Subject: renewing of Millstone lic.

MPS-40-1 We want to voice our concern about the renewal of the Millstone Power Plant license. We are strongly opposed to this, and hope that you will consider closing the plant.

MPS-40-2 We are very concerned that there is no apparant notification system in place - we site the recent fire, and site evacuation in Jan. 2005. There are no policies in places to notify neighboring states, this is a huge concern of ours. As residents of New Jersey, we would want to be fully advised, and alerted to when public meetings are being held to discuss/debate the renewal of the license.
Again, I urge you to refuse the renewal of the Millstone opereating Units 2&3
Sincerely,
Valerie Briody
Maureen Swearingen
9 Delsey Road
Kendall Park, NJ 08824
732.398.9454
Please live up to your mission statement:

12/9/04
69FR 71437
(15)

"NRC's primary mission is to protect public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities."

Do you Yahoo!?
Yahoo! Search presents - Jib Jab's 'Second Term'

E-RFDS = ADM-03
All = B.L. Emails (RLF)

SISP Review Complete
Template = ADM-013

BDB received 2/08/05

From: <TMJM1968@aol.com>
To: <MillstoneEIS@nrc.gov>
Date: Tue, Feb 1, 2005 11:00 AM
Subject: (no subject)

2/9/05
69FR 7437
(16)

MPS-41-1 I have read the available information sent to me about Millstone. I am deeply distressed that you would even consider extending the opening of this facility. It seems that it would be common sense with all the other data in the world about this type of situation, that you would have no reason to keep this open or to extend the opening of it.
Please think about the future of our children and grand children and do the right thing.

In God We Trust
Josephine

SESP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = B. A. Elliott (BAE)

RDI Template
2/28/05

From: john magnesi <magneslj2003@yahoo.com>
To: <millstoneeis@nrc.gov>
Date: Wed, Feb 9, 2005 7:30 AM
Subject: License Renewal at Millstone

Dear Sir,

MPS-42-1 I wish to register my opinion that license renewal for Millstone nuclear power plant be delayed. All the parties who have concerns about this renewal have not been fully heard. These parties include Long Island communities, citizen groups and anti-nuclear activists. The health effects of this power plant may not have been fully considered. As a consequence, I urge you to delay renewal of the license.
Sincerely,

John Magnesi
7 Partridge Run
Wallingford, CT 06492

12/9/04
69 FR 71437
(17)

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R.L. Emch (RLE)

RDB, Receive
2/28/05

12/9/04
69FR71437

(18)

From: <Lirrcomm@aol.com>
To: <MillstoneEIS@nrc.gov>
Date: Wed, Feb 23, 2005 4:41 AM
Subject: Address Correction regarding Millstone and ...

Hello Mr. Emch,

I have submitted my written comments regarding the re licensing of the Millstone several many weeks ago and yesterday, I received communication from your office regarding subject:
"Response to Joshua Y. Horton, Southold Supervisor, Regarding Millstone Power Station, Units 2 and 3 License Renewal Review" and found the NRC has an incorrect address for me. The purpose of this email to ask that you correct my address to read as follows:

Marie Domenici
330 Oldfield Court
Mattituck, NY 11952

MPS-43-1 In the future, when posting "public meetings" I recommend the NRC place your notifications in no less than 3 newspapers:

1. NY Times
2. Newsday
3. Suffolk Times

The Easthampton Independent is a free newspaper that is distributed in local supermarkets and is not necessarily a well read newspaper. So, in fairness to the residents of Long Island, it would be prudent on your behalf to place your public notifications in the 3 newspapers stated above. If you require contact info on these newspapers, I will be happy to provide that information. Additionally, on January 12, I sent an email to Mr. Zalcman providing him with all the elected officials contact information, from the Town Supervisor all the way up to Governor Pataki to ensure that future notifications were made as appropriate. If you would like a copy of that email, please contact me.

Lastly, I ask that I be added as a contact name for future meetings that will be conducted as it relates to Millstone.

Thanking you in advance for your attention to this matter.

Marie Domenici
631 298 0211

SESP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R.L. Emch (RLE)

NRC FORM 659 (6-2003) U.S. NUCLEAR REGULATORY COMMISSION

RDD received 2/28/05

10/9/04 69FR 71437

Category 3

NRC PUBLIC MEETING FEEDBACK

(19)

Meeting Date: 01/11/2005

Meeting Title: Public Meeting to discuss the Draft Supplemental Environmental Impact Statement for License Renewal at Millstone Power Station, Units 2 and 3

In order to better serve the public, we need to hear from the meeting participants. Please take a few minutes to fill out this feedback form and return it to NRC.

1. How did you hear about this meeting?

☐ NRC Web Page ☐ NRC Mailing List ☑ Newspaper
☐ Radio/TV ☐ Other _____

		Yes	No	Somewhat (Please explain below)
2.	Were you able to find supporting information prior to the meeting?	☐	☐	☑
3.	Did the meeting achieve its stated purpose?	☐	☑	☐
4.	Has this meeting helped you with your understanding of the topic?	☐	☑	☐
5.	Were the meeting starting time, duration, and location reasonably convenient?	☑	☐	☐
6.	Were you given sufficient opportunity to ask questions or express your views?	☐	☐	☑
7.	Are you satisfied overall with the NRC staff who participated in the meeting?	☑	☐	☐

COMMENTS OR SUGGESTIONS: Thank you for answering these questions.

MPS-44-1 The hearing was poorly noticed, perhaps meeting legal requirements, but missing the major avenues for correctly notifying the public on the North Fork of Long Island. Consequently we did not have enough time to read and consider the DEIS or SEIS.

The hearing shouldn't be a dog & pony show - you are there to hear public comments not present your view. I know what your view is before it arrive.. I certainly didn't take a 1½ hr.

Continue Comments on the reverse. ⇨

OPTIONAL

Name Michael J. Domino Organization North Fork Environmental Council, Inc.

Telephone No. 298-8855 E-Mail NFEC@optonline.net ☑ Check here if you would like a member of NRC staff to contact you.

OMB NO. 3150-0197 Expires: 05/30/2004

Public Protection Notification: If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

Please fold on the dotted lines with Business Reply side out, tape the bottom, and mail back to the NRC.

SISP Review Complete

E-RIDS = ADM-03

Template = NRR-Admin

Add = B.L. Emala (BLE)

NRC FORM 659 (6-2000) U.S. NUCLEAR REGULATORY COMMISSION

RDB received 2/16/05

Category 3

NRC PUBLIC MEETING FEEDBACK

(20)

Meeting Date: 01/11/2005

Meeting Title: Public Meeting to discuss the Draft Supplemental Environmental Impact Statement for License Renewal at Millstone Power Station, Units 2 and 3

In order to better serve the public, we need to hear from the meeting participants. Please take a few minutes to fill out this feedback form and return it to NRC.

1. How did you hear about this meeting?
   - ☐ NRC Web Page
   - ☐ NRC Mailing List
   - ☑ Newspaper
   - ☐ Radio/TV
   - ☐ Other _____

		Yes	No	Somewhat (Please explain below)
2.	Were you able to find supporting information prior to the meeting?	☐	☐	☑
3.	Did the meeting achieve its stated purpose?	☐	☑	☐
4.	Has this meeting helped you with your understanding of the topic?	☐	☑	☐
5.	Were the meeting starting time, duration, and location reasonably convenient?	☑	☐	☐
6.	Were you given sufficient opportunity to ask questions or express your views?	☐	☑	☐
7.	Are you satisfied overall with the NRC staff who participated in the meeting?	☐	☑	☐

COMMENTS OR SUGGESTIONS: Thank you for answering these questions.

MPS-45-1 Close Millstone Power Station 2+3 at ONCE. This Nuclear Power station is a Threat to The local Community's health. To the east coast, the United States, and the world.

MPS-45-2 Let alone it's a environmental hazzard to

MPS-45-3 Long Island Sounds living Fish + creatures + ~~Yeall~~ water quality. It's Killing Long Island Sound. And the people living near it.

Continue Comments on the reverse. ➪

OPTIONAL

Name Walter N. Parahas Organization Retired Long Island Sound Boater

Telephone No. 860-691-8377 E-Mail None ☑ Check here if you would like a member of NRC staff to contact you.

OMB NO. 3150-0137 Expires: 08/30/2004

Public Protection Notification: If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

Please fold on the dotted lines with Business Reply side out, tape the bottom, and mail back to the NRC.

STOP Before Complete

Template = ADM-03

E-RFDS = ADM-03

Add = A. L. Emch (ALE)

RDB received 2/08/05

CONNECTICUT COALITION AGAINST MILLSTONE
P.O. Box Niantic CT 06357
www.mothballmillstone.org

10/9/04
69 FR 61137
(21)

ANTI-MILLSTONE COALITION REPORTS MOUNTING EVIDENCE OF MILLSTONE LINK TO HIGH CANCER RATE IN NEW LONDON COUNTY

FOR IMMEDIATE RELEASE
JANUARY 11, 2005

Contact: Joseph J. Mangano Tel. 610-666-2985
Nancy Burton Tel. 203-938-3952
Michael Steinberg Tel. 860-739-7002

WATERFORD – Evidence is mounting of a scientific correlation between routine radiation emissions from the Millstone Nuclear Power Station and high cancer incidence in the surrounding area, the Connecticut Coalition Against Millstone reported today.

MPS-46-1 Laboratory analysis of baby teeth donated by children with cancer in the areas near the Millstone and Indian Point Nuclear Power Plants found levels of radioactive strontium-90 more than twice as high as found in teeth collected from other parts of the state, according to Joseph J. Mangano, National Coordinator of the Radiation and Public Health Project.

"The average level of strontium-90 concentration close to the nuclear power plants was 6.16 picocuries per gram of calcium, compared with 2.70 picocuries in other parts of the state," Mangano said.

Stop Review Complete
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E-RIDS = ADM-03
Add = R.L. Emch (RLE)

MPS-46-1 "For children suffering from cancer, the average level of strontium-90 concentration was 7.03 picocuries per gram calcium," Mangano said.

"Strontium-90 is a radionuclide routinely emitted by the Millstone Nuclear Power Plant into the air and water," said Mangano, who as national coordinator of the Radiation and Public Health Project (RPHP) has participated in analysis of baby teeth collected from around the country. RPHP has published 21 articles in peer-reviewed medical journals (including 4 on the tooth study), and five books, since 1994.

"Strontium-90 mimics calcium and when it is taken into the body of an exposed person it collects in the teeth and bones," Mangano said.

MPS-46-1 "The presence of strontium-90 elevated levels near the nuclear power plants cannot be accounted for other than from their routine releases of strontium-90," Mangano said.

MPS-46-2 Mangano stated that cancer rates in the New London area, which used to be below the state average, have risen steadily during the period the Millstone nuclear reactors have been in operation, beginning in 1970.

"In the 1950s and 1960s, cancer incidence in New London County, where Millstone is located, was 8 per cent below the state rate," Mangano said. "After Millstone began operations in 1970, the state rate rose steadily until it reached a level of 6 per cent above the state rate in the late 1990s."

"New London County's current cancer rate is the highest of all counties in the state," Mangano said.

Mangano acknowledged that the information about strontium-90 levels in baby teeth in Connecticut is based on a sampling of 37 teeth, and therefore the information is still of a preliminary nature. The tooth-testing program is continuing to analyse baby teeth.

MPS-46-3 In its most recent report of radiological emissions to the environment, based on samplings taken in the year 2002, Dominion reported the presence of strontium-90 in the milk of goats living two miles downwind of Millstone.

"Despite information to the contrary in its own reports, the owners and operators of Millstone have denied that strontium-90 found in goat milk near and downwind from Millstone has been coming from their nuclear reactors," said Michael Steinberg, author of "Millstone and Me," a book analyzing Millstone's radiological releases.

Strontium-90 is only one of hundreds of radioactive waste products Millstone releases into the air and water during routine operations.

MPS-46-4 "Millstone has the third-highest record of airborne radiation releases to the environment of all nuclear power plants operating in the United States according to its own reports," said Mangano.

The official Tumor Registry maintained by the state of Connecticut shows the region around Millstone has the highest incidence of cancers known to be triggered by certain of the radionuclides routinely released by Millstone, according to Mangano.

MPS-46-5 According to the Coalition, Millstone radiological releases of tritium – radioactive hydrogen - to the environment are increasing to all-time highs.

The Connecticut Coalition Against Millstone comments were prepared for delivery to the U.S. Nuclear Regulatory Commission at a proceeding today to consider the draft Environmental Impact Statement (EIS) NRC staff prepared to assess environmental consequences of extending the Millstone operating license an additional twenty years.

MPS-46-6 In its draft EIS, the NRC concluded that the agency need not consider issues of human health as it relates to radiological emissions from nuclear power plants undergoing relicensing because

MPS-46-6 an NRC guidance document released in 1996 discounted health effects from nuclear power plant radiological releases.

"Millstone is poisoning our air and water and killing our children in the year 2005," said Nancy Burton, a founder of the Coalition, "We do not need its deadly megawatts. The community can no longer tolerate the Millstone menace."

The Coalition cited high cancer levels, environmental degradation and the threat of terrorism as causes for Millstone shutdown.

"Dominion sold itself to the people of Connecticut as a conscientious environmental steward when it bought Millstone for $1.3 billion in 2001," Burton said.

MPS-46-7 Yet, according to research by Public Citizen, a public-interest organization based in Washington, D.C., Dominion's record has proved otherwise.

According to Public Citizen, in April 2003, a Dominion subsidiary agreed to pay $1.2 billion in a settlement with the U.S. Department of Justice when it violated the Clean Air Act by increasing power-generating capacity of a huge coal-fired power plant in West Virginia without obtaining mandatory permits.

A year later, according to Public Citizen, Dominion paid a $500,000 civil penalty and had to offer a $4.5 million refund to its customers after the U.S. Federal Energy Regulatory Commission (FERC) caught the company violating federal regulations.

"When an outlaw company operates a killing machine that targets innocent families in our community, it is time to demand that its operations be terminated," Burton said.

The Connecticut Coalition Against Millstone is an organization of statewide safe-energy groups, Millstone whistleblowers and families.

4

RDB received 2/25/05

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Dominion

12/9/04
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(22)

February 25, 2005

Chief, Rules Review and Directives Branch
United States Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

Serial No.: 04-745
LR/RJG R0
Docket Nos.: 50-336
50-423
License Nos.: DPR-65
NPF-49

DOMINION NUCLEAR CONNECTICUT, INC. (DNC)
MILLSTONE POWER STATION UNITS 2 AND 3
LICENSE RENEWAL APPLICATIONS
COMMENTS ON DRAFT SUPPLEMENT 22
TO THE GENERIC ENVIRONMENTAL IMPACT STATEMENT

On December 9, 2004, the Nuclear Regulatory Commission (NRC) issued Draft Supplement 22 to the Generic Environmental Impact Statement (GEIS) regarding the license renewal applications (LRAs) for Millstone Power Station Units 2 and 3. Comments on the draft were solicited.

DNC has reviewed the draft and presents the following observations. Draft Supplement 22 fairly represents the environmental conditions associated with plant operation. Furthermore, we concur with the overall conclusions concerning the impacts associated with the station's operation, and offer the attached comments and clarifications concerning the content of the draft.

Should you have any questions regarding this letter, please contact Mr. William D. Corbin, Director, Nuclear Engineering Department, Dominion Resources Services, Inc., at (804) 273-2365.

Very truly yours,

E. S. Grecheck
Vice President – Nuclear Support Services

Attachment: Comments on Draft Supplement 22 to the GEIS for License Renewal

Commitments made in this letter: None.

SISP Review Complete
Template = ADM-013

E-RIDS-ADM-03
Cal = B. L. Erick (ELE)

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SN: 04-745
Docket Nos.: 50-336/423
Subject: Comments on Draft Supplement 22 to the Generic Environmental Impact Statement

COMMONWEALTH OF VIRGINIA)
)
COUNTY OF HENRICO)

The foregoing document was acknowledged before me, in and for the County and Commonwealth aforesaid, today by Eugene S. Grecheck, who is Vice President - Nuclear Support Services, of Dominion Nuclear Connecticut, Inc. He has affirmed before me that he is duly authorized to execute and file the foregoing document in behalf of that Company, and that the statements in the document are true to the best of his knowledge and belief.

Acknowledged before me this 25th day of February, 2005.

My Commission Expires: May 31, 2006.

Vicki L. Hull
Notary Public

(SEAL)

Attachment

Millstone Power Station Units 2 and 3
License Renewal Applications

Comments on Draft Supplement 22 to the
Generic Environmental Impact Statement
for License Renewal

Dominion Nuclear Connecticut

MPS-47-1 **Section 2.1.1 External Appearance and Setting**

Page 2-2, Line 18

Draft GEIS Supplement 22 Statement

All development at Millstone is situated south of this mostly below-grade rail line.

Dominion Comment

After the word "Millstone," insert "except the training facility," such that the sentence reads:

"All development at Millstone, except the training facility, is situated south of this mostly below-grade rail line."

MPS-47-2 **Section 2.1.3 Cooling and Auxiliary Water Systems**

Page 2-7, Line 9

Draft GEIS Supplement 22 Statement

...cuts excavated from the bedrock at the eastern end of the quarry into Long Island Sound.

Dominion Comment

"eastern" should be changed to "southern," such that the line reads:

"...cuts excavated from the bedrock at the southern end of the quarry into Long Island Sound."

MPS-47-3 **Section 2.1.3 Cooling and Auxiliary Water Systems**

Page 2-7, Lines 29-32

Draft GEIS Supplement 22 Statement

Service water is withdrawn and diverted from the system before the water enters the condensers. This water is used in a variety of applications, including component cooling (e.g., pump bearings and spent fuel pool water) and fire protection. A maximum of 2.3 m^3/s (36,000 gpm) of service water is withdrawn.

MPS-47-3 **Dominion Comment**

The configuration of the service water system is somewhat different than that stated, and the stated pump capacity is that only for the three pumps at Unit 2. During normal operation, two pumps at each unit are operating, for a total of 3.4 m^3/s (54,000 gpm). Also, service water is used as backup for several other systems, but not for fire protection. This paragraph should be changed to read:

"Service water is also withdrawn inside the intake structures. This water is used in a variety of applications, including component cooling (e.g., pump bearings and spent fuel pool water) and as an emergency backup supply for some systems. During normal operation, approximately 3.4 m^3/s (54,000 gpm) of service water is withdrawn for both units."

MPS-47-4 **Section 2.1.4 Radioactive Waste Management Systems and Effluent Control Systems**

Page 2-8, lines 27-29

Draft GEIS Supplement 22 Statement

Millstone is in the process of obtaining a permit to construct a dry fuel storage area for additional spent fuel assemblies.

Dominion Comment

Millstone has obtained the permit described above. It is suggested that "is in the process of obtaining a permit to construct" be changed to "has constructed" so the sentence reads:

"Millstone has constructed a dry fuel storage area for additional spent fuel assemblies."

MPS-47-5 **Section 2.1.4.3 Solid Waste Processing**

Page 2-12, line 3

Draft GEIS Supplement 22 Statement

...volume was 24.3 m^3 (858 ft^3)...

MPS-47-5 **Dominion Comment**

Change to:

"...volume was 243 m^3 (8580 ft^3)...

MPS-47-6 **Section 2.1.5 Nonradioactive Waste Systems**

Page 2-12, Lines 11-12

Draft GEIS Supplement 22 Statement

Dominion has petitioned the CTDEP to be classified as a small-quantity generator because of a reduction in the amount of waste generated at Millstone.

Dominion Comment

Although Millstone generates hazardous waste at the rate of a small-quantity generator, the decision was made not to pursue classification as a small-quantity generator, in order to maintain flexibility in storage and shipping. It is suggested that this sentence be deleted.

MPS-47-7 **Section 2.1.5 Nonradioactive Waste Systems**

Page 2-12, Lines 17-19

Draft GEIS Supplement 22 Statement

Common types of hazardous waste generated at Millstone are lead acid sludges and batteries, solvent rags, and sawdust contaminated with chemicals regulated under RCRA.

Dominion Comment

Lead acid batteries and sawdust contaminated with chemicals are classified as Connecticut-regulated wastes. This sentence should be changed to the following:

"Common types of hazardous waste generated at Millstone are aerosol cans, paint-related waste materials, and solvent rags."

MPS-47-8 **Section 2.1.6 Plant Operation and Maintenance**

Page 2-12, line 37

Draft GEIS Supplement 22 Statement

Dominion assumes that an additional 60 employees will be needed...

Dominion Comment

Sentence should be changed to:

"Dominion assumes that no more than 5 additional employees will be needed..."

MPS-47-9 **Section 2.1.7 Power Transmission System**

Page 2-15, Line 2

Draft GEIS Supplement 22 Statement

All personnel applying herbicides are required to process a valid applicator's license.

Dominion Comment

It is suggested that the word "process" be changed to "possess," so that the sentence reads:

"All personnel applying herbicides are required to possess a valid applicator's license."

MPS-47-10 **Section 2.2.2 Water Use**

Page 2-17, Line 2

Draft GEIS Supplement 22 Statement

Additional minor amounts of ocean water are used for fire protection and other systems.

MPS-47-10 **Dominion Comment**

Although ocean water can be used as backup for some systems, it is not used in the fire protection system. The sentence should be modified as follows:

"Additional minor amounts of ocean water may be used as emergency backup for other systems."

MPS-47-11 **Section 2.2.2 Water Use**

Page 2-17, Lines 6-7

Draft GEIS Supplement 22 Statement

Dye tracer and modeling studies estimate that 20 percent of the Niantic River discharge goes through the plant.

Dominion Comment

These studies determined flow characteristics during three-unit operation. It is estimated that current two-unit operation results in approximately 15 percent of the Niantic River discharge going through the plant. The sentence should be changed to:

"Dye tracer studies estimated that 20 percent of the Niantic River discharge went through the plants during three-unit operation. It is estimated that current two-unit operation results in approximately 15 percent of Niantic River discharge going through the plants."

MPS-47-12 **Section 2.2.3 Water Quality**

Page 2-17, Line 36

Draft GEIS Supplement 22 Statement

The NPDES permit, which is renewed every five years, expired in 1997.

Dominion Comment

Change "expired in 1997" to "was set to expire in 1997 but remains in effect because a timely renewal application was filed with the CTDEP" so sentence reads:

MPS-47-12 "The NPDES permit, which is renewed every five years, was set to expire in 1997 but remains in effect because a timely renewal application was filed with the CTDEP."

MPS-47-13 **Section 2.2.3 Water Quality**

Page 2-18, Lines 7-8

Draft GEIS Supplement 22 Statement

Recent monitoring results show that the discharge quality occasionally exceeds permit limits.

Dominion Comment

It is suggested that the sentence be changed by adding "There have been occasional instances when" before "monitoring results," substituting "have been above" for "show that the discharge quality occasionally exceeds" and adding "These instances have been properly reported in Millstone's monthly discharge monitoring reports to the CTDEP" so the sentence reads:

"There have been occasional instances when monitoring results have been above permit limits (e.g., total suspended solids). These instances have been properly reported in Millstone's monthly discharge monitoring reports to the CTDEP."

MPS-47-14 **Section 2.2.3 Water Quality**

Page 2-18, Line 24

Draft GEIS Supplement 22 Statement

...may be present for no more than two hours in any one day.

Dominion Comment

After "two hours," insert "per unit," so the sentence reads:

"...may be present for no more than two hours per unit in any one day."

MPS-47-15 **Section 2.2.4 Air Quality**

Page 2-20, Lines 20-22

Draft GEIS Supplement 22 Statement

Air emissions from these sources are subject to Connecticut General Statutes section 22a-174-33 of the Regulations of Connecticut State Agencies (Connecticut Legislature 2003).

Dominion Comment

In addition to section 22a-174-33 (which regulates Title V air permits), air emissions from site sources are subject to other regulations. It is suggested that this sentence read:

"Air emissions from these sources are subject to Connecticut General Statutes, various sections of the Regulations of Connecticut State Agencies, Title 22a-174, 'Abatement of Air Pollution,' and various federal regulations."

MPS-47-16 **Section 2.2.5 Aquatic Resources**

Page 2-20, Lines 28-29

Draft GEIS Supplement 22 Statement

Millstone is located at Millstone Point, a small peninsula of land situated on the west shore of Long Island Sound near Waterford, Connecticut.

Dominion Comment

Change "west" to "north," and change "near" to "in," so the sentence reads:

"Millstone is located at Millstone Point, a small peninsula of land situated on the north shore of Long Island Sound in Waterford, Connecticut."

MPS-47-17 **Section 2.2.5 Aquatic Resources**

Page 2-20, Lines 38-39, and Page 2-21, Line 4.

MPS-47-17 **Draft GEIS Supplement 22 Statement**

...about 20 percent of the water discharged from the station from the Niantic River could be passed through the Millstone cooling water system under three-unit operation...

Dominion Comment

Delete "from the station," and add "and about 15 percent under two-unit operation" to the end of the sentence, so the sentence reads:

"...about 20 percent of the water discharged from the Niantic River could be passed through the Millstone cooling water system under three-unit operation, and about 15 percent under two-unit operation..."

MPS-47-18 **Section 2.2.5.1 General Water Body Characteristics**

Page 2-22, Lines 12-15

Draft GEIS Supplement 22 Statement

Millstone Point lies on the western shore of Long Island Sound, near the mouth of the sound. This area of Long Island Sound experiences a salinity of approximately 23 parts per thousand. Salinity is influenced by the presence of three major rivers: the Thames, the Housatonic, and the Connecticut. These rivers flow into the Sound in the vicinity of the site.

Dominion Comment

It is suggested that "western shore" be changed to "eastern end," that "23" be changed to "26-30," and that "These" be changed to "The Thames and Connecticut," so the sentence reads:

"Millstone Point lies on the eastern end of Long Island Sound, near the mouth of the sound. This area of Long Island Sound experiences a salinity of approximately 26-30 parts per thousand. Salinity is influenced by the presence of three major rivers: the Thames, the Housatonic, and the Connecticut. The Thames and Connecticut rivers flow into the Sound in the vicinity of the site."

MPS-47-19 **Section 2.2.5.5 Population Trends Associated with Important Fish and Shellfish Species**

Page 2-24, Line 41

Draft GEIS Supplement 22 Statement

...and the northern Atlantic cost of the U.S.

Dominion Comment

Change "cost" to "coast."

MPS-47-20 **Section 2.2.5.5 Population Trends Associated with Important Fish and Shellfish Species**

Page 2-25, Line 28

Draft GEIS Supplement 22 Statement

Individual females can produce up to 500,000 eggs.

Dominion Comment

It is suggested that the sentence be changed to read:

"Individual females can produce up to 2,500,000 eggs, but 500,000 eggs is an approximate average."

MPS-47-21 **Section 2.2.5.5 Population Trends Associated with Important Fish and Shellfish Species**

Page 2-25, Line 36 and Page 2-26, Figure 2-6.

Draft GEIS Supplement 22 Statement

...reporting years (Figure 2-6) (NOAA 1998; MacLeod 2003; National Marine Fisheries Service...

MPS-47-21 **Dominion Comment**

It is suggested that "Gottschall et al. 2003" be added to the reference list for Figure 2-6 on line 36, and in the figure itself. Gotschall et al. is the citation for the CTDEP Long Island Sound Trawl Survey.

MPS-47-22 **Section 2.2.5.5 Population Trends Associated with Important Fish and Shellfish Species**

Page 2-26, Lines 4-8

Draft GEIS Supplement 22 Statement

According to NOAA, "The continuing low levels of landings, catch per unit effort indices, and survey indices suggest that winter flounder abundance in the Gulf of Maine has been reduced substantially. Future improvements in the condition of the stock will depend on decreases in exploitation in both the recreational and commercial fisheries, and on improved recruitment. The stock is at a low biomass level and is considered to be exploited) (NOAA 1998).

Dominion Comment

It is suggested that the following information regarding the Southern New England stock be added to this paragraph, or as an additional paragraph:

"With regard to current winter flounder stock abundance, NEFSC (2003) stated that the Southern New England/Mid-Atlantic winter flounder stock complex has been overfished and overfishing is continuing to occur. The current assessment provided a much more pessimistic evaluation of stock status than the previous assessment made in 1998. Recruitment to the winter flounder stock has been below average since 1989, and indications are that the 2001 year-class is the smallest in 22 years."

The reference for this statement is:

NEFSC (Northeast Fisheries Science Center). 2003. B1. Southern New England/Mid-Atlantic (SNE/MA) winter flounder. Pages 139-220 in Report of the 36th northeast regional stock assessment workshop (SAW): stock assessment review committee (SARC) consensus summary of assessments. NOAA/National Marine Fisheries Service, Woods Hole, MA. Accessed via:

http://www.nefsc.noaa.gov/nefsc/publications/crd/crd0306

MPS-47-23 **Section 2.2.5.5 Population Trends Associated with Important Fish and Shellfish Species**

Page 2-28, Lines 15-16

Draft GEIS Supplement 22 Statement

...with commercial harvests over the past seven years for the Atlantis seaboard ranging from approximately 259 to over 300 MT (286 to 331 tons)...

Dominion Comment

Change "Atlantis" to "Atlantic." Also, all of the numbers in this sentence should be followed by "x 10^3."

MPS-47-24 **Section 2.2.5.5 Population Trends Associated with Important Fish and Shellfish Species**

Page 2-28, Line 25

Draft GEIS Supplement 22 Statement

The silverside (Menidia menidia, family Atherinidae) is a small...

Dominion Comment

Two different species of silverside are found in the area. It is suggested that the sentence be changed to:

"The silversides (*Menidia menidia/Menidia beryllina*, family Atherinidae) are small..."

MPS-47-25 **Section 2.2.5.5 Population Trends Associated with Important Fish and Shellfish Species**

Page 2-28, Line 32

MPS-47-25 **Draft GEIS Supplement 22 Statement**

Regional abundance data are not available.

Dominion Comment

Dominion notes that Gotschall et al (2003) observed similar fluctuations without trend throughout Long Island Sound.

MPS-47-26 **Section 2.2.5.6 Other Important Aquatic Resources**

Page 2-31, Line 8

Draft GEIS Supplement 22 Statement

...barnacles, the algae Fucus spp., the red alga Chondrus spp., and...

Dominion Comment

It is suggested that this sentence include *Ascophyllum nodosum,* and that it read:

"...barnacles, the brown algae *Fucus* spp. and *Ascophyllum nodosum*, the red alga *Chondrus crispus*, and...

MPS-47-27 **Section 2.2.5.6 Other Important Aquatic Resources**

Page 2-31, Line 22

Draft GEIS Supplement 22 Statement

...and the bivalve mollusc Nuculana annulata...

Dominion Comment

Change "*Nuculana*" to "*Nucula.*"

MPS-47-28 **Section 2.2.5.7 Threatened or Endangered Aquatic Species**

Page 2-33, Line 9

Draft GEIS Supplement 22 Statement

Adult-sized (10 cm [6 or more in.]) sturgeon are occasionally seen...

Dominion Comment

Dominion believes that the intent was to characterize adult-sized sturgeon as 6 feet long, rather than 6 inches.

MPS-47-29 **Section 2.2.6.1 Site Terrestrial Resources**

Page 2-36, line 10

Draft GEIS Supplement 22 Statement

...173 fledglings have been produced over this period.

Dominion Comment

As of the present time, the number of fledglings produced at Millstone stands at 186.

MPS-47-30 **Section 2.2.6.1 Site Terrestrial Resources**

Page 2-36, line 14

Draft GEIS Supplement 22 Statement

There are 18 species listed by FWS or the state of Connecticut as being known to occur on the site.

MPS-47-30 **Dominion Comment**

Dominion believes this sentence refers to the 18 species listed in Table 2-3. Some of those species have been observed on the site or along the transmission lines, and some have not been observed, but may occur. It is suggested that the sentence be changed to:

"There are 18 species listed by FWS or the State of Connecticut that have either been observed on the site or have the potential to occur in the area or along transmission lines."

MPS-47-31 **Section 2.2.6.1 Site Terrestrial Resources**

Table 2-3

Draft GEIS Supplement 22 Statement

This table lists terrestrial species known to occur or that potentially occur at Millstone or along the transmission lines.

Dominion Comment

Dominion notes the following:

- As of June 2004, the Cooper's hawk is no longer listed by the State of Connecticut.
- The piping plover is listed as "threatened" by the State of Connecticut.
- Dominion is unable to find any citation by the State of Connecticut that lists the New England cottontail as either threatened or endangered.
- The seabeach sandwort is listed by the State of Connecticut as a "special concern" species.

MPS-47-32 **Section 2.2.8.1 Housing**

Page 2-44, line 1

Draft GEIS Supplement 22 Statement

...while another 200 live in Niantic and East Lime.

MPS-47-32 **Dominion Comment**

Change "Lime" to "Lyme."

MPS-47-33 **Section 2.2.8.2 Public Services**

Page 2-47, Lines 10-12

Draft GEIS Supplement 22 Statement

A new water supply line was constructed in 2000 to supply Millstone, and this line replaced the use of two shallow low-yield wells that had been used to irrigate ball fields and supply concession stands on the Millstone site licensed to Waterford.

Dominion Comment

It is suggested that this paragraph be replaced with the following clarification:

"A new water supply line was constructed in 2000 to supply a concession stand at the ball fields licensed by Millstone to Waterford. The stand had been supplied by a shallow low-yield well, which continues to be used to irrigate the ball fields on a seasonal basis."

MPS-47-34 **Section 2.2.8.5 Demography**

Page 2-55, Line 30

Draft GEIS Supplement 22 Statement

Source: Dominion 20004a

Dominion Comment

Delete a zero in the date of the citation.

MPS-47-35 **Section 2.2.8.5 Demography**

Page 2-56, Line 35

MPS-47-35 **Draft GEIS Supplement 22 Statement**

...after September 11, 2000...

Dominion Comment

Change "2000" to "2001."

MPS-47-36 **Section 2.2.9.1 Cultural Background**

Page 2-60, Line 25

Draft GEIS Supplement 22 Statement

...Park overlooking the Thames River about 8km (5 mi) northwest of Millstone.

Dominion Comment

Change "northwest" to "northeast."

MPS-47-37 **Section 2.2.9.1 Cultural Background**

Page 2-63, Line 16

Draft GEIS Supplement 22 Statement

Actual power generation began in 1975.

Dominion Comment

Unit 1, which is not the subject of this report, began generating power in 1970. It is suggested that "at Unit 2" be inserted so sentence reads as follows:

"Actual power generation at Unit 2 began in 1975."

MPS-47-38 **Section 2.3 References**

Dominion Comment

It is suggested that the following new references be added to this list, as discussed in comments above:

"Gottschall, K.F., D.J. Pacileo, and D.R. Molnar. 2003. Job 2: Marine finfish survey. Part I: Long Island Sound trawl survey and Part II: estuarine seine survey. Pages 41-149 in: A study of marine recreational fisheries in Connecticut. CT Dept. of Envir. Prot., Bureau of Natural Resources, Fisheries Division."

and

"NEFSC (Northeast Fisheries Science Center). 2003. B1. Southern New England/Mid-Atlantic (SNE/MA) winter flounder. Pages 139-220 in Report of the 36th northeast regional stock assessment workshop (SAW): stock assessment review committee (SARC) consensus summary of assessments. NOAA/National Marine Fisheries Service, Woods Hole, MA. Accessed via:

http://www.nefsc.noaa.gov/nefsc/publications/crd/crd0306"

MPS-47-39 **Section 4.1 Cooling System**

Page 4-7, lines 38-39

Draft GEIS Supplement 22 Statement

The barrier prevents fish from entering the quarry. Since installation of the fish barriers, the licensee has not observed any fish kills related to the station discharge.

Dominion Comment

As discussed in section 4.1.3, page 4-28, lines 26-27, temperatures within the quarry occasionally exceed lethal temperature thresholds for some species. Some periodic, smaller-scale fish kills have occurred due to thermal stress for fish that entered the quarry as eggs/larvae, as juveniles, or during barrier maintenance activities. None of these occurrences have been of a magnitude that resulted in an impact to source populations, and they have been confined to the quarry. The sentences should be modified as follows:

MPS-47-39 "The barrier is designed to prevent fish from swimming into the quarry. Since installation of the fish barriers, the licensee has not observed any gas bubble disease-related fish kills related to the station discharge."

MPS-47-40 **Section 4.1.1 Entrainment of Fish and Shellfish in Early Life Stages**

Page 4-10, lines 17-19

Draft GEIS Supplement 22 Statement

Licensees are required to demonstrate compliance with the Phase II performance standards at the time of renewal of their NPDES permit.

Dominion Comment

"are" should be changed to "will be," and "at the time of renewal of their NPDES permit" should be changed to "in accordance with the provisions of the new rule" so the sentence reads as follows:

"Licensees will be required to demonstrate compliance with the Phase II performance standards in accordance with the provisions of the new rule."

MPS-47-41 **Section 4.1.1 Entrainment of Fish and Shellfish in Early Life Stages**

Page 4-10, Lines 19-21

Draft GEIS Supplement 22 Statement

Licensees may be required as part of the NPDES renewal to alter the intake structure, redesign the cooling system, modify station operation, or take other mitigative measures as a result of this regulation.

Dominion Comment

Delete the words "as part of the NPDES renewal" so the sentence reads as follows:

"Licensees may be required to alter the intake structure, redesign the cooling system, modify station operation or take other mitigative measures as a result of this regulation."

MPS-47-42 **Section 4.1.1 Entrainment of Fish and Shellfish in Early Life Stages**

Page 4-13, Table 4-4

Dominion Comment

The 2003 Annual Report (Dominion 2004b) contained minor changes to the data in this table. Also, the data columns are each $x10^6$. It is suggested that the table be replaced with the following:

MPS-47-42

Table 4-4

Estimated Number of Anchovies, Winter Flounder, American Sand Lance, Grubby, and Atlantic Menhaden Larvae Entrained Each Year from 1976 Through 2003 at Millstone and the Volume of Cooling Water on Which the Entrainment Estimates Were Based (From Dominion [2004b]).

	Anchovies		Winter Flounder		American Sand Lance[a]		Grubby		Atlantic Menhaden	
Year	No. entrained ($X10^6$)	Volume (m^3)[b] ($X10^6$)	No. entrained ($X10^6$)	Volume (m^3)[b] ($X10^6$)	No. entrained ($X10^6$)	Volume (m^3)[b] ($X10^6$)	No. entrained ($X10^6$)	Volume (m^3)[b] ($X10^6$)	No. entrained ($X10^6$)	Volume (m^3)[b] ($X10^6$)
1976	381	738	121	629	-	-	-	-	3	796
1977	418	821	29	444	81	954	30	489	2	773
1978	165	912	80	390	176	709	11	554	3	821
1979	805	786	44	343	110	919	20	546	<1	716
1980	877	633	168	562	111	960	32	699	2	643
1981	1,452	860	45	373	74	620	42	408	2	711
1982	451	635	184	638	27	932	48	648	14	743
1983	623	691	211	541	30	902	54	828	19	564
1984	189	801	84	508	18	835	38	524	4	557
1985	693	697	80	469	8	712	35	527	44	521
1986	1,096	1,208	123	1,064	4	1,577	53	844	5	1,217
1987	119	1,332	165	1,193	30	1,712	51	1,144	2	893
1988	386	1,790	184	1,173	74	1,291	112	1,132	6	791
1989	518	1,445	167	889	42	1,511	67	857	208	1,420
1990	981	1,483	133	1,174	39	1,607	47	998	33	1,367
1991	451	899	116	750	7	1,278	31	760	56	802
1992	157	1,091	492	1,076	19	1,302	76	1,293	51	1,220
1993	214	1,221	42	1,387	46	1,801	51	1,157	21	1,126
1994	507	1,033	173	920	58	899	56	843	66	868
1995	171	896	214	1,006	90	1,532	57	996	86	997
1996	24	138	51	472	18	729	41	467	23	92
1997	17	145	76	173	3	212	28	154	5	135
1998	64	480	84	358	11	440	22	300	33	615
1999	157	1,119	148	748	14	860	49	820	124	1,377
2000	75	875	333	1,003	88	1,459	47	754	466	1,571
2001	26	1,031	377	963	13	1,008	178	721	143	908
2002	28	881	119	880	6	760	33	875	1,454	1,088
2003	-	-	434	1,096	19	725	153	890	-	-

(a) Includes data from December of the previous calendar year.
(b) Volume was determined from the condenser and service cooling water flow at Millstone during the season of occurrence for each taxon.

MPS-47-43 **Section 4.1.1 Entrainment of Fish and Shellfish in Early Life Stages**

Page 4-14, Table 4-5

Dominion Comment

The 2003 Annual Report (Dominion 2004b) contained minor changes to the data in this table. It is suggested that the table be replaced with the following:

Table 4-5. Estimated Number of Cunner, Tautog, and Anchovy Eggs Entrained Each Year from 1979 through 2002 at Millstone and the Volume of Cooling Water on Which the Entrainment Estimates Were Based (From Dominion [2004b]).

	Cunner		Tautog		Anchovies	
Year	No. Entrained ($X10^6$)	Volume (m^3)[a] ($X10^6$)	No. entrained ($X10^6$)	Volume (m^3)[a] ($X10^6$)	No. Entrained ($X10^6$)	Volume (m^3)[a] ($X10^6$)
1979	1,055	423	445	680	323	383
1980	1,640	677	962	773	87	359
1981	1,535	620	1,353	620	285	583
1982	2,074	755	1,248	719	210	501
1983	1,888	462	1,019	627	411	377
1984	2,089	532	1,302	569	883	453
1985	2,809	737	1,717	774	26	441
1986	2,855	1,795	3,747	1,795	523	772
1987	4,082	1,713	3,575	1,713	31	740
1988	4,294	1,800	2,693	1,800	15	905
1989	4,306	1,436	3,001	1,510	5	632
1990	3,634	1,689	2,100	1,641	27	724
1991	4,116	1,223	1,513	1,214	105	538
1992	2,648	1,509	1,341	1,509	18	648
1993	5,379	1,492	2,048	1,492	228	626
1994	6,099	1,381	1,989	1,381	175	867
1995	5,524	1,198	2,481	1,198	29	737
1996	871	256	312	256	4	114
1997	569	185	105	134	<1	92
1998	577	718	494	709	47	376
1999	1,963	1,222	1,173	1,222	1	339
2000	4,800	1,254	2,149	1,369	<1	849
2001	4,339	1,416	3,015	1,416	8	635
2002	3,340	1,188	2,040	1,188	<1	750

(a) Volume was determined from the condenser cooling-water flow at Millstone during the season of occurrence for each taxon.

MPS-47-44 **Section 4.1.1 Entrainment of Fish and Shellfish in Early Life Stages**

Page 4-16, Line 1

Draft GEIS Supplement 22 Statement

...nonentrained, late stage larvae from reaching reproductive maturity.

Dominion Comment

It is suggested that "and subsequent juveniles" be inserted after larvae, so the sentence reads:

"...nonentrained, late stage larvae and subsequent juveniles from reaching reproductive maturity."

MPS-47-45 **Section 4.1.1 Entrainment of Fish and Shellfish in Early Life Stages**

Page 4-18, line 17

Draft GEIS Supplement 22 Statement

...cooling water entrained through the cooling system, the number of eggs entrained,...

Dominion Comment

It is suggested that "eggs" be changed to "larvae."

MPS-47-46 **Section 4.1.2 Impingement of Fish and Shellfish**

Page 4-22, lines 8-10

Draft GEIS Supplement 22 Statement

Licensees are required to demonstrate compliance with the Phase II performance standards at the time of renewal of their NPDES permit.

MPS-47-46 **Dominion Comment**

"are" should be changed to "will be," and "at the time of renewal of their NPDES permit" should be changed to "in accordance with the provisions of the new rule" so the sentence reads as follows:

"Licensees will be required to demonstrate compliance with the Phase II performance standards in accordance with the provisions of the new rule."

MPS-47-47 **Section 4.1.2 Impingement of Fish and Shellfish**

Page 4-22, lines 10-12

Draft GEIS Supplement 22 Statement

Licensees may be required as part of the NPDES renewal to alter the intake structure, redesign the cooling system, modify station operation, or take other mitigative measures as a result of this regulation.

Dominion Comment

Delete the words "as part of the NPDES renewal" so the sentence reads as follows:

"Licensees may be required to alter the intake structure, redesign the cooling system, modify station operation or make other mitigative measures as a result of this regulation."

MPS-47-48 **Section 4.1.2.1 Impingement Monitoring**

Page 4-24, Table 4-6

Dominion Comment

Dominion believes that the correct reference for this table is Jacobson et al (1998). See the comment below for Section 4.10 for the complete reference.

Also, on line 18, the species name for the rock crab is *irroratus*.

MPS-47-49 **Section 4.1.3 Heat Shock**

Page 4-29, Lines 9-15

Dominion Comment

Dominion offers the following minor edits:

Line 9, change *"concorta"* to *"contorta."*

Line 10, change *"gragile"* to *"fragile,"* and change *"Saragassum gilipendula"* to *"Sargassum filipendula."*

Line 13, change "abundance" to "nodal growth."

Line 15, change "abundance" to "growth."

MPS-47-50 **Section 4.4.2 Public Services: Public Utility Impacts During Operations**

Page 4-40, Lines 17-18

Draft GEIS Supplement 22 Statement

Millstone's 2000 to 2001 potable water usage averaged 1.257 X 10^6 L per day (3.320 X 10^6 gpd).

Dominion Comment

Change "3.320 X 10^6 gpd" to "3.320 X 10^5 gpd."

MPS-47-51 **Section 4.6.2 Terrestrial Species**

Page 4-52, Lines 33-34

Draft GEIS Supplement 22 Statement

Both the bald eagle (Haliaeetus leucocephalus) and the piping plover (Charadrius melodus) are known to occasionally use the Millstone site.

MPS-47-51 **Dominion Comment**

To Dominion's knowledge, the piping plover has not been observed on the Millstone site. Dominion believes the intent may have been to name the roseate tern, which has been observed on the site. It is suggested that the sentence be changed to:

"Both the bald eagle (Haliaeetus leucocephalus) and the roseate tern (Sterna dougallii) are known to occasionally use the Millstone site."

MPS-47-52 **Section 4.10 References**

Page 4-62

Dominion Comment

Add the following reference, as discussed above:

"Jacobson, P.M., E. Lorda, D.J. Danila, J.D. Miller, C.A. Tomichek, and R.A. Sher. 1998. Studies of cooling water intake effects at two large coastal nuclear power stations in New England. In Proceedings of a workshop on Clean Water Act Section 316(b) Technical Issues held at the Coolfont Conference Center, Berkeley Springs, WV, September 22-23, 1998. Electric Power Research Institute, Palo Alto, CA EPRI Technical Report."

MPS-47-53 **Section 8.1 No-Action Alternative**

Page 8-4, Lines 26-27

Draft GEIS Supplement 22 Statement

When the plant stops operating, there will be a reduction in use of groundwater.

Dominion Comment

The station itself does not use groundwater. The only use of groundwater is that used by the town of Waterford for seasonal irrigation of the ball fields. Therefore, closure of the plants would not necessarily result in a reduction in the use of groundwater.

MPS-47-54 **Section 8.2.5.10 Utility-Sponsored Conservation**

Page 8-50, Line 18

Draft GEIS Supplement 22 Statement

Dominion participates in State-wide residential, commercial, and industrial programs to reduce...

Dominion Comment

Dominion is not the local distributor of electricity. It is suggested that "Dominion participates in" be replaced with "Connecticut has" so the sentence reads:

"Connecticut has State-wide residential, commercial, and industrial programs to reduce..."

MPS-47-55 **Appendix H**

Page H-1, Lines 17-18

Draft GEIS Supplement 22 Statement

...or were related to a reactor coolant pump (RCP) seal loss of coolant accident (LOCA).

Dominion Comment

"loss of coolant accident (LOCA)" should be replaced with "dependency on charging pumps" so the sentence reads:

"...or were related to a reactor coolant pump (RCP) seal dependency on charging pumps."

RDB Received 3/1/05

3/9/04
69FR 11437

Jean M. Thorsen
4 Bay View Avenue
Old Saybrook, CT 06475

(23)

February 20, 2005

Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mailstop T-6D 59
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

Re: License Renewal Millstone 2 & 3

Dear Sir:

I attended the hearing on January 11, 2005 in Waterford, CT concerning the license renewal for Millstone. It appeared to me that your experts did an excellent job for their client, the Department of Energy.

MPS-48-1 In their comparisons of alternative methods of electricity production, I could not find a chart showing total dollar costs for production by the various alternative means.

When considering environmental costs, I feel that nuclear waste and the production of depleted uranium are the most undesirable. The cost of electricity keeps rising for Connecticut residents. As a citizen of this state I would prefer to pay more if the
MPS-48-2 power came from more environmentally friendly method of generation. Therefor, I hope you will not renew this license.

Sincerely,

Jean M. Thorsen

Jean M. Thorsen

SISP Review Complete
Template = ADM-013

E-RFDS=ADM-03
Add = B. L. Erich (RLG)

Doris Mendiola - Report Number NUREG-1437, Supplement 22 Page 1

RDB Received 3/1/05

12/9/04

69FR 71437

24

From: "saintrobert" <saintrobert@comcast.net>
To: <opa@nrc.gov>
Date: 2/28/05 9:01PM
Subject: Report Number NUREG-1437, Supplement 22

Please see the attached comments.

Robert Fromer

SISP Review Complete
Template=ADM-013

E-RIDS=ADM-03
Call = B.L. Emch (BLE)

P.O. Box 71
Windsor, CT 06095
February 28, 2005

Chief
Rule Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mailstop T-6D59
Washington, DC 20555-0001

Re: **Draft Report For Comment on Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Regarding Millstone Power Station, Units 2 and 3, NUREG-1437, Volumes 1 and 2, Supplement 22**

Dear Chief Rule Review and Directives Branch:

"[t]he problem at hand, which is that centrally generated electricity is a vulnerable genie. In order to be used it must travel on an ugly, complex and inefficient labyrinth of wires and substations Even from a security view (national or otherwise) such a fragile system is suicide." Gordes, Hartford Courant, Letter to the Editor, February 1978.

Dominion has not provided a comparative analysis and assessment of life cycle energy consumption to determine that re-licensing of Millstone is the preferred option. Nor, has Dominion considered cumulative alternatives (i.e., energy sources) to meet the current and future energy demands.

A. INTRODUCTION

"The United States Nuclear Regulatory Commission ("NRC") considered the environmental impacts of renewing nuclear power plant operating licenses ("Ols") for a 20-year period in its *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2, and codified the results in 10 Code of Federal Regulations (CFR) Part 51. In the GEIS (and its Addendum 1), the staff identifies 92 environmental issues and reaches generic conclusions related to environmental impacts for 69 of these issues that apply to all plants or to plants with specific design or site characteristics. Additional plant-specific review is required for the remaining 23 issues. These plant-specific reviews are to be included in a supplement to the GEIS." [GEIS, p. iii.]

"This draft supplemental environmental impact statement ("SEIS") has been prepared in response to an application submitted to the NRC by the Dominion Nuclear Connecticut (Dominion) to renew the OLs for Millstone Power Station, Units 2 and 3 (Millstone) for an additional 20 years under 10 CFR Part 54. This draft SEIS includes the NRC staff's analysis that considers and weighs the environmental impacts of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures available for reducing or avoiding adverse impacts. It also includes the staff's preliminary recommendation regarding the proposed action." Id.

Robert Fromer
Feb. 28, 2005

B. BACKGROUND

"By letter dated January 20, 2004, the Dominion Nuclear Connecticut, Inc. (Dominion) submitted an application to the U.S. Nuclear Regulatory Commission (NRC) to renew the operating licenses (OLs) for Millstone Power Station, Units 2 and 3 for an additional 20-year period. If the OLs are renewed, State regulatory agencies and Dominion will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the State's jurisdiction or the purview of the owners. If the OLs are not renewed, then the plants must be shut down at or before the expiration dates of the current OLs, which are July 10 2015 for Unit 2 and November 2025 for Unit 3. The NRC has implemented Section 102 of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321) in 10 CFR Part 51. In 10 CFR 51.20(b)(2), the Commission requires preparation of an environmental impact statement (EIS) or a supplement to an EIS for renewal of a reactor OL. In addition, 10 CFR 51.95(c) states that the EIS prepared at the OL renewal stage will be a supplement to the *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2." (Emphasis added.) [Executive Summary, p. xv.]

"Upon acceptance of the Dominion application, the NRC began the environmental review process described in 10 CFR Part 51 by publishing a notice of intent to prepare an EIS and conduct scoping. The NRC staff visited the Millstone site in May 2004 and held public scoping meetings on May 18, 2004, in Waterford, Connecticut. In the preparation of this draft supplemental environmental impact statement (SEIS) for Millstone, the staff reviewed the Dominion Environmental Report (ER) and compared it to the GEIS, consulted with other agencies, conducted an independent review of the issues following the guidance set forth in NUREG-1555, Supplement 1, the *Standard Review Plans for Environmental Reviews for Nuclear Power Plants, Supplement 1: Operating License Renewal*, and considered the public comments received during the scoping process. ..." Id.

"This draft SEIS includes the NRC staff's preliminary analysis, which considers and weighs the environmental effects of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures for reducing or avoiding adverse effects. It also includes the staff's preliminary recommendation regarding the proposed action." Id, xv-xvi.

"NRC regulations [10 CFR 51.95(c)(2)] contain the following statement regarding the content of SEISs prepared at the license renewal stage:

> The supplemental environmental impact statement for license renewal is not required to include discussion of need for power or the economic costs and economic benefits of the proposed action or of alternatives to the proposed action except insofar as such benefits and costs are either essential for a determination regarding the inclusion of an alternative in the range of alternatives considered or relevant to mitigation. In addition, the supplemental environmental impact statement prepared at the license renewal stage need not discuss other issues not related to the environmental effects of the proposed action and the alternatives, or any aspect of the storage of spent fuel for the facility within the scope of the generic determination in § 51.23(a) ["Temporary storage of spent

fuel after cessation of reactor operation–generic determination of no significant environmental impact"] and in accordance with § 51.23(b)."

Id., xvi.

"If the Millstone operating licenses are not renewed and the units cease operation on or before the expiration of their current operating licenses, the adverse impacts of likely alternatives will not be smaller than those associated with continued operation of Millstone. *The impacts may, in fact, be greater in some areas.*" (Emphasis added.) Id., xix.

"The preliminary recommendation of the NRC staff is that the Commission determine that the adverse environmental impacts of license renewal for Millstone are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable. This recommendation is based on (1) the analysis and findings in the GEIS; (2) the ER submitted by Dominion; (3) consultation with other Federal, State, and local agencies; (4) the staff's own independent review; and (5) the staff's consideration of public comments received during the scoping process." (Emphasis added.) Id.

"1.3 The Proposed Federal Action

The proposed Federal action is renewal of the OLs for Millstone. The Millstone site is located in Waterford, Connecticut on the coast between the Niantic and Thames Rivers, approximately64 km (40 mi) east of New Haven, 64 km (40 mi) southeast of Hartford, and 32 km (20 mi) west of Rhode Island. Unit 2 is a Combustion Engineering-designed pressurized-water reactor with a design power level of 2700 megawatts thermal (MW[t]) and a net power output of 870 megawatts electric (MW[e]). Unit 3 is a Westinghouse-designed pressurized-water reactor with a design power level of 3411 MW(t) and a net power output of 1154 MW(e). Plant cooling is provided by a once-through cooling-water system that is withdrawn from Niantic Bay and dissipates heat by discharge into Long Island Sound. Units 2 and 3 produce electricity to meet about 50 percent of the electrical use of Connecticut. The current OL for Unit 2 expires on July 31, 2015, and for Unit 3 on November 25, 2025. By letter dated January 20, 2004, Dominion submitted an application to the NRC (Dominion 2004b) to renew these OLs for an additional 20 years of operation (i.e., until July 31, 2035, for Unit 2 and November 25, 2045, for Unit 3)." [GEIS, p. 1-8.]

"1.4 The Purpose and Need for the Proposed Action

Although a licensee must have a renewed license to operate a reactor beyond the term of the existing OL, the possession of that license is just one of a number of conditions that must be met for the licensee to continue plant operation during the term of the renewed license. Once an OL is renewed, State regulatory agencies and the owners of the plant will ultimately decide whether the plant will continue to operate based on factors such as the need for power or other matters within the State's jurisdiction or the purview of the owners. Thus, for license renewal reviews, the NRC has adopted the following definition of purpose and need (GEIS Section 1.3):

Robert Fromer
Feb. 28, 2005

> The purpose and need for the proposed action (renewal of an operating license) is to provide an option that allows for power generation capability beyond the term of a current nuclear power plant operating license to meet future system generating needs, as such needs may be determined by State, utility, and where authorized, Federal (other than NRC) decisionmakers."

[GEIS, p. 1-8.]

"This definition of purpose and need reflects the Commission's recognition that, unless there are findings in the safety review required by the Atomic Energy Act of 1954 or findings in the NEPA environmental analysis that would lead the NRC to reject a license renewal application, the NRC does not have a role in the energy-planning decisions of State regulators and utility officials as to whether a particular nuclear power plant should continue to operate. From the perspective of the licensee and the State regulatory authority, the purpose of renewing an OL is to maintain the availability of the nuclear plant to meet system energy requirements beyond the current term of the plant's license. (Emphasis added.) [GEIS, pp. 1-8 to 1-9.]

"1.5 Compliance and Consultations

Dominion is required to hold certain Federal, State, and local environmental permits, as well as meet relevant Federal and State statutory requirements. In its Environmental Review, Dominion provided a list of the authorizations from Federal, State, and local authorities for current operations, as well as environmental approvals and consultations associated with Millstone license renewal. Authorizations and consultations relevant to the proposed OL renewal action are included in Appendix E." [GEIS, p. 1-9.]

"The staff has reviewed the list and consulted with the appropriate Federal, State, and local agencies to identify any compliance or permit issues or significant environmental issues of concern to the reviewing agencies. These agencies did not identify any new and significant environmental issues. The ER states that Dominion is in compliance with applicable environmental standards and requirements for Millstone. The staff has not identified any environmental issues that are both new and significant." Id.

"8.2.5 Other Alternatives

Other generation technologies considered by NRC are discussed in the following paragraphs." [GEIS, p. .]

"8.2.5.1Wind Power

Wind power, by itself, is not suitable for large base-load electrical generation. As discussed in Section 8.3.1 of the GEIS, wind has a high degree of intermittency, and average annual capacity factors for wind plants are relatively low (less than 30 percent). Wind power, in

conjunction with energy storage mechanisms, might serve as a means of providing base-load power. However, current energy storage technologies are too expensive for wind power to serve as a large base-load generator." [GEIS, p. .]

"The State of Connecticut is in a wind power Class 2 region (average wind speeds at 10-m [30-ft]) elevation of 5.6 to 6.4 m/s [18 to 21 ft/s]). On the coast, Connecticut is in a wind power Class 3 region (average wind speeds at 10-m (30-ft) elevation of 6.4 to 7.0 m/s [21 to 23 ft/s]) (DOE 2004a). In wind power Class 2 areas wind turbines are economically marginal for development, but in Class 3 areas may be suitable with future technology (DOE 2004a)." Id.

"There are active wind power facilities in the region, and others are proposed. As of January 16 2003, there were approximately 48 MW of grid-connected wind power facilities in New York State, with an additional 410 MW of additional capacity in various stages of planning (American Wind Energy Association 2003). In addition, the U.S. Army Corps of Engineers (USACE) is preparing an environmental impact statement for a proposed wind farm to generate 420 MW(e) using 170 turbines off the coast of Massachusetts (USACE 2004)." Id.

"Access to many of the best land-based wind power sites near the coast likely would require extensive road building, as well as clearing (for towers and blades) and leveling (for the tower bases and associated facilities) in steep terrain. Also, many of the best quality wind sites are on ridges and hilltops that could have greater archaeological sensitivity than surrounding areas. For these reasons, development of large-scale, land-based wind-power facilities are not only likely to be costly, but could also have MODERATE to LARGE impacts on aesthetics, archaeological resources, land use, and terrestrial ecology." Id.

"The offshore wind speeds are higher than those onshore and could thus support greater energy production than onshore facilities. Ten offshore wind power projects are currently operating in Europe, but none have been developed in the United States. The European plants together provide approximately 250 MW(e), which is significantly less than the electrical output of Millstone (British Wind Energy Association 2003). For the preceding reasons, the staff concludes that locating a wind-energy facility on or near the Millstone site, or offshore as a replacement for Millstone generating capacity, is not only likely to be costly, but could also have MODERATE to LARGE impacts on aesthetics, aquatic ecology, and shipping lanes." Id.

"8.2.5.2Solar Power

Solar technologies use the sun's energy and light to provide heat and cooling, light, hot water, and electricity for homes, businesses, and industry. In the GEIS, the staff noted that by its nature, solar power is intermittent. Therefore, solar power by itself is not suitable for base-load capacity and is not a feasible alternative to license renewal of Millstone. The average capacity factor of photovoltaic cells is about 25 percent, and the capacity factor for solar thermal systems is about 25 percent to 40 percent (NRC 1996). Solar power, in conjunction with energy storage mechanisms, might serve as a means of providing base-load power. However, current energy storage technologies are too expensive to permit solar power to serve as a large base-load generator. Therefore, solar power technologies (photovoltaic and thermal) cannot

currently compete with conventional fossil-fueled technologies in grid-connected applications, due to high costs per kilowatt of capacity. (NRC 1996)." [GEIS, p. .]

"There are substantial impacts to natural resources (wildlife habitat, land-use, and aesthetic impacts) from construction of solar-generating facilities. As stated in the GEIS, land requirements are high - 14,000 ha (35,000 ac) per 1000 MW(e) for photovoltaic and approximately 5700 ha (14,000 ac) per 1000 MW(e) for solar thermal systems. Neither type of solar electric system would fit at the Millstone site, and both would have large environmental impacts at an alternate site." Id.

"The Millstone site receives approximately 3 to 3.5 kWh of solar radiation per square meter per day (Dominion 2004), compared to 6 to 8 kWh of solar radiation per square meter per day in areas of the western United States, such as California, which are most promising for solar technologies (DOE/EIA 2000). Because of the natural resource impacts (land and ecological), the area's relatively low rate of solar radiation, and high cost, solar power is not deemed a feasible base-load alternative to renewal of the Millstone OLs. Some solar power may substitute for electric power in rooftop and building applications. Implementation of nonrooftop solar generation on a scale large enough to replace Millstone would likely result in LARGE environmental impacts." Id.

"8.2.5.3Hydropower

Connecticut has an estimated 43.5 MW(e) of undeveloped hydroelectric resources (Idaho National Environmental and Engineering Laboratory 1995). This amount is far less than would be needed to replace the 2024 MW(e) capacity of Millstone. In Section 8.3.4 of the GEIS, the staff points out that hydropower's percentage of U.S. generating capacity is expected to decline because hydroelectric facilities have become difficult to site as a result of public concern about flooding, destruction of natural habitat, and alteration of natural river courses." [GEIS, p. .]

"In the GEIS, the staff estimated that land requirements for hydroelectric power are approximately 4.0 × 105 ha (1.0 × 106 ac) per 1000 MW(e). Replacement of Millstone generating capacity would require flooding more than this amount of land. Due to the relatively low amount of undeveloped hydropower resource in Connecticut, and the large land-use and related environmental and ecological resource impacts associated with siting hydroelectric facilities large enough to replace Millstone, the staff concludes that, on its own, local hydropower is not a feasible alternative to Millstone OLs renewal. Siting hydroelectric facilities large enough to replace Millstone would result in LARGE environmental impacts." Id.

"8.2.5.4Geothermal Energy

Geothermal energy has an average capacity factor of 90 percent and can be used for base-load power where available. However, geothermal technology is not widely used as base-load electrical generation due to the limited geographical availability of the resource and immature status of the technology (NRC 1996). As illustrated by Figure 8.4 in the GEIS, geothermal plants are most likely to be sited in the western continental United States, Alaska, and Hawaii where hydrothermal reservoirs are prevalent. There is no feasible eastern location

for geothermal capacity to serve as an alternative to Millstone. The staff concludes that geothermal energy is not a feasible alternative to renewal of the Millstone OLs." [GEIS, p. .]

"8.2.5.5Wood Waste

The use of wood waste to generate electricity is largely limited to those states with significant wood resources, such as California, Maine, Georgia, Minnesota, Oregon, Washington, and Michigan. Electric power is generated in these states by the pulp, paper, and paperboard industries, which burn wood and wood waste for electrical power generation, benefitting from the use of waste materials that could otherwise represent a disposal problem." [GEIS, p. .]

"A wood-burning facility can provide base-load power and operate with an average annual capacity factor of around 70 to 80 percent and with 20 to 25 percent efficiency (NRC 1996). The fuels required are variable and site-specific. A significant barrier to the use of wood waste to generate electricity is the high delivered-fuel cost and high construction cost per MW of generating capacity. The larger wood-waste power plants are only 40 to 50 MW(e) in size. Estimates in the GEIS suggest that the overall level of construction impact per MW of installed capacity should be approximately the same as that for a coal-fired plant, although facilities using wood waste for fuel would be built at smaller scales. Like coal-fired plants, wood-waste plants require large areas for fuel storage and waste disposal and involve the same type of combustion equipment." Id.

"Due to uncertainties associated with obtaining sufficient wood and wood waste to fuel a base-load generating facility, ecological impacts of large-scale timber cutting (e.g., soil erosion and loss of wildlife habitat), and low efficiency, the staff has determined that wood waste is not a feasible alternative to renewing the Millstone OLs." Id.

"8.2.5.6Municipal Solid Waste

Municipal waste combustors incinerate the waste and use the resultant heat to generate steam, hot water, or electricity. The combustion process can reduce the volume of waste by up to 90 percent and the weight of the waste by up to 75 percent (EPA 2001). Municipal waste combustors use three basic types of technologies: mass burn, modular, and refuse-derived fuel (DOE/EIA 2001). Mass burning technologies are most commonly used in the United States. This group of technologies processes raw municipal solid waste "as is," with little or no sizing, shredding, or separation before combustion." [GEIS, p. .]

"Growth in the municipal waste combustion industry slowed dramatically during the 1990s after rapid growth during the 1980s. The slower growth was due to three primary factors: (1) the Tax Reform Act of 1986, which made capital-intensive projects such as municipal waste combustion facilities more expensive relative to less capital-intensive waste disposal alternatives such as landfills; (2) the 1994 Supreme Court decision (*C&A Carbone, Inc. v. Town of Clarkstown*), which struck down local flow control ordinances that required waste to be delivered to specific municipal waste combustion facilities rather than the potentially lower-cost (lower fee) landfills; and (3) increasingly stringent environmental regulations that increased the

capital cost necessary to construct and maintain municipal waste combustion facilities (DOE/EIA 2001)." Id.

"The decision to burn municipal waste to generate energy is usually driven by the need for an alternative to landfills rather than by energy considerations. The use of landfills as a waste disposal option is likely to increase in the near term; however, it is unlikely that many landfills will begin converting waste to energy because of unfavorable economics, particularly with electricity prices declining in real terms. EIA projects that between 1999 and 2020, the average price of electricity in real 1999 dollars will decline by an average of 0.5 percent per year as a result of competition among electricity suppliers (DOE/EIA 2001)." Id.

"Municipal solid waste combustors generate an ash residue that is buried in landfills. The ash residue is composed of bottom ash and fly ash. Bottom ash refers to that portion of the unburned waste that falls to the bottom of the grate or furnace. Fly ash represents the small particles that rise from the furnace during the combustion process. Fly ash is generally removed from flue-gases using fabric filters and/or scrubbers (DOE/EIA 2001)." Id.

"Currently there are approximately 102 waste-to-energy plants operating in the United States. These plants generate approximately 2800 MW(e), or an average of approximately 28 MW(e) per plant (Integrated Waste Services Association 2001), much less than needed to replace the 2024 MW(e) of Millstone." Id.

"The initial capital costs for municipal solid-waste plants are greater than for comparable steam-turbine technology at wood-waste facilities. This is due to the need for specialized waste-separation and -handling equipment for municipal solid waste (NRC 1996). Furthermore, estimates in the GEIS suggest that the overall level of construction impact from a waste-fired plant should be approximately the same as that for a coal-fired plant. Additionally, waste-fired plants have the same or greater operational impacts (including impacts on the aquatic environment, air, and waste disposal). Some of these impacts would be moderate, but still larger than the environmental impacts of license renewal of Millstone. Therefore, municipal solid waste would not be a feasible alternative to renewal of the Millstone OLs, particularly at the scale required." Id.

"8.2.5.7Other Biomass-Derived Fuels

In addition to wood and municipal solid-waste fuels, there are several other concepts for fueling electric generators, including burning crops, converting crops to a liquid fuel such as ethanol, and gasifying crops (including wood waste). In the GEIS, the staff points out that none of these technologies has progressed to the point of being competitive on a large scale or of being reliable enough to replace a base-load plant such as Millstone. For these reasons, such fuels do not offer a feasible alternative to renewal of the Millstone OLs." [GEIS, p. .]

"8.2.5.8Fuel Cells

Fuel cells work without combustion and its environmental side effects. Power is produced electrochemically by passing a hydrogen-rich fuel over an anode and air over a cathode and separating the two by an electrolyte. The only by-products are heat, water, and

carbon dioxide. Hydrogen fuel can come from a variety of hydrocarbon resources by subjecting them to steam under pressure. Natural gas is typically used as the source of hydrogen." Id.

"Phosphoric acid fuel cells are generally considered first-generation technologies. These fuel cells are commercially available at a cost of approximately $4500 per kW of installed capacity (DOE 2004b). Higher-temperature, second-generation fuel cells achieve higher fuel-to-electricity and thermal efficiencies. The higher temperatures contribute to improved efficiencies and give the second-generation fuel cells the capability to generate steam for cogeneration and combined-cycle operations." Id.

"DOE has a new initiative to reduce costs to as low as $400 per kW by the end of the decade (DOE 2004b). For comparison, the installed capacity cost for a natural gas-fired, combined-cycle plant is about $456 per kW (DOE/EIA 2004a). As market acceptance and manufacturing capacity increase, natural gas-fueled fuel cell plants in the 50- to 100-MW range are projected to become available. At the present time, however, fuel cells are not economically or technologically competitive with other alternatives for base-load electricity generation. Fuel cells are, consequently, not a feasible alternative to renewal of the Millstone OLs."

C. Council on Environmental Quality Regulations, 40 Code of Federal Regulations

Sec. 1502.16. Environmental consequences.

This section forms the scientific and analytic basis for the comparisons under Sec. 1502.14. It shall consolidate the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of the statement and as much of section 102(2)(C)(iii) as is necessary to support the comparisons. The discussion will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. This section should not duplicate discussions in Sec. 1502.14. It shall include discussions of:

(a) Direct effects and their significance (Sec. 1508.8).

(b) Indirect effects and their significance (Sec. 1508.8).

(c) Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned. (See Sec. 1506.2(d).)

(d) The environmental effects of alternatives including the proposed action. The comparisons under Sec. 1502.14 will be based on this discussion.

(e) Energy requirements and conservation potential of various alternatives and mitigation measures. (Emphasis added.)

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(f) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures.

(g) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.

(h) Means to mitigate adverse environmental impacts (if not fully covered under Sec. 1502.14(f)).

Sec. 1508.8 Effects.

"Effects" include:

(a) Direct effects, which are caused by the action and occur at the same time and place.

(b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

D. COMMENTS

MPS-49-1 Dominion has not provided a comparative analysis and assessment of life cycle energy consumption to determine that re-licensing of Millstone is the preferred option. Nor, has Dominion considered cumulative alternatives (i.e., energy sources) to meet the current and future energy demands.

1. Energy Considerations

a. Embodied Energy

Most people are familiar with the concept of improving the energy efficiency of buildings by reducing the operating energy they use and increasing thermal resistance to heat loss. It's a common claim that energy-efficiency measures can reduce the operating energy of an individual building by 60% or more. Comparatively, little attention has been focused, however, on recognizing or reducing the embodied energy of structures. Embodied energy, or "embedded energy," is an assessment that includes the energy required for extracting raw materials from nature, plus the energy used in primary and secondary manufacturing or construction/demolition activities to provide a finished product or result. There is embodied

energy in every processed product, from a drinking cup to a car. In embodied energy terms, buildings represent a huge, relatively long-duration energy investment. Embodied energy can be defined as the quantity of energy required by all of the activities associated with some production or construction process including the acquisition of primary material, transportation, manufacturing and handling over its useful life plus the energy for demolition, recycling and/or reuse.

Take a clay brick, for example. This includes the energy to extract the clay, transport it to the brickworks, mould the brick, fire it in the kiln, transport it to the building site and put the brick into place. It also includes all the indirect energy required, i.e. all the energy required to manufacture the equipment and materials needed to manufacture a brick, e.g. trucks, kilns, mining equipment, etc. All have a proportion of their energy invested in that brick.

Embodied energy is highly dependent on factors such as geographical location, technology employed in the manufacturing/construction process, the degree of automation, mechanization and local methods of manufacture, etc. The value is by no means absolute and is different from on location to another.

Every building is a complex combination of many processed materials, each of which contributes to the building's total embodied energy. The energy required to extract and process the raw material for an individual component, as well the energy used to transport the finished product to the job site and install it, all become part of the embodied energy cost of the completed structure. Furthermore, energy involved in maintaining an individual building component, and finally removing it and recycling or otherwise disposing of it at the end of its useful life, can all be part of the embodied energy equation for a particular building material, depending on how the embodied energy is quantified.

As the operating energy required for buildings declines, the embodied energy they represent becomes a more significant percentage of the total energy buildings use over their life. In coming years, more efforts will probably be directed toward measuring and reducing the amount of embodied energy in buildings.

Where buildings no longer serve a particular use, waste includes the material debris and the demolition energy for disposal (i.e., in-state or out-of-state).

b. Need for Energy Conservation

Dr. Charles Hall, a Systems Ecologist[1] has previously testified as follows:

[1] Dr. Hall received his Doctorate of Philosophy at the University of North Carolina at Chapel Hill in the field of energy and natural resource relationships to economics, which is his primary scholarly and intellectual academic focus, studied under Dr. H.T. Odum, who is the most noted scholar in the field. Dr. Hall has published more than 160 papers and five books on energy, natural resources and its relationship to economics in prestigious journals. Dr. Hall is a full professor at the State University of New York College of Environmental Science and Forestry and has been a professor previously at the University of Montana (2 years), Cornell University

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1. Each dollar of cost requires the consumption of energy for meaning to that dollar. For the nation as a whole, the cost is roughly 5,000 kilocalories (i.e., 1 kilocalorie = 1,000 calories) consumed per dollar spent, roughly half a liter of oil or its equivalent as some other fuel. Certain activities, such as construction, tend to be more energy intensive per unit dollar spent. Very careful assessments of these energy costs were made in the 1970s and are still useful when corrected for inflation. Spending large amounts of money requires spending large quantities of energy for that money to have meaning;

2. An important consideration in our society is the energy expenditures of various social alternatives.... Energy consumption is the direct cause effectuating pollution, impairment or destruction of the air, water or other natural resources;

3. Any time energy is used there are environmental impacts and consequences ranging from impacts at extraction sites (e.g. oil facilities in Southern Louisiana, Alaska and Venezuela and coal mines in Wyoming or Pennsylvania), processing, fabrication and transportation and at sites of consumption (i.e. where cement or steel or bulldozers are made and also on site). These impacts include e.g. terrain disruption, sulfur dioxide emissions and so forth;

4. These impacts include essentially irrevocable changes to the atmosphere with possible severe climatic impacts. There is roughly one kilogram of carbon dioxide released per dollar of economic activity in the U.S. Thus each unit of economic activity generates very long term disruption to our atmosphere;

5. The principal source of our energy use is fossil fuel, by definition non-renewable. Our domestic petroleum and gas supplies are quite finite. For example, U.S. production of oil peaked in 1970 (as predicted by Hubbert in 1955). It has been declining steadily since then despite huge drilling investments, so that we now produce roughly half of what we did in the 70's. We make up the difference from imported oil, which now represents approximately 60 percent of our supply. It is not clear when the total world oil production will peak, but it might be as soon as about this year (predicted by Hubbert in 1968) or 2007 (predicted by Campbell in 1998). It is hard to find a prediction made by any competent researcher that pushes the peak beyond about 2030 assuming continued economic growth, and most suggest sooner. Natural gas supplies are harder to predict but might not be too different form oil. Amongst the world authorities on these estimates are my former students Cutler Cleveland and Robert Kaufmann, Director and Associate Professor of the Boston University Center for Energy and the Environment."

6. It is important to understand that there are many scientific, environmental, economic and political reasons for minimizing energy usage and waste, over foreseeable time.

(13 years) and Research Associate at the Ecosystems Center Woods Hole and Brookhaven National Laboratories.

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7 Historical resource planning has primarily concerned corrective considerations and .

8. Comparative energy assessments for the expected life of alternatives (a/k/a life-cycle energy assessment) provide the best scientific basis for selecting the preferred option to demolition for conservation of energy and natural resources.

c. Life Cycle Energy Analysis and Assessments.

This tool provides accurate energy analysis of projects (e.g., residential/commercial/industrial facilities) resulting in detailed reports designed to reduce energy consumption, greenhouse gas emissions and meet statutory energy requirements by comparative assessments of alternatives directed towards selection of the preferred option.

(1) Assessment of the phases of a product's lifecycle

Every product, service or facility has impacts on the environment. Those impacts don't just effect operations but also all activities from "cradle to grave":

Raw materials: The materials that are used to manufacture the product are either extracted from the Earth by mining, drilling and similar processes, or they are recycled from previous products.

Manufacturing/Fabrication/Assembly: In order to fabricate the product, a factory consumes energy and materials. Some of the materials, especially process chemicals, do not end up in the product, but rather are discarded and therefore have environmental impacts that are not easily known by the consumer.

Packaging, storage and transportation: The packaging used to transport and sell the product consumes energy and materials in its manufacture. Transportation of the product from the factory to store shelves, and then to the purchaser's home, also costs energy. Even storage of the product in a warehouse has impacts associated with construction and use of the warehouse.

Use: Some products have large environmental impacts while they are under use by the consumer. For instance, automobiles output large quantities of air pollutants and greenhouse gases as they are used, and homes consume large quantities of energy when they are heated and cooled.

Disposal: Most discarded products become "municipal solid waste," meaning they are either buried in a landfill or incinerated. Some products are partially or fully recycled, a process that itself requires certain amounts of heat, transportation and chemicals.

(2) Environmental (Energy) Impacts

Traditionally, environmental impacts of a given activity or project are catalogued across a spectrum of environmental realms, for instance, air quality, water quality and land use.

However, of far greater significance are the environmental impacts of each phase of a project's lifecycle by measuring the total energy consumed during that phase.

By adding together the energy consumed in each project's phase, one can calculate an energy content for the product: the total amount of energy consumed during the project's entire lifetime. The projected energy consumed then becomes the "analytical embodied energy" of the project, and is a rough but effective measure of that project's total environmental impact.

Example of Life Cycle Analysis

The automobile instrument panel (IP) is a complex component that is fabricated of numerous parts and must fulfill a variety of requirements. As the engineering manager for one of the major automotive companies, your responsibility is to design and manufacture instrument panels for one of your company's most popular vehicles. For the current version of this vehicle, the structural parts of the IP are built primarily of steel. However, for the 1999 model, you and your staff are evaluating a design that is lighter and replaced much of the steel with magnesium.

Issue

Thus far, the new design appears to meet all of your company's safety, aesthetic, cost and other criteria. However, a recent technical report indicated that the material production energy of magnesium is much greater than that of any other materials used in current IP's. Since one of your company's objectives is to lower the life cycle energy of the instrument panel, you must now assess if the new design will achieve this objective. Does the new design lower the life cycle energy of the instrument panel? Please show your calculations and state assumptions.

Data

Material Production Data

Material	Material Production Energy (MJ/kg)	Current Design (kg)	New Design (kg)
Steel	40	10	4
Magnesium	285	0	3
Polyurethane Foam	72	3	3
PVC	65	2	2
Other Plastic	93	10	8
TOTAL		25	20

Manufacturing Phase Data

- Approximately 500 MJ/IP are required to produce either the current or new design.

Use Phase Data

- Average car last 180,000 km.

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- For this model of car, 1.0 MJ of energy are consumed to move one kg of weight for a distance of 1,000 km, i.e. the efficiency factor is 1.0 MJ/(kg*1000 km).

End of Life Phase Data

- For either design, a total of 10 MJ/IP are consumed during the shredding and other end of life processes.

Key Assumption:

The mass of each material in the product is equal to the mass of each material required for manufacturing. This assumes no scrap is generated.

Life Cycle Analysis

Material production:

$E_{material} = E_{steel} + E_{magnesium} + E_{polyurethane} + E_{PVC} + E_{other}$

$E_{current}$ = 10 kg * 40 MJ/kg + 0 kg * 285 MJ/kg + 3 kg * 72 MJ/kg + 2 kg * 65 MJ/kg + 10 kg * 93 MJ/kg
= 400 MJ + 0 MJ + 216 MJ + 130 MJ + 930 MJ
$E_{current}$ = 1676 MJ

E_{new} = 4 kg * 40 MJ/kg + 3 kg * 285 MJ/kg + 3 kg * 72 MJ/kg + 2 kg * 65 MJ/kg + 8 kg * 93 MJ/kg
= 160 MJ + 855 MJ + 216 MJ + 130 MJ + 744 MJ
E_{new} = 2105 MJ

Manufacturing Phase Data

E_{mfg} = 500 MJ for both the current and new designs

Use Phase Data

E_{use} = 1.0 MJ/(kg * 1000 km) * 180,000 km * W_{IP}
$E_{current}$ = 1.0 MJ/(kg * 1000 km) * 180,000 km * 25 kg
= 4500 MJ

E_{new} = 1.0 MJ/(kg * 1000 km) * 180,000 km * 20 kg
= 3600 MJ

End of Life Phase Data

E_{eol} = 10 MJ for both the current and new designs

Total Life Cycle Energy

$E_{total} = E_{material} + E_{mfg} + E_{use} + E_{eol}$

$E_{current}$ = 1676 MJ + 500 MJ + 4500 MJ + 10 MJ
= 6686 MJ

E_{new} = 2105 MJ + 500 MJ + 3600 MJ + 10 MJ
= 6210 MJ

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Therefore, we can see that the new design does lower the life cycle energy of the instrument panel.

E. CONCLUSIONS

Dominion has not provided a comparative analysis and assessment of life cycle energy consumption to determine that re-licensing of Millstone is the preferred option. Nor, has Dominion considered cumulative alternatives (i.e., energy sources) to meet the current and future energy demands.

Cordially,

Robert Fromer
M.S.E.E., P.E., P.C., R.E.P.

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Feb. 28, 2005

REFERENCES

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Life Cycle Assessment Reviews:

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Life Cycle Energy, Costs, and Strategies for Improving a Residential House. Journal of Industrial Ecology, Vol. 4, Issue 2 - Spring 2000

Appendix A, Part 3. Written Comments on the Draft EIS

RDB Received 3/8/05

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 1
1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

12/7/04
69FR 71437

OFFICE OF THE REGIONAL ADMINISTRATOR

25

March 2, 2005

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001

Re: Draft Supplemental Environmental Impact Statement (DSEIS) for License Renewal of Nuclear Plants at the Millstone Power Station, Units 2 and 3, NUREG-1437, Supplement 22 (EPA ERP #NRC-B06005-CT)

Dear Sir/Madam:

In accordance with our responsibilities under the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act we have reviewed the Nuclear Regulatory Commission's (NRC's) Draft Supplemental Environmental Impact Statement (DSEIS) for relicensing of Units 2 and 3 of the Millstone Nuclear Power Station in Waterford, Connecticut.

As described in the DSEIS, Dominion Nuclear Connecticut, Inc. (Dominion) as submitted an application to NRC for renewal of the operating licenses for an additional 20 years. The current operating licenses expire in 2015 for Unit 2 and 2025 for Unit 3. The DSEIS was prepared to provide site specific information to supplement NRC's 1996 Generic EIS for License Renewal of Nuclear Plants. It contains the NRC staff's preliminary recommendation that adverse environmental effects of license renewal at Millstone are not so great that preserving the option of license renewal would be unreasonable.

Our comments on the DSEIS, which are contained in the attachment to this letter, highlight areas where we believe additional information is needed to more fully describe the impacts of the Millstone facility. Specifically, these comments address the environmental impacts of operation, including entrainment and impingement of fish and shellfish, impacts from heat shock, and cumulative impacts. We encourage the NRC to address these issues prior to the close of the NEPA process. We also recognize that the intake and discharge of water at Units 2 and 3 are regulated under the Clean Water Act's National Pollutant Discharge Elimination System (NPDES) permit, administered in Connecticut by the Connecticut Department of Environmental Protection (CTDEP). As discussed in the DSEIS, Dominion has submitted an application to the CTDEP for renewal of the NPDES permit. The comments in this letter are based solely on our review of the information in the NRC's DSEIS from the standpoint of what is required by NEPA and are not intended to address the requirements of the Clean Water Act NPDES permit.

SESP Review Complete

E-RFDS = ADM-03
Cell = R.L. Emch (RLE)

617-918-1010
Internet Address (URL) • http://www.epa.gov/region1

Template = ADM-013

For the reasons discussed above (and in the attachment which follows), EPA has rated this DSEIS "EC-2 Environmental Concerns-Insufficient Information" in accordance with EPA's national rating system, a description of which is attached to this letter. We look forward to reviewing responses to the issues highlighted in this letter and technical attachment in the Final Supplemental Environmental Impact Statement (FSEIS). My staff is available to provide additional input, as necessary, to help the NRC respond to the issues discussed in this letter. Please feel free to contact me or Timothy Timmermann of the Office of Environmental Review at 617/918-1025 if you wish to discuss these comments further.

Sincerely,

Robert W. Varney
Regional Administrator

Attachment

cc:

Gina McCarthy, Commissioner, Connecticut Department of Environmental Protection

Summary of Rating Definitions and Follow-up Action

Environmental Impact of the Action

LO–Lack of Objections
The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC–Environmental Concerns
The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

EO–Environmental Objections
The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU–Environmentally Unsatisfactory
The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potentially unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEQ.

Adequacy of the Impact Statement

Category 1–Adequate
EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2–Insufficient Information
The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3–Inadequate
EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

ADC-1

Additional Detailed Comments
Draft Supplemental Environmental Impact Statement (DSEIS) for
License Renewal of Nuclear Plants at the Millstone Power Station, Units 2 and 3,
NUREG-1437, Supplement 22

Comments on Chapter 2 - Description of Nuclear Power Plant and Site, and Plant Interaction with the Environment

MPS-50-1 Pg. 2-1. The DSEIS identifies the years when construction began for each of Millstone's three units, but does not mention when the units came on line for commercial production of electricity. These dates, as well as dates when each unit was offline for extended periods, would be helpful in reviewing fish impingement and entrainment data, and should be included in the FSEIS.

MPS-50-2 Pg. 2-7. Intake velocity is estimated to be about 0.2 meters per second in front of the Unit 2 structure. The DSEIS does not state at what distance from the intake screen the velocity was measured. Intake velocity should be presented in feet per second and should be estimated as through-screen velocity, not in front of the screen, which estimates approach velocity. Additionally, no intake velocity data are provided for Unit 3. This information is important for assessing the potential of the intake structure to impinge organisms, and should be provided in the FSEIS.

MPS-50-3 Pg. 2-7. The DSEIS identifies some features of the intake structure (e.g., traveling screens, fish return trough), but additional information is needed to assess the adequacy of the system for returning fish and other organisms in good condition, as well as the potential to re-impinge organisms that have been discharged from the fish return troughs. We recommend that the FSEIS include information on the water pressure(s) of the spray wash system used to remove fish and debris from the traveling screens, the frequency at which the traveling screens are rotated, a spatial-view diagram that includes the location of the intake structures and fish return troughs of each unit, and any other information pertaining to system design or operation that may affect the impingement of organisms and the likely condition of those that are impinged.

Comments on Chapter 4 - Environmental Impacts of Operation

Among the various potential impacts to the environment associated with the operation of a power plant that utilizes once-through cooling water technology, the NRC identifies three issues that warrant a site-specific review at Millstone, identified in the DSEIS as Category 2 issues. These are 1) entrainment of fish and shellfish, 2) impingement of fish and shellfish, and 3) "heat shock". The following comments identify information that we believe should be provided in the FSEIS.

ADC-2

Entrainment

MPS-50-4 In Section 4.1.1 entitled "Entrainment of fish and shellfish in Early Lifestages," we could not find data or discussion about shellfish resources. While shellfish larvae may represent a small fraction of the total composition of all larvae entrained, we recommend that the FSEIS include a discussion about species such as lobster, which has suffered significant declines throughout Long Island Sound. Larval lobster are entrained at other coastal plants, and it is likely that there is some loss occurring at Millstone associated with the daily withdrawal of up to 2.1 billion gallons of water. We recommend that the FSEIS address the entrainment of larval lobster, blue crab, and other shellfish of commercial and recreational interest.

MPS-50-5 Pg. 4-12. Table 4-3 (Percent Composition of Fish Larvae and Eggs) is unclear on what the significance of the dates is for each column, and why dates for larvae differ from those for eggs. In addition, it is unclear why a 26-year average of percent composition data for larvae is compared to data from one year (2002-03). We believe it would be more useful to provide a graph that depicts how percent composition has changed annually over the past 27 years. We recommend that the graph include, at minimum, bay anchovy, winter flounder, Atlantic menhaden, American sandlance, grubby, tautog, and cunner.

MPS-50-6 Pg. 4-13. Table 4-4 presents larvae entrainment data for select species of fish. As presented, this table is not clear as to how many larvae are entrained on an annual basis. While knowing larval concentration (i.e., the number of larvae per volume of water sampled) is important in understanding the seasonal variations in larval abundance for each species, it does not in itself provide a clear sense of the annual loss of larvae from the plant's operation. We recommend that this table be replaced or accompanied by a table in the FSEIS that lists the estimated total larvae for each species entrained annually from 1976 - 2003. While the entrainment numbers may reflect differences in operating schedules from year to year and such considerations should be noted where they exist, of greatest interest is the number of larvae for each species being removed from the system. We recommend that that number be provided in the FSEIS.

Pg. 4-14. Table 4-5 presents similar data to Table 4-4, but for eggs of three fish species. However, Table 4-5 presents what appears to be the total numbers of eggs entrained annually and a volume that corresponds with the volume withdrawn during the period when these eggs were likely to be entrained. This may be what the DSEIS was intended to illustrate in Table 4-4 (the number listed multiplied by 1 million), but it was not noted on the headers of each column.

MPS-50-7 While an understanding of how many eggs and larvae are entrained annually is important, the significance of those numbers varies from species to species based on a number of variables including species fecundity, age to maturity, estimated annual mortality, recruitment, and status of the local population. Another consideration that we recommend be addressed is whether a species is an important forage source to local predatory species, and what the loss of their eggs and larvae represent in terms of foregone productivity to the local ecosystem. These analyses were likely performed by Millstone, and we recommend that the FSEIS provide additional information on what the loss of eggs and larvae represent in terms of adult equivalents, and the amount of

MPS-50-7
MPS-50-8

production foregone for forage species. Additionally, for species that are exhibiting depressed local stocks, such as winter flounder and cunner, we recommend that information on spawning stock biomass forgone also be provided. The loss of one adult winter flounder could represent the cumulative loss of future egg production for 14 years, or more.

MPS-50-9

Pg. 4-21. The DSEIS concludes that impacts to the Niantic River winter flounder population from entrainment is "moderate," though it suggests fishing mortality plays a much more significant role. Other stressors, including rising water temperatures, are also cited as possible contributing factors. According to the DSEIS (pg.1-4), "moderate" is defined as "Environmental effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource." From our review of the DSEIS, there seems to be general agreement that the Niantic River winter flounder stock has been destabilized, that multiple stressors are contributing to this condition, and that the entrainment of larvae at Millstone (e.g., 492 million in 1992) is one of the contributing stressors.

The DSEIS concludes that the NRC has no role in mitigating for entrainment impacts since such impacts are regulated under the Clean Water Act. We agree that these impacts are regulated under CTDEP's NPDES permit. However, we believe that under NEPA, the FSEIS needs to fully evaluate and disclose the potential environmental impacts from this operation, and identify possible operational and technology alternatives that could effectively mitigate for the loss of aquatic resources. The DSEIS correctly identifies the unique vulnerabilities associated with the winter flounder's habitat of returning to natal systems to spawn, suggesting that localized impacts could dramatically influence local population dynamics. However, the DSEIS includes only a very limited discussion on mitigation alternatives, and suggests that any reduction in entrainment losses would lessen the impact of the plant on the Niantic River winter flounder population. This assessment does not fully document the plant's impact on the decline of local winter flounder stocks.

MPS-50-10

Pg 4-20. The DSEIS concludes that there is no clear evidence of entrainment impact on species other than winter flounder. While other species may not exhibit the same site fidelity for spawning that winter flounder exhibit, data presented in the DSEIS indicate there is a potential cause for concern that additional losses associated with entrainment to already depressed fish stocks, such as bay anchovy and cunner, could impede stock recovery, at least locally. We believe that entrainment impacts to fish populations that are regionally depressed should receive closer scrutiny in the FSEIS.

MPS-50-11

The DSEIS notes that populations of sandlance, bay anchovy, and cunner have been depressed for decades. Anchovy populations reached a 27-year low in 2002. On pg. 4-27, the DSEIS states that anchovy declines appear to be reflecting a regional decline in the stock, but on pg. 2-28 it states that population data for anchovy are not available for Long Island Sound or the Mid-Atlantic region, and therefore "...it is not possible to assess whether decreasing abundance of this species near Millstone is a reflection of regional populations". For the FSEIS, we recommend that Millstone's potential impacts to anchovy populations be reassessed and clarified.

ADC-4

Impingement

MPS-50-12 Pg. 4-24. Table 4-6 provides impingement data for Units 1 and 2. Apparently, no data was collected for Unit 3 based on survival studies that indicated high survival rates for demersal species during cool and cold water periods. Pelagic species, including long-finned squid, bay anchovy, and Atlantic silversides, had poor rates of survival year-round. While these studies may provide some sense of the fish return system's effectiveness for demersal species in cool or cold water conditions, it also clearly demonstrates that some species such as bay anchovy and menhaden are not likely to survive impingement. In addition, it does not indicate what the survival rate is during the warm water months of summer and early fall when the newest year class of some species such as winter flounder are likely to be present in the vicinity of the intakes, and vulnerable to impingement. We recommend that Information on survival rates of demersal species during warmer periods be included in the FSEIS.

MPS-50-13 The DSEIS states (pg. 4-23) that the highest annual impingement of winter flounder for Unit 2 and 3 combined was 2,446 fish, in 1986. However, Table 4-6 indicates that the largest annual impingement of winter flounder was estimated to be 23,554. The table does not mention whether the number reflects impingement rates for Unit 3. The FSEIS should clarify the estimate of total annual impingement for winter flounder and other species listed in Table 4-6 that reflects impingement numbers for all units together.

MPS-50-14 The DSEIS states (pg. 4-27) that the measures in place at Millstone Units 2 and 3 provide mitigation for impacts related to impingement, and no new measures are warranted. This conclusion is a departure from NRC's approach taken for entrainment which is to defer the issue of mitigation to the CTDEP. It is unclear why the DSEIS advises that no further mitigation is warranted for impingement, but for entrainment impacts which the NRC believe are moderate, the question of need for, and alternative ways to accomplish, mitigation is largely deferred. As noted above, we believe that under NEPA, a discussion of appropriate mitigation alternatives should be in the FSEIS. In addition, we recommend that the FSEIS not view entrainment and impingement as mutually exclusive impacts, but instead assess the combined effects of entrainment, impingement, and the thermal plume on species such as winter flounder and anchovy that are vulnerable to two or all of these stressors.

Heat Shock

MPS-50-15 Pg 4-27. This section of the DSEIS provides a limited discussion of some potential environmental impacts associated with the discharge of heated effluent. The use of the term "heat shock" implies a fairly limited scope of review for a pollutant (i.e., heat) that can affect aquatic organisms and their habitats in many ways. We recommend that the FSEIS's discussion be expanded to address heat's less conspicuous ability to: 1) preclude the use of affected areas by temperature-sensitive species; 2) attract and expose organisms to areas of elevated temperature during spawning periods; and 3) expose eggs and larvae to water temperatures well above levels that are typical under ambient conditions.

ADC-5

MPS-50-15 While thermal plumes tend to remain near the surface during most of the year, they have been known to become negatively buoyant during the colder winter periods. If this is the case at Millstone, or if the thermal plume affects the entire water column in shallow areas of Niantic Bay, we recommend that the FSEIS address how the plume might affect adult winter flounder entering Niantic Bay in the winter months en route to spawning grounds in the Niantic River. The 8,000 foot thermal mixing zone, in which temperatures are permitted to exceed ambient levels by 4°F, appears to cover most of Niantic Bay. We recommend that the FSEIS provide a spatial-view graphic depicting maximum temperatures of the thermal plume under various tidal conditions and seasons, and a more comprehensive analysis of the potential sub-lethal effects caused by the thermal plume.

The DSEIS contains a preliminary conclusion that potential impacts to fish and shellfish due to heat shock are small, and that no new mitigation measures are warranted (pg. 4-29). As stated above, EPA believes that the FSEIS should provide a broader review to ensure that all of the possible thermal effects associated with Millstone's daily discharge of up to 2.1 billion gallons of heated water are adequately assessed. We recommend that the FSEIS re-evaluate Millstone's thermal impacts, at least for winter flounder, before reaching a final conclusion on this issue.

Cumulative Impacts

MPS-50-16 The DSEIS (pg. 4-57) identifies fishing mortality, entrainment from Millstone water withdrawals, environmental changes associated with regional increases in water temperature, and predator-prey interactions as the primary stressors contributing to continuing low winter flounder population levels in the Niantic River area. EPA agrees that there are multiple stressors affecting winter flounder, but we believe that other impacts from Millstone besides entrainment may be helping to impede stock recovery, if not contributing to the population decline.

Impacts from impingement on winter flounder and other depressed stocks have an additive effect to entrainment losses, and we recommend that they be discussed in the assessment of cumulative impacts. In addition, while the thermal plume from Millstone may not be causing acute mortality to winter flounder and other species, non-lethal effects may have a significant effect to the Niantic Bay area. According to the DSEIS, water temperatures in Long Island Sound (LIS) have increased over a 25-year period by 2.8°F/1.8°F (daily/annual mean). Temperatures in Millstone's mixing zone are permitted to be up to 4.0°F higher than ambient. The DSEIS states that elevated water temperatures in LIS may be a major contributing factor to the flounder's decline, but the report does not address possible effects elevated temperature from Millstone's thermal plume has on Niantic Bay, most of which is contained within the designated thermal mixing zone. If there is information supporting a conclusion that thermal effects are not having any adverse impacts on winter flounder behavior, spawning success, habitat use, young-of-year survival, changes in trophic dynamics or forage opportunities, we recommend that it be included in the FSEIS.

We recommend that the FSEIS provide maps with depictions of the thermal plume on multiple stages of the tide. These maps should include known aquatic resources, such as shellfish beds, fish spawning and nursery habitats and fish migration routes.

ADC-6

RDB received
3/3/05

CONNECTICUT COALITION AGAINST MILLSTONE

www.mothballmillstone.org

March 2,2005

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Chief
Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mailstop T-6D59
U.S. Nuclear Regulatory Commission
Washington DC 20555-0001

Re: Millstone Nuclear Power Station/Draft Environmental Impact Statement

Dear Sirs:

The Connecticut Coalition Against Millstone submits herewith preliminary comments concerning the draft Environmental Impact Statement (EIS) which the NRC staff has prepared in support of relicensing of Millstone nuclear reactors Units 2 and 3 to extend their terms to the years 2035 and 2045 respectively. These comments will be supplemented with a separate filing with attachments.

MPS-51-1 The Coalition strongly opposes Millstone relicensing.

The data available to the U.S. Nuclear Regulatory Commission in its environmental review establishes a clear link between Millstone's radiological and chemical discharges to the environment and **major health effects** in the surrounding community.

The data reviewed by the NRC is alarming.

MPS-51-2 The data strongly suggests – and indeed does so almost to a certainty – that Dominion Nuclear Connecticut, Inc. is operating and will continue to operate the Millstone Nuclear Power Station in violation of NRC regulations requiring limiting doses to the public of 15 millirems per year to any organ.

1

Put another way, the data strongly suggests that Dominion's Millstone daily operations exceed the permissible dose of radiation to the public and will continue to do so during the proposed relicensing period.

Based on Dominion's own reporting of radiation sampling in the environment, the Coalition believes the available data reviewed by the NRC for the years 2001, 2002 and 2003 prove that routine operations of Millstone are in violation of federal health standards and are illegal.

MRC-51-3 By its own admission, the NRC confined its review of Millstone radiological releases, for Environmental Impact Statement purposes, to the years 2001,2002 and 2003. ("Radioactive Waste Management Systems and Effluent Control Systems 2.1.4," DEIS at 2-9) (No explanation is provided in the DEIS as to why the years 1970-2000 and the year 2004 – with the most current data – were excluded from review.)

MRC-51-4 The Annual Radiological Environmental Operating Report submitted by Dominion Nuclear Connecticut, Inc. to the NRC for the year 2001 – one of the few reports the NRC specifically identified that it had reviewed in its EIS procedure - contains the following information:

> On September 19, 2001, a concentration of strontium-90 of 55.5 picoCuries per liter (pCi/l) was measured in a sample of goat milk taken from a location 5.5 miles north-northeast of the Millstone Nuclear Power Station. The uncertainty factor reported was plus or minus 5.3 pCi/L.

A concentration of 55.5 picoCuries per liter is an "extremely large concentration, close to twice the highest concentration measured in Connecticut pooled milk at the height of nuclear weapons testing in 1963 of 23 pCi/L," according to a report dated March 1, 2005 by Dr. Ernest J. Sternglass, Professor Emeritus of Radiological Physics at the University of Pittsburgh School of Medicine and an acknowledged pioneer in the field of the effects of low-level ionizing radiation on living cells. The report appears annexed hereto as Exhibit A.

MPS-51-4 Moreover, according to Dr. Sternglass, since the measured value is ten times as large as the measurement uncertainty, "this is an extremely significant result, with an astronomically small chance that it is a statistical fluctuation."

Put into perspective, an individual drinking two eight-ounce glasses of the strontium-90-contaminated goat milk on a daily basis would receive a maximum permissible dose of radiation – under NRC guidelines – within 30 days.

This assumes no other radiological contamination of the milk. However, strontium-90 never appears alone in the environment. When the radiological effects of identified concentrations of radionuclides also reported in the same goat milk sample - cesium-134, cesium-137, iodine-131, barium-140 and others – are considered, the effect is even more damaging and far less milk would need to be consumed over fewer days before the maximum permissible radiation does established by federal law would be exceeded, according to Dr. Sternglass.

'The dose to bone or the bone marrow when other fission products are present is some 5 to 6 times greater than from strontium-90 alone, and the Dominion reports for goat milk show significant concentrations of other fission products, such as cesium-137, in significant concentrations," Dr. Sternglass states in his report, Exhibit A.

'Using the NRC NUREG 1.109 dose factor of 0.0172 mrem/pCi/l [millirem] from Table A-5, a mere 2.4 pCi/l daily intake results in the maximum permissible dose to any organ of 15 mrem per year set by NRC guidelines, 23 times the amount measured in a single liter," according to the Sternglass report.

Attached to Dr. Sternglass' report are measurements, reported to the NRC by Dominion, of strontium-90 in goat milk sampled at locations within 5 miles of Millstone during the years 2001, 2002 and 2003.

MPS-51-4 The reported samples of measurements show concentrations of 13 to 14 pCi/l on other days during the three-year period. According to Dr. Sternglass, these are also significantly high readings since strontium-90, concentrating in milk due to atmospheric nuclear weapons testing which ended in 1980, has declined to less than 1 pCi/l in areas far removed from any nuclear reactors.

Since the samples are collected by Dominion only twice a month, it is unknown whether actual concentrations on other days exceeded the levels reported.

In 1997, Millstone's previous owner, Northeast Utilities, persuaded the NRC to permit it to discontinue sampling for strontium-90 in its air filter monitoring program. As the 1997 Annual Radiological Environmental Operating report states:

> Section 4.5 Air Particulate Strontium (Table 5)
> Table 5 in past years was used to report the measurement of Sr-89 and Sr-90 in quarterly composited air particulate filters. These measurements are not required by the Radiological Effluent Monitoring Manual (REMM) and have been discontinued. Previous data has shown the lack of detectable station activity in this media. This fact, and the fact that milk samples are a much more sensitive indicator of fission product existence in the environment, prompted the decision for discontinuation. In the event of widespread plant related contamination or special events such as the Chernobyl incident, these measurements may be made.

MPS-51-5 Strontium-90 is among the most deadly byproducts of nuclear fission. Once ingested, its highly-energetic electrons damage and cause mutations in nearby cells. Exposure to low levels of strontium-90 and other bone-seeking radioactive chemicals routinely released by nuclear power plants does not merely increase the risk of bone cancer or leukemia, but it weakens the immune defenses provided by the white cells of the blood that originate in the bone marrow. See Declaration of Ernest J. Sternglass (August 8, 2004) submitted to the NRC in In the Matter of Dominion Nuclear Connecticut, Inc., Docket No. 50-336-LR, 50-423-LR, ASLBP No. 04-824-01-LR, annexed hereto as Exhibit B.

MPS-51-5 'As recently shown in the 2003 report by the European Committee on radiation Risk, numerous epidemiological and laboratory studies have shown that the risk of cancer and other diseases produced by local internal doses to critical organs from fission products that are inhaled or ingested have been underestimated by extrapolation from high external doses by factors of hundreds to thousand of times," according to the Sternglass report, Exhibit A.

"This explains why it now appears that releases from nuclear plants, often acting synergistically with other environmental pollutants, are a major neglected reason for the recent rise of illness and deaths both among newborns and the elderly observed in the U.S. in the last two decades, as also discussed in the ECRR report," according to Dr. Sternglass. Id.

For these reasons, it is my professional opinion that the Millstone Nuclear Plant should not be relicensed," Dr. Sternglass stated. In his report, Exhibit A.

The Coalition has previously submitted, in these and the related Atomic Safety and Licensing Board proceedings, documentation from Joseph Mangano and Michael Steinberg which links the Millstone radiological effluent releases – including strontium-90 - to significant negative health consequences in the community. These documents are incorporated by reference herein.

CONNECTICUT COALITION AGAINST MILLSTONE

Nancy Burton

Please address correspondence to:
Nancy Burton
147 Cross Highway
Redding Ridge CT 06876
Tel. 203-938-3952

5

Exhibit "A"

Memorandum to: Nancy Burton
Date: 03/01/05
From: Ernest J. Sternglass, Ph. D.
Subject: Millstone Relicensing

I have recently had the opportunity to examine the levels of radioactivity in goat milk samples reported by Dominium Nuclear Connecticut, Inc. in their Annual Radiological Environmental Operating Reports and found that highly significant concentrations of carcinogenic fission products were measured, indicating that the Millstone nuclear plant continues to represent a major health hazard to the people of the area.

Thus, in the enclosed copy of Table 8 of the Report for the year 2001, a concentration of 55.5 picoCuries per liter (PCI/L) of milk of Strontium-90 was reported for Location 22 for the sample measured on September 19, 2001, with an uncertainty of plus or minus 5.3 PCI/L. This is an extremely large concentration, close to twice the highest concentration measured in Connecticut pooled milk at the height of nuclear weapons testing in 1963 of 23 PCI/L, as can be seen from the enclosed Figure 6-1 prepared by the Dominion Company for the period 1961 to 1993. Moreover, since the measured value is ten times as large as the measurement uncertainty, this is an extremely significant result, with an astronomically small chance that it is a statistical fluctuation.

To put this into perspective, using the NRC NUREG 1.109 dose factor of 0.0172 mrem/PCI from Table A-5, a mere 2.4 PCI daily intake results in the maximum permissible dose to any organ of 15mrem per year set by NRC guidelines, 23 times the amount measured in a single liter.

Moreover, since strontium-90 has a physical half-life of 28 years, it must have been present for a number of days that month. In fact, only 16 days at the measured concentration of 55 PCI/L are sufficient to reach the permissible dose.

As the enclosed samples of measurements show, concentrations of 13 to 14 PCI/L were found on other days, again significantly higher than the measurement uncertainty of 1-2 PCI/L.

Moreover, as discussed in the United Nations UNSCEAR reports, the dose to bone or the bone marrow when other fission products are present is some 5 to 6 times greater than from Sr-90 alone, and the Dominion Reports for milk show significant concentrations of other fission products, such as Cesium-137, again significant concentrations.

The high concentrations of Sr-90 and other isotopes measured clearly exclude the possibility that they are due to past nuclear bomb-tests. No other sources of Sr-90 exist other than the fission of Uranium, so the measured values represent releases from Millstone.

As recently shown in the 2003 report by the European Committee on Radiation Risk, numerous epidemiological and laboratory studies have shown that the risk of cancer and other diseases produced by local internal doses to critical organs from fission products that are inhaled or ingested, have been underestimated by extrapolation from high external doses by factors of hundreds to thousands of times. This explains why it now appears that releases from nuclear plants, often acting synergistically with other environmental pollutants, are a major neglected reason for the recent rise of illness and deaths both among newborns and *the* elderly observed in the U.S in the last two decades, as also discussed in the ECRR report.

For these reasons, it is my professional opinion that the Millstone Nuclear Plant should not be relicensed.

Ernest J. Sternglass, Ph. D.
Professor Emeritus of Radiological Physics
University of Pittsburgh School of Medicine

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MILLSTONE POINT 2001

TABLE B
GOAT'S MILK
(PCI/L)

LOCATION	COLLECTION DATE	SR-89	(+/-)	SR-90	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)
22	04/11/01	.	.	.	.	0.01	0.26	-0.2	2.1	3.7	2.7	-1	3
22	04/25/01	.	.	.	.	0.02	0.23	-3.2	3.2	4.5	4.0	-2	4
22	05/02/01 A	.	.	.	.	-0.27	0.34	-0.6	3.2	5.4	3.8	-4	5
22	05/09/01	.	.	.	.	0.02	0.26	1.4	3.6	7.0	4.8	-1	5
22	05/23/01	.	.	.	.	0.07	0.23	0.4	3.7	9.6	5.2	-4	5
22	06/13/01	.	.	.	.	-0.06	0.29	-1.6	4.8	18.2	6.8	-3	6
22	06/27/01	2.5	4.2	13.2	1.5	0.02	0.23	-2.4	3.2	15.8	4.9	0	5
22	07/11/01	.	.	.	.	0.08	0.17	-3.5	3.7	15.6	5.8	2	5
22	07/25/01	.	.	.	.	0.05	0.13	0.2	2.6	10.8	4.5	-4	4
22	08/08/01	.	.	.	.	-0.02	0.16	-0.1	2.1	21.9	4.7	-1	5
22	08/22/01	.	.	.	.	0.27	0.32	-0.1	2.3	21.4	4.2	-3	4
22	09/05/01	.	.	.	.	-0.04	0.11	1.6	2.8	14.9	4.3	0	5
22	09/19/01	(3.2)	(11.1)	(13.3)	(15.3)	0.04	0.23	2.2	4.2	12.6	5.2	1	6
22	10/18/01	.	. B	.	. B	0.07	0.26	0.9	3.2	(67.2)	7.6	-1	4
24C	04/25/01	.	.	.	.	0.13	0.22	2.3	3.5	5.8	3.9	2	5
24C	05/09/01	.	.	.	.	-0.08	0.19	-1.5	1.9	4.6	2.4	-1	4
24C	05/23/01	.	.	.	.	0.17	0.28	1.2	3.0	7.5	4.1	0	4
24C	06/13/01	.	.	.	.	0.15	0.38	3.5	3.1	11.8	4.9	-2	4
24C	06/27/01	-0.7	3.7	5.9	1.2	-0.01	0.16	2.5	3.6	4.0	3.9	1	4
24C	07/11/01	.	.	.	.	0.48	0.46	1.2	2.5	4.3	2.8	-1	4
24C	07/25/01	.	.	.	.	0.05	0.12	-0.1	2.9	7.2	3.6	-1	4
24C	08/08/01	.	.	.	.	0.04	0.18	1.3	2.6	3.3	3.5	1	4
24C	08/22/01	.	.	.	.	0.26	0.31	-0.7	3.1	3.9	3.7	6	4
24C	09/05/01	.	.	.	.	0.04	0.29	-1.1	2.9	11.4	4.5	-2	5
24C	09/19/01	1.8	5.1	5.7	1.2	0.04	0.11	-0.7	2.8	6.1	4.4	-1	4

PASTURE GRASS, HAY OR FEED WAS SAMPLED AS A SUBSTITUTE FOR UNAVAILABLE GOAT MILK.
STRONTIUM ANALYSES ARE COMPOSITES OF ALL MILK SAMPLED FROM A GIVEN LOCATION DURING THE QUARTER.
A: SPECIAL SAMPLE TAKEN TO MONITOR HIGHER THAN NORMAL STATION RELEASE OF IODINE (SEE SECTION 4.13).
B: SINGLE SAMPLE FOR THE QUARTER WAS NOT ANALYZED FOR SR89/90 DUE TO LAB DATA ENTRY ERROR.

TABLE 8
GOAT MILK
(PCI/L)

LOCATION	COLLECTION DATE	K-40		SR-89		SR-90		I-131		CS-134		CS-137		BA-140		LA-140	
			(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)		(+/-)
21	06/19/02	1041	84	4.7	9.8	1.29	0.87	0.53	0.51	-1.2	2.9	2.4	3.1	-1.7	5.3	-2.0	6.1
	07/11/02	1790	170					0.13	0.26	-5.3	3.9	5.6	4.9	4.1	5.9	4.7	6.8
	07/24/02	1660	130					0.06	0.14	-3.0	3.4	1.6	3.7	-2.8	5.4	-3.2	6.2
	08/07/02	1850	130					0.08	0.36	-0.5	3.3	3.7	4.2	1.3	4.8	1.5	5.6
	08/14/02		A					0.05	0.19		A		A		A		
	09/04/02	931	59					0.28	0.83	1.5	1.7	2.9	2.0	-0.6	2.9	-0.7	3.3
	09/25/02	1790	97	-5.0	3.3	0.99	0.97	0.63	0.71	-1.2	2.7	7.2	3.0	-0.7	4.8	-0.9	5.5
	10/09/02	583	61		C		C	-0.15	0.06	0.5	2.0	4.1	2.9	2.4	3.7	2.7	4.3
22	04/10/02	1760	110					0.04	0.21	1.2	2.5	-0.6	2.7	-2.7	3.7	-3.1	4.2
	04/24/02	1640	150					-0.03	0.06	1.8	3.5	5.0	4.1	-0.5	6.1	-0.6	7.0
	05/08/02	1890	160					0.20	0.35	2.2	5.4	-0.3	4.0	-0.6	6.5	-0.7	7.5
	05/22/02	1790	190					0.24	0.49	-0.2	3.8	5.4	3.9	1.6	4.5	1.8	5.2
	06/05/02	1760	140					0.06	0.25	-0.8	3.5	15.4	5.3	4.6	5.0	5.3	5.9
	06/19/02	1620	120	8.6	6.2	5.00	1.20	0.69	0.70	-0.9	2.9	4.0	4.5	1.8	4.1	2.1	4.7
	07/10/02	1910	130					0.06	0.25	0.8	2.7	17.3	64.7	0.5	3.2	0.6	3.7
	07/24/02	1630	110					0.01	0.13	0.6	2.7	17.3	64.7	0.5	3.2	0.6	3.7
	08/07/02	1420	130					0.58	0.66	1.4	3.3	16.7	5.2	0.6	5.4	0.5	6.2
	08/21/02	1390	130	6.4	6.3	1.90	1.10	0.06	0.28	-0.2	3.3	13.3	4.7	-0.8	3.7	-0.9	4.3
26C	04/24/02	1270	130					0.07	0.12	4.5	5.9	2.4	3.9	-2.5	5.2	-2.9	6.0
	05/08/02	1550	100					0.10	0.28	-1.6	2.6	3.8	2.9	1.1	4.1	1.2	4.7
	05/22/02	1630	150					0.15	0.42	-0.5	3.5	5.9	4.3	2.4	5.6	2.7	6.5
	06/05/02	1850	150					-0.02	0.14	0.2	3.6	-1.9	3.9	2.3	6.0	2.6	6.9
	06/19/02	1750	120	0.9	3.9	2.43	0.83	0.80	0.81	-2.7	3.0	13.5	4.3	0.3	3.9	0.3	4.5
	07/13/02	1580	160					0.07	0.25	3.2	4.3	2.3	4.3	-1.8	6.2	-2.1	7.1
	07/24/02	1630	120					0.01	0.11	0.4	2.6	1.2	3.3	1.0	3.9	1.1	4.5
	08/07/02	1470	110					-0.06	0.02	0.0	2.4	5.5	3.6	0.2	3.2	0.3	3.7
	08/21/02	1770	130					0.69	0.70	2.5	3.8	9.5	5.3	-2.5	4.7	-2.9	5.4
	09/04/02		B					0.05	0.35		B		B		B		
	09/25/02	1810	110	-6.1	5.0	14.30	1.70	0.68	0.69	-1.7	2.7	5.6	3.4	-4.1	5.5	-4.9	6.3
	10/09/02	1980	150	-15.6	9.4	1.77	0.83	0.03	0.33	-0.5	3.6	3.1	4.3	-1.8	6.8	-2.0	5.6

PASTURE GRASS, HAY OR FEED WAS SAMPLED AS A SUBSTITUTE FOR UNAVAILABLE GOAT MILK
STRONTIUM ANALYSES ARE COMPOSITES OF ALL MILK SAMPLED FROM A GIVEN LOCATION DURING THE QUARTER
A: GAMMA ANALYSIS NOT PERFORMED DUE TO TECHNICIAN ERROR
B: GAMMA ANALYSIS NOT PERFORMED DUE TO LAB ERROR
C: STRONTIUM ANALYSIS NOT PERFORMED DUE TO LAB ERROR

TABLE 8
GOAT MILK
(PCI/L)

LOCATION	COLLECTION DATE	K-40	(+/-)	SR-89	(+/-)	SR-90	(+/-)	I-131	(+/-)	CS-134	(+/-)	CS-137	(+/-)	BA-140	(+/-)	LA-140	(+/-)
21	05/06/03	1603	94					-0.01	0.21	1.6	2.5	7.0	3.4	0.0	3.0	0.0	3.5
	05/21/03	1650	130					0.17	0.34	-0.7	3.2	5.7	4.0	4.8	4.6	4.5	5.3
	06/10/03	1930	180					0.03	0.31	-0.5	3.6	1.5	3.3	-3.9	3.1	-4.5	3.6
	06/24/03	1610	180	3.1	5.7	0.00	0.38	-0.02	0.22	2.7	5.3	3.1	4.3	2.3	6.3	2.6	7.3
	07/08/03	1690	120					-0.10	0.04	0.5	3.3	3.7	3.2	-1.7	4.0	-1.9	4.6
	07/22/03	2321	86					0.46	0.50	1.3	2.5	2.7	3.4	-0.4	3.1	-0.5	3.6
	08/06/03	1430	110					0.45	0.48	2.7	3.2	3.4	4.0	-2.6	3.5	-3.0	4.1
	08/19/03	2730	63					0.45	0.85	1.7	1.8	3.9	2.8	-0.1	3.5	-0.2	4.0
	09/10/03	3070	140					0.00	0.11	-1.2	3.8	4.6	4.4	-0.4	5.7	-0.4	6.5
	09/23/03	1470	130	3.4	5.5	0.6	1.1	-0.10	0.84	3.3	4.8	11.4	5.8	-2.8	5.6	-3.2	6.4
22	04/23/03	1700	140					-0.06	0.16	-1.6	3.2	0.9	3.0	-0.5	4.0	-0.6	5.8
	05/06/03	1036	96					0.22	0.30	0.3	2.3	5.1	3.6	-4.3	3.4	-5.0	3.9
	05/21/03	1540	150					0.11	0.33	1.7	3.9	0.5	5.0	2.4	6.0	2.7	6.9
	06/10/03	1351	87					-0.08	0.03	-1.1	3.5	14.8	3.5	0.4	3.3	0.4	3.0
	06/24/03	1416	150	-0.2	5.7	9.2	1.2	0.14	0.35	0.9	4.2	1.1	4.2	0.7	5.3	0.8	6.3
	07/08/03	1770	110					0.07	0.15	0.1	2.0	21.7	4.4	1.0	3.7	1.1	4.2
	→ 07/22/03	1510	110					0.09	0.20	-0.2	3.1	24.0	±5.1	-0.6	4.5	-0.7	5.2
	08/07/03	1120	89					0.03	0.18	1.1	2.8	30.2	±6.4	3.8	4.2	6.3	4.5
	→ 08/19/03	2313	86	8	11	14.5	±1.0	0.09	0.06	1.6	2.5	19.8	±3.0	0.5	4.9	0.6	5.6
24C	05/22/03	1710	150					-0.08	0.03	2.5	3.6	5.5	3.8	3.6	5.2	-4.1	7.1
	06/11/03	1790	120					0.03	0.20	-1.7	3.3	7.3	6.1	-4.4	4.4	-5.1	5.1
	06/25/03	1700	130	-7.5	5.9	-1.5	1.1	0.12	0.25	1.1	4.5	-2.5	4.7	2.2	6.8	3.5	7.8
	07/09/03	1600	100					0.05	0.23	1.1	2.6	3.2	3.1	-2.6	3.5	-3.0	4.1
	07/22/03	2751	96					-0.04	0.02	1.7	2.8	3.6	2.8	3.6	3.4	2.9	3.9
	08/05/03	1840	120					0.36	0.45	1.0	3.0	2.7	3.3	-3.7	4.7	-4.3	5.4
	08/19/03	1466	67					0.03	0.30	-0.1	1.7	3.9	1.9	-0.2	3.3	-4.2	3.8
	09/09/03	2860	120					~~0.00~~	~~0.17~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~
	~~[illegible]~~	~~[illegible]~~	~~[illegible]~~	2.3	3.3	1.4	1.2	0.03	0.26	-0.3	4.6	-3.6	4.4	-3.3	5.2	-3.0	5.9
	10/09/03	2650	110					-0.28	0.07	0.6	3.9	2.2	2.6	-1.2	5.2	-1.4	6.0

PASTURE GRASS, HAY OR FEED WAS SAMPLED AS A SUBSTITUTE FOR UNAVAILABLE GOAT MILK
STRONTIUM ANALYSES ARE COMPOSITES OF ALL MILK SAMPLED FROM A GIVEN LOCATION DURING THE QUARTER

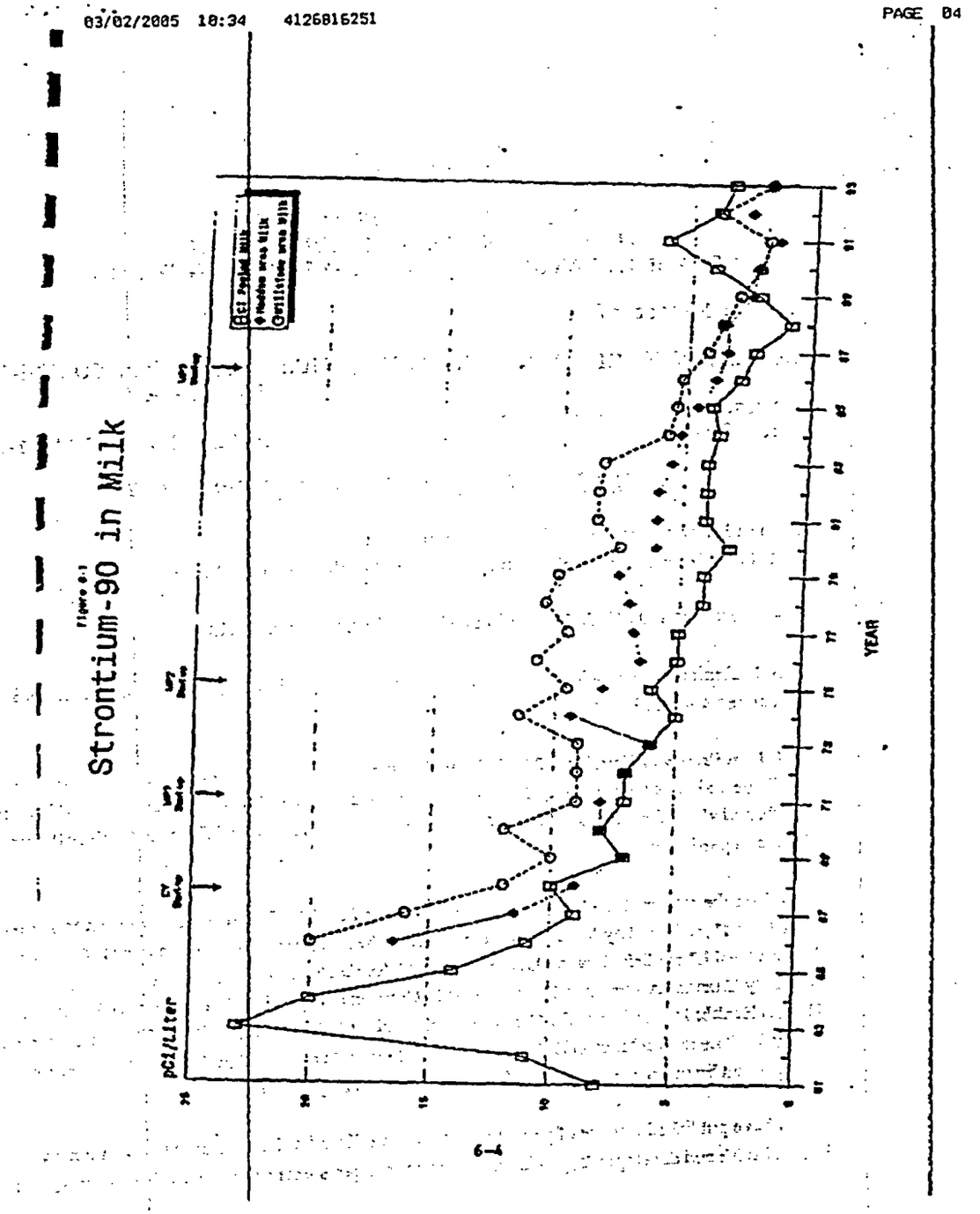
03/02/2005 10:34 4126816251
PAGE 04
Strontium-90 in Milk
pCi/Liter
YEAR
6-4

Exhibit "B"

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

DOMINION NUCLEAR CONNECTICUT, INC.: Docket Nos. 50-336-LR, 50-423-LR

(Millstone Nuclear Power Station, Units 2 and 3) : ASLBP No. 04-824-01-LR

DECLARATION OF ERNEST J. STERNGLASS

I, Ernest J. Sternglass, do hereby declare as follows:

1. I am above the age of eighteen (18) years and I believe in the obligation of an oath.

2. I reside at 4601 Fifth Avenue in Pittsburgh, Pennsylvania, 15213.

3. I submit this declaration in support of Connecticut Coalition Against Millstone Intervention in the above referenced matter.

4. I am Professor Emeritus of Radiological Physics at the University of Pittsburgh School of Medicine and have written and published extensively in the area of low-level radiation and human health, and about the adverse effects of radioactive emissions from the Millstone Nuclear Power Station in particular.

5. I am the author of the book "Secret Fallout: Low-Level Radiation from Hiroshima to Three-Mile Island" published by McGraw-Hill in 1981, of the review article "Environmental Radiation and Human Health" published by the University of California Press in 1972, and the article "Cancer Mortality Changes Around Nuclear Facilities in Connecticut" published in "Radiation Standards and Human Health: Proceedings of a Congressional Seminar February 10, 1978, by The Environmental Policy Institute in Washington DC. The facts and statements contained in these publications are incorporated by reference herein as references 1, 2 and 3 respectively.

6. I have published a series of papers on the effects of low-level environmental radiation on human health and development produced by nuclear weapons tests and reactor releases for the last

forty years, and have testified on this subject at hearings held by the U.S. Congress, the National Academy of Sciences, State Legislatures and U.S. Government Regulatory Agencies as an expert on this subject.

7. It is my professional opinion that the radioactive releases from the Millstone Nuclear Power Station since its startup in 1970 have caused and will continue to cause excess infant mortality, low birthweight, leukemia and cancer as well as increased rates of both chronic and infectious diseases in the towns around Millstone as well as in New London County and Connecticut as a whole.

8. According to the NRC publication "Radioactive Materials Released From Nuclear Power Plants" (NUREG /CR -2907), by 1987 Millstone had released a total of 32 Curies of radioactive Iodine and Particulates into the air which include the highly carcinogenic Strontium-90 and Iodine -131, together with 6.7 million Curies of Total Fission and Activation gases such as Xenon and Krypton, and the highest liquid releases of Mixed Fission and Activation Products of any nuclear plant in the United States, namely 581 Curies or 581 trillion picoCuries, the unit of concern in milk and drinking water.

9. In a single year, 1975, Millstone released a record high of 9.99 Curies of Iodine and Particulates into the air, more than twice as high as the 4 Curies released shortly after startup in 1971, together with 29.7 million Curies of Total Fission and Activation Gases, and 199 Curies of liquid Mixed Fission and Activation Products into Long Island Sound, also a record for all U.S. nuclear reactors.

10. Between startup of Millstone in 1970 and 1975, as shown in the 1978 Millstone report (3), cancer mortality rose 58% in Waterford where the reactor is located, 44% in New London 5 miles to the north-east, 27% in New Haven 30 miles to the west, 12% for the State of Connecticut as a whole, 8% in nearby Rhode Island, 7% in Massachusetts and 1% in New Hampshire, while it actually declined by 6% in the most distant New England state, Maine, following the pattern of Strontium-90 in the milk shown in the same report.

11. As shown in Table 9 of reference (3), while the Strontium-90 concentration in the milk declined for the U.S. as a whole between 1970 and 1975 from 8 picoCuries per liter to only 3 pCi/l, it rose from 9.8 in 1970 to a high of 15.8 in 1973 and 14.8 in 1974 near the Millstone Nuclear Plant, remaining at 10.7 by 1975. This is far in excess of the U.S. average of 3 pCi/l, ruling out any significant contribution to the local milk from bomb test fallout by France and China that continued until 1980.

12. As shown in Table 10 of reference (3) the calculated yearly radiation dose to bone of a child due to the excess Strontium-90 within 10-15 miles of the plant in excess of the yearly dose for the U.S. rose from 33 millirem per year in the first full year of operation to 204 mrem/yr by 1974, nearly three times the normal background level of 70 mrem/yr in Connecticut.

13. These doses due to Strontium-90 alone may be compared with the 15 mrem/yr to any organ permitted under current NRC regulations, the 2 mrem produced to bone marrow in a typical chest X-ray of a child, and the 80 mrem/yr to a developing fetus found to produce a doubling of the rate of childhood leukemia in the studies of Dr. Alice Stewart cited in Reference 7 of reference (3) for exposure in the mother's womb to X-rays in the first three months of pregnancy.

14. These considerations, later supported by the more recent studies of Strontium-90 measured in baby teeth together with effects on cancer incidence and infant mortality as reported by Mangano submitted in the present case and referred to here as reference (4) provide overwhelming evidence for the existence of a causal relationship between the abnormally high levels of Strontium-90 in the milk and the pattern of cancer changes at various distances from the Millstone plant.

15. The existence of a direct causal relationship between Strontium-90 released from nuclear reactors and an increased risk of cancer is very strongly supported by the finding described by Mangano (4) that baby teeth of children diagnosed with cancer have close to double the concentration of Strontium-90 than children born the same year and in the same area. This finding has led to a lawsuit having been filed in Florida against the Florida Power and Light company by the family of a child with a very high Strontium-90 tooth concentration seeking compensation, a suit which a federal judge ruled to be of sufficient merit to go to trial in 2005, despite efforts of the defendant to have it dismissed (5).

16. As pointed out in reference (3), this conclusion is still further supported by the fact that the types of cancer that rose most strongly in the Connecticut area near the Millstone Nuclear Plant are exactly those that have been found to be most sensitive to radiation in earlier studies by national and international standard setting organizations, namely those that increased the most by 1975, such as respiratory cancers (37%), breast cancer (12%), and pancreatic cancer (32%).

17. Likewise, further support for a causal relationship of nuclear plant releases and adverse health effects is provided by the fact cited by Mancuso et al.(5) cited in reference (1) that cancer deaths showed a much greater rise in women than in men, namely 17% for white women and only 11% for

white males. This same difference between males and females was found by Mancuso and his co-investigators for atomic workers at the Hanford Nuclear Plants exposed to low doses of both internal exposures to critical organs due to inhaled and ingested radioactive elements similar to those released by Millstone over a period of years, together with protracted external exposures from gamma rays produced by fission products accumulated on the ground, rather than to very short X-ray exposures used in diagnostic procedures.

18. A renewed rise in infant mortality in the six towns nearest Millstone took place after a sharp decline by 18% when all three units had been shut down for most of 1996-97 as described in Table 9 of the 2004 report by Mangano (4), with a smaller decline of 3.1% in 1998-99 relative to 1994-95, followed by a rise of 8.8% in 2000-01. This is very strong evidence indicating that even the much smaller releases from the two remaining PWR type of reactors continue to adversely affect the health of the newborn so that there can be no safe operation of any existing type of nuclear plant for the developing children on whom the future of our nation depends.

19. The much greater risk to human health from radioactive gases and particles that are inhaled or ingested and concentrate in certain critical organs such as the bone marrow or in hormone producing glands such as the pituitary gland targeted by the highly radioactive daughter product of Strontium-90, the element Yttrium-90 that has different chemical properties and leaves the bone to concentrate in soft tissues. This results in very high local doses to both the bone marrow and the critical hormone producing glands over long periods of time that greatly exceed the whole-body dose and result in cancer and other adverse effects on health hundreds to thousands of times greater than had been expected by a linear extrapolation to low doses of the risk from short external exposures such as received by the survivors of Hiroshima and Nagasaki or individuals exposed to medical X-rays that do not concentrate in specific organs, as described in the ECRR report (6).

20. It is important to note that exposure to low levels of Strontium-90 and other bone seeking radioactive chemicals routinely released by nuclear plants that resemble Calcium do not merely increase the risk of bone cancer or leukemia, but they weaken the immune defenses provided by the white cells of the blood that originate in the bone marrow. As a result the rate of cancer development all over the body normally held in check by white cells is increased, and the defenses against infectious diseases such as influenza, pneumonia and AIDS are lowered, increasing both total and infant mortality due to all causes combined as discussed in references (1)(2)(3) and (6).

21. Unfortunately for the protection of human health, the operators of nuclear plants such as Millstone are no longer required to measure Strontium-90 in the milk, the soil, the water and other

environmental samples, nor does the government measure bone concentrations of this element after 1982, and milk concentrations of this critical element each month in a series of cities across the nation since 1990. Thus, presently the operators of nuclear reactors only need to measure gamma ray emitting elements such as Cesium-137 that can be more easily and cheaply measured than Strontium-90 that emits only short range electrons that cannot penetrate the Geiger counters used for gamma rays, and which requires more costly laboratory procedures for each sample.

22. As recently brought out in the ECCR report (6), the reason why the risk of low protracted exposures due to inhaled or ingested radioactive chemicals is some 100 to 1000 times greater than the same dose due to short exposures is that for the low doses given over a long period the damage by free-radicals of oxygen dominate over direct damage to the DNA and cell membranes. This leads to a dose-response curve that rises extremely rapidly for very small doses and then flattens out at high doses, thus causing the error made by a linear extrapolation to zero dose used to establish the existing safety standards for permitted releases from nuclear plants.

23. Thus, the ECRR report states in paragraph 10 of its executive summary "that the present cancer epidemic is a consequence of exposure to global atmospheric weapons fallout in the period 1959-63 and that more recent releases of radioisotopes to the environment from the operation of the nuclear fuel cycle will result in significant increases in cancer and other types of ill health (Emphasis added).

24. Thus, in the concluding paragraph of the executive summary, it says that it is "the committee's belief that nuclear power is a costly way of producing energy when human health deficits are included in the overall assessment" and that "the environmental consequences of radioactive discharges must be assessed in relation to the total environment, including both direct and indirect effects on all living systems."(6).

25. Although the most serious airborne radioactive releases so far have occurred from the operation of Unit I which was a Boiling Water Reactor (BWR) permanently closed in 1996, studies described in references (1) and (2) have found similar increases in infant mortality, low birthweight and cancer around Pressurized Water Reactors (PWR) such as Shippingport near Pittsburgh and Indian Point near New York City. Therefore, it is to be expected that a twenty year renewal of the operating licenses for Millstone Units 1 and 2 would further increase the adverse effects on human health and their associated cost in health care, as well as the damage to wildlife, birds and fish that have been rising alarmingly in recent years.

26. This further increase of damage to human health and the environment is not only due to the short-lived radioactive elements such as Iodine-131, but also due to the long half-life of many of the radioactive chemicals routinely released by nuclear plants such as the 28 years it takes for the activity of Strontium-90 to decrease by half. Thus, it is very likely that continued operation of the Millstone Nuclear Plant will further increase the rates of cancer, low birthweight, infant mortality and chronic diseases such as hypothyroidism, diabetes, and other diseases related to immune and hormonal system damage as these elements accumulate in the underground water table from which wells draw their water, making it impossible to safely protect the public.

27. The unexpectedly great risk to the life and future health of the newborn due to very small doses of radiation to critical organs has just been further supported by a study of the incidence of premature births leading to underweight infants as reported in the April 28, 2004 issue of the Journal of the American Medical Association (7). This study revealed that the very small dose due to scattered radiation to the thyroid in the neck of the mother produced by just one or two dental X-rays during the first three months of pregnancy, approximately 40 millirem each, significantly increased the risk of premature birth and low birth weight. This in turn is known to increase infant mortality as well as producing a greater danger of mental and physical problems for infants who survive as a result of recent advances in neonatal care, but at huge emotional cost to the family and rising health care costs to society.

28. In the light of current knowledge of the unanticipated serious adverse effects on human health of extremely small doses of prolonged environmental radiation exposures to Strontium-90 and other fission products as described above, it is my professional opinion that the Millstone 2 and 3 reactors would need to end all radiation releases in order to meet public health requirements for safety, and that therefore they should not be granted license renewals to continue operations during the proposed twenty year renewal periodwithout demonstrating that this objective can be achieved.

I hereby declare the foregoing to be true and accurate to the best of my knowledge, information and belief under penalty of perjury.

Ernest J. Sternglass

Dated: August 8, 2004

LIST OF REFERENCES

1) Ernest J. Sternglass, "Secret Fallout: Low-Level Radiation from Hiroshima to Three Mile Island" (McGraw - Hill, New York, 1981) Available on the website www.radiation.org.

2) Ernest J. Sternglass, "Environmental Radiation and Human Health", pp.145-216, Proceedings of the Sixth Berkeley Symposium on Mathematical Statistics and Probability: Effects of Pollution on Health", Edited by M. L. Lecam, J. Neyman El. Scott, University of California Press, Berkeley and Los Angeles, 1972.

3) Ernest J. Sternglass, "Cancer Mortality Changes Around Nuclear Facilities in Connecticut", pp. 174-212, "Radiation Standards and Human Health: Proceedings of a Congressional Seminar", February 10,1978 published by the Environmental Policy Istitute, Washington, DC.

4) . Joseph J. Mangano, "Risks of Cancer And Other Diseases From The Operation Of The Millstone Nuclear Plant," August 5, 2004, Radiation and Public Health Project, New York, NY.

5). Finestone vs. FLP, Case Number 03-140040-CIV-COHN/LYNCHC

6) Philippe P. Huel et al. "Antepartum Dental Radiography and Infant Low Birth Weight", Journal of the American Medical Association, Volume 291, No.16, April 28, 2004, pp. 1987-1993.

7) . "Health Effects of Ionizing Radiation Exposure at Low Doses for Radiation Protection Purposes: Recommendations of the European Committee on Radiation Risk", Edited by Chris Busby with Rosalie Bertell, Inge Schmitz - Feuerhake, Molly Scott Cato and Alexei Yablokov, Published for the ECRR by Green Audit Press, Castle Cottage, Aberystwyth, SY 23iDZ, United Kingdom. (2003) Website: www. euradcom.org 2003.

RDB received 3/10/05

COUNTY OF SUFFOLK

12/9/04
69FR 71137

(27)

OFFICE OF THE COUNTY EXECUTIVE

Steve Levy
COUNTY EXECUTIVE

Kevin S. Law
Chief Deputy County Executive

Michael J. Deering
Director of Environmental Affairs

February 23, 2005

Chief, Rules Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T-6 D59
Washington, D.C. 20555-0001

Re: Millstone Power Station, Units 2 and 3, NUREG-1437, Supplement 22

Dear Chief:

MPS-52-1 A draft supplemental impact statement (SEIS) has been submitted to the Nuclear Regulatory Commission (NRC) by Dominion Nuclear Connecticut, Incorporated concerning the application to renew the operating license for Millstone Power Station, Units 2 and 3 for an additional 20 years. The County of Suffolk finds the document overly narrow in scope, and lacking detail with regard to the issues of concern to the 1.4 million residents of our county. It appears that public notifications to areas in Suffolk County within the 10 and 50 mile emergency planning zones were neglected; that there is no need to rush operating license renewal for the plants decades prior to their license expiration; and, that radiological emergency evacuation plans for Suffolk County were not addressed.

I was dismayed that a public hearing was not held in Suffolk County concerning the renewal application and that the Commission failed to contact local municipalities and environmental groups on eastern Long Island (Supplement 22, Appendix D, Organizations Contacted). An analysis of major points of view concerning significant problems and objections raised by federal, state or local agencies is required by 10 CFR 51.71 in a draft environmental impact statement. In accordance with NRC policy regarding public involvement in reactor license renewal and as Suffolk County residents may be adversely affected by the renewal, we request that a public hearing be held in Suffolk County where the NRC and Dominion can respond to these issues.

MPS-52-2 Suffolk County views the applications to renew Millstone's operating licenses as premature at this time. The current operating licenses do not expire for periods of 10 and 20 years, until July 2015 for Unit 2 and November 2025 for Unit 3. With the advance of science in the next two decades, it is likely that alternative cleaner energy sources and/or conservation will negate the need for license renewal for outmoded and hazardous nuclear generating plants. It is clearly self-serving for the Commission to conclude that environmental impacts for future generating and conservation alternatives would be greater than those operating Millstone (Supplement 22, pages *xix* and 8-51). The *NRC Fact Sheet on Reactor License Renewal* states that the license renewal

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Template = ADM-013

E-RIDS = ADM-03
Call = R. LEMCH (RLE)

MPS-52-2 procedure is expected to take no more than 30 months. Why then is there a push to renew operating licenses decades before it is necessary to perform such a review?

Suffolk County is an important stakeholder in the application to renew the operating licenses because the plants are located within 10 miles NNE of the tip of Orient Point and seven miles WNW of Fishers Island in Suffolk County. Fishers Island and a portion of the Plum Island Animal Disease Laboratory, now operated by the Department of Homeland Security, are located
MPS-52-3 within the Millstone Power Station's primary 10 mile Emergency Planning Zone (EPZ). In the event of an emergency, Fishers Island's residents are to be evacuated to either New London or Stonington Harbor and be bused north to Windham, CT. What is the fate of researchers and operations at Plum Island in the event of a severe accident at Millstone?

A 50-mile Ingestion Planning Zone is identified in the State of Connecticut's Radiological Emergency Plan in the event that a nuclear plant release is carried beyond 10 miles. This EPZ encompasses virtually all of Suffolk County east of the William Floyd Parkway in Brookhaven Township. Although ingestion suggests an assessment of food and drinking water, a release carried southward to Suffolk County is likely require additional public protective actions, up to and including evacuation. This had been deemed infeasible during the public discourse concerning the Shoreham nuclear plant due to the lack of adequate transportation infrastructure. Since that era, no new major east-west transportation facilities have been constructed, and there has been a significant increase in the population of eastern Suffolk County. Evacuation of eastern Suffolk County remains an infeasible scenario, a fact we consider to be a major factor impeding renewal of Millstone's operating licenses.

MPS-52-4 NRC regulations limit commercial power reactor licenses to 40 years, but also permit such licenses to be renewed where appropriate. In the case of Millstone, however, renewal for 20 years is not an appropriate public policy decision. The NRC recognizes that some structures and components of nuclear plants may have been engineered on the basis of an expected 40-year service life. Suffolk County is not reassured by the assumption made by the NRC in NUREG-1437, Vol.1, section 5.3.1.

> *"In assessing the impact on the environment from postulated accidents during the license renewal period, the assumption has been made that the license renewal process will ensure that aging effects on the plant are controlled and that the probability of any radioactive releases from accidents will not increase over the license renewal period."*

This does not appear to be a credible position in light of Dominion's statement (Supplement 22, page *xviii*) that it *"did not identify any major plant refurbishment activities or modifications as necessary to support the continued operation of Millstone for the license renewal period."* The county has difficulty reconciling the two positions that, 1) the NRC will "control" the effects of an aging plant forty years into the future, and yet 2) Dominion foresees no major maintenance activity as necessary for safe operation through the year 2045.

Other significant issues that are not adequately addressed in the SEIS include:

MPS-52-5 • The cumulative impact of routine operations to aquatic resources, although recognized as significant for winter flounder (Supplement 22, page 4-56), are not adequately addressed or mitigated by the SEIS.

MPS-52-6 • In the event of a severe accident at Millstone the probability of weighted consequences of a release to groundwater is stated to be small (Supplement 22, page 5-4). However, there is a potential for radioactive fallout directly onto the surface water bodies that serve as the

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MPS-52-6 Fishers Island water supply. Radiological monitoring and the provision of an alternative public water supply for these Suffolk County residents are not addressed in the document.

- Dominion estimates that the dose to the population within 50 miles of the Millstone site from severe accidents to be between 12.8 and 17.4 person-rem. What is the expected dose to county residents living on Fishers Island and the North Fork that are in considerably closer proximity and what health risks are posed by this exposure?

Thank you for the opportunity to comment on this proposal and we look forward to hearing your response at a forum held in Suffolk County.

Sincerely,

Steve Levy
Suffolk County Executive

Cc: Diane Screnci, Public Affairs Officer, United States Nuclear Regulatory Commission, 475 Allendale Road, King of Prussia. Pennsylvania19406-1415
Kevin Law, Chief Deputy County Executive and General Counsel
Paul Sabatino II, Chief Deputy County Executive
Christine Malafi, County Attorney
Lynne Bizzarro, Deputy County Attorney
Michael Deering, Director of Environmental Affairs
Brian Harper, M.D. Commissioner, Department of Health
Vito Minei, Director, Division of Environmental Quality

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RDB Received 3/10/05

From: Helga Walter <hg@optonline.net>
To: <rle@nrc.gov>
Date: 2/25/05 8:19PM
Subject: Deny Millstone's Relicensing

12/9/04

69 FR 71437

MPS-53-1 I urge you to deny Millstone's Relicensing

MPS-53-2 1. There are no emergency plans in place for Long Island in the event of an incident or accident at the facility.
The DEIS ignores the safety threats to Long Island residents and the environmental impacts of the aging reactors.

MPS-53-3 2. Millstone has been operating with an expired Clean Water Act discharge permit since 1997. The Clean Water Act mandates permit holders to obtain five-year permits so that every five years they will have to demonstrate that they have implemented best available technology to reduce or eliminate pollution if they want their permits renewed. Millstone has been able to get away with operating with non-updated technology an extra five years.

MPS-53-4 3. Millstone is responsible for the depletion of native fish species through the operations of its intake structures. All these assaults on the environment would end if (a) Millstone were shut down or (b) if Millstone converted to closed cooling system. This important issue certainly affects Long Island because of the dispersion of toxic and radioactive waste byproducts by tidal and wave action.

I urge you to deny Millstone's Relicensing !

H. Geisler Walter
Long Island Resident
hg@optonline.net

SISP Review Complete

Template = ADM-013

E-RIDS = ADM-03
Cc = R.L. Emch (RLE)

Richard Emch - Deny license extension to Millstone. Page 1

RDB received 3/10/05

From: Margie Brock <margieb3@optonline.net>
To: <rle@nrc.gov>
Date: 2/25/05 8:58PM
Subject: Deny license extension to Millstone.

MPS-54-1 Please deny the license extension to Millstone.

12/9/04

69FR71137

(29)

SESP Review Complete
Template = ADM-013

E-RIDS-ADM-03
Cadd = R.L. Emch (RLE)

Richard Emch - (no subject) Page 1

NRR received 3/10/05

From: <SMEP2@aol.com>
To: <rle@nrc.gov>
Date: 2/26/05 9:38AM
Subject: (no subject)

To Whom It May Concern,
MPS-55-1 Nuclear energy has its attributes but plants should be located in sensible areas where evacuation in case of emergency is possible.
MPS-55-2 Please use your common sense and protect both the public and the fragile LI
MPS-55-3 Sound environment before you license Millstone to continue for another twenty years.
Sylvia Pafenyk
Southold, LI

12/9/04
69FR 71437
(50)

CC: <nfec@optonline.net>

SFSP Review Complete
Template=ADM-013

E-RIDS=ADM-03
Add=R. L. Emch (RLE)

Richard Emch - relicensing of Millstone Page 1

RDB Received 3/10/05

From: <Caseathome@aol.com>
To: <rle@nrc.gov>
Date: 2/27/05 3:28PM
Subject: relicensing of Millstone

10/9/04
69FR 71437
(31)

MPS-56-1 Gentlemen: It is very upsetting to learn that you are considering relicensing the Millstone plant with all the negative considerations that has:
MPS-56-2 1. Millstone has been operating an expired clean water act permit for a full 5 years beyond the alloted time.
MPS-56-3 2. The Millstone operation depletes the native fish population due to ineffective intake methods
MPS-56-4 3. There is no plan in existance for a safe evacuation from Long Island in spite of the fact that it is 11 miles away. Shoreham was shut down for just that reason.

MPS-56-1 How can you be thinking of this? Millstone must be shut down. Dont fool with our lives!

Yours truly
Constance K. Case

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R.L. Emch (RLE)

ADP Received 3/10/05

From: <Judgekk@aol.com>
To: <rle@nrc.gov>
Date: 2/26/05 11:34AM
Subject: Millstone Relicensing

10/9/04 69FR71437

(32)

Mr. Emch,

MPS-57-1 As a property owner on Long Island Sound at Northville Beach, I am opposed to the relicensing of the Millstone Nuclear Plant. My reasons are as follow:

MPS-57-2 1. The Millstone Draft Environmental Impact Statement is completely silent on impacts to Long Island. There are absolutely no evacuation plans in place for Long Island.

MPS-57-3 2. Millstone has been operating with an expired Clean Water Act discharge permit since 1997. The Clean Water Act mandates permit holders to obtain five-year permits so that every five years they will have to demonstrate that they have implemented best available technology to reduce or eliminate pollution if they want their permits renewed. Millstone has been able to get away with operating with non-updated technology an extra five years.

MPS-57-4 3. Millstone is responsible for the depletion of native fish species through the operations of its intake structures. All these assaults on the environment would end if (a) Millstone were shut down or (b) if Millstone converted to closed cooling system. This important issue certainly affects Long Island because of the dispersion of toxic and radioactive waste byproducts by tidal and wave action.

Kathleen McGraw

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Cdd = R.L. Emch (RLE)

RDB - Received 3/10/05

From: Justin Porter <justembase@yahoo.com>
To: <rle@nrc.gov>
Date: 2/28/05 10:09AM
Subject: I Oppose the Nuke Plant Relicensing at Millstone CT

12/9/04

Hi Dick,

MPS-58-1 I oppose renewing the license on the Millbrook Nuke. I feel it threatens the safety and security of Eastern Long Islanders. I am a US Citizen that votes.

69FR 71437

33

Justin Porter
848 Roanoke Ave
Riverhead NY 11901

--- NFEC <nfec@optonline.net> wrote:

> Tell the NRC to Deny Millstone's Relicensing! Deadline March 2, 2005!
>
> The operators of the Millstone Nuclear Reactors are seeking to renew their
MPS-58-2 > license. If renewed, these reactors will be up and running for another 20
> years, yet there are no emergency plans in place for eastern Long Island in
> the event of an incident or accident at the facility.
>
> The Nuclear Regulatory Commission is accepting comments on the Draft
> Environmental Impact Statement (DEIS) for relicensing. The DEIS ignores
> the safety threats to Long Island residents and the environmental impacts
> of the aging reactors.
> Reasons to oppose:
>
MPS-58-2 > 1. The Millstone DEIS is completely silent on impacts to Long Island. Shoreham did not come on line because we couldn't put an evacuation plan in place.
MPS-58-3 > 2. Millstone has been operating with an expired Clean Water Act discharge permit since 1997. The Clean Water Act mandates permit holders to obtain five-year permits so that every five years they will have to demonstrate that they have implemented best available technology to reduce or eliminate pollution if they want their permits renewed. Millstone has been able to get away with operating with non-updated technology an extra five years.
MPS-58-4 > 3. Millstone is responsible for the depletion of native fish species through the operations of its intake structures. All these assaults on the environment would end if (a) Millstone were shut down or (b) if Millstone

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R.L. Emch (RLE)

MPS-58-4

> converted to closed cooling system. This important issue certainly
> affects
> Long Island because of the dispersion of toxic and radioactive waste
> byproducts by tidal and wave action.
>
>
> Tell the NRC to deny license extension to Millstone.
> Email your comments to rle@nrc.gov or send your comments to:
> Richard L.
> Emch, Environmental Project Manager, U.S. Nuclear Regulatory
> Commission,
> Washington DC 20555-0001.
>
> The deadline is March 2, 2005!
>
>
>
>
>

> powered by ebase(tm) v1.03. mailto:info@ebase.org,
> http://www.ebase.org
> -19-
>

>
> North Fork Environmental Council
> P.O. Box 799
> Mattituck, New York 11952
> 631-298-8880
> Fax: 631-298-4649
> E-mail: nfec@optonline.net
> www.nfec1.org

Do You Yahoo!?
Tired of spam? Yahoo! Mail has the best spam protection around
http://mail.yahoo.com

CC: NFEC <nfec@optonline.net>

RDB received 3/10/05

From: <ABenners@aol.com>
To: <rle@nrc.gov>
Date: 2/28/05 10:45AM
Subject: Millstone

10/7/04
69FR 71437

(34)

MPS-59-1 Deny license extension to Millstone

MPS-59-2 The operators of the Millstone Nuclear Reactors are seeking to renew their license. If renewed, these reactors will be up and running for another 20 years, yet there are no emergency plans in place for eastern Long Island in the event of an incident or accident at the facility.

The Nuclear Regulatory Commission is accepting comments on the Draft Environmental Impact Statement (DEIS) for relicensing. The DEIS ignores the safety threats to Long Island residents and the environmental impacts of the aging reactors.
Reasons to oppose:

MPS-59-2 1. The Millstone DEIS is completely silent on impacts to Long Island. Shoreham did not come on line because we couldn't put an evacuation plan in place.

MPS-59-3 2. Millstone has been operating with an expired Clean Water Act discharge permit since 1997. The Clean Water Act mandates permit holders to obtain five-year permits so that every five years they will have to demonstrate that they have implemented best available technology to reduce or eliminate pollution if they want their permits renewed. Millstone has been able to get away with operating with non-updated technology an extra five years.

MPS-59-4 3. Millstone is responsible for the depletion of native fish species through the operations of its intake structures. All these assaults on the environment would end if (a) Millstone were shut down or (b) if Millstone converted to closed cooling system. This important issue certainly affects Long Island because of the dispersion of toxic and radioactive waste byproducts by tidal and wave action.

Deny license extension to Millstone.

Andrew Benners
South Jamesport, NY

SISP Review Complete
Template = ADM-013

ENFDS = ADM-03
Call = BLEnch (RLE)

RDB received
3/10/05

From: Jenny Bloom <jennybloom@optonline.net>
To: <rle@nrc.gov>
Date: 2/28/05 5:22PM
Subject: Please deny Millstone's License

Richard L. Emch, Environmental Project Manager, U.S. Nuclear Regulatory Commission, Washington DC 20555-0001.

3/9/04
69FR 9H37

(35)

Mr. Emch,

MPS-60-1 Please deny Millstone's operating license.

MPS-60-2 As a resident of the North Fork of Long Island it is unacceptable to me that Millstone be allowed to operate without a workable evacuation plan in place for my township.

MPS-60-3 The threat posed my Millstone's operation to Long Island's environment and
MPS-60-4 quality of life are larger than the benefits to CT's energy costs.

Sincerely,

Jenny Bloom
11600 Main Rd
East Marion, NY 11939
(631) 477-3617

SUNSP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R.L. Emch (RLE)

Richard Emch - Millstone Page 1

BDO received 3/10/05

12/7/04 69FR 71437

(36)

From: <SweetSen@aol.com>
To: <rle@nrc.gov>
Date: 2/28/05 5:08PM
Subject: Millstone

Dear Richard L. Ech,

MPS_61-1 Does Millstone have an updated Clean Water Act discharge permit? I understand their's expired in 1997. If this is true, why has it been allowed to operate without one???

MPS-61-2 And if a closed cooling system existed, would that not have a postive impact upon the environment? Why isn't one being installed?

How can we face the guilt of destroying our envirment for our future generations because we are too cheap to do the right thing?

MPS-61-3 CLOSE MILLSTONE PLEASE.

Thank you.

Judi

ESP Review Complete

Template = ADM-013

E-RFDS = ADM-03

Cc = R.L. Emch (RLE)

RDB received 3/10/05

From: MBS <orange05@optonline.net>
To: <rle@nrc.gov>
Date: 2/28/05 2:28PM
Subject: Millstone Nuclear plant in CT

Greetings,

MPS-62-1 I am a resident of Connecticut and I am writing to you to strongly urge you to deny the renewal of the license for this plant. There are significant
MPS-62-2 health concerns associated with this plant that merit immediate
MPS-62-3 investigation. Also, the State of Connecticut has enacted legislation that mandates a move to Clean, Renewable energy (referred to as Class I renewable). This plant does not meet this criteria. The denial of this extension would go a long way to improving the health and environment of Ct as well as exepiting the move to Clean Energy.
I am sure that you have received many requests similar to this one; please look at the facts and make the right decision. What decision would you make if you lived next door to this plant? Reject this application for the sake of the residents, specifically the children of CT and of planet Earth.

12/7/04

69FR71437

(37)

Respectfully submitted,

Michael Schwartz
Orange, CT

"It is amazing what you can accomplish if you do not care who gets the credit."
–Harry S. Truman

CC: <info@mothballmillstone.org>

E-RIDS = ADM-03
Cal = R.L. Emch (RLE)

STSP Review Complete
Template = ADM-013

RDB Received 3/10/05

From: Amy Martin <amykm@optonline.net>
To: <rle@nrc.gov>
Date: 2/28/05 11:27AM
Subject: Millstone Nuclear Plant

MPS-63-1 My husband and I live in Greenport NY and are seriously opposed to the relicensing of Millstone. It is and has been what itsname portends, a millstone around the neck of all who live on the eastern end of Long Island.
MPS-63-2 There is no way we can be safely evacuated, should there be a problem, the communications of warnings between the states seem to be nearly non-existent
MPS-63-3 and this plant is functioning with an expired clean Water discharge permit
MPS-63-4 for over 4 years time. Long Island Sound is dying and the NRC and EPA seem to care very little for the welfare of the people who consume the fish and shellfish that have managed to survive this long. Our rates of cancer have drastically increased in recent years and someone needs to address the fact that Millstone can be a serious contributor to the food chain poison we consume and breath.

Please do not relicense this plant until it is able to pass all CURRENT permit requirements such as the Clean water discharge permit and the health issues and evacuation route of Eastern Long Island are satisfiably addressed.

We live and work here, our lives are no less important than those of the citizens of Connecticut who receive their power from this plant. Make it safe or close it down.

Amy Martin
5th St
Greenport,
New York

10/9/04
69FR 71437
(38)

STSP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Cc = R.L. Emch (RLE)

Robert Fromer sent his comments to NRC's Office of Public Affairs by email message on February 28, 2005. His comments are located in comment document #24 (MPS-49), starting on page A-280. He also sent those same comments to NRC's Rules Review and Directives Branch (the address given in the draft SEIS), by letter dated 2/28/2005. Mr. Fromer's letter was received on March 10, 2005. His letter was designated as comment document #39 before it was realized that the letter was a duplicate of his email message (#24). Only the first page of his letter is reproduced here. All of his comments are reproduced, starting on page A-280.

RDB received 3/10/05

P.O. Box 71
Windsor, CT 06095
February 28, 2005

3/9/04
69FR 71437
(39)

Chief
Rule Review and Directives Branch
U.S. Nuclear Regulatory Commission
Mailstop T-6D59
Washington, DC 20555-0001

Re: Draft Report For Comment on Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Regarding Millstone Power Station, Units 2 and 3, NUREG-1437, Volumes 1 and 2, Supplement 22

Dear Chief Rule Review and Directives Branch:

"[t]he problem at hand, which is that centrally generated electricity is a vulnerable genie. In order to be used it must travel on an ugly, complex and inefficient labyrinth of wires and substations Even from a security view (national or otherwise) such a fragile system is suicide." Gordes, Hartford Courant, Letter to the Editor, February 1978.

Dominion has not provided a comparative analysis and assessment of life cycle energy consumption to determine that re-licensing of Millstone is the preferred option. Nor, has Dominion considered cumulative alternatives (i.e., energy sources) to meet the current and future energy demands.

A. INTRODUCTION

"The United States Nuclear Regulatory Commission ("NRC") considered the environmental impacts of renewing nuclear power plant operating licenses ("OIs") for a 20-year period in its *Generic Environmental Impact Statement for License Renewal of Nuclear Plants* (GEIS), NUREG-1437, Volumes 1 and 2, and codified the results in 10 Code of Federal Regulations (CFR) Part 51. In the GEIS (and its Addendum 1), the staff identifies 92 environmental issues and reaches generic conclusions related to environmental impacts for 69 of these issues that apply to all plants or to plants with specific design or site characteristics. Additional plant-specific review is required for the remaining 23 issues. These plant-specific reviews are to be included in a supplement to the GEIS." [GEIS, p. iii.]

"This draft supplemental environmental impact statement ("SEIS") has been prepared in response to an application submitted to the NRC by the Dominion Nuclear Connecticut (Dominion) to renew the OLs for Millstone Power Station, Units 2 and 3 (Millstone) for an additional 20 years under 10 CFR Part 54. This draft SEIS includes the NRC staff's analysis that considers and weighs the environmental impacts of the proposed action, the environmental impacts of alternatives to the proposed action, and mitigation measures available for reducing or avoiding adverse impacts. It also includes the staff's preliminary recommendation regarding the proposed action." Id.

B. BACKGROUND

E-RIDS = ADM-03
Acc = F.L. Emch (RLE)

SISP Review Complete
Template = ADM-013

HDB Received 3/10/05

From: <Jpr3261761@aol.com>
To: <rle@nrc.gov>
Date: 3/2/05 9:47AM
Subject: Millstone License

10/7/04 69FR 71437 (10)

MPS-64-1 Do NOT reissue license to Millstone reactor in Connecticut. There is no
MPS-64-2 evacuation plan for eastern Long Island, and its clean water permit is expired.
MPS-64-3 Millstone is a serious danger.

John Rooney

PO Box 1622

(425 Maple Lane)

Southold NY 11971

SFSP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R.L. Emch (RLE)

ADM Received 3/10/05

From: amanda meisel <amandameisel@yahoo.com>
To: <millstoneeis@nrc.gov>
Date: Fri, Feb 25, 2005 1:19 PM
Subject: oppose nuclear revival

To Whom it may concern,

MPS-65-1 I am writing to oppose the license renewal for the millstone nuclear reactors in Waterford. I am a
MPS-65-2 physician and am truly concerned about the health impact of the radioactive particles on the residents and
MPS-65-3 workers int our area. I would appreciate your consideration of a new hearing to include all stakeholders,
MPS-65-4 including nearby Long Island Communities, as the effects are far-reaching. The nuclear site also makes
MPS-65-5 us a target for terrorist activity, which is certainly a concern in today's world. It has also come to my attention that nuclear waste is shipped to Barnswell, South Carolina and has a negative health impact on the poor community. This information about the destination and impact of nuclear waste from Waterford should be included in the NRC's environmental impact agenda. Please reconsider the decision to extend the operating licences for the Millstone 2&# reactors. Even a small percentage of cancer increase is too much, if it can be prevented.
Thank you, Amanda M. Levitt, ND

12/9/04

Do you Yahoo!?
Yahoo! Mail - Helps protect you from nasty viruses.

69FR 71137

141

SFSP Review Complete Template - ADM-013

E-RFDS = ADM-03
Add - R.L. Fuch (RLE)

RDB received
3/10/05

From: "Baran, Marie" <Marie.Baran@rrb.gov>
To: <MillstoneEIS@nrc.gov>
Date: Fri, Feb 25, 2005 11:40 AM
Subject: Millstone

MPS-66-1 I wish to voice my opposition to the Millstone Nuclear power plant

12/9/04
69FR 714.37
(.112)

MPS-66-2 1. The Millstone draft Environmental Impact Statement is completely silent on impacts to Long Island. This gross omission by the NRC is reason to deny re licensing on this basis alone. Meaning if and when there is a nuclear event (and there was one on January 14, 2005), they do not have to notify Long Island who is just 10 miles south of the Millstone along the Long Island Sound. Shoreham did not come on line because we couldn't put an evacuation plan in place. Millstone is our Shoreham!!

MPS-66-3 2. Millstone has been operating with an expired Clean Water Act discharge permit since 1997. The Clean Water Act mandates permit holders to obtain five-year permits so that every five years they will have to demonstrate that they have implemented best available technology to reduce or eliminate pollution if they want their permits renewed. Millstone has been able to get away with operating with non-updated technology an extra five years.

The Connecticut Coalition Against Millstone believes this is a flagrant violation of federal law. (In Connecticut, the Department of Environmental Protection is delegated by the federal EPA to implement the Clean Water Act and hence is the permitting agency. DEP has routinely issued "emergency authorizations" of indefinite duration which violate the permit conditions and which allow for increased pollution by toxic chemicals. This is a scandal! Meaning the NRC and Millstone are above the law and play by their own rules.

MPS-66-4 3. Millstone is responsible for driving the native fisheries stock to near-extinction through the operations of its intake structures. All these assaults on the environment would end if (a) Millstone were shut down or (b) if Millstone converted to closed cooling system. This important issue certainly affects Long Island because of the dispersion of toxic and radioactive waste byproducts by tidal and wave action.

Marie Baran

E-RFDS=ADM-013
Ack = RL. Elnick (RLE)

STSP Review Complete
Template - ADM-013

2567 7th Avenue

East Meadow NY 11554

CC: <tim.bishop@mail.house.gov>, <jennifer.gunn@mail.house.gov>, <Jon.schneider@mail.house.gov>, <hilliary.clinton@mail.house.gov>

MillstoneEIS - Millstone Page 1

NRR Receiving 3/10/05

From: <CayLea30@aol.com>
To: <MillstoneEIS@nrc.gov>
Date: Fri, Feb 25, 2005 11:27 AM
Subject: Millstone

12/9/04

MPS-67-1 Sirs: I want to go on record as being against the re licensing of
MPS-67-2 Millstone. They do not have an emergencey evacuation plan for where I live on Long Island.
Arthur Tillman,
Mattituck, N.Y.

691FR5711137

(43)

SFSP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = RL Emch (RLE)

RDB received
3/10/05

10/9/04
69 FR 61137
44

From: Kathleen Faraone <kathyfaraone@yahoo.com>
To: <rle@nrc.gov>
Date: 3/2/05 10:59AM
Subject: Millstone Power Plant relicensing

Kathleen Cunningham Faraone
44 Cosdrew Lane
East Hampton, New York 11937
t - 631-324-3581
f-631-324-7439
e-kathyfaraone@yahoo.com

Mr. Richard L. Emch
Environmental Project Manager
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

2 March 2005

Dear Mr. Emch,

MPS_68-1 I understand the operators of the Millstone Nuclear Reactors across Long Island Sound in Connecticut are seeking to renew their license. If renewed, these reactors will be up and running for another 20 years, yet there are no emergency plans in place for eastern Long Island in the event of an incident or accident at the facility. I also understand that the DEIS for this relicensing ignores the safety threats to Long Island, New York residents and the environmental impacts of the aging reactors.

I oppose the relicensing of these reactors for the following reasons:

1. The Millstone DEIS is completely silent on impacts to Long Island. A nuclear power plant in Shoreham, Long Island did not come on line because an evacuation plan could not be put in place, particularly for Eastern Long Island.

MPS-68-2 2. Millstone has been operating with an expired Clean Water Act discharge permit since 1997. The Clean Water Act mandates permit holders to obtain five-year permits so that every five years they will have to demonstrate that they have implemented best available technology to reduce or eliminate pollution if they want their permits renewed. Millstone has been able to operate with non-updated technology for an additional five years with no consequence.

MPS-68-3 3. Millstone is responsible for the depletion of native fish species through the operations of its intake structures. All these assaults on the environment would end if (a) Millstone were shut down or (b) if Millstone converted to closed cooling system. This important issue certainly affects Long Island because of the dispersion of toxic and radioactive waste byproducts by tidal and wave action.

SESP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R. L. Emch (RLE)

MPS-68-4 Please do not allow this power plant to reopen without mitigation of the above impacts.

Thank you.

Sincerely,

Kathleen Cunningham Faraone

Celebrate Yahoo!'s 10th Birthday!
Yahoo! Netrospective: 100 Moments of the Web
http://birthday.yahoo.com/netrospective/

RDB Received 3/10/05

From: Kersten Elenteny <kelenteny@mac.com>
To: <rle@nrc.gov>
Date: 3/2/05 11:30AM
Subject: I Oppose Millstone License Extension

Dear Mr. Emch -

MPS-69-1 I am writing to inform you that as a resident of New London County, I am in opposition of the license
MPS-69-2 extension of Millstone. The plant has a negative environmental impact on our waterways and wildlife, in
MPS-69-3 addition to the harmful health hazards posed to humans.

Please deny the Millstone license extension. Feel free to contact me with any questions or for further discussion.

12/9/04
69 FR 71137

Kersten Elenteny
33 Essex Street
Mystic, CT 06355

HG

CC: <pmcquown@mac.com>

SISP Review Complete
Template = NRR-013

E-RIDS=ADM-03
Add= A.L. Emch (RLE)

ADB Received 3/10/05

12/9/04 69 FR 71137 (46)

From: Andy Greene <ajgreene@optonline.net>
To: <rle@nrc.gov>
Date: 3/2/05 12:42PM
Subject: relicensing of Millstone

Dear Mr. Emch:

Kindly accept the following as my comments on the DEIS related to the relicensing of Millstone.

MPS-70-1 1. I am appalled that the Millstone DEIS is completely silent on impacts to Long Island. I live less than 25 miles from Millstone, in an area that is downwind from the plant several months a year. There is no question my family would be directly impacted in the event of any accident or a terrorist attack. How is it possible that you can ignore Long Island when considering Millstone?

MPS-70-2 2. Millstone has been operating with an expired Clean Water Act discharge permit since 1997. The Clean Water Act mandates permit holders to obtain five-year permits so that every five years they will have to demonstrate that they have implemented best available technology to reduce or eliminate pollution if they want their permits renewed. Millstone has been able to get away with operating with non-updated technology an extra five years. Why is Millstone allowed to subvert the intent of the law?

MPS-70-3 3. Millstone is responsible for the depletion of native fish species through the operations of its intake structures. All these assaults on the environment would end if (a) Millstone were shut down or (b) if Millstone converted to closed cooling system. This important issue certainly affects Long Island because of the dispersion of toxic and radioactive waste byproducts by tidal and wave action.

I hope that these crucial matters will be considered in the final DEIS.

Sincerely yours,

Andrew Greene
1220 Sigsbee Road
Mattituck, NY 11952

SFSP Reviewer Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R.L. Emch (RLE)

RDB received
3/10/05

From: Rory MacNish <rm246@cornell.edu>
To: <MillstoneEIS@nrc.gov>
Date: Fri, Feb 25, 2005 3:21 PM
Subject: opposing the re licensing of Millstones Units 2 & 3

To Whom it may Concern,
MPS-71-1 My family, (which consists of my 4 children and my wife) and myself are opposed to the re licensing of Millstones Units 2 & 3.
Thank you,

12/9/04
69FR71137
(77)

Rory MacNish
370 Pacific Street
Mattituck NY 11952
rmacnish@optonline.net

CC: <jennifer.gunn@mail.house.gov>, <tim.bishop@mail.house.gov>, <jon.schneider@mail.house.gov>, <acampop@assembly.state.ny.us>, <Lirrcomm@aol.com>

SISP Review Complete
Template = NRR-013

E-RFDS-NRR-013
Add = R.L.Emch (RLE)

OFFICIAL COMMENTS OF THE TOWN OF SOUTHOLD
P.O. Box 1179
Southold, NY 11971-0959
Tel.: (631) 765-1889
Fax: (631) 765-1823

March 2, 2005

Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mailstop T-6D 59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RE: Objections to DEIS, Millstone Power Station Units 2 and 3

To Whom It May Concern:

MPS-72-1

I am Supervisor of the Town of Southold, the easternmost town on the North Fork of Long Island, located on a narrow peninsula directly opposite the Millstone plant across the Long Island Sound. On January 11, 2005, I appeared and made comments on the record on behalf of the residents of the Town of Southold at the public hearing on the Draft Environmental Impact Statement (DEIS) for the proposed renewal of the operating licenses for the Millstone Power Station, Units 2 and 3. Those comments stand; these written comments serve as supplemental objections to the renewal of those licenses in the absence of the due consideration for the safety of the affected nearby Long Island residents.

Furthermore, I hereby join in the request of other parties, including, without limitation, the Connecticut Coalition Against Millstone, for an extension of time in which to submit written comments due to the failure of the NRC to make available for review relevant documents such as the transcript of the January 11, 2005 hearing.

In the first instance, I object that the Town of Southold was given no notice whatsoever of the "scoping process" that was apparently held in this purportedly public environmental review procedure. It is precisely because we were not included in this process, and not afforded the opportunity to "identify the significant issues to be analyzed in depth", that critical issue of the safety of Long Island residents has been completely omitted from the environmental review.

U.S. Nuclear Regulatory Commission
Page 2
March 2,2005

MPS-72-2 This safety issue falls squarely under the topic of severe accident mitigation, which the DEIS is mandated to analyze in detail. However, completely omitted from all review was the topic of an evacuation plan for the residents of Southold Town or elsewhere on eastern Long Island. The reason for such omission is simple; no such plan exists, nor has one ever been studied or even considered. The geography of Long Island creates an extremely dangerous situation for those residents in the case of a severe accident at Millstone. At the very end of a narrow strip of land, there is only one direction for these residents to travel in the case of an emergency - West. There is, in some cases, only one road on which to travel - New York State Route 25 in the event of a Millstone-induced emergency, Southold residents will be unaccounted for by the NRC. By the time Southold residents evacuate and reach the mainland of Long Island, we will be lined up on the Long Island Expressway behind the literally millions of other Long Island residents who have the same one and only direction to travel. This is a "natural recipe for a manmade disaster" that must be avoided.

To the extent that the drafters of DEIS seek to avoid creating an evacuation plan for the Town of Southold and eastern Long Island on the purported grounds that federal regulations only require such plans to do so within a 10 mile radius, they should and must consider the extreme circumstances that are present. The North Fork of Long Island is directly across the Long Island Sound. Strong prevailing winds blow across the water directly to our shores. We are the first affected residents to the south of this plant. To say that we are beyond the affected area is just wrong and cannot be the basis for a proper EIS. With that knowledge, I believe it is imperative that the NRC expand the scope of its evacuation planning to include the residents of the Town of Southold and other affected areas of eastern Long Island.

MPS-72-3 Clearly, as far as safety of affected residents is concerned, the environmental review process has not yet begun. Since this is a matter of federal concern, and which is the subject of federal regulation, it is crucial that the NRC seek and heed the input of the federal elective officials in the surrounding areas for their input regarding the concerns of their constituents. The NRC must, therefore, seek formal input from the Senators and Representatives in New York as well as Connecticut.

Furthermore, the NRC must appropriate funding and conduct a proper study for the evacuation of eastern Long Island residents, which should then be included as part of the DEIS, and subject to public input, at a forum Long Island residents can attend - on Long Island. The DEIS must not, and cannot move forward until these crucial matters are properly considered and integrated into the document.

Very truly yours,

Joshua Y. Horton
Supervisor

ADB received 3/10/05

From: Gwynn Schroeder <gdsnfec@optonline.net>
To: <MillstoneEIS@nrc.gov>
Date: Tue, Mar 1,2005 4:58 PM
Subject: Millstone Licensure Renewal

10/7/04 69FR 61437 (49)

March 1,2005

Mr. Richard Emch, Jr.
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Washington DC 20555

Dear Mr. Emch:

North Fork Environmental Council (NFEC) is a grassroots advocacy group established in 1972. We are located in Mattituck, New York and represent over 1500 members in the Townships of Riverhead, Southold and Shelter Island.

MPS-73-1 On behalf of NFEC, I am writing to strongly oppose the relicensure of the Millstone Nuclear Reactors and to express my grave concerns about their continued operation. The Millstone reactors are located in Waterford, Connecticut and although the facility is located only 11 miles from the Town of Southold, the Nuclear Regulatory Commission continues to ignore the safety and environmental concerns held by the residents of the North Fork when considering the continued operations of these aging reactors.

MPS-73-2 If the NRC is not prepared to deny the request of Dominion to renew the operating license for the Millstone reactors, we request, at the very least, that the NRC hold an additional public hearing on Long Island. The actions of the NRC in this licensing renewal process will affect residents of the North Fork and it is morally reprehensible to deny our voice in the process. The January hearing held in Ct. was poorly noticed. Although the hearing may have met the legal requirements for notification, very few stakeholders on the North Fork were aware of the hearing, or for that matter, the entire scoping process. We certainly were not given ample time to fully read, consider and prepare thoughtful comments on the Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Plants or the 449 page draft Supplemental Environmental Impact Statement (SEIS) which examines the renewal of the Millstone licenses specifically.

MPS-73-3 Residents, civic and environmental groups have joined many elected officials from the East End and across Long Island and called for the extension of the emergency planning zone from the current 10-miles radius to a 50 miles mile radius. By doing so, emergency planning for the North Fork would be required.

Because the North Fork is essentially a peninsula, surrounded by water on three sides, we have only one direction to evacuate west. Residents in Orient only have one Road heading west until Greenport. There are only two roads from Greenport to Mattituck, three from Mattituck to Riverhead. In the event of an emergency, evacuation of the 20,000 year round North Fork residents, or 30,000 summer residents would be virtually impossible not to mentions the hundreds of thousands of Long Island residents to the west. Because evacuation of Long Island is impossible, the Shoreham Nuclear Plant was shut down. Many of us live closer to Millstone than to

E-RIDS = ADM-03
Add. = R.L. Emch (RLE)

SISP Review Complete
Template = ADM-013

MPS-73-3 Shoreham.

MPS-73-4 It is common knowledge that nuclear power plants and the adjacent spent fuel pools are vulnerable to terrorist attack. In addition to living in close proximity to Millstone, North Fork residents live very close to other potential terrorist targets including the Plum Island Animal Disease Center (PIADC). If there were an incident at the Millstone Facility, there are no emergency plans in place for PIADC. The NRC would be negligent if these facts were not considered in your deliberations.

Sincerely,

Gwynn Schroeder
Executive Director

Gwynn Schroeder
Executive Director
North Fork Environmental Council
P.O. Box 799
Mattituck, New York 11952
631-298-8880
Fax: 631-298-4649
E-mail: gdsnfec@optonline.net
www.nfec1.org

ADD received 3/10/05

From: <Diane_Lazinsky@ios.doi.gov>
To: <MillstoneEIS@nrc.gov>
Date: Mon, Feb 28, 2005 11:11 AM
Subject: Comments, Millstone Power Station, NUREG-1437 [Virus checked]

Dear Mr. Emch:

10/9/04
69FR 71437
(30)

Please see the attached file for the Department of the Interior's comments on the draft Supplemental Environmental Impact Statement (SEIS) Millstone Power Station, Units 2 and 3, Waterford, Connecticut. Thank you and please feel free to contact me if you have any questions.

Sincerely,
Diane Lazinsky

Diane Lazinsky
U.S. Department of the Interior
Office of the Secretary
Office of Environmental Policy and Compliance
408 Atlantic Avenue., Room 142
Boston, MA 02210-3334
Phone: 617-223-8565 Fax: 617-223-8569

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Add.=R.A. Emch (RLE)

United States Department of the Interior
OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
408 Atlantic Avenue – Room 142
Boston, Massachusetts 02210-3334

TAKE PRIDE IN AMERICA

February 28, 2005

ER 04/921

Richard L. Emch, Jr.
U.S. Nuclear Regulatory Commission
Mail Stop 011F1
Washington, DC 20555-0001

RE: COMMENTS
Review of a Draft Supplemental Environmental Impact Statement (SEIS), NUREG-1437, Supplement 22, License Renewal, Dominion Nuclear Connecticut, Millstone Power Station, Units 2 and 3, Waterford, Connecticut

Dear Mr. Emch:

The Department of the Interior (Department) has reviewed the Draft Supplemental Environmental Impact Statement (SEIS), NUREG-1437, Supplement 22, regarding Millstone Power Station, Units 2 and 3. The Department has no comment on, or concern with the Draft Supplemental Environmental Impact Statement.

Thank you for your attention to these comments.

Sincerely,

Andrew L. Raddant /s/
Regional Environmental Officer

RDB Hard Copy 3/14/05

From: WALLMULLER <JWALLY063@AOL.COM>
To: <operlic@nrc.gov>
Date: 1/17/05 1:08PM
Subject: Response from "Contact Us About Operator Licensing"

Below is the result of your feedback form. It was submitted by

WALLMULLER (JWALLY063@AOL.COM) on Monday, January 17, 2005 at 13:07:10

12/9/04 GFA 71437

recipient location: Washington, DC (Hdqtrs.)

MPS-75-1 comments: I am against Millstone Nuclear Power Plant which is located in Connecticut renewing its operating licenses. (57)

organization:

address1: PO BOX 1312

address2:

city: SMITHTOWN

state: NY

zip: 11787

country: USA

phone:

SISP Review Complete
Template = ADM-013

E-RIDS=ADM-03
Cdd = A.L. Emch (ALE)

Richard Emch - NO, TO MILLSTONE!!! Page 1

RDB received 3/14/05

From: <Carjam10@aol.com>
To: <opa@nrc.gov>
Date: 1/16/05 11:36PM
Subject: NO, TO MILLSTONE!!!

12/9/04
69FR71437
(52)

The Millstone spokesman adds that the company is in the beginning of the license renewal process so North Fork residents still have time to voice their opinions.

MPS-76-1 I am saying NO to this proposed Millstone license renewal. One can hardly get off Long Island now without there being a catastrophe! This renewal would put too many lives here on Long Island in danger should anything happen at the Millstone Nuclear plant...There is no feasable escape route possible for so many Long Island inhabitants.
A NUCLEAR LEAK OR ACCIDENT WOULD BE WORSE THAN A TSUNAMI HITTING LONG ISLAND!!!
NO, NO, NO TO THIS RENEWAL!

SISP Review Complete
Template = ADM-013

E-RIDS = ADM-03
Add = R. L. Emch (RLE)

RDB Received 3/11/05

From: "Merrily Gere" <merrily.gere@po.state.ct.us>
To: <MillstoneEIS@nrc.gov>
Date: Tue, Mar 8, 2005 9:45 AM
Subject: Comments of Connecticut DEP on Document NUREG-1437, Supplement22

Attached please find the comments of the Connecticut Department of Environmental Protection Bureau of Air Management on the Draft Generic Impact Statement for the License Renewal of the Millstone Power Station Units 2 and 3 (NUREG-1437, Supplement 22). These comments will also arrive by U.S. mail.

Merrily A. Gere
Environmental Analyst 2
Connecticut Department of Environmental Protection
Bureau of Air Management
79 Elm Street
Hartford, CT 06106-5127
Tel: (860) 424-3416
"To conserve, improve and protect the
natural resources and environment of the State"

12/9/04
69FR71437
53

CC: "Edward Wilds" <edward.wilds@po.state.ct.us>

E-RFDS=ADM-03
SISP Review Complete
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Cole = R.L. Emch (RE)

VIA ELECTRONIC AND REGULAR MAIL.

March 2, 2005

Chief, Rules and Directives Branch
U.S. Nuclear Regulatory Commission
Mail Stop T6-D59
Washington, DC 20555-0001
MillstoneEIS@nrc.gov

Re: *Comments of the Connecticut Department of Environmental Protection – Bureau of Air Management – Draft Generic Impact Statement for License Renewal of Nuclear Plants Regarding Millstone Power Station, Units 2 and 3 NUREG-1437, Supplement 22*

To the Chief of the Rules and Directive Branch:

The Connecticut Department of Environmental Protection Bureau of Air Management (the Bureau) submits these comments on the U.S. Nuclear Regulatory Commission's (NRC's) *Draft Generic Environmental Impact Statement for License Renewal of Nuclear Plants Regarding Millstone Power Station, Units 2 and 3* (Draft EIS). The Draft EIS discusses the environmental impacts of the proposal to renew the operating licenses for Units 2 and 3 of the Millstone Power
MPS-77-1 Station, including the alternatives to license renewal. The Bureau has considered the alternatives presented in the Draft EIS and is concerned that any fossil-fueled alternative electricity supply will have negative air quality impacts as compared to re-licensing the Millstone units.

If the license for the Millstone units is not renewed, additional fossil-fueled generation would likely be necessary to meet the state demand for electricity, as an alternative consisting only of demand reduction, energy efficiency and alternative energy sources is not feasible in the given timeframe. Moreover, the Connecticut Energy Advisory Board's 2004 energy plan specifically identified the inadequacy of the State's transmission infrastructure. Failure to re-license units 2 and 3 will further exacerbate this problem. The Bureau supports the use of clean alternative energy sources and measures that reduce electricity demand. However, the Bureau recognizes that such measures require immediate and substantial changes in behavior with regard to energy use, a substantial investment in low- and no-emitting resources and large-scale implementation of energy conservation and load reduction measures by residential and industrial energy users. Such changes can only occur over a longer timeframe than that allowed by denial of the license renewal.

The air quality impact of replacing the electricity generated by the Millstone units with electricity generation by large-scale fossil-fueled electric generators is substantial. As the Draft EIS identifies, emissions of nitrogen oxides (NOx), sulfur oxides, carbon monoxide, particulate

MPS-77-1 matter and hazardous air pollutants would increase. Increased NOx emissions are a particular

MPS-77-1 concern to the Bureau since reductions in emissions of ozone precursors are of immediate importance to Connecticut's strategy to attain and maintain the national ambient air quality standards (NAAQS) for ozone. In order to attain the new 8-hour ozone NAAQS statewide by 2010, as required by the U.S. Environmental Protection Agency (EPA), Connecticut is now in the process of identifying additional reductions that may be obtained from a variety of sources in the state. Furthermore, the same assessment is underway for fine particulate matter, in order to comply with EPA's designations under the NAAQS for particulate matter less than 2.5 microns in diameter.

The Bureau appreciates the opportunity to submit these comments and will be glad to provide any additional information that you may require.

Sincerely,

/s/Anne R. Gobin, Chief
Bureau of Air Management

ARG/MAG/mag

RPB Received 3/14/05

From: <Lirrcomm@aol.com>
To: <bxz@nrc.gov>
Date: 1/12/05 11:54PM
Subject: Millstone License Renewal - Letter of Opposition and Contact Information

A-9/104
69FR71437
(54)

Dear Mr. Zalcman,

I would like to take this opportunity to thank you for listening to our concerns as it related to cutting short the NRCs presentation at the Millstone Meeting on Tuesday. I also appreciate the fact that myself, Mike Domino and Supervisor Horton were given the opportunity to speak first as we had to catch a 5:00 Ferry back to Long Island.

The attached email is from Assemblywoman Pat Acampora of Mattituck. Please take a moment to review her comments that were forwarded to Mr. Emch.

MPS-78-1 Lastly, I would like to provide you with contact information of our local representatives who should be put on your list of "people to contact" representing Long Island & NYS. These individuals should be advised of future meetings as it relates to the Millstone Power Plant license renewal or other matters relating to this plant. Please ensure your community affairs people have this information for future reference. Additionally, would like to recommend conducting this licensing meeting on Long Island for "public" feedback. If you would like to plan a meeting on Long Island, I recommend you contact one of the individuals listed below to determine a mutually agreeable location.

The following information applies:

Southold Town Supervisor
Joshua Horton
631 765 1889
Joshua.Horton@town.southold.ny.us
(mailto:Joshua.Horton@town.southold.ny.us)
Joshhorton03@yahoo.com (mailto:joshhorton03@yahoo.com)

Assemblywoman
Patricia Acampora
631 727 1363 (Long Island #)
518 455 5294 (Albany #)
acampop@assembly.state.ny.us (mailto:acampop@assembly.state.ny.us)

Congressman
Tim Bishop
3680 Route 112 Suite C
Coram, NY 11727
631 696 6500 (Coram) ask for Jennifer Gunn
631 259 8450 (Southampton Office)
Tim.Bishop@mail.house.gov (mailto:Tim.Bishop@mail.house.gov)
Jennifer.Gunn@mail.house.gov (mailto:Jennifer.Gunn@mail.house.gov)

County Legislator
Michael Caracciolo
423 Griffing Avenue
Riverhead, NY 11901

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Add = B. E. Emch (RLE)

631 852 3200
Michael.Caracciolo@co.suffolk.ny.us
(mailto:Michael.Caracciolo@co.suffolk.ny.us)

Senator
Ken LaValle
631 696 6900
LAVALLE@senate.state.ny.us (mailto:LAVALLE@senate.state.ny.us)

Governor
George Pataki
212 681 4580
631 952 6583

I would also like to add:

North Fork Environmental Council
Gwynn Schroeder
Executive Director
631 298 8880
gdsnfec@optonline.net (mailto:gdsnfec@optonline.net)

Marie Domenici
631 298 7103
Lirrcomm@aol.com (mailto:Lirrcomm@aol.com)

Thank you for taking the time to review this information and please feel free to contact me should you have any questions regarding this information.
Sincerely,
Marie Domenici

CC: <gdsnfec@optonline.net>, <rle@nrc.gov>, <JdSouthold@aol.com>

RDB received 6/28/05

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC UTILITY CONTROL

Letter postmarked 3/7/05

12/9/04

69FR 71437

(55)

DONALD W. DOWNES
CHAIRPERSON

Nils J. Diaz
Chairman
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

RE: Millstone Power Station Application for Renewed Operating License

Dear Chairman Diaz:

MPS-79.1 The Connecticut Department of Public Utility Control (Department) submits this letter in support of the Application for Renewed Operating License for Millstone Power Station, located in Waterford, Connecticut. Millstone Power Station consists of Unit 2 and Unit 3. Unit 2 is solely owned and operated by Dominion Nuclear Connecticut, Inc, (Dominion) and Unit 3 is jointly owned by Dominion, Central Vermont Public Service Corporation and Massachussetts Municipal Wholesale Electric Company. Dominion is the operator of Unit 3 and authorized to act as agent for the joint owners. Dominion is seeking renewal of the operating license for a period of 20 years beyond the expiration date of the current operating license for both units (Unit 2 current expiration date is July 31, 2015; Unit 3 current expiration date is November 25, 2025). This letter is in support of both applications for the units, collectively referred to herein as Millstone.

The Department believes that Dominion is one of the best nuclear plant operators in the country and that it has demonstrated an excellent history of nuclear plant operation and safety. The Department would like to offer two additional reasons for granting Millstone's request.

MPS-79.2 First, from a regional and Connecticut energy needs point of view, Millstone has been an essential resource for the existing bulk power system. This essential resource need is expected to continue as such into the future. It is for this reason that Millstone's license extension is important to continue to serve New England and Connecticut energy needs. The Independent System Operator for the New England bulk power supply system (ISO-NE) publishes an annual regional system plan meant to identify system needs that can impact regional users and identify system solutions that will benefit the entire region. It's most recent annual report, dated January 4, 2005, states that it "... has identified serious bulk power system problems in Connecticut that pose risks not only for reliable electric service in the state, but also in the entire New England region." Connecticut Energy Plan Framework, 2005 ISO New England, page 5.

FILES=A3H-03

10 Franklin Square, New Britain, Connecticut 06051
An Equal Opportunity Employer

SISP Review Complete
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ACC=R.L. Emch (RLE)

The ISO-NE annual report states that New England could face a capacity shortage if there is high demand for electricity beginning in 2006 and continuing into the future. Id., page 6. Possible means of resolving this looming problem includes, inter alia, additional generation. Accordingly, the Department is greatly concerned that existing, reliable, safe, high capacity factor units such as Millstone be allowed to continue and extend operation. This is especially true given the high demand for fossil fuels upon which MPS-79-3 most new generation is based. Keeping Millstone operational greatly adds to the diversity of fuel supply in Connecticut and the region.

Second, on August 28, 2001 Connecticut and the New England region committed to a Climate Change Action Plan. The goal of this plan is to mitigate the release of greenhouse gases that are emitted by the combustion of fossil fuels. As is well known, the greenhouse gas emissions from nuclear power plants are negligible. Continued operation of Millstone past its present license expiration dates will displace fossil generation, helping the region to meet its greenhouse gas reduction targets. Extension of the licenses for the Millstone units is very important to meeting this goal.

The Department urges the Commission to consider the above factors in reviewing the request for the Millstone license extension.

Sincerely,

Donald W. Downes
Chairman
Public Utilities Control Commission

RDB received 3/08/05

From: <SLKalee@aol.com>
To: <millstoneEIS@nrc.gov>
Date: Fri, Mar 11, 2005 8:15 AM
Subject: testimony

MPS-80-1 Do you believe that true costs are considered when assessments, such as the one you are about to read of, are done? Pollution from mining, transportation, processing, waste products and their disposal as well as the health and
MPS-80-2 environmental costs, etc. make up those unaccounted for costs. If we really want to cut C02 emissions we need to look at the big picture, wind, solar, geothermal, bio-diesel, methane from dumps used as a fuel source, forest conservation, green building, etc.

12/9/04
69FR71437
(56)

If we take a nuclear power plant off line, clearly any wind generated power will not make a dent in the C02 until there is more electricity produced from the wind source than by the nuclear power plant...and don't forget those hidden costs. How much C02 is produced in the processing, and other the other steps mentioned before? Have you ever heard of someone getting cancer from a wind generator or its by-products? How about the danger of a terrorist attack on a wind generator (shades of Don Quixote)? Is there a Price Anderson Bill to cover the insurance for wind generators and do we find an exclusion in our home insurance policies for damage caused by an accident or an attack upon a wind generator? And one last question, Is there a good evacuation plan in case of a major problem with a wind generator?

Larry Kaley

From:
http://www.wired.com/wired/archive/13.02/nuclear.html

Nuclear Now!
How clean, green atomic energy can stop global warming
By Peter Schwartz and Spencer ReissPage

Peter Schwartz (peter_schwartz@ gbn.com) is chair of Global Business Network, a scenario-planning firm. Contributing editor Spencer Reiss (spencer@ upperroad.net) wrote about pebble-bed nuclear reactors in issue 13.01. Additional research by Chris Coldewey.

On a cool spring morning a quarter century ago, a place in Pennsylvania called Three Mile Island exploded into the headlines and stopped the US nuclear power industry in its tracks. What had been billed as the clean, cheap, limitless energy source for a shining future was suddenly too hot to handle.

In the years since, we've searched for alternatives, pouring billions of dollars into windmills, solar panels, and biofuels. We've designed fantastically efficient lightbulbs, air conditioners, and refrigerators. We've built enough gas-fired generators to bankrupt California. But mainly, each year we hack 400 million more tons of coal out of Earth's crust than we did a quarter century before, light it on fire, and shoot the proceeds into the atmosphere.

The consequences aren't pretty. Burning coal and other fossil fuels is driving climate change, which is blamed for everything from western forest

E-RIDS = ADM-03
Acc = R.L. Euch (RLE)

Staff Review Complete
Template = ADM-013

fires and Florida hurricanes to melting polar ice sheets and flooded Himalayan hamlets. On top of that, coal-burning electric power plants have fouled the air with enough heavy metals and other noxious pollutants to cause 15,000 premature deaths annually in the US alone, according to a Harvard School of Public Health study. Believe it or not, a coal-fired plant releases 100 times more radioactive material than an equivalent nuclear reactor - right into the air, too, not into some carefully guarded storage site. (And, by the way, more than 5,200 Chinese coal miners perished in accidents last year.)

Burning hydrocarbons is a luxury that a planet with 6 billion energy-hungry souls can't afford. There's only one sane, practical alternative: nuclear power.

We now know that the risks of splitting atoms pale beside the dreadful toll exacted by fossil fuels. Radiation containment, waste disposal, and nuclear weapons proliferation are manageable problems in a way that global warming is not. Unlike the usual green alternatives - water, wind, solar, and biomass - nuclear energy is here, now, in industrial quantities. Sure, nuke plants are expensive to build - upward of $2 billion apiece - but they start to look cheap when you factor in the true cost to people and the planet of burning fossil fuels. And nuclear is our best hope for cleanly and efficiently generating hydrogen, which would end our other ugly hydrocarbon addiction - dependence on gasoline and diesel for transport.

Some of the world's most thoughtful greens have discovered the logic of nuclear power, including Gaia theorist James Lovelock, Greenpeace cofounder Patrick Moore, and Britain's Bishop Hugh Montefiore, a longtime board member of Friends of the Earth (see "Green vs. Green," page 82). Western Europe is

quietly backing away from planned nuclear phaseouts. Finland has ordered a big reactor specifically to meet the terms of the Kyoto Protocol on climate change. China's new nuke plants - 26 by 2025 - are part of a desperate effort at smog control.

Even the shell-shocked US nuclear industry is coming out of its stupor. The 2001 report of Vice President Cheney's energy task force was only the most high profile in a series of pro-nuke developments. Nuke boosters are especially buoyed by more efficient plant designs, streamlined licensing procedures, and the prospect of federal subsidies.

In fact, new plants are on the way, however tentatively. Three groups of generating companies have entered a bureaucratic maze expected to lead to formal applications for plants by 2008. If everything breaks right, the first new reactors in decades will be online by 2014. If this seems ambitious, it's not; the industry hopes merely to hold on to nuclear's current 20 percent of the rapidly growing US electric power market.

That's not nearly enough. We should be shooting to match France, which gets 77 percent of its electricity from nukes. It's past time for a decisive leap out of the hydrocarbon era, time to send King Coal and, soon after, Big Oil shambling off to their well-deserved final resting places - maybe on a nostalgic old steam locomotive.

Besides, wouldn't it be a blast to barrel down the freeway in a hydrogen Hummer with a clean conscience as your copilot? Or not to feel like a planet

killer every time you flick on the A/C? That's how the future could be, if only we would get over our fear of the nuclear bogeyman and forge ahead - for real this time - into the atomic age.

The granola crowd likes to talk about conservation and efficiency, and surely substantial gains can be made in those areas. But energy is not a luxury people can do without, like a gym membership or hair gel. The developed world built its wealth on cheap power - burning firewood, coal, petroleum, and natural gas, with carbon emissions the inevitable byproduct.

Indeed, material progress can be tracked in what gets pumped out of smokestacks. An hour of coal-generated 100-watt electric light creates 0.05 pounds of atmospheric carbon, a bucket of ice makes 0.3 pounds, an hour's car ride 5. The average American sends nearly half a ton of carbon spewing into the atmosphere every month. Europe and Japan are a little more economical, but even the most remote forest-burning peasants happily do their part.

And the worst - by far - is yet to come. An MIT study forecasts that worldwide energy demand could triple by 2050. China could build a Three Gorges Dam every year forever and still not meet its growing demand for electricity. Even the carbon reductions required by the Kyoto Protocol - which pointedly exempts developing countries like China - will be a drop in the atmospheric sewer.

What is a rapidly carbonizing world to do? The high-minded answer, of course, is renewables. But the notion that wind, water, solar, or biomass will save the day is at least as fanciful as the once-popular idea that nuclear energy would be too cheap to meter. Jesse Ausubel, director of the human environment program at New York's Rockefeller University, calls renewable energy sources "false gods" - attractive but powerless. They're capital- and land-intensive, and solar is not yet remotely cost-competitive. Despite all the hype, tax breaks, and incentives, the proportion of US electricity production from renewables has actually fallen in the past 15 years, from 11.0 percent to 9.1 percent.

The decline would be even worse without hydropower, which accounts for 92 percent of the world's renewable electricity. While dams in the US are under attack from environmentalists trying to protect wild fish populations, the Chinese are building them on an ever grander scale. But even China's autocrats can't get past Nimby. Stung by criticism of the monumental Three Gorges project - which required the forcible relocation of 1 million people - officials have suspended an even bigger project on the Nu Jiang River in the country's remote southwest. Or maybe someone in Beijing questioned the wisdom of reacting to climate change with a multibillion-dollar bet on rainfall.

Solar power doesn't look much better. Its number-one problem is cost: While the price of photovoltaic cells has been slowly dropping, solar-generated electricity is still four times more expensive than nuclear (and more than five times the cost of coal). Maybe someday we'll all live in houses with photovoltaic roof tiles, but in the real world, a run-of-the-mill 1,000-megawatt photovoltaic plant will require about 60 square miles of panes alone. In other words, the largest industrial structure ever built.

Wind is more promising, which is one reason it's the lone renewable attracting serious interest from big-time equipment manufacturers like General Electric. But even though price and performance are expected to improve, wind, like solar, is inherently fickle, hard to capture, and widely dispersed. And wind turbines take up a lot of space; Ausubel points out that the wind equivalent of a typical utility plant would require 300 square miles of turbines plus costly transmission lines from the wind-scoured fields of, say, North Dakota. Alternatively, there's California's Altamont Pass, where 5,400 windmills slice and dice some 1,300 birds of prey annually.

What about biomass? Ethanol is clean, but growing the amount of cellulose required to shift US electricity production to biomass would require farming - no wilting organics, please - an area the size of 10 Iowas.

Among fossil fuels, natural gas holds some allure; it emits a third as much carbon as coal. That's an improvement but not enough if you're serious about

rolling back carbon levels. Washington's favorite solution is so-called clean coal, ballyhooed in stump speeches by both President Bush (who offered a $2 billion research program) and challenger John Kerry (who upped the ante to $10 billion). But most of the work so far has been aimed at reducing acid rain by cutting sulphur dioxide and nitrogen oxide emissions, and more recently gasifying coal to make it burn cleaner. Actual zero-emissions coal is still a lab experiment that even fans say could double or triple generating costs. It would also leave the question of what to do with 1 million tons of extracted carbon each year.

By contrast, nuclear power is thriving around the world despite decades of obituaries. Belgium derives 58 percent of its electricity from nukes, Sweden 45 percent, South Korea 40, Switzerland 37 percent, Japan 31 percent, Spain 27 percent, and the UK 23 percent. Turkey plans to build three plants over the next several years. South Korea has eight more reactors coming, Japan 13, China at least 20. France, where nukes generate more than three-quarters of the country's electricity, is privatizing a third of its state-owned nuclear energy group, Areva, to deal with the rush of new business.

The last US nuke plant to be built was ordered in 1973, yet nuclear power is growing here as well. With clever engineering and smart management, nukes have steadily increased their share of generating capacity in the US. The 103 reactors operating in the US pump out electricity at more than 90 percent of capacity, up from 60 percent when Three Mile Island made headlines. That increase is the equivalent of adding 40 new reactors, without bothering anyone's backyard or spewing any more carbon into the air.

So atomic power is less expensive than it used to be - but could it possibly be cost-effective? Even before Three Mile Island sank, the US nuclear industry was foundering on the shoals of economics. Regulatory delays and billion-dollar construction-cost overruns turned the business into a financial nightmare. But increasing experience and efficiency gains have changed all that. Current operating costs are the lowest ever - 1.82 cents per kilowatt-hour versus 2.13 cents for coal-fired plants and 3.69 cents for natural gas. The ultimate vindication of nuclear economics is playing out in the stock market: Over the past five years, the stocks of leading nuclear generating companies such as Exelon and Entergy have more than doubled. Indeed, Exelon is feeling so flush that it bought New Jersey's Public

Service Enterprise Group in December, adding four reactors to its former roster of 17.

This remarkable success suggests that nuclear energy realistically could replace coal in the US without a cost increase and ultimately lead the way to a clean, green future. The trick is to start building nuke plants and keep building them at a furious pace. Anything less leaves carbon in the climatic driver's seat.

A decade ago, anyone thinking about constructing nuclear plants in the US would have been dismissed as out of touch with reality. But today, for the first time since the building of Three Mile Island, new nukes in the US seem possible. Thanks to improvements in reactor design and increasing encouragement from Washington, DC, the nuclear industry is posed for unlikely revival. "All the planets seem to be coming into alignment," says David Brown, VP for congressional affairs at Exelon.

The original US nuclear plants, built during the 1950s and '60s, were descended from propulsion units in 1950s-vintage nuclear submarines, now known as generation I. During the '80s and '90s, when new construction halted in the US, the major reactor makers - GE Power Systems, British-owned Westinghouse, France's Framatome (part of Areva), and Canada's AECL - went after customers in Europe. This new round of business led to system improvements that could eventually, after some prototyping, be deployed back in the US.

By all accounts, the latest reactors, generation III+, are a big improvement. They're fuel-efficient. They employ passive safety technologies, such as gravity-fed emergency cooling rather than pumps. Thanks to standardized construction, they may even be cost-competitive to build - $1,200 per kilowatt-hour of generating capacity versus more than $1,300 for the latest low-emission (which is not to say low-carbon) coal plants. But there's no way to know for sure until someone actually builds one. And even then, the first few will almost certainly cost more.

Prodded by the Cheney report, the US Department of Energy agreed in 2002 to pick up the tab of the first hurdle - getting from engineering design to working blueprints. Three groups of utility companies and reactor makers have stepped up for the program, optimistically dubbed Nuclear Power 2010. The government's bill to taxpayers for this stage of development could top $500 million, but at least we'll get working reactors rather than "promising technologies."

But newer, better designs don't free the industry from the intense public oversight that has been nuclear power's special burden from the start. Believe it or not, Three Mile Island wasn't the ultimate nightmare; that would be Shoreham, the Long Island power plant shuttered in 1994 after a nine-year legal battle, without ever having sold a single electron. Construction was already complete when opponents challenged the plant's application for an operating license. Wall Street won't invest billions in new plants ($5.5 billion in Shoreham's case) without a clear path through the maze of judges and regulators.

Shoreham didn't die completely in vain. The 1992 Energy Policy Act aims to forestall such debacles by authorizing the Nuclear Regulatory Commission to

issue combined construction and operating licenses. It also allows the NRC to pre-certify specific reactor models and the energy companies to bank preapproved sites. Utility executives fret that no one has ever road-tested the new process, which still requires public hearings and shelves of supporting documents. An idle reactor site at Browns Ferry, Alabama, could be an early test case; the Tennessee Valley Authority is exploring options to refurbish it rather than start from scratch.

Meanwhile, Congress looks ready to provide a boost to the nuclear energy industry. Pete Domenici (R-New Mexico), chair of the Senate's energy committee and the patron saint of nuclear power in Washington, has vowed to revive last year's energy bill, which died in the Senate. Earlier versions included a 1.85 cent per-kilowatt-hour production tax credit for the first half-dozen nuke plants to come online. That could add up to as much as $8 billion in federal outlays and should go a long way toward luring Wall Street back into the fray. As pork goes, the provision is easy to defend. Nuclear power's extraordinary startup costs and safety risks make it a special case for government intervention. And the amount is precisely the same bounty Washington spends annually in tax credits for wind, biomass, and other zero-emission kilowattage.

Safer plants, more sensible regulation, and even a helping hand from Congress - all are on the way. What's still missing is a place to put radioactive waste. By law, US companies that generate nuclear power pay the Feds a tenth of a cent per kilowatt-hour to dispose of their spent fuel. The fund - currently $24 billion and counting - is supposed to finance a permanent waste repository, the ill-fated Yucca Mountain in Nevada. Two decades ago when the payments started, opening day was scheduled for January 31, 1998. But the Nevada facility remains embroiled in hearings, debates, and studies, and waste is piling up at 30-odd sites around the country. Nobody will build a nuke plant until Washington offers a better answer than "keep piling."

At Yucca Mountain, perfection has been the enemy of adequacy. It's fun to discuss what the design life of an underground nuclear waste facility ought to be. One hundred years? Two hundred years? How about 100,000? A quarter of a million? Science fiction meets the US government budgeting process. In court!

But throwing waste into a black hole at Yucca Mountain isn't such a great idea anyway. For one thing, in coming decades we might devise better disposal methods, such as corrosion-proof containers that can withstand millennia of heat and moisture. For another, used nuclear fuel can be recycled as a source for the production of more energy. Either way, it's clear that the whole waste disposal problem has been misconstrued. We don't need a million-year solution. A hundred years will do just fine - long enough to let the stuff cool down and allow us to decide what to do with it.

The name for this approach is interim storage: Find a few patches of isolated real estate - we're not talking about taking it over for eternity - and pour nice big concrete pads; add floodlights, motion detectors, and razor wire; truck in nuclear waste in bombproof 20-foot-high concrete casks. Voilà: safe storage while you wait for either Yucca Mountain or plan B.

Two dozen reactor sites around the country already have their own interim facilities; a private company has applied with the NRC to open one on the

Goshute Indian reservation in Skull Valley, Utah. Establishing a half-dozen federally managed sites is closer to the right idea. Domenici says he'll introduce legislation this year for a national interim storage system.

A handful of new US plants will be a fine start, but the real goal has to be dethroning King Coal and - until something better comes along - pushing nuclear power out front as the world's default energy source. Kicking carbon cold turkey won't be easy, but it can be done. Four crucial steps can help increase the momentum: Regulate carbon emissions, revamp the fuel cycle, rekindle innovation in nuclear technology, and, finally, replace gasoline with hydrogen.

. Regulate carbon emissions. Nuclear plants have to account for every radioactive atom of waste. Meanwhile, coal-fired plants dump tons of deadly refuse into the atmosphere at zero cost. It's time for that free ride to end, but only the government can make it happen.

The industry seems ready to pay up. Andy White, CEO of GE Energy's nuclear division, recently asked a roomful of US utility executives what they thought about the possibility of regulating carbon emissions. The idea didn't faze them. "The only question any of them had," he says, "was when and how much."

RDB Received 3/28/05

12/9/04 69FR71437 (57)

From: <connecticut.chapter@sierraclub.org>
To: <millstoneeis@nrc.gov>
Date: Fri, Mar 18, 2005 9:55 AM
Subject: Millstone license

Dear NRC

MPS-81-1 The Connecticut, United States, and worldwide community demands are clear....it's time to phase out nuclear power. It's an experiment that didn't work for a number of reasons.

MPS-81-2 If an accident happened we could not evacuate the population (we can't even get home during rush hour).

MPS-81-2 We have no way to deal with the contamination should an accident occur.

MPS-81-3 It appears we have not dealt with the environmental justice issue of shipping nuclear waste to poor communities.

MPS-81-4 Millstone has had radiation releases into the local environment many times.

MPS-81-5 And now we have to spend money on terrorist precautions. (If nuclear power was so safe, why do we have to worry about terrorists attacks? I've never heard of a terrorist attack on a solar panel)

MPS-81-5 Germany ("the old Europe") as already started to phase out all nuclear power. We have the technology and money to do the same in the U.S. Yes, this does mean in the next two decades you will have to look for another job. Can I interest you in something related to hydrogen fuel cells? (hydrogen produce from clean sources not nuclear)

MPS-81-6 The recent successes of hybrid cars and solar incentive programs are pointing to the same thing...do not renew the Millstone license . Nuclear power itself is over and Millstone's record are arguments enough to move on from nuclear. Besides, we have enough cancer in the U.S. without having to worry about another source like nuclear power.

John D. Calandrelli
State Coordinator
for 12,500 members of the CT Sierra Club

CC: <secy@nrc.gov>

SISP Review Complete Template = ADM-013

E-RIDS = ADM-03
Cac = R.L. Emch (RLE)

CONNECTICUT COALITION AGAINST MILLSTONE

www.mothballmillstone.org

March 16, 2005

Chief
Rules and Directives Branch
Division of Administrative Services
Office of Administration
Mailstop T-6D59
U.S. Nuclear Regulatory Commission
Washington DC 20555-0001

Re: Millstone Nuclear Power Station/Draft Environmental Impact Statement/Supplemental Comments

Dear Sirs:

The NRC is committed to protecting the public health and safety.
- Statement of NRC's Organizational Values

The Connecticut Coalition Against Millstone submits herewith its supplemental comments concerning the draft Environmental Impact Statement (SEIS) which the NRC staff has prepared in support of relicensing of Millstone nuclear reactors Units 2 and 3 to extend their terms to the years 2035 and 2045 respectively. These comments were preceded by preliminary comments submitted on March 2, 2005.

Unfortunately, our review of the SEIS and our interaction with NRC's SEIS staff concerning its evaluation of the operational history of the Millstone Nuclear Power Station lead us to conclude that **in this instance the NRC has entirely departed from its self-defined organizational values (see above).**

Indeed, we are driven to conclude that, in this instance, the NRC staff is not even *remotely* concerned about the effects of Millstone releases of radiation to the public health and safety and to the environment.

Nor has the NRC staff adhered to the "Principles of Good Regulation" heralded on the NRC's website.[1]

The standard defining evaluation criteria for the NRC staff's environmental review is defined in 10 CFR 51.95(c)(4) as follows:

> . . . whether or not the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

MPS-82-1 The NRC staff has preliminarily concluded in its draft Environmental Impact Statement that the adverse environmental impacts of license renewal are not so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable.

This conclusion is clearly erroneous and based on incorrect and incomplete information, industry bias and flawed analysis. **It also manifests a profound disregard for the health and welfare of the community.**

This conclusion ignores substantial available evidence that Millstone operations have had and will continue to have devastating health impacts on a wide scale and will continue to cause irreversible environmental damage on a wide scale.

Our detailed comments follow. Following the Introduction, our comments appear in sequence conforming to the appearance of topics in the draft Environmental Impact Statement (SEIS). Our comments today address the SEIS up to 5.0 ("Environmental Impacts of Postulated Accidents"). Additional comments addressed to Section 5.0 *et seq.* will be provided subsequently hereto.

Introduction

The U.S. Nuclear Regulatory Commission ("NRC") is considering relicensing of the Millsone Nuclear Power Station, Units 2 and 3 for additional 20-year terms. Without relicensing, Unit 2's operating license

[1] See NRC's "Principles of Good Regulation," attached.

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would expire in the year 2015 and Unit 3's operating license would expire in the year 2025.

MPS-82-2 Together with Unit 1, these reactors have had an operational history since 1970 which is among the ugliest in the annals of the nuclear industry.[2] Millstone's radioactive releases have been among the highest of all nuclear reactors in the United States.[3] Millstone's routine radiation releases were linked early-on with cancers and other diseases.[4] Millstone's treatment of its workforce by way of exposing it to unnecessary radiation levels[5] and its treatment of nuclear whistleblowers by ostracism and retaliatory firings have made it notorious within the nuclear industry.[6] While full-time inspectors from the NRC were onsite, Millstone lost two highly radioactive spent fuel rods. These irradiated rods contain plutonium and other fission elements which may be diverted to create dirty bombs. While Millstone's environmental monitoring program was being monitored by the NRC and Connecticut's Department of Environmental Protection ("DEP"), Millstone's personnel brazenly falsified environmental monitoring reports to the NRC and DEP and sabotaged the sample-taking activities.[7]

MPS-82-3 Connecticut's regulatory apparatus has failed to safeguard the public. Millstone's five-year National Pollution Discharge Elimination System ("NPDES") permit expired on December 14, 1997 – eight years ago - and it has not been renewed. Nevertheless, DEP has permitted Millstone to operate under the 1992 permit in brazen violation of the letter and spirit of the federal Clean Water Act. Former DEP Commissioner Arthur J. Rocque,

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MPS-82-4 [2] For this reason, each of the environmental issues required for consideration in the Environmental Impact Statement process should be considered to be a Category 2 issue, subject to site-specific consideration.

[3] See Millstone & Me: Sex, Lies and Radiation in Southeastern Connecticut by Michael Steinberg (Black Rain Press 1998).

[4] See Testimony of Ernest J. Sternglass, Ph.D., presented to a Congressional Committee investigating nuclear power issues.

[5] See, e.g., www.mothballmillstone.org, experience of Charles D. Douton, Jr.

[6] See, James Plumb v. Northeast Nuclear Energy Company (Superior Court, Judicial District of New London); Clarence O. Reynolds v. Department of Public Utility Control (Superior Court, Judicial District of New Britain); John DelCore v. Northeast Nuclear Energy Co., U.S. District Court, District of Connecticut.

[7] See "Owner of Connecticut Nuclear Plant Accepts a Record Fine" (The New York Times September 28, 1999), attached.

3

MPS-82-3 Jr., routinely authorized "emergency authorizations" ("EAs") while recognizing his lack of legal authority to do so.[8] These EAs – of indefinite duration permitting releases of toxic and carcinogenic substances without enforceable limits – permit Millstone's owners and operators to do, *inter alia*, what Northeast Utilities pleaded guilty to doing wilfully and illegally when it pleaded guilty in the U.S. District Court in September 1999 to committing environmental felonies at Millstone and paying a $10 million fine. Clearly, the Clean Water Act prohibits major waivers of NPDES permit conditions without notice to the public and a meaningful opportunity for public input. Commissioner Rocque issued sequential EAs without notice to the public and he did not provide an opportunity for public comment. To our knowledge, Rocque's successor, DEP Commissioner Gina McCarthy, has done nothing to bring the Millstone operations into compliance with the law. She has permitted the *status quo* to reign. Connecticut Attorney General Richard S. Blumenthal is complicit in the illegal Millstone activities. Mr. Blumenthal successfully suppressed the truth of Millstone's illegal operations in litigation brought to require Millstone operations to comply with existing laws.

Regardless of whether Millstone has been technically out of compliance with the law during much or all of its 35-year operational life, its operations have systematically endangered the public health and safety.

Millstone operations are a clear and present danger to the public health, safety and welfare.

MPS-82-5 Although Millstone's reactors have been operating since 1970, and thus have generated a 35-year history of operations and record of environmental impact, the NRC selected only a *three-year period* (2001, 2002 and 2003) to review to assess Millstone radiological emissions for purposes of its SEIS evaluation. Necessarily, the NRC staff's superficial

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MPS-82-3 [8] The Coalition attaches hereto the "Emergency Authorization" issued on October 13, 2000 which "legalizes" violations of the expired NPDES permit and which ex-Commissioner Rocque "transferred" to Dominion when it was a paper company without assets. Prior to issuing EAs for Millstone operations, Commissioner Rocque admitted in writing he lacked authority to issue emergency authorizations on an emergency basis for unlimited durations. The EA attached hereto has been in effect on an emergency basis since 2000 premised on a "finding" that it was required to avert "an imminent threat to health or safety."The SEIS makes no reference to this EA.

MPS-82-5 and selective review deprived it of the opportunity to engage in a meaningful assessment of the environmental impacts of Millstone's complete operating history to inform the evaluation necessary to evaluate the full scope of future effects during a potential period of license extension.

MPS-82-6 At the same time, the NRC staff virtually ignored the information available to it even in the limited area it selected for review: the years 2001-2003.[9]

The most glaring example we may provide you of this appears as the preliminary comment we provided to you on, together with the declaration of Ernest J. Sternglass, Ph.D.[10] Dr. Sternglass evaluated Dominion Nuclear Connecticut, Inc.'s reports of strontium-90 levels sampled in goat milk five miles from Millstone during 2001, 2002 and 2003. Although one sample measurement reported by Northeast Utilities in 2001 was at a level nearly twice the highest level of measured strntium-90 concentration in Connecticut milk during the height of the atmospheric nuclear weapons testing in the 1960s, this fact is not reported in the SEIS nor is it analyzed, nor are the other high strontium-90 measurements in goat milk sampled five miles downwind from Millstone analyzed.[11]

MPS-82-7 We perceive a determined lack of dedication by the NRC staff to genuinely understand the full scope of environmental - including human health - impacts of continued operations of Millstone. Documents which we provided to the NRC have apparently been destroyed.[12] Comments made in relicensing proceedings attended by the SEIS staff and documents submitted in such proceedings were ignored or disregarded by the SEIS staff.[13]

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[9] Webster's Dictionary defines misfeasance as "the performance of a lawful action in an illegal or improper manner."
[10] Refer to the Coalition's March 2, 2005 submission and attachments thereto.
[11] Webster's Dictionary defines malfeasance as "wrongful conduct, especially by a public official."
[12] See Response of Richard L. Emch, Jr. to the Coalition's February 5, 2005 queries, Paragraph 7 (attached); Documents responsive to this request were presented to the NRC by the Coalition as attachments to the Affidavit of Cynthia M. Besade dated August 5, 2005.
[13] See Transcript of January 11, 2005 public informational meeting sponsored by the NRC's SEIS staff at the Waterford CT Town Hall.

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MPS-82-7 We continue to be troubled by the fact that documents produced by the SEIS staff in response to our queries about the SEIS submitted to the SEIS staff on January 23, 2005 were withheld by the NRC's own Freedom of Information staff and have yet to be released.[14]

MPS-82-8 Similarly, we are astonished that the NRC staff most involved with the SEIS declined our invitation to attend the press conference we gave on the Niantic Bay shoreline 1.5 miles from Millstone on March 10, 2005. At our press conference, we introduced Zachary M. Hartley, a 7-year-old boy born with a rare cancer in his jawbone.[15] During critical months of her pregnancy, Zachary's mother swam regularly and unknowingly in the nuclear "mixing zone"[16] which is known locally as the Hole-in-the-Wall Beach. We invited the entire NRC to attend the press conference and address questions to our expert, Dr. Helen Caldicott, world-renowned pediatrician, co-founder of Physicians for Social Responsibility and a leading authority on the health effects of low-level ionizing radiation such as is routinely emitted by Millstone. Zachary's medical records were available for NRC review. Not a single representative of the NRC appeared, not even one of the resident inspectors assigned to Millstone. Dr. Caldicott linked young Zachary's rare jawbone cancer to Millstone's radiological and toxic chemical emissions as being the likely causative agent. Dr. Caldicott acknowledged that, while there cannot be a 100-per-cent certainty that Millstone caused Zachary's medical condition, cesium-137 which Northeast Utilities found in a fish in the same nuclear "mixing zone" in 1997 – the year of Zachary's mother's pregnancy – and which contamination it admitted was discharged by Millstone, is known to be associated with cancer, including cancer of the bone. We are transcribing Dr. Caldicott's comments and will provide the NRC with a copy as soon as the transcription is available.

In light of the facts which have come light regarding Zachary M. Hartley, the Coalition has requested that the Connecticut General Assembly's Public Health and Environment Committees convene a special public

[14] The Coalition will address this issue in a subsequent filing.
[15] Press clippings from the Hartford Courant, Norwich Bulletin and The New London Day are attached.
[16] See SEIS at 4.1.3.

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hearing to consider our request to close the Niantic shoreline beaches.[17] We understand that the legislature may find it necessary, in order to adequately protect the public health and safety, to enact legislation to close Millstone forthwith. Governor M. Jodi Rell has referred our request to the Commissioner of Public Health; we are asking him to exercise his authority to close the Niantic beaches as a health hazard. We further anticipate that the Connecticut DEP will order that Millstone convert from its once-through cooling system to a closed cooling system, thereby virtually eliminating the discharge of radioactive and toxic chemical contaminants to the Niantic and

MPS-82-9 Waterford shorelines. The SEIS does not address the prospect that Millstone will undergo a major refurbishment in the conversion from the once-through to a closed cooling system. This is a major omission in the SEIS.

We recognize that the events in question in Zachary's life arose in 1997, prior to Dominion's takeover of Millstone in 2001. However, Zachary's sickness is a factor which must be considered in the operational history of Millstone. Under Dominion ownership, Millstone has continued to release the same radioactive and toxic chemical waste byproducts as NU before.

MPS-82-10 Indeed, Dominion is currently seeking permission from CTDEP to add **new chemicals** to the "mixing zone" and continue the routine discharge of others. Nowhere in the SEIS is it stated that the NRC staff reviewed Dominion's application for renewal of the NPDES permit. Nowhere are these facts assessed in the SEIS.

MPS-82-11 The SEIS fails to meaningfully consider the routine environmental impacts of Millstone's radiological releases, relying on the "conclusion" in the NRC's Generic Environmental Impact Statement that all the nation's nuclear power plants release radiation within levels permitted under the NRC's regulations and therefore may be expected to continue to do so in the future. These conclusions do not apply to Millstone. See discussion at infra.

Even NRC's Generic Environmental Impact Statement ("GEIS") states that ***cesium-137 – for one – may be expected to bioaccumulate such that its buildup in the environment will increase by 35 per cent during***

[17] See Coalition letter to Connecticut General Assembly Public Health and Environment Committees dated March 4, 2005, attached.

7

the postulated renewal period at each of the nation's nuclear power plants undergoing relicensing.[18]

GEIS section 4.6.1.1 states in part as follows:

> To determine whether the added period of operation following license renewal would, by virtue of buildup, result in significant (double) added dose, the ratios of buildup factors for midlives of 30 to midlives of 20 years were evaluated. **These ratios amount to a 35 per cent increase for Cesium-137 and a 6 per cent increase for cobalt-60.**
>
> **In certain cases, the bioaccumulation factors may require reexamination. These principally involve fish (in the human food chain) that are bottom feeders. Bottom feeders may ingest worms and other biota that may remobilize radioactive materials accumulated in the sediments.**
>
> **Accumulation of radioactive materials in the environment is of concern not only to license renewal but also to operation under present licenses.**

(Emphasis added.)

MPS-82-12 This reference is entirely omitted from consideration in the SEIS. The SEIS omits any analysis of the predicted buildup of cesium-137 or cobalt-60 or any other radionuclides in the environment surrounding Millstone. To the extent that cesium-137 released to the environment will have enhanced effects, the NRC's staff's failure to assess the impact to the health and safety of the community – including Niantic Bay beachgoers who may be pregnant - borders on reckless endangerment.

It is known that cobalt-60 released by Millstone bioaccumulates in the sediment of Jordan Cove and is therefore subject to being ingested by worms and thereby enter the food chain.[19] Yet, the SEIS fails to "re-examine" this phenomenon – and the potential for bioaccumulation of other radionuclides in the environment surrounding Millstone - consistent with GEIS section 4.6.1.1.

[18] GEIS 4.6.1.1.
[19] See [citation to follow]

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MPS-82-13 Nor does the SEIS examine the quality of environmental stewardship exercised by Dominion in its other corporate activities.

We suggest you review the October 2003 report by Public Citizen, "Dominion Resources, Inc.; A Public Citizen Corporate Profile." [20] Public Citizen reports that "[I]n April 2003, Dominion's VEPCO agreed to a $1.2 **billion** enforcement settlement with the US Department of Justice and the US Environmental Protection Agency for violations of the Clean Air Act." (Emphasis added.)

The report further states that Dominion's VEPCO failed to install pollution control equipment at its coal-fired Mount Storm Power Plant in West Virginia after it made significant modifications that increased power-generating capacity. This was a violation of the Clean Air Act and, "according to the EPA, resulted in the release of 'massive amounts' of sulfur dioxide, nitrogen oxide, and particulate matter."

Dominion's Dominion Energy, owner of the Brayton Point Power Station in Massachusetts, releases 240 pounds of toxic mercury annually from that facility – enough to poison 120 million pounds of fish part of the Dominion network of companies, according to the Providence (RI) Journal of March 11, 2005.[21] Eating mercury in fish and shellfish presents a danger to children and pregnant mothers by harming developing nervous systems. Dominion Energy has been served with a notice of intent to sue by the Conservation Law Foundation, according to the newspaper report.

According to the SEIS, four states and all or parts of 15 counties fall within the 50-mile radius of Millstone (eight in Connecticut, four in Rhode Island, two in Massachusetts and one in New York). An estimated 2,868,207 people live within this area. This equates to a population density of 219 persons/square kilometer or 567 persons per square mile. In the GEIS matrix of rank of sparseness (Category 4) and proximity (Category 4) result in the conclusion that Millstone is located in a high-population area.
MPS-82-14 Moreover, the population within a 10-mile radius of Millstone increases seasonally as a result of an influx of approximately 10,500 summer

[20] A copy of the report is attached.
[21] See "Conservation Group Sues Brayton Point" (Providence Journal, March 11, 2005), attached.

MPS-82-14 residents. The SEIS contains no figures of the seasonal influx of visitors to the eastern end of Long Island although it is within the 50-mile radius of Millstone.

MPS-82-15 **In conclusion, it is clear that the adverse environmental impacts of license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be beyond "unreasonable" – license renewal for Millstone is a license to kill.**

This conclusion is unassailable when the full scope of available information about Millstone's environmental impacts is properly considered.

Detailed Comments

GEIS Is Inapplicable to the Millstone EIS

MPS-82-16 The Millstone Draft Environmental Impact Statement analysis largely avoids the **primary issue** presented by the prospect of relicensing Millstone Units 2 and 3 for additional 20-year terms: the effects of routine releases of radiological and toxic chemical releases to human health and the environment surrounding the nuclear facility.

The troubled nuclear industry knew that if the truth about the radiological impacts of nuclear power plant operations could be addressed in relicensing proceedings, no community in American would accept the prospect to hosting a nuclear power plant beyond its initial 40-year licensing term. The GEIS is a fiction contrived by the nuclear industry and adopted by the NRC to deny the public an opportunity to challenge relicensing of nuclear power plants based on radiological impacts to human health and the environment.

MPS-82-17 The NRC's Generic Environmental Impact Statement ("GEIS") was published in the year 1996, or nine (9) years prior to the NRC's invitation for public comment on the SEIS, at a time when Unit 2 had operated for 26 years, Unit 1 for 21 and Unit 3 for 10 years. Necessarily, when the GEIS refers to "current levels" of radiation, it is referring to radiation levels which were "current" in 1996 or earlier. The GEIS is not itself current, but is

MPS-82-17 outdated and fails to account for the past nine (9) years of operations within the U.S. nuclear industry.

The GEIS itself is obsolete. Although the NRC staff states in the SEIS it was not required to consider site-specific aspects of Millstone's routine radiological emissions because Millstone site-specific routine radiological emissions were considered in the GEIS at Appendix E, GEIS Appendix E is limited to "routine" radiological emissions during the years 1985-1987. No explanation is given why a report published by the NRC in 1996 relies on 10-year-old data, when its purpose is to project radiation levels five decades into the future. At best, GEIS's radiological analysis of "routine" Millstone radiological emissions is incomplete and superficial.

More significantly, the GEIS fails to account for any of the following facts and circumstances – routine and extraordinary – which have occurred at Millstone since 1996, including the following:

MPS-82-18 1. The NRC placed the entire Millstone Nuclear Power Station on its "Watch List" and ordered an unprecedented three-reactor two-year shutdown in 1996 because of national media exposure of wilful, systemic disregard for safety standards and licensing requirements; Unit 1 never restarted, Unit 3 restarted in 1996 and Unit 3 restarted in 1999;

MPS-82-19 2. In 1996, after workers in the site maintenance department at Millstone were diagnosed with brain cancers and Northeast Utilities dismissed the entire department – after securing releases the workers would not sue Northeast Utilities if the company paid them double severence pay – and hired transient contract workers to perform hot and dirty tasks within the plant, two of the workers died untimely deaths due to their brain cancers.

3. On December 16, 1997, Zachary M. Hartley was born with a rare jawbone cancer which required major life-threatening surgery. His mother swam regularly in the nuclear/chemical "mixing zone" otherwise known as the Hole-in-the-Wall Beach on the Niantic Bay shoreline during critical months of her pregnancy with Zachary.

4. In 1997, Northeast Utilities caught a fish contaminated with cesium-137, a deadly carcinogen, it admitted releasing into Niantic Bay, in the nuclear/chemical "mixing zone" which stretches from the Millstone

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MPS-82-19 discharge point to the Niantic Bay shoreline, a popular summer destination for families with young children.

5. On or before 1997, Millstone dispensed with its measurement of strontium-90 in quarterly composited air particulate filters, relying instead on infrequent sampling of goat milk in the community to determine whether its strontium-90 emissions reached harmful levels after-the-fact.

MPS-82-20 6. In September 1999, Northeast Utilities, predecessor to Dominion, pleaded guilty to committing environmental felonies including falsifying environmental monitoring records and releasing hydrazine, a carcinogen, illegally into the Long Island Sound.[22]

MPS-82-21 7. A Connecticut Superior Court judge enjoined the restart of Millstone Unit 2 in 1999 because he was persuaded that the health and stability of the indigenous Niantic winter flounder stocks were endangered by operations of the Millstone intake structures through entrainment and impingement. Fish Unlimited v. Northeast Utilities.

8. In 2000, two commercial fishermen sued Northeast Utilities for tortiously causing the collapse of the formerly commercially viable Niantic winter flounder fishing stocks; their suit remains pending.

MPS-82-22 9. In 2000, Northeast Utilities acknowledged that – even under daily supervision by onsite inspectors of the NRC – it had lost two highly radioactive spent fuel rods from the Unit 1 spent fuel pool.

10. In 2000, the Connecticut Department of Public Utility Control ("DPUC") oversaw a "public auction" by Northeast Utilities to sell the Millstone Nuclear Power Station; the public was excluded from the "public auction"; virtually all key "public auction" documents were redacted and ordered sealed by the DPUC; over public protest, and despite the Coalition's disclosure that Dominion had the worst safety record in the nuclear industry including the deaths of seven nuclear workers at its nuclear facilities in Virginia, the DPUC approved the sale of Millstone to Dominion Nuclear Connecticut, Inc., ("DNC") at the time a paper entity with no assets with only a post office box in Niantic, Connecticut; when the Connecticut Coalition Against Millstone obtained a Superior Court hearing date for a judge to consider its challenge to the rigged sale and the prospective transfer of expired environmental permits to DNC, lawyers for Northeast Utilities and DNC met *ex parte* with Superior Court Chief

[22] See "Owner of Connecticut Nuclear Plant Accepts a Record Fine" (New York Times September 28, 1999), attached.

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Administrative Judge John J. Langenbach and obtained an order suspending the hearing so the sale could proceed without court review; when the matter was brought to the Connecticut Supreme Court, Justice Christine Vertefeuille, beneficiary of a Northeast Utilities 401K plan, recused herself; Connecticut Attorney General Richard S. Blumenthal, although entitled to automatic party status in the DPUC proceedings, declined participation. So occurred the "public auction" of Connecticut's worst polluter.

MPS-82-23 11. In April 2001, Connecticut's Commissioner of Environmental Protection, Arthur J. Rocque, Jr., "transferred" an expired NPDES (National Pollution Discharge Elimination System) permit (it had expired four years earlier) and "emergency authorizations" (which he admitted in writing he lacked legal authority to issue) to "Dominion Nuclear Connecticut, Inc.," at that time a paper company with a post office box in Niantic but no assets. Dominion has been operating under the authority of the expired permit for four years and DEP has not renewed the permit in the intervening time.

MPS-82-24 12. In 2001, Dominion reported concentration levels of strontium-90 contamination in goat milk sampled within five (5) miles downwind of the Millstone Nuclear Power Station nearly twice as high as the highest recording measurement of strontium-90 concentrations in Connecticut milk during the height of the 1960s atmospheric nuclear weapons testing.

MPS-82-25 13. In 2001, terrorists who had targeted nuclear power plants hijacked a passenger jet and flew over the Indian Point Nuclear Power Plant 29 miles of New York City before slamming into the World Trade Center. The U.S. Department of Homeland Security, subsequently created, designated the Millstone Nuclear Power Plant a terrorist's target of choice.

14. In 2004, Connecticut State Senator Melodie Peters, Chairman of the powerful Energy and Technology Committee, took a paying job with Dominion in public relations to advocate for Millstone relicensing, without giving up her legislative commitments.

MPS-82-26 11. On August 16, 2003, Joseph H. Besade became the seventh known pipefitter to die prematurely from workplace exposures at Millstone.

MPS-82-27 15. On August 5, 2004, Cynthia M. Besade reported to the NRC in an affidavit her personal knowledge of some 67 cancers in persons known directly or indirectly to her, all living within or close to the five-mile radius surrounding Millstone, including childhood cancers and

MPS-82-27 the case of a 17-year-old Waterford high school student diagnosed with ovarian cancer; from one street alone – Seabreeze Drive, north-northeast and less than two miles downwind of Millstone – seven (7) cases of cancer were reported.

MPS-82-28 16. On August 5, 2004, Richard Heaton drove seven (7) hours from the University of Pennsylvania Medical Center to New London to participate in a press conference and proceeding before the NRC to share the facts of his daughter's rare thyroid cancer which developed following her exposure to Millstone effluents at age 10.

MPS-82-29 17. In 2004, Dominion rejected the U.S. Department of Homeland Security's offer of a free security enhancement to protect the three Millstone intake structures from terrorist attack.[23]

MPS-82-30 18. In February 2005, the Coalition discovered that Zachary M. Hartley's rare jawbone cancer, believed caused by his mother's *in utero* exposure to Millstone radiological and chemical effluents in the nuclear/chemical "mixing zone" in 1997, was knowingly excluded from listing in the State of Connecticut's Tumor Registry because part of the orange-size cancerous tumor removed from Zachary's mouth in life-saving surgery was determined to be benign.

MPS-82-31 19. On March 10, 2005, Dr. Helen Caldicott, world-renowned pediatrician, authority on the health effects of low-level ionizing radiation and co-founder of Physicians for Social Responsibility, declared the likelihood that 7-year-old Zachary M. Hartley's rare jawbone cancer was caused by his mother's exposure to Millstone's radiological and chemical effluents.

MPS-82-32 Moreover, Millstone is unique in the annals of the U.S. nuclear industry: Millstone has released the highest levels of radionuclides of any nuclear power station in the country at various times over the past 35 years of its operational history.

From 1970 to 1987, Millstone had released a total reported release of 32 curies of radioactive iodine and particulates into the air, which included the highly carcinogenic strontium-90 and iodine-131, together with 6.7 million curies of total fission and activation gases such as xenon and krypton. During the same period, Millstone released 581 curies or 581 trillion picoCuries of radiation in the highest liquid volume of such releases

[23] See "Millstone Owner Turned Down Free Homeland Security Device" (The New London Day, March 9, 2005)

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MPS-82-32 of mixed fission and activation products of any nuclear plant in the United States.[24]

In a single year, 1975, Millstone released a record reported high of 9.99 curies of iodine and particulates into the air and 199 curies of liquid mixed fission and activation products into the Long Island Sound, also a record for all U.S. reactors.[25] Id.

MPS-82-33 While the strontium-90 concentration in milk declined for the United States as a whole between 1970 and 1975, from 8 pCi/l to 3 pCi/l, it rose from 9.8 in 1970 to a high of 15.8 in 1973 and 14.8 in 1974 near Millstone, remaining at 10.7 by 1975. This is far in excess of the U.S. average of 3 pCi/l, ruling out any significant contribution to the local milk from bomb test fallout by France and China that continued until 1980.[26]

The calculated yearly radiation dose to bone of a child due to excess strontium-90 within 10 to 15 miles of Millstone, in excess of the yearly dose for the United States, rose from 33 millirem per year in the first full year of operation to 204 millirem per year by 1974, nearly three times the normal background level of 70 millirems per year in Connecticut.[27]

These doses of strontium-90 alone may be compared with the 15 millirem per year to any organ permitted under current NRC regulations, the 2 millirem produced to bone marrow in a typical X-ray of a child, and the 80 millirem per year to a developing fetus found to produce a doubling of the rate of childhood leukemia in the studies of the renowned Dr. Alice Stewart.[28]

MPS-82=34 Given all these facts and circumstances, the application of a "Generic Environmental Impact Statement" to Millstone, thereby precluding site-

[24] See Declaration of Ernest J. Sternglass, Ph.D., In the Matter of Dominion Nuclear Connecticut, Inc., Docket No. 50-336-LR, 50-423-LR, ASLBP No. 04-824-01-LR (August 8, 2004)

[25] Id.
[26] Id.
[27] Id.
[28] Id.

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MPS-82-34 specific analysis in the Environmental Impact Statement, is so deeply flawed as to be fraudulent.

The Coalition and others have provided "new and significant" information which compels the NRC to conduct a site-specific analysis of the environmental impacts of relicensing Millstone Units 2 and 3. See discussion at pages 32 *et seq. infra*.

MPS-82-35 At the very least, the NRC should be required to evaluate the environmental impact of Millstone's radiological and chemical effluents – singly, in synergy and cumulatively - under site-specific analysis to qualify under the standards of the National Environmental Policy Act.

2.1.4.2 Gaseous Waste Processing Systems and Effluent Controls

In this section, the SEIS describes the liquid, gaseous and solid waste management systems presently in place to collect and treat the radioactive materials which are produced as a by-product of the nuclear plant operations.

The SEIS states as follows:

> Radioactive material produced from fission of uranium-235 and neutron activation of metals in the reactor coolant system is the primary source of liquid, gaseous and solid waste. The radioactive fission products build up within the fuel. Most of these fission products are contained in the fuel pellets and sealed fuel rods, but small quantities escape from the fuel rods into the reactor coolant. Neutron activation of trace concentrations of metals entrained in reactor coolant such as zirconium, iron and cobalt creates radioactive isotopes of these metals. Both fission and activation products in liquid and gaseous forms are continuously removed from reactor coolant and captured on several different types of filter media. Units 2 and 3 operate separate liquid and gaseous processing systems. Gaseous discharges for each unit are monitored separately before they are discharged to the stack or to other designated release points for each unit. All liquid discharges are directed to a canal which terminates in the old quarry and the quarry discharges to Long Island Sound.

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MPS-82-36 Despite these comments, it is clear that station monitoring of radioactive effluents is presently inadequate and incomplete and that some radionuclides are released into the environment without measurement or documentation.

For example, In 1997, Northeast Utilities reported in its Annual Radiological Environmental Operating Report as follows:

> Section 4.5 Air Particulate Strontium (Table 5)
> Table 5 in past years was used to report the measurement of Sr-89 and Sr-90 in quarterly composited air particulate filters. **These measurements are not required by the Radiological Effluent Monitoring Manual (REMM) and have been discontinued.** Previous data has shown the lack of detectable station activity in this media. This fact, and the fact that milk samples are a much more sensitive indicator of fission product existence in the environment, prompted the decision for discontinuation. In the event of widespread plant related contamination or special events such as the Chernobyl incident, these measurements may be made.

MPS-82-37 As Dr. Sternglass has pointed out,[29] in 2001, Dominion recorded concentrations of strontium-90 in goat milk sampled five miles from Millstone at a level nearly twice that of the highest recorded concentration of strontium-90 in milk in Connecticut during the peak of atmospheric atomic bomb testing in the 1960s.

MPS-82-38 In 1997 alone, there were numerous reported incidences of station radiation monitors being inoperable:

- Unit 1 Liquid Radwaste Effluent Monitor (inoperable 6/7/96 – 3/25/97 – 83 days in 1997, 291 days total)
- Unit 1 Service Water Effluent Monitor (inoperable 6/9/96 – 7/18/97 – 198 days in 1997, 404 days total)

[29] See Coalition's March 2, 2005 filing to the NRC.

MPS-82-38 Unit 2 Steam Generator Blowdown Monitor (inoperable 2/22/96 – 8/26/97 – 237 days in 1997, 551 days total)(NU claims no discharges were made during this period)

Unit 2 Clean Waste Monitor Tank Radiation Monitor (inoperable 5/25/97 – 7/1/97 – 37 days)(NU claims no discharges were made during this period)

Even the GEIS acknowledges that some airborne radioactive effluent releases are not monitored, recorded or documented.

Within the entire body of radioactive airborne effluents released by Millstone over the course of its 35-year operational life, the SEIS only specifically considers those reported by Dominion in 2002 as follows:

Unit 2: Total fission and activation gas activity released 128 Curies
Iodine-131 4.90 X 10 –3 Curies
Particulates 1.22 X 10 –5 Curies
Tritium 31.2 Curies

Unit 3: Total; fission and activation gas activity released 2.45 Curies
Iodine-131 1.52 X 10 –6 Curies
Particulates 6.08 X 10 –5 Curies
Tritium 47.3 Curies

MPS-82-39 These figures do not break down the radioisotopes released, other than for Iodine-131 and Tritium, and do not identify nor quantify which radioactive gases are emitted, such as xenon-137 (with a half-life of 3.9 minutes decaying to cesium-137 with a half-life of 30 years); xenon-135 (with a half-life of 9.17 hours decaying to cesium-135 with a half-life of 3,000,000 years); nor krypton-89 (with a half-life of 3.2 minutes decaying to strontium-89 with a half-life of 52 days). These radioactive materials are long-lived and have cumulative impacts. The SEIS does not analyze these environmental impacts.

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The SEIS states: "These releases from both units are typical of annual releases from Millstone and are not expected to increase during the renewal period."

MPS-82-40 Since the SEIS analysis was self-limited to the years 2001, 2002 and 2003, and annual releases for the 32 other years Millstone has been operating were not considered, the statement that "These releases from both units are typical of annual releases from Millstone" is not substantiated.

Moreover, the SEIS statement, that [these releases] are not expected to increase during the renewal period" is incorrect. First, releases of tritium, a known cancer-causing radioactive toxic with a half-life of 12.3 years. are trending upward.[30] Second, as Units 2 and 3 operate for longer periods at full capacity, airborne radioactive emissions will increase. Similarly, if during the renewal period Millstone Units 2 or 3 receive approval for power upgrades, airborne radioactive emissions will increase. The consequences of these reasonably foreseeable circumstances were not analyzed in the SEIS.

MPS-82-41 Moreover, the SEIS does not identify nor quantify strontium-90 releases, nor note the absence of strontium-90 monitoring from the station stack, while strontium-90 concentrations are regularly found to be inordinately high in goat milk taken from samples five miles from Millstone.

2.2.7 Radiological Impacts

In section 2.2.7, Radiological Impacts, on page 2-43, the section concludes, "The applicant does not anticipate any significant changes to the radioactive effluent releases or exposures from Millstone operations during the renewal period and, therefore, the impacts to the environment are not expected to change."

MPS-82-42 However, in Dominion Nuclear Connecticut Millstone Station Annual Radiological Operating Report 2003, in section 4.14, Seawater, on page 4-9, it is stated, "since the restart of Unit 3 in 1998 and Unit 2 in 1999, tritium

[30] See discussion at page 20 infra.

MPS-82-42 releases in liquid effluents have risen to levels at ***or above*** [emphasis added] those observed during pre-shutdown period."

Dominion records indicate that Millstone released 1854 curies of liquid radiation in 2000, an all time high. Such reported releases totaled 1273 curies in 2001, 1537 in 2002 and 1278 in 2003. NRC records for Millstone's liquid tritium releases totaled from 1970-1994 totaled 11,550 curies. The total from 1995-2003 was 8551 curies.

This trend of increasing amounts of tritium releases is dangerous because tritium has carcinogenic, mutagenic, teratogenic and transmutational properties whose effect upon the environment which have not been considered in the SEIS.[31]

The coastline around Millstone is lined with beaches and shoreline communities, with many summer residents as well. Human activities in the area include swimming, boating, fishing, clamming, scalloping. Thus there are ample opportunities for liquid tritium contamination of people and shore and marine life.

MPS-82-43 It is undeniable that the more the pressurized water reactors of Units 2 and 3 operate, the more tritium by-products they will create and release into the environment.

The current stated policy of both Dominion and the nuclear power industry in general is to operate power reactors as close to maximum capacity as possible. In 2003 Millstone 3 operated at almost 100% capacity. Millstone 2 operated at 80% capacity, but only because it shut down for refueling.

The increasing amounts of tritium discharged into Long Island Sound means that Dominion's claim that it "does not anticipate any significant changes to radioactive releases or exposures from Millstone operations during the renewal period" is false. Therefore the NRC's conclusion that "impacts to the environment are not expected to change" is also false.

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[31] See "The Carcinogen, Mutagenic, Teratogenic and Transmutational Effects of Tritium," Citizens Awareness Network, April 1994.

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MPS-82-44 Given this history, the NRC should mandate the immediate installation of filters to mitigate liquid tritium discharges from Millstone units 2 and 3. In addition, the NRC should mandate the testing of drinking water, well water and groundwater and in marine life in areas affected by Millstone for the presence of tritium. At present only sea water is tested for tritium.

Until these measures have been put into place and monitoring results have been made public until Millstone's current operating licenses expire, or units 2 and 3 permanently shut down, the NRC should not consider granting license extensions for Millstone units 2 and 3, in consideration of the health and safety of the public.

4.1 Cooling System

MPS-82-45 The GEIS identifies the issue of scouring caused by discharged cooling water as a Category 1 issue. As a "Category 1" issue, the NRC staff will not review it on a Millstone site-specific basis in the absence of "new and significant information."

The SEIS states the NRC staff "has not identified any significant new information during its independent review of the Dominion ER, the staff's site visit, the scoping process, its review of monitoring programs, or its evaluation of other available information."

MPS-82-45 Yet, scouring caused by discharged cooling water was identified by a technician in the Millstone Environmental Laboratory as an irreversible environmental impact during a recent public presentation on Dominion's environmental impacts presented at the Three Rivers Community College.

Accordingly, the NRC staff should request Dominion to release details to it of this "new and significant information."

4.1.1 Entrainment of Fish and Shellfish in Early Life Stages

Entrainment of winter flounder larvae at the Millstone intakes is a major issue and it is one which has been the subject of much litigation in the Connecticut courts. Lawsuits have been brought by local fishermen

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complaining that Millstone intake structures have driven the indigenous Niantic winter flounder population to near-extinction. The fishermen have successfully resisted dilatory and repetitive motions on the part of Dominion and Northeast Utilities to dismiss their claims.

The SEIS states:

"The staff independently reviewed the Millstone Units 2 and 3 ER [Environmental Report], visited the site, and reviewed the applicant's NPDES permit. The staff also reviewed relevant scientific articles and agency documents (CTDEP) and NOAA (National Oceanic and Atmospheric Administration) Fisheries (also known as National Marine Fisheries Service [NMFS], interviewed agency staff, and interviewed a faculty member at the University of Connecticut who has conducted research on entrainment at Millstone." [Crivello 2003]

MPS-82-46 Astonishingly, the NRC staff does not report any attempt to consult with the **fishermen** who are targeted in the SEIS for the demise of the Niantic winter flounder population. Had the NRC staff attempted to locate commercial fishermen who fish for Niantic winter flounder near Millstone, it would have learned that the resource has vanished and, with it, the fishermen and a way of life.

Nor, apparently, did the NRC staff make any effort to consult with the experts who have testified in court proceedings to the overwhelming evidence that the suction action of the Millstone intake structures is the predominant cause of the collapse of the Niantic winter flounder population and has been since 1986, when Millstone Unit 3 went online.

Northeast Utilities obtained operating licenses for Millstone in the 1970s based on projections – possibly knowingly bogus – that the Millstone intake structures would have a far less devastating effect on the Niantic winter flounder larvae than has in fact occurred.

MPS-82-47 Although NRC staff spoke with Prof. Crivello of the University of Connecticut, who has studied Millstone entrainment, the staff does not explicitly identify Prof. Crivello as a paid consultant to Millstone's owners and operators each time his name appears in the SEIS.

MPS-82-48 Why did the NRC staff not meet with DEP's Victor Crecco, author of reports debunking Dominion's theorizing about the Millstone impacts on the Niantic winter flounder collapse?

MPS-82-49 The SEIS analysis of the collapse of the indigenous fishing stocks does not mention the discovery of a fish caught in Niantic Bay in 1997 contaminated with cesium-137 – nor Northeast Utilities' acknowledgment that the cesium-137 originated in its nuclear operations.[32]

The SEIS analysis does not mention the build-up of cobalt-60 in Jordan Cove near the Millstone discharge point[33] nor does the SEIS analyze the contribution of cobalt-60 buildup in sediment as a contributing factor in the collapse of the population of the bottom-feeding Niantic winter flounder.

MPS-82-50 Attributing the collapse of the fishing stocks to elevated water temperatures, the SEIS fails to consider the contribution of Millstone's 24-hour-a-day, seven-day-a-week thermal discharges to the Long Island Sound.

MPS-82-51 While the SEIS reports that "[T]he CTDEP [Division of Marine Fisheries which has been analyzing this issue for nearly a decade] believes that Millstone is having a significant impact due to entrainment of winter flounder larvae," the SEIS relies on NOAA and NMFS reports – which contain no data of the unique conditions at Niantic Bay but are devoted to a broad, regional analysis of fishing stocks - to discredit CTDEP Division of Marine Fisheries, as follows:

> Regulatory agencies concerned with the management of winter flounder have concluded that the resource is overfished and overexploited (NOAA 1998; NMFS 2003) and have instituted measures to reduce fishing pressure throughout Long Island Sound and the southern New England-middle-Atlantic region. Thus, there is ample evidence to suggest that fishing pressure is directly contributing to the decline **both local and regional levels** at and

[32] See Northeast Utilities 1997 Annual Radiological Environmental Operating Report at Section 4.17.2 ("Cs-137 was detected in one sample from the Niantic Bay (location 35). Positive indications are seldom seen in this media outside of the immediate discharge vicinity.")

[33] See [citation to follow]

MPS-82-51 may represent the major impact to this resource. The extent to which Dominion contributes to or exacerbates the problem in the Niantic River system is not elucidated by fish population studies reviewed in this SEIS." [Emphasis added.]

As stated, the SEIS does not identify either a NOAA or NFSS study specific to the Niantic River winter flounder nor the recent fishing habits of commercial fishermen in the area; thus, its failure to accord credit to the CTDEP for its insights appears to be result-driven, to obscure and downplay the fact that the Millstone Nuclear Power State has been the primary factor in driving indigenous fishing stocks to collapse. Or, as Rhode Island expert on Niantic winter flounder, Mark Gibson – a witness whose testimony aided Connecticut Superior Court Judge Robert Hale in issuing a temporary restraining order keeping Millstone Unit 2 shut down during the 1999 spawning season to avoid harmful entrainment effects to the fish population – has stated, Millstone is the worst predator of fish in the Northeast.

The SEIS concludes:

> The staff's evaluation of past impacts of entrainment on Niantic River winter flounder is inconclusive because unresolved questions remain about population dynamics, life history, and unknown factors that may be impacting the population. The available data do not allow us to unequivocally link or decouple population declines with Millstone operations . . . Because the spawning adult population is very low, and in consideration of the 20-year license renewal period, the staff's conclusion is that the impacts would be moderate.

MPS-82-52 The Coalition has reference to Figure 2-6 ("Comparison of Winter Flounder Population Trends in Niantic River and Long Island Sound".[34] This figure illustrates clearly that while the winter flounder fishing stocks in the region are rebounding – perhaps due in part to fishing restrictions that apply throughout the region – the Niantic River winter flounder population continues its collapse.

[34] Draft NUREG-1437, Supplement 22, 2-26 (December 2004)

MPS-82-52 The facts available to the NRC staff demonstrate that the sole factor which has prevented the Niantic River winter flounder population from enjoying a rebound as has the species elsewhere in the region due to tightened fishing restrictions is the most obvious one: the Millstone Nuclear Power Station.

It is submitted that if the SEIS staff had pondered the ramifications of Figure 2-6 in consultation with the Niantic fishermen who have gone out of business and the fishermen's expert witnesses and CTDEP's marine biologist Victor Crecco, in light of all the facts and circumstances, the NRC staff would have been compelled to categorize the impact to Niantic winter flounder from continued operations of Millstone in a license renewal period to be "major" and devastating and probably irreversible.

The weight of credible evidence is that the operations of the Millstone Nuclear Power Station have driven the winter flounder to virtual extinction, a phenomenon not contemplated in the original Millstone environmental impact statement. Future entrainment during the license renewal period will definitely assure that the once-abundant, commercially important resource will never return.

4.1.2.1 Impingement Monitoring
4.1.2.2. Impingement Mortality

At the request of Northeast Utilities, CT DEP permitted routine impingement monitoring for Unit 2 to cease in December 1987. Unit 2 did not have a fish return and all impinged marine organisms were presumed lost. Routine impingement monitoring has never been conducted for Unit 3.

MPS-82-53 The most recent data for Unit 2 involves sampling collected biweekly from July 2000 to June 2001. It is questionable whether the Unit 2 fish return was in operation during such period.[35] Data for Unit 3 involve samplings collected biweekly from January to December 1993.

These samplings do not suffice in frequency to form a data base to support conclusions about impingement during the 35-year operations of Millstone, nor to provide an adequate basis for extrapolation to the future.

[35] Report of a commercial lobsterman to the Coalition.

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MPS-82-53 Thus, the SEIS statement:

> Based on the assessment to date, the staff expects that the measures in place at Millstone Units 2 and 3 (i.e., aquatic organism return systems) provide mitigation for impacts related to impingement, and no new mitigation measures are warranted.

is not supported by genuine evidence.

4.1.3 Heat Shock

MPS-82-54 The SEIS states:

> Millstone has remained in compliance with the NPDES thermal and discharge volume limits at the quarry cut. [SEIS at page 4-28]

Yet, the SEIS report is absent any indicia of an independent basis from which to render such a conclusion.

The SEIS states:

> The [NRC] staff also independently reviewed monitoring reports for the cooling-water discharge mixing zone. . . .the boundary of the mixing zone cannot exceed a radius of 2438 m (8000 ft) from discharge outlet at the quarry cut.

The SEIS report does not identify a single monitoring report by date or otherwise; any conclusions regarding the cooling-water discharge mixing zone are utterly unsubstantiated.

4.3 Radiological Impacts of Normal Operations

The NRC SEIS staff review of Millstone data on the most critical issue of "radiological impacts of normal operations" was self-limited to the years 2001, 2002 and 2003.

MPS-82-55 The NRC GEIS staff review of Millstone data on the most critical issue of "radiological impacts of normal operations" was self-limited to the years 1985, 1986 and 1987.[36]

Thus, in its consideration of whether the Millstone Nuclear Power Station should be permitted to operate in the years 2015-2025 (Unit 2) and 2025-2045 (Unit 3), the NRC deliberately failed to consider the "radiological impacts of normal operations" for the years 1970-1984, 1988-2000 and 2004 to the present.

Put another way, the NRC considered Millstone's "radiological impacts of normal operations" for only 6 of the 35 years the Millstone nuclear reactors have been routinely releasing harmful radiation into the environment – just 17 per cent of Millstone's operational history. Twenty-nine (29) years of Millstone's routine releases of harmful radiation releases to the environment are not evaluated in either the GEIS or the SEIS.

By limiting the pool of data considered in the GEIS and the SEIS to a period of time which encompasses only 17 per cent of Millstone's operational history of harmful radiation releases to the environment, the NRC failed to consider all available information. The NRC's evaluation of future impacts based on past impacts rests of an inadequate data base and its conclusions are accordingly unreliable, if not invalid. Certainly, the NRC staff's consideration of "cumulative" impacts (SEIS section 4.8.3) is scientifically unsound if not indeed scientifically fraudulent, since the NRC staff did not review, tabulate or assess the full scope of past impacts to be able to "accumulate" cumulate impacts..

On its website, www.nrc.gov/who-we-are/values.html, the NRC states that it "adheres" to "Principles of Good Regulation" which include the following:

> Independence: . . . Final decisions must be based on objective, unbiased assessments of all information, and must be documented with reasons explicitly stated."

[36] See GEISS Appendix E.19

The SEIS and GEIS systematically exclude all available information concerning Millstone's radiological effluents for the years 1970-1985, 1988-2000 and 2004 to the present. No reason for such exclusion is explicitly stated.

The GEIS addresses radiological impacts of "normal" operations of nuclear power plants during a projected renewal period as follows:

Radiation exposures to public (license renewal term):

GEIS: "Radiation doses to the public will continue at current levels associated with normal operations." (GEIS 4.6.2)

Occupational radiation exposures (license renewal term):

GEIS: "Projected maximum occupational doses during the license renewal term are within the range of doses experienced during normal operations and normal maintenance outages, and would be well below regulatory limits.

The GEIS categorizes the issue of "radiological impacts of normal operations" as a Category 1 issue, meaning that the SEIS reviewing staff need not consider site-specific issues at all in the absence of "new and significant information."

MPS-82-56 The Coalition believes that "radiological impacts of normal operations" must be considered on a site-specific basis with regard to Millstone Units 2 and 3 as a Category 2 issue. See discussion at page 32 *et seq. infra*. Because the SEIS did not consider the issue as a Category 2 issue, the SEIS is deeply flawed and inadequate and falls far short of meeting the NRC's "Principles of Good Regulation."

MPS-82-57 Finally, as stated, the SEIS states that the NRC staff is not required to evaluate Millstone radiation releases on a site-specific basis because Millstone releases were subjected to site-specific analysis in the GEIS which found them to be "well within regulatory limits." This statement is most misleading in that it fails to acknowledge that the NRC GEIS staff limited itself to reviewing Millstone's reported radiological emissions for the

MPS-82-57 years 1985, 1986 and 1987 only.[37] Millstone's largest reactor, the 1,220-megaWatt Unit 3 – was still under construction in 1985. By the year 1987, it had not established an operational record; it has since substantially increased output and, hence, "routine" radiological emissions.

GEIS Section 4.6 ("Radiological Impacts of Normal Operation") provides in pertinent part as follows:

> This section provides an evaluation of the radiological impacts on occupational personnel and members of the public during normal operation following license renewal. This evaluation extends to all 118 nuclear power reactors. Radiation exposures occurring after license renewal are projected based on present levels of exposures. Estimates of additional maintenance, testing and inspections as a result of a variety of age-related changes in operational procedures were made based on the anticipated changes to current operation and are detailed in Section 2.6 and Appendix B. Added maintenance, testing, and inspection will be accompanied by increased exposure time to members of the work force but are not expected to significantly influence dose to members of the public.

As noted,[38] the GEIS was published in 1996. Hence the above statement, "Radiation exposures occurring after license renewal are projected based on present levels of exposures," must be read with regard to 1996-or-earlier levels of exposure, rather than actual "current" exposures. However, the NRC SEIS staff limited its review to 2001-2003 data, rather than actual "current" exposures. As also noted, the NRC GEIS staff only reviewed Millstone's 1985-1987 exposure data.

With regard to the above statement:

> Estimates of additional maintenance, testing and inspections as a result of a variety of age-related changes in operational procedures were made based on the anticipated changes to current operation and are detailed in Section 2.6 and Appendix B.

[37] See GEIS, Table E19.
[38] See discussion at page 10 supra.

MPS-82-58 the SEIS fails to identify or evaluate any "additional maintenance, testing and inspections as a result of a variety of age-related changes in operational procedures" at Millstone.

With regard to the above statement:

> Added maintenance, testing, and inspection will be accompanied by increased exposure time to members of the work force but are not expected to significantly influence dose to members of the public

the SEIS fails to identify or evaluate any "added maintenance, testing, and inspection "at Millstone and hence fails to evaluate increased exposure time to members of the work force and members of the public during the proposed renewal period.

MPS-82-59 The SEIS also fails to consider the environmental impact of Dominion's August 24, 2004 submittal to the NRC requesting approval of the "Nuclear Facility Quality Assurance Program Description." According to an Request for Additional Information ("RAI"), dated February 24, 2005, this program deletes from the Millstone Quality Assurance program radiological protection responsibilities which include "maintaining records and reports on radioactive contamination levels." If this application is approved, a safeguard to protect against excessive worker radiological contamination will be lost and there will be no basis for the NRC to conclude now that occupational radiation exposures during the license renewal term will be small and within regulatory limits.

MPS-82-60 The NRC SEIS staff accepted at face value Dominion's self-assessment that it would not conduct "major" refurbishment in the future. Thus, the NRC SEIS staff considered neither "major" or "minor" refurbishments. The NRC SEIS staff's conclusions about the radiological impacts during refurbishment are therefore necessarily flawed. Given the strong likelihood that major refurbishment in the form of a stationwide conversion from once-through cooling to closed cooling systems will be ordered by the Connecticut DEP – to avoid future exposure of pregnant women and others to harmful radioactive and toxic waste effluents in the "mixing zone" and to avoid irreversible impacts to the indigenous Niantic winter flounder – the radiological impacts from such refurbishment should have been fully explored and analyzed in the SEIS.

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The NRC's GEIS further states at section 4.6.1.1:

> To determine whether the added period of operation following license renewal would, by virtue of buildup, result in significant (double) added dose, the ratios of buildup factors for midlives of 30 to midlives of 20 years were evaluated. These ratios amount to a 35 per cent increase for Cesium-137 and a 6 per cent increase for cobalt-60. This added increase due to buildup will not significantly change the total dose to members of the public.
>
> In certain cases, the bioaccumulation factors may require reexamination. These principally involve fish (in the human food chain) that are bottom feeders. Bottom feeders may ingest worms and other biota that may remobilize radioactive materials accumulated in the sediments.
>
> Accumulation of radioactive materials in the environment is of concern not only to license renewal but also to operation under present licenses.

MPS-82-61 As stated,[39] the bioaccumulation of cobalt-60 in sediment in Jordan Cove near the Millstone discharge point has been established. The SEIS does not address this phenomenon, even though required by the GEIS.

Millstone's monitoring of the aquatic environment in the area of the discharge has also revealed the presence of the following plant-related radionuclides: cobalt-60, zinc-65, silver-110 and cesium-137.[40]

In 1997 and at other times, "[I]ndications of plant releases were observed" in aquatic flora, including detectable levels of cobalt-60, zinc-65 and silver-110. According to the 1997 Radiological Environmental report filed by Northeast Utilities,

> The detection of these [radio]nuclides throughout the year, as witnessed by positives detected in other aquatic media, correspond to radioactive liquid discharges from the three Millstone units. Sampling

[39] See discussion at page 8 supra.
[40] See 1997 Annual Radiological Environmental Monitoring Program Report.

MPS-82-61 of this media provides useful information because it is very sensitive to plant discharges. However, since seaweed is not consumed, other media are utilized in the determination of dose consequences (e.g., see Shellfish and Fish results)

The presence of cesium-137 in a fish caught in the "mixing zone" within the Niantic Bay – as identified as a plant-related contamination in the 1997 Millstone effluent report – suggests widespread bioaccumulation of that carcinogenic radioisotope within the environment, requiring a "re-examination pursuant to GEIS standards.

The "radiological impacts of normal operations" should be analyzed as a site-specific Category 2 issue.

4.4 Socioeconomic Impacts of Plant Operations During the License Renewal Period

MPS-82-62 The SEIS considers the economic contribution to the community through payment of Dominion's workforce; however, the SEIS does not separate out the economic investment made in maintaining a workforce to monitor Unit 1, a nuclear power plant undergoing decommissioning, and its repository of spent nuclear fuel. Nor does the SEIS consider the prospect of a continuing workforce required to maintain Units 2 and 3 in the event each or both units is/are decommissioned or prematurely shut down before or during the renewal period.

MPS-82-63 The SEIS does not consider the enormous health care costs associated with the community's long-term exposure to low-level ionizing radiation, nor worker illnesses related to their exposures. We are aware of a recent surgery, upon a patient whose cancer is fairly linked to Millstone radiological and toxic chemical emissions, which cost in excess of $2.5 million. This does not include follow-up or lifelong care.

The SEIS is incomplete and inaccurate in its assessment of socioeconomic impacts.

4.4.6 Environmental Justice

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MPS-82-64 The SEIS does not address the environmental justice issues involved in the transportation and storage of nuclear waste generate by the Millstone Nuclear Power Station, either during its 35 years of operations or in the future. Transportation through poor urban areas and storage of Millstone's nuclear waste in poor rural communities both implicate environmental justice concerns; neither aspect was addressed in the SEIS.

4.7 Evaluation of Potential New and Significant Information on Impacts of Operations During the Renewal Term

The Connecticut Coalition Against Millstone and others have provided the SEIS staff with "new and significant information" which, once considered, dictates site-specific review as Category 2 issues or, in the alternative, rejection of the SEIS *in toto*.

The "new and significant" information may be summarized as follows:

Millstone causes cancer and Millstone is responsible for an increased cancer incidence in the surrounding community.

The SEIS states that "commentators" have provided "no evidence to support a causal relationship between increased cancer incidence and Millstone operations."

The NRC's SEIS staff concluded that the information provided during the scoping process was not new and significant with respect to the findings of the GEIS on the health effects to the public from radiological effluent releases due to the Millstone operations."

MPS-82-65 To the contrary: the Coalition and others have presented overwhelming and unrebutted evidence of a causal relationship between increased cancer incidence and Millstone operations.

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While these facts are "significant," they are not "new."

Since practically the onset of Millstone nuclear operations, Millstone's radiological emissions have been linked to heightened cancer incidences.[41]

This is hardly surprising.

Since the onset of its operations, Millstone's owners and operators have submitted reports to the NRC and the DEP detailing their radiological[42] and chemical[43] effluent emissions to the air and water.

Millstone routinely releases to the air and water the following radioactive materials:

Ag
Be-7
Ce-144
Co-57
Co-58
Co-60
Cr-51
Cs-134
Cs-137
Fe-55
Fe-59
I-131
I-133
Kr-85
Kr-88
La-140
Mn-54
Mo-99
Na-24
Nb-95
Nb-97

[41] See footnote 4 supra.
[42] See the list of radionuclides listed at pages 34-35.
[43] See the list of chemical effluent emissions listed at pages 36-40.

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Ru-105
Sb-122
Sb-124
Sb-125
Sn-113
Sr-89
Sr-90
Sr-92
TC-99M
TC-101
TC-104
Tritium
Xe-133
Xe-135
Zn-69M
Zr-95
Zr-97[44]

This list is not exhaustive.

MPS-82-66 **All radionuclides released by Millstone cause cancer.[45]**

According to the U.S. Environmental Protection Agency,

> **Radioactive materials that decay spontaneously produce ionizing radiation. Any living tissue in the human body can be damaged by ionizing radiation. Cancer is considered by most people the primary health effect from radiation exposure. Simply put, cancer is the uncontrolled growth of cells. Ordinarily, natural processes control the rate at which cells grow and replace themselves. They also control the body's processes for repairing and replacing damages tissue. Damage occurring at the cellular or molecular level can disrupt the control processes, permitting the uncontrolled growth of cells – cancer. This is why ionizing radiation's ability to break chemical bonds**

[44] Fission and Activation Products – Millstone Unit 2 Liquid Effluents – Batch Sampling – 1997 as reported in 1997 Radiological Environmental Monitoring Program.
[45] See selected bibliography prepared by Nuclear Information Resource Service, attached.

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MPS-82-66 **in atoms and molecules makes it such a potent carcinogen. . . . There is no firm basis for setting a "safe" level of exposure above background for stochastic effects [those resulting from long-term, low-level exposure to radiation]. . . . Other than cancer, the most prominent long-term health effects [from radiation exposure] are teratogenic [those that result from the exposure of fetuses or unborn children to radiation] and genetic [those that can be passed from parent to child] mutations.[46]**

According to the U.S. Nuclear Regulatory Commission, genetic effects and the development of cancer are the primary health concerns attributed to radiation exposure.[47]

MPS-82-67 **Many chemicals discharged by Millstone are known carcinogens, such as hydrazine, hexavalent chromium, cadmium, lead and benzene and many others.**

Millstone routinely discharges into the nuclear/chemical "mixing zone" which extends 8,000 feet toward the Niantic and Waterford shorelines, the following chemicals and others:[48]

Chemicals & Metals "Known or Suspected Present" in Discharge [156 compounds listed]

Aluminum
Antimony
Ammonia
Ammonium Hydroxide
Arsenic
Barium
Beryllium
Boric Acid
Boron

[46] U.S. Environmental Protection Agency website, "Understanding Radiation: Health Effects" (3/16/05)
[47] U.S. Nuclear Regulatory Commission website, "Fact Sheet: Biological Effects of Radiation." (3/26/05)
[48] Millstone 1997 Radiological Environmental Monitoring Program Report and documents filed with Connecticut DEP.

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Bromide
Bulab 6002
Cadmium
Carbohydrazide
Chlorine
Chromium
Cobalt
Conquor 3585 (methoxypropylamine and diethylhydroxylamine)
Copper
Cyanide
Dietylhydroxylamine
Epichlorohydrin
Ethanolomine
Fluoride
Freon
Hexavalent Chromium
Hydrazine
Hydrogen Peroxide
Iron
Methoxypropylamine
Molybdate
Molybdenum
Nalcolyte
Nickel
Nitrogen
Oil & Grease
Phosphorus
Selenium
Silver
Styrene
Sulfate
Sulfide
Sulfite
Surfactants
Thallium
Tin
Titanium
Tolyltriazole
Xylene

Zinc
Zirconium

Volatiles
Acrolein
Acrylonitrile
Benzene
Bromoform
Carbon Tetrachloride
Chlorobenzene
Chlorodibromomethane
Chloroethane
2-Chloroethylvinyl Ether
Chloroform
Dichlorobromomethane
1, 1-Dichloroethane
1, 2-Dichloroethane
1, 1-Dichloroethylene
1, 2-Dichloropropane
1, 3-Dichloropropylene
Ethylbenzene
Methylbromide
Methylchloride
Methylene Chloride
1, 1, 2, 2, -Tetrachloroethane
Tetrachloroethylene
Toluene
1, 2-Trans-Dichloroethylene
1, 1, 1-Trichloroethane
1, 1, 2-Trichloroethane
Trichloroethylene
Vinyl Chloride

GC/MS Fraction Acid Compounds
2-Chlorophenol
2, 4-Dichlorophenol
2, 4-Dimethylphenol
4, 6-Dinitro-O-Cresol
2, 4-Dinitrophenol

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2-Nitrophenol
4-Nitrophenol
P-Chloro-M-Cresol
Pentachlorophenol
Phenol
2, 4, 6-Trichlorophenol

Base Neutral Compounds
Acenaothylene
Benzidine
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(ghi)perylene
Benzo(k)fluoranthene
Bis(2-Chloroethyl) Ether
Bis(2-Ethylhexyl)phthalate
Chrysene
Dibenzo(ah)anthracene
1,2-Dichlorobenzene
1.3-Dichlorobenzene
1.4-Dichlorobenzene
3.3-Dichlorobenzidines
Diethyl phthalate
Dimethyl phthalate
Di-n-butyl phthalate
2,4-Dinitrotoulene
1,2-Diphenylhydrazine
Fluoranthene
Fluorene
Hexachlorobenzene
Hexachlorocyclopentadiene
Hexachloroethane
Indenol1,2,3-ed)pyrene
Isophorone
Nurobenzene
N-Nitrosodimethylamine
N-Nitrosodiphenylamine
Phenanthrene
Pyrene

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Pesticides
Aldrin
Chlordane
DDT
DDE
Dieldrin
Endosulfan(alpha)
Endosulfan (beta)
Endosulfan Sulfae
Endrin
Endrin Aldehyde
Heptachlor
Heotachlor epoxide
Arochlor 1016(PCB)
Arochlor 1232(PCB)
Arochlor 1242(PCB)
Arochlor 1248 (PCB)
Arochlor 1254 (PCB)
Arochlor 1260 (PCB)
Toxaphene

Other Substances
Ammonia
Benzo(b)fluoranthene
Chlorine
Hexachlorocyclohexane (Alpha)
Hexachlorocyclohexane (Beta)
Hexachlorocyclohexane (Gamma)
2,3,7,8-TCDD

MPS_82-68 **The interaction of radionuclides and chemicals has been established to create a synergy, multiplying the harmful effects of each.[49]**

[49] See Memorandum of Ernest J. Sternglass, Ph.D. dated March 8, 2005 ("Synergistic Interaction of radiation, Air Pollution and Chemicals") and references therein (copy

MPS-82-69 **Millstone discharges these radionuclides and chemicals – and more – into the air and into the nuclear/chemical "mixing zone" known as Niantic Bay, Pleasure Beach and Jordan Cove, defined as an area within 8,000 feet of the Millstone discharge point.**

Some of the radionuclides, such as cesium-137, have been found in fish swimming in Niantic Bay.[50]

Some of the radionuclides, such as cobalt-60, have been found in the sediment of Jordan Cove where they enter the food chain when they are ingested by worms.[51]

Some of the radionuclides and toxic chemicals very likely entered Zachary M. Hartley's mother while she was swimming in the nuclear/chemical"mixing zone" popularly known as Hole-in-the-Wall Beach during critical months of her pregnancy with Zachary, according to an expert on the health effects of low-level ionizing radiation, Dr. Helen Caldicott.[52] Four pathways are possible: breathing, swallowing, skin contact and eating a radioactive fish. Zachary was born with a rare cancer in his jawbone requiring lifesaving surgery.

In SEIS section 4.7, beginning on page 4-53, the NRC states, "During scoping, some commentators suggested that operation of Millstone resulted in excess cancers in populations around the plant site," and "other support of these positions at the May 2004 public meeting or thereafter commentators suggested there is no relationship between cancer incidence and nuclear power plants."

MPS-82-70 Millstone's cumulative dose to the environment and humans, based on annual Millstone reports filed with the NRC since 1970, totals over 6.5 curies. As reported in the response to section 2.2.7, releases of tritium into

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attached). And see "Health Effects of selected Industrial Chemicals and Radionuclides" (STAND Technical Report 2003-2) at page 5 (copy attached).

[50] See 1997 Annual Radiological Environmental Operating Report at page 4-5.

[51] See [citation to follow]

[52] See footnote 14 supra.

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MPS-82-70 Long Island Sound since Millstone's restart in 1998 are at all time highs in its operating history.

Current annual plant reports indicate that Millstone Units 2 and 3, as in the years since 1970, have been releasing radionuclides such as strontium-90, cesium-137, iodine-131, -133 and -135, cobalt -58 and -60, krypton-85, xenon-131, -133 and -135, and other such radioactive chemicals, all known to be carcinogenic.

The NRC's denial of a causal relationship between Millstone's 35 years of radioactive releases and elevated cancer rates in nearby towns, and in New London County as a whole, does not hold up to scrutiny.

The most glaring example of the NRC's denial in the Millstone SEIS is its complete omission of consideration of the August 17, 2004 declaration of Dr. Ernest J. Sternglass. The Millstone SEIS lists, on page C-9, Dr. Sternglass' declaration as received on August 17, 2004. This is the only mention of it in the SEIS.

Consequently, the declaration was omitted from the NRC's evaluation of potential new and significant information in section 4.7.

In his declaration, Dr. Sternglass presents his credentials as an expert in the field of radiation and human health. He has written and published numerous studies in this field in peer reviewed scientific journals and testified to Congress and other government agencies on this subject. The NRC knows full well who Dr. Sternglass is. He first brought up the problem of radioactive releases in relation to increasing cancer rates around nuclear plants, and in towns near Millstone in particular, to the public eye in the 1970s. He has conducted and published studies informing the public of this continuing problem ever since.

In his declaration, Dr. Sternglass methodically outlines the "causal relationship between abnormally high doses of strontium-90 in milk produced near Millstone and the pattern of cancer changes at various distances from the Millstone plant.

MPS-82-71 Dr. Sternglass also states in his declaration, "It is my professional opinion that the radioactive releases from the Millstone Nuclear Power

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MPS-82-71 Station since its startup have caused and ***will continue to cause*** [emphasis added] excess infant mortality, low birthweight, leukemia and cancer as well as increased rates of both chronic and infectious diseases in the towns around Millstone as well as in New London County and Connecticut as a whole."

For the NRC to exclude Dr. Sternglass' declaration from section 4.7 is a glaring major error in that in and of itself invalidates the NRC's conclusion that "information provided during the scoping process was not new and significant with respect to the findings of the GEIS on the health effects to the public from radiological effluent releases due to the Millstone operations."

This statement rather is indicative of the NRC's determination to support the nuclear industry's–and in this case Dominion's–rush to relicense old unsafe nuclear plants, to the detriment of the public's health and safety. This bias is repeated in statements and omission throughout section 4.7, as the following will demonstrate.

MPS-82-72 For example, in dealing with the Connecticut Tumor Registry's report, "Cancer Incidence in Connecticut Counties 1995-99," the NRC does report that New London County "had the highest incidence rate of all invasive tumors for females," but omits that this rate was second highest for males, as was reported at the May 2004 public meeting.

Furthermore, the NRC characterizes information in the report indicating that New London County had the highest rate for 12 specific kinds of cancers as "several forms," a choice of words that seeks to minimize a major health crisis.

The NRC also fails to mention information from the report, which was testified to at the May 2004 public meeting, that New London County had the second highest rate for six more kinds of cancer, third highest for five additional ones, and fourth highest for seven more, totally 30 out of 39 kinds of cancers in which New London County was counted separately.

All of the above reveals a deliberate and systematic attempt to exclude the most important "new and significant" information about Millstone radioactive releases and its effects on human health.

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MPS-82-73 Similarly, in dealing with a 2003 study by Joseph Mangano et al, presented at the May 2004 public meeting, "Elevated Childhood Cancer Incidence Proximate to U.S. Nuclear Power Plants," the SEIS selectively focuses on information from the study that indicates there may not be a causal relationship between Millstone's radioactive releases and health problems. So the NRC states the study "reported no significant difference in childhood cancer mortality rates between counties surrounding the nuclear plants and the U.S. population."

This would be fine and fair if the agency did not also exclude the major finding of the study, which is that "cancer incidence for children less than 10 years of age, who live within 30 miles of each of 14 plants [one of which is Millstone] in the eastern U.S. (49 counties with a population of more than 16 million) exceeds the national average. The excess 12.4% suggests that 1 in 9 cancers among children who reside near nuclear reactors is linked to radioactive emissions."

Once again, this omission is deliberate and systematic, serving the nuclear industry's interests to the detriment of the public's health and safety.

MPS-82-74 The NRC also failed to mention numerous other studies listed in the bibliography of study that have linked radioactive releases from nuclear facilities to elevated cancers.

MPS-82-75 Another example of this exclusion of new and significant information is the NRC's treatment of the 1990 National Cancer Institute study of cancer in counties near nuclear power plants.

That study found that the risk for leukemia in children under 10 in New London County was over 3 times higher than for same aged children in "control counties" used for comparison. The NRC focused on NRC information that sought to downplay of that finding.

MPS-82-76 However, the NRC excluded other NCI information cited by Joseph Mangano in his report, also presented and testified to at the May 2004 public meeting, entitled "2500 Excess Cancer Cases in New London County Since 1970; Radioactive Emissions From Millstone May Be Cause." In that report Mangano stated, "in Millstone's first 14 years, leukemia cases

MPS-82-76 for New London County children under 10 were ***55% higher*** than the state, and leukemia deaths ***45% higher***. All scientists agree that children are most sensitive to low-level radiation's effects."

Once again, the NRC's failure to give equal weight to critical evidence invalidates its analysis and makes its conclusions false, as well as disqualifying itself as a just arbiter.

Another example is its treatment of another Connecticut Tumor Registry report, which examines cancer incidence in Connecticut towns 1995-99, rather than by county.

First of all, this report was not brought in by the public during the scoping process. The NRC decided to do so on its own as part of its response to information presented at the May 2004 public meeting and thereafter. Why? The NRC reported on the results of the study for only one town, Waterford, site of Millstone. The NRC reported "The town of Waterford does not have the highest ratio of observed cancers to expected cancers for any form of cancer analyzed."

MPS_82-77 As the NRC well knows, there is no barrier to prevent Millstone radioactive emissions from traveling beyond the boundaries of the town of Waterford. A more comprehensive such analysis would have included other towns near Millstone. But the NRC didn't do that, once again excluding critical information.

However, investigative journalist and author Michael Steinberg of Niantic, CT, did perform such an analysis, including the towns of Waterford, East Lyme, Old Lyme, New London and Groton together. Steinberg's analysis, included herein, found higher than expected incidence of cancer in these towns together for: all female cancers, lung cancer for females, colorectal cancers for females, prostate cancer for males, breast cancer for females, melanoma for both males and females, and cervical cancer for females.[53]

These findings are consistent with findings presented from the Connecticut Tumor Registry's study of Connecticut Counties 1995-99, as

[53] See "Cancer Incidences in Connecticut Towns 1995-1999," as compiled by Michael Steinberg, attached.

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MPS-82-77 well as information presented in Mangano's 1998 study "2500 Excess Cancer Cases...", Sternglass' declaration, and a new study by Mangano presented at the January 11, 2005 meeting.

MPS-82-78 Finally, the NRC reports in section 4.7 that a 2000 study by the Connecticut Academy of Science and Engineering (CASE) found that "The town of Waterford was not in the highest ratio category for any cancer except thyroid cancer, and at least three other town had higher ratios for thyroid cancer. At least 30 town had higher ratios for pediatric leukemia (ages 0 to 14) than Waterford."

First of all, this analysis, as reported above, is defective by limiting it to Waterford. Secondly, the CASE study focused on the Connecticut Yankee Nuclear Plant, and Millstone is never mentioned in it. Therefore radioactive emissions from Millstone are not considered in its analysis. Furthermore, information for cancer is not reported statistically by town, other than in maps where towns are not identified specifically but are marked by varying shades of white to black.

Nevertheless, the maps do indicate elevated cancers in towns around Millstone for all the specific kinds of cancers studied: thyroid cancer is elevated not only in Waterford, but also in Groton, Old Lyme and Stonington. Multiple myeloma is elevated for Waterford. And acute adult leukemia is elevated for Groton and Ledyard, both downwind of Millstone. However, while the CASE study uses information from the Connecticut Tumor Registry for 1976-95, I does not look for trends over those years (e.g. by comparing cancer rate increases or decreases over 5 year periods, as was done in studies by Sternglass and Mangano).

The CASE study was initiated in 1997. At that time, all three Millstone reactors had been shut down for two years because of gross mismanagement and harassment of whistleblowers. At that time Northeast Utilities owned and operated Millstone, and still owned the permanently shut down Connecticut Yankee Nuclear Plant. CASE reports that Northeast Utilities was one of its top financial supporters at that time, and its website still shows NU at the top of its list of financial supporters.[54]

[54] We attach a study critical of the CASE report, entitled "Epidemiological Evaluation of the CASE Report Entitled 'Study of Radiation Exposure from the Connecticut Yankee Nuclear Power Plant'"(Suzanne Gutter and Edwin van Wijngarden)(February 21, 2001)

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Thus NU in effect was a major funder of the CASE study, which means CASE had a major conflict of interest, one that put pressure on it to come up with results that would please the hand that feeds it.

MPS-82-79 All the above points to the failure of the NRC to conduct a fair and unbiased analysis of the critical information given as public testimony at the May 2004 pubic meeting in Waterford, Connecticut, and in documents presented there and thereafter to the NRC.

As a result the NRC's conclusion that there is not new and significant information is fatally flawed. The agency excluded and downplayed the critical information that was presented, information that establishes a strong and clear relationship between Millstone's 35 years of radioactive emissions and the concurrent rise of cancers and other diseases in towns around Millstone and in New London County, as well as across Connecticut and into Rhode Island.

MPS-82-80 While the Connecticut Tumor Registry is a source of much information about the heightened incidence of cancer and related diseases in the area surrounding Millstone, it is not a completely reliable source of information.

Zachary M. Hartley is not the only victim of Millstone's radiological and toxic chemical releases. In any individual cancer case, a 100 per cent positive correlation with a suspected causative agent cannot be made. That is why we rely on all available information obtained formally – such as the Connecticut Tumor Registry and epidemiological research – as well as informally, through reports of victims themselves or their family members to understand the scope of this public health emergency.

Although Zachary was born in Connecticut with a life-threatening cancer in his jaw and although a tumor the size of an orange was removed from his face when he was 14 months of age, the Connecticut Tumor Registry does not list Zachary's cancer. The Registry's explanation is that a portion of Zachary's tumor was benign and therefore it does not qualify for listing in the Connecticut Tumor Registry.

MPS-82-81 The NRC SEIS staff relies on a report of the National Cancer Institute (NCI 1990), which in turn relies on data of the Connecticut Tumor Registry.

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MPS-82-81 According to the Connecticut Tumor Registry website, it obtains its funding from the National Cancer Institute.[55] The NCI report is fifteen (15) years old. The NCI report was released four (4) years after Millstone Unit 3 commenced generating nuclear energy and long before many cancers associated with its dangerous emissions might be detected. It does not reflect the extremely high concentrations of strontium-90, a carcinogen, found in goat milk sampled within five miles of Millstone in 2001. It does not report the case of Zachary M. Hartley. It does not report the case of Rachel Heaton, who developed a rare form of thyroid cancer years after swimming in the Niantic shoreline "mixing zone" because she moved from the area. Nor does it report the brain tumor of Charles D. Douton, Jr., one of three former Millstone site maintenance workers who developed brain tumors and were dismissed from their jobs at Millstone by Northeast Utilities, as identified by Cynthia M. Besade in her August 5, 2004 affidavit. The NCI report does not include any of the seven (7) cancer cases recently identified to the NRC SEIS staff among residents or former residents of a single road - Seabreeze Drive - in Waterford two miles downwind from Millstone. The Connecticut Coalition Against Millstone is actively investigating to determine to what extent the Connecticut Tumor Registry fails to maintain records of other Millstone victims.

The Connecticut Coalition Against Millstone is also actively investigating information it has received of rare cancers – including a fatal skin cancer confined to the feet of a woman who frequently waded for long periods in the nuclear/chemical "mixing zone" to the east of the Millstone discharge point – in the community surrounding Millstone. The information under review includes dozens of cases of early childhood death and disease.

MPS-82-82 The Coalition attaches a selected Bibliography compiled by the Nuclear Information Resource Service ("NIRS") linking nuclear power plant radiological emissions with cancers in their communities. For example, NIRS reports a 400 per cent increase in leukemia incidence in the population living downwind from the Pilgrim (MA) Nuclear Power Plant during the first five years after nuclear fuel was known to have leaked excess radioactivity. A necessary review of Millstone records will reveal the occurrence of leaking fuel at Unit 2 after Dominion assumed ownership.

[55] See www.dph.state.ct.us/OPPE/hptumor.htm

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MPS-82-83 The Coalition notes that the European Committee on Radiation Risk ("ECRR") has reported that radiation dose models employed by the NRC and other governmental agencies are probably 100 to 1,000 times too high to be accurate.[56]

The NRC SEIS staff had to be reminded at the NRC's January 11, 2005 public meeting on the SEIS that the Coalition and others had previously submitted documentation to the NRC establishing a causative link between Millstone radiological and toxic effluent emissions and the heightened cancer rates in the area surrounding Millstone.

The NRC SEIS staff did not adhere to the NRC's Principles of Good Regulation, which require in part:

> Independence: Nothing but the highest possible standards of ethical performance and professionalism should influence regulation. However, independence does not imply isolation. All available facts and opinions must be sought openly from licensees and other interested members of the public. The many and possibly conflicting public interests involved must be considered.

The SEIS states that the NRC staff

> and its contractors discussed Millstone's history of radiological effluent and environmental monitoring with officials from CTDEP's Division of Radiation. The reports cited above by CTDPH, CASE and the national Cancer Institute were also discussed. CTDEP conducts its own radiological environmental monitoring program around Millstone. STDEP had also reviewed the reports by CTDPH, CASE and the National Cancer Institute. CTDEP concluded that Millstone's radiological effluent and environmental monitoring data were accurate. CTDEP also concluded that the reports cited above by CTDPH, CASE and the National Cancer Institute reports showed no evidence of a causal link between public exposure to Millstone's radiological effluents and cancer in Connecticut towns."

[56] See "ECRR Report Challenges Entrenches Radiation Assumptions" (MIRS, February 21, 2003)

The Connecticut Coalition Against Millstone has sent correspondence to Dr. Edward C. Wilds, Director of the DEP Radiation Bureau, to determine what conversations occurred with the SEIS staff, whether the DEP staff agrees with the characterizations of its conduct and input in the SEIS. Finally, the Coalition asked Dr. Wilds if he agreed with the SEIS statement that "CTDEP concluded that Millstone's radiological effluent and environmental monitoring data were accurate," and if so, to specify what radiological effluent and environmental monitoring data were referenced and, further, if so, how such statement could be reconciled with Northeast Utilities' plea of guilty in 1999 in the U.S. District Court to committing environmental felonies, including falsifying environmental monitoring records.

To date, Dr. Wilds has failed to respond to the Coalition's request.

4.8.3. Cumulative Radiological Impacts

The GEIS did not perform a meaningful analysis of cumulative radiological impacts because its data base was limited to Millstone effluent discharges from 1985-1987.

The GEIS further states:

> In addition, the radiological environmental monitoring program conducted by Dominion in the vicinity of Millstone measures radiation and radioactive material from all sources, including Millstone; therefore, the monitoring program measures cumulative radiological impacts.

The Health Physics Society defines cumulative dose as follows:

> The total dose resulting from repeated exposures of ionizing radiation to the same portion of the body, or to the whole body, over a period of time.

MPS-82-84 Correspondingly, the SEIS failed to conduct the analysis required by virtue of GEIS 4.6.1.1, which provides:

MPS-82-84 To determine whether the added period of operation following license renewal would, by virtue of buildup, result in significant (double) added dose, the ratios of buildup factors for midlives of 30 to midlives of 20 years were evaluated. These ratios amount to a 35 per cent increase for Cesium-137 and a 6 per cent increase for cobalt-60. This added increase due to buildup will not significantly change the total dose to members of the public.

In certain cases, the bioaccumulation factors may require reexamination. These principally involve fish (in the human food chain) that are bottom feeders. Bottom feeders may ingest worms and other biota that may remobilize radioactive materials accumulated in the sediments.

Accumulation of radioactive materials in the environment is of concern not only to license renewal but also to operation under present licenses.

Accordingly, the SEIS is substantially flawed on the issue of cumulative radiological impacts.

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Conclusion

It has been demonstrated herein that the adverse environmental impacts of Millstone license renewal are so great that preserving the option of license renewal for energy planning decisionmakers would be unreasonable. The NRC should reach such a conclusion in its final Environmental Impact Statement.

In the alternative, the NRC should recognize that its staff has failed to consider the full scope of the environmental impacts of present or future Millstone operations, and similarly, the licensee has failed to fully apprise the NRC of all pertinent facts and circumstances sufficient to enable the NRC to undertake meaningful review; in the absence of such complete evaluation the NRC must deny relicensing.

CONNECTICUT COALITION AGAINST MILLSTONE

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Tel. 203-938-3952

Memo to: Nancy Burton, Esq.
From: E. J. Sternglass
Date: March 8, 2005
Subject: Synergistic interaction of radiation, air pollutants and chemicals

The synergistic or "super-additive" action of radioactivity and chemicals or air pollutants has been discussed extensively in the scientific literature. A very comprehensive review of the subject was published in a monograph by Wriedt in the Department of Labor and Health of the City of Hamburg, Germany in 1989 (1). Particularly strong synergistic effects have been found for radiation exposure combined with such chemicals as lead, mercury, magnesium, sulfate and carbon-tetrachloride known or suspected to be emitted by the Millstone Nuclear Plant together with fission products and neutron-activated radioactive elements.

Also, an unexpected super-additive effect was discovered for the action of tranquilizers taken by a woman during pregnancy with radiation exposure in the cancer mortality of her children (2).

The synergistic action of smoke particles and radioactive gases and particulates, such as exist in uranium mines and in heavily polluted urban areas near nuclear plants, was discussed in an article by Radford and Hunt as long ago as 1963 (3).

The increase in cancer rates due to the combination of small airborne particles such as cigarette smoke and radioactive gases was studied by a series of authors beginning as early as 1938 (4)(5)(6). This explains the extremely high incidence of lung cancer in uranium miners who smoked. In the particular case of radioactive gases such as Radon and other radioactive gases such as Xenon and Krypton isotopes that are routinely emitted in large quantities by nuclear plants. Thus, Cassarett pointed out in his introductory article in "Radionuclide Carcinogenesis" in 1972 (7) that "the lung is highly vulnerable to the potential cancer promoting action of localized damage resulting from infections and inflammatory conditions caused by other air pollutants."

Increased risk of infections is known to be produced by the fission product Strontium-90 emitted from nuclear plants due to its action on the cells of the immune system produced in the bone marrow, and so are inflammatory conditions produced by abnormal white cells mutated by the beta particles emitted by Strontium-90 and other bone-seeking fission products such as Barium-140. Moreover, Yttrium-90, the highly radioactive daughter product of Strontium-90, is known to seek out soft tissues like the lung, causing inflammation and cancer. This is strongly supported by the fact reported by the U.S. Department of Health and Human Services in the report "Health in the United States 1994 and 1996" that the age-adjusted respiratory cancer mortality of white U.S. females over 16 years of age began to rise only after 1960, increasing more than five-fold from 5 to 28 per hundred thousand by 1995, while the percent smoking actually declined from 35 to 23% (See enclosed graph).

Not only cancer but also infant mortality, first linked to Strontium-90 releases in nuclear weapons testing (8), can be increased by the synergistic interaction with fine particulates in the urban atmosphere (9). Thus, the 2002 rise in infant mortality (10) which was the first increase since 1958 following the largest atmospheric tests in Nevada in 1957, was probably due to the combination of urban Diesel exhaust and nuclear fission product releases that increased in direct relation to the record rise in nuclear energy generated per reactor as capacity factors were pushed from 58 to over 90% (11) with decreased time for inspection, maintenance and repair of aging nuclear power plants.

Still another way in which the airborne releases from nuclear power plants produce unforeseen biological damage to humans as well as to animals and plants arises from the interaction of the radioactive rare gases Krypton-85 and Xenon-133 that cannot be readily filtered out of the effluent with the nitrogen and oxygen molecules in clean air. This has been described in detail by Graeub (12), who reviewed the evidence that the radiation emitted by these gases ionizes the air just as ultraviolet radiation from the Sun does, resulting in the formation of toxic ozone and nitric oxides. The ozone in turn interacts with the chemicals emitted in automobile exhaust, producing smog that damages the lung, and contributes to the dying of the trees seen downwind from nuclear plants. Furthermore, when the nitric oxides are brought down by precipitation, they act like fertilizer run-off that is carried by the rivers into the estuaries where they lead to blooming plankton that produce dead-zones depleted in oxygen where marine animals live, leading to declines in shrimp and other fisheries as recently seen especially in the Gulf of Mexico.

Thus, not only human life but marine life and the life of birds, land animals and plants is adversely affected not only by the direct effect of fission and neutron-activated radioactive chemicals released from nuclear plants, but also by the indirect effects involving clean air as well as chemical and particulate pollutants..

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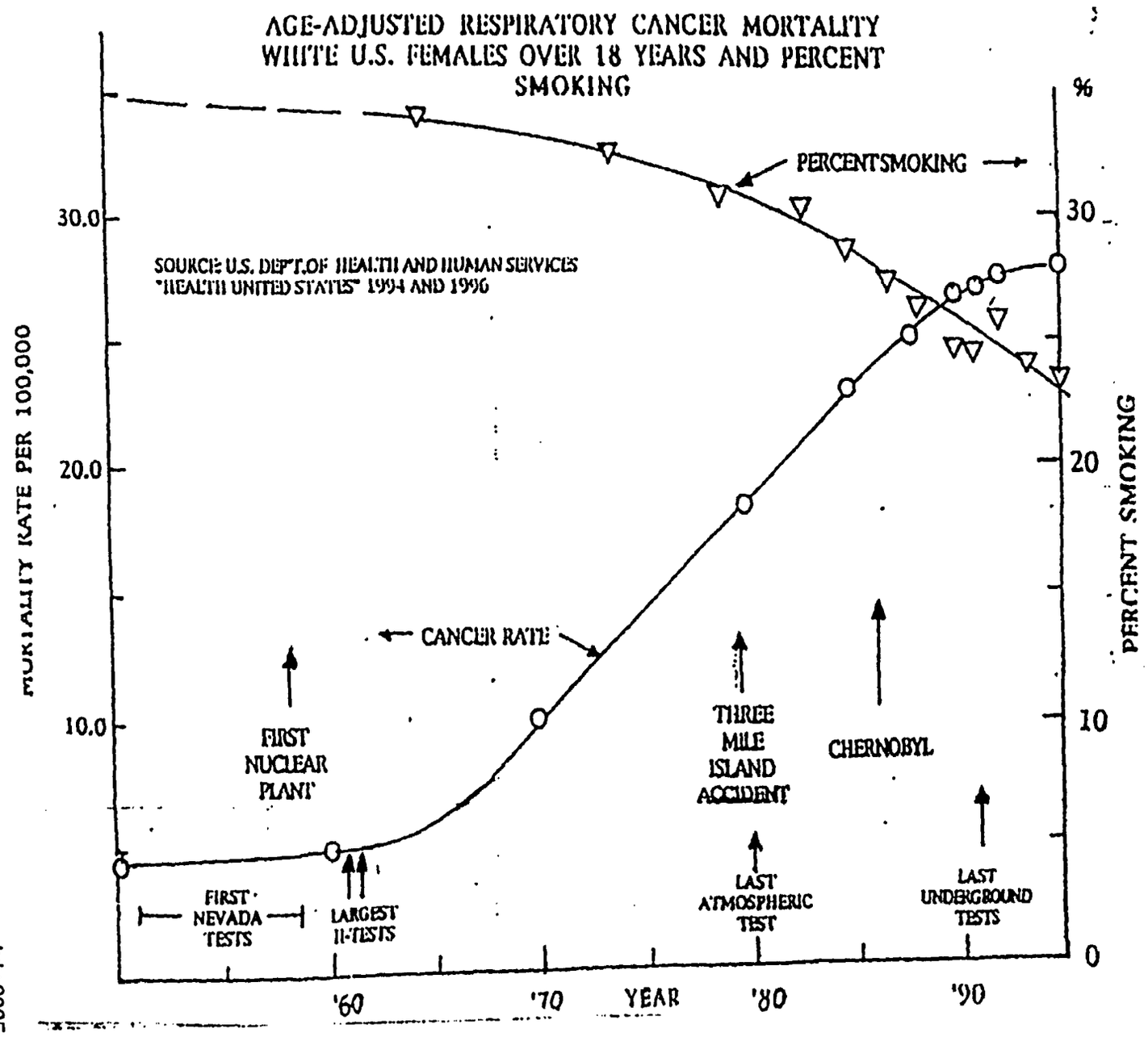
AGE-ADJUSTED RESPIRATORY CANCER MORTALITY
WHITE U.S. FEMALES OVER 18 YEARS AND PERCENT SMOKING
SOURCE: U.S. DEPT. OF HEALTH AND HUMAN SERVICES
"HEALTH UNITED STATES" 1994 AND 1996
PERCENT SMOKING
CANCER RATE
MORTALITY RATE PER 100,000
PERCENT SMOKING
%
30.0
20.0
10.0
30
20
10
0
FIRST NUCLEAR PLANT
THREE MILE ISLAND ACCIDENT
CHERNOBYL
FIRST NEVADA TESTS
LARGEST H-TESTS
LAST ATMOSPHERIC TEST
LAST UNDERGROUND TESTS
'60
'70
YEAR
'80
'90

21 February 2003, WISE/NIRS Nuclear Monitor 583 9

ECRR REPORT CHALLENGES ENTRENCHED RADIATION ASSUMPTIONS

A recently-released report claims that the radiation dose model of the International Commission on Radiological Protection (ICRP) is inadequate for internal irradiation, and proposes a new model. The report made headlines with its predictions of over 61 million deaths from cancer attributable to nuclear activities since 1945.

(583.5493) NIRS – The European Committee on Radiation Risk (ECRR) is an independent committee formed in 1997 after a meeting at the European Parliament to review the controversial issue of low-level radiation.

Shortly after it was set up, a meeting of the European Parliament's Scientific and Technological Options Assessment unit (STOA) considered evidence that low-level exposure to man-made radiation caused ill health and that models used by ICRP failed to predict these effects.

The ECRR was asked to come up with an alternative analysis.

The resulting report, *2003 Recommendations of the European Committee on Radiation Risk*, addresses not only the science behind the low-dose debate, but also the ethical basis for allowable radiation exposures.

The intellectual breadth and depth, and scientific inclusiveness of this report are a refreshing change from current radiation establishment tactics.

If society is ever to have a proper debate on the effects of low-doses and dose rates of ionizing radiation, it must challenge the very basis of radiation dose and risk assessment. This report does.

For its models, the ICRP uses ethical justifications which are based on overall societal benefit rather than individual benefit. This does not account for rights-based philosophies which are part of the UN declaration of human rights. Since any dose of radiation has a small probability of fatal harm, the ECRR argues, the "collective dose" should be employed for all practices and time scales dealing with avoidable radiation exposure.

Among inadequacies in the ICRP risk model, the ICRP makes assumptions that are based on a series of value judgments. Often the risk model runs counter to actual and epidemiological study results. Additionally, population dose is not accurate for each individual since it averages the effects of many people who are genetically variable.

Current ICRP risk models do not differentiate enough between radiation delivered externally and that delivered internally; a difference the report likens to "a man warming himself in front of a fire and a man eating a red hot coal."

Further, the ICRP risk model takes a high dose to a single cell and averages it over a larger tissue mass.

The ECRR accepts the ICRP's "linear no threshold" model for external irradiation. However, because of the complex mechanism of cells, the ECRR says that the current linear damage model is not suitable for internal irradiation. The linear model must, according to the committee, be superseded in favor of relationships that show much higher effects at low doses.

To help correct for these shortcomings, ECRR has developed mathematical terms that extend the risk model of the ICRP. They include two new weighting factors in the calculation of effective dose (for internal exposures) which address ionization density in time and space at the cellular level. Ionization densities vary by radiation type (alpha, beta or gamma).

The committee also makes weighting adjustments for certain types of radionuclides which undergo damaging transmutation; and they make enhancement weightings based on biological and biophysical aspects of certain exposures.

ECRR derives these weighting factors from studies showing harm from low-dose exposures.

The committee recommends:

- the total maximum permissible dose to members of the public from all human nuclear practices be not more than 0.1mSv and 5mSv for workers

- all new nuclear practices must be justified by considering the rights of all individuals.

- total consequences of radioactive discharge must be assessed for both direct and indirect effects on all living systems.

- radiation exposures must be kept as low as reasonably achievable using best available technology.

For more information, visit the committee website at www.euradcom.org.
Source and contact: Cindy Folkers at NIRS (cindyf@nirs.org)

Cancer Incidences in Connecticut Towns 1995-1999
Source: Connecticut Tumor Registry

All Sites – Female

Town	Cancers	Expected	SIR
East Lyme	251	239.04	1.05
Groton	475	469.02	1.05
New London	365	302.10	1.21
Old Lyme	134	114.58	1.17
Waterford	320	323.42	.99
TOTAL	1,545	1,448.16	1.07

All Sites – Male

Town	Cancers	Expected	SIR
East Lyme	222	253.68	.88
Groton	448	468.98	.96
New London	314	292.52	1.07
Old Lyme	143	134.05	1.07
Waterford	325	337.83	.96
TOTAL	1,452	1,487.06	.98

Lung (Males)

Town	Cancers	Expected	SIR
East Lyme	24	38.59	.62
Groton	69	69.92	.99
New London	54	43.70	1.24
Old Lyme	10	20.88	.48
Waterford	46	52.39	.88
TOTAL	203	225.48	.90

Lung (Females)

East Lyme	32	29.81	1.07

Groton	67	58.87	1.14
New London	51	37.51	1.36
Old Lyme	16	14.86	1.08
Waterford	48	42.56	1.13
TOTAL	214	183.61	1.17

Colorectal (Males)

East Lyme	26	29.62	.88
Groton	55	55.58	.99
New London	32	34.99	.91
Old Lyme	46	41.08	1.12
TOTAL	170	177.2	.96

Colorectal (Female)

East Lyme	24	26.32	.91
Groton	77	57.58	1.34
New London	50	37.79	1.32
Old Lyme	13	13.21	.98
Waterford	40	41.37	.97
TOTAL	204	176.27	1.16

Prostate

East Lyme	80	71.88	1.11
Groton	118	128.37	.92
New London	83	79.67	1.04
Old Lyme	57	39.00	1.46
Waterford	97	97.22	1.00
TOTAL	435	416.14	1.05

Breast, Females

East Lyme	78	77.33	1.01
Groton	139	143.17	.97
New London	103	91.22	1.13
Old Lyme	53	36.62	1.45
Waterford	78	98.17	.79
TOTAL	451	446.51	1.01

Melanoma, Males

East Lyme	15	11.63	1.29
Groton	33	21.42	1.54
New London	10	13.33	.75
Old Lyme	13	5.79	2.25
Waterford	12	14.53	.84
TOTAL	83	66.53	1.25

Melanoma, Females

East Lyme	18	8.92	2.02
Groton	17	16.48	1.03
New London	13	10.57	1.23
Old Lyme	6	3.95	1.52
Waterford	14	10.46	1.34
TOTAL	68	50.38	1.35

Uterine/Cervix

East Lyme	7	4.72	1.48
Groton	9	8.52	1.06
New London	9	5.44	1.65
Old Lyme	3	1.98	1.52
Waterford	6	5.10	1.18
TOTAL	34	25.76	1.32

Health Effects
of Selected Industrial Chemicals and Radionuclides:
an introduction

STAND
Technical Report 2003 – 2

July 2003

STAND is a 501(c)(3) non-profit grassroots organization
dedicated to government
that is accountable to the community,
to citizen responsibility for the welfare of our communities,
and
to a forum for public debate in which to find solutions.

STAND's goal is
the protection of human health and the long-term
preservation of the natural resources entrusted to our care.

Supported by a grant from the
Citizens' Monitoring and Technical Assessment Fund.

Health Effects
of Selected Industrial Chemicals and Radionuclides: *an introduction*

by

Valerie Navab, M.S., Rachael Hawkins, M.S. and Marvin Resnikoff, Ph.D.

Radioactive Waste Management Associates

prepared for

STAND

July 2003

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Introduction

The purpose of this report is to provide information about the health hazards that exposures to industrial chemicals and radionuclides may pose to the community. Sources of additional information are provided in Appendix 3. In this way, the community might better understand the heath issues and hazards related to these chemicals and contaminants.

Determining and classifying health hazards to humans exposed to varying amounts of contaminants is difficult and subtle. The risks of serious illness as a function of exposure is not the same for all compounds, and one should not be misled by the similarities of the health effects due to the different toxic chemicals inventoried in this report. The quantitative aspects of exposure are as important as the seriousness of the health consequences. Indeed, the geographical spread of the contaminants and their temporal evolutions would also vary; leading us to naturally consider the seriousness of contamination as a function of quantity, consequences, and also temporal evolution. Therefore, the notion of "acceptable" risk levels for a site goes much further than just establishing a list of contaminants and their legal dose limits.

Some of the reasons that make the understanding of "acceptable" exposure more subtle than it first appears are provided below.

Regulating Agencies and Guidelines

The federal government is charged with developing regulations and recommendations to protect public health. These regulations can be enforced by law.

Federal agencies that develop regulations for toxic substances include the Environmental Protection Agency (EPA), the Occupational Safety and Health Administration (OSHA), and the Food and Drug Administration (FDA). Recommendations provide valuable guidelines to protect public health but cannot be enforced by law. Federal organizations that develop recommendations for toxic substances include the Agency for Toxic Substances and Disease Registry (ATSDR) and the National Institute for Occupational Safety and Health (NIOSH).

It is important to remember in this regard that as far as radioactive materials are concerned, the Department of Energy (DOE) regulates

its own facilities. Through its contractors, DOE also operates these facilities. DOE funds health studies that determine the hazard of radioactive materials.

National Primary Drinking Water Regulations are determined by the EPA for certain toxic and radioactive chemicals. These regulations, known as the Maximum Contaminant Level (MCL), are legally enforceable in the United States. These legal standards set limits to the amount of contamination in the public drinking water supply.

Many other agencies study the effects and patterns of some toxic materials, such as the World Health Organization (WHO), the International Agency for Research on Cancer (IARC), and the United States Department of Health and Human Services (US DHHS). These organizations recommend limits on the concentrations, or amounts, of contamination to be allowed in drinking water.

In this report, many of the chemicals discussed do not have assigned MCLs. In these cases, additional guidelines are provided. The American Conference of Governmental Industrial Hygienists (ACGIH) has set Threshold Limit Values (ACGIH TLV); these values are time-weighted averages to which a worker can be exposed in a normal 8-hour day, 40-hour workweek without any effect on human health. The NIOSH has determined Recommended Exposure Limits (REL) which are guidelines based on risk evaluations using human health effects for levels feasibly achieved and measured by engineering controls. However, these two guidelines are difficult to compare. In addition, the WHO has set its own recommended levels for contaminants allowed in drinking water.

Standards

Regulations and recommendations can be expressed in "not-to-exceed" levels in air, water, soil, or food that are usually based on levels that affect animals, then adjusted to protect people. Sometimes these "not-to-exceed" levels differ among federal organizations because of different exposure times (an 8-hour workday or a 24-hour day), the use of different animal studies, or other factors. Recommendations and regulations are also periodically updated and change as more information becomes available. Unfortunately, the number of new chemicals introduced into the workplace each year numbers in the hundreds or thousands, completely over-whelming the ability of federal agencies to determine the hazards of each.

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So, it is not uncommon that different studies reach different conclusions about which contaminants are most prevalent or of highest priority. Similarly, the Hazard Rating (HR) assigned to each material in the form of a number (1, 2, and 3) that briefly identifies the level of toxicity or hazard varies according to different agencies and organizations.

Factors

When a substance is released from a large area, such as an industrial plant, or a container, such as a drum or bottle, it enters the environment. This release does not always lead to exposure. One can be exposed to a substance only when in contact with it by breathing, eating, touching, or drinking. The consequences may vary in each case.

When exposed to a chemical, many factors determine whether a person would likely be harmed or not. These factors include the dose (how much), the duration (how long), the form (which chemical compound), and the way the contact occurs. Other important parameters could be the presence of other chemicals that enhance or diminish the toxicity, and the age, sex, diet, family traits, lifestyle, and state of health of the person. Therefore, classifying the health hazards to humans becomes difficult and research-intensive. Varying test environments and procedures will alter results in the patient. Also, health effects for the majority of these chemicals are better known for animals than humans. The same effects seen in animals may also be seen in humans to some extent. However, humans do not react in the same way when exposed to the same chemicals and, therefore, more research is needed to determine the full extent of harm to human health.

In addition, medical tests on individuals to detect and evaluate exposures to a chemical may have used various "techniques" and resulted in contradictory results. Measurements in the blood, feces, or urine can determine if one has been exposed to larger-than-normal amounts of chemicals. But these measurements will obviously depend on each individual, their overall health and how long after the exposure the measurement is taken.

It is difficult to obtain information on target organs. For example, all the persons suspected of having died prematurely because of a precise exposure have not necessarily been autopsied so the information

about which organs have been partially or completely damaged is lacking.

Further, correlations can be difficult to establish. An organ may not be lethally damaged, but its malfunction could accelerate the deterioration of another part of the body and lead to a fatality. For example, smoking or chronic bronchitis due to exposure to dust would make a person more sensitive to radioactivity.

Fetuses, children, and adults also exhibit different susceptibilities to various contaminants.

Cancer Reviews and Classifications

Along with other agencies, the U.N. International Agency for Research on Cancer (IARC) examines suspected potential carcinogens. The results, which vary widely between animals and humans, usually fall into one of three groups defined as follows:

1) Class I – Confirmed Carcinogens
These substances are capable of causing cancer in exposed humans.

2) Class II – Suspected Carcinogens
These substances may be capable of causing cancer in exposed humans. The evidence is suggestive, but not sufficient to convince expert review committees. Some entries have not yet had expert review, but contain experimental reports of carcinogenic activity.
As more studies are published, many Class II carcinogens will have their carcinogenicity confirmed. On the other hand, some may be judged non carcinogenic.

3) Class III – Questionable Carcinogens
These entries have minimal published evidence of possible carcinogenic activity. The reported endpoint is often neoplastic growth with no spread or invasion characteristic of carcinogenic pathology.

It should be noted that these three categories refer only to the strength of the experimental evidence that a chemical is carcinogenic, and not to the extent of its carcinogenic activ-

ity nor to the mechanism involved. The classification of any chemical may change as new information becomes available.

For a substance to belong in Class III, the report may simply have lacked control animals, may have used a very small sample size, lacked complete pathology reporting, or may have suffered other design defects. Many of these were designed for other-than-carcinogenic evaluation, and the reported carcinogenic effect is a by-product of the study, not the goal. The data were presented because some of the substances may be carcinogens. There are simply insufficient data to affirm or deny the possibility.

Synergistic Effects of Multiple Contaminants

Complicating the assessment of toxicity for a contaminated site is the presence of a mixture of contaminants. Aggregated chemicals could mean aggregated risks.

In a survey of 91 DOE waste sites, for example, Riley and Zachara (1992) found that mixtures of two or more compounds were present at 65 % of the sites. In soils, the most frequently occurring mixtures were metals combined with radionuclides, but various combinations of metals and radionuclides with organic contaminants were also observed at some sites. In groundwater, the most common mixtures were metals and chlorinated hydrocarbons.

The consequences of the synergy, linked to the presence of several contaminants at a time in a contaminated site, still need to be thoroughly examined. Chemical and radioactive risks are generally increased if these substances are carcinogenic to the same organ.

Other auxiliary parameters may also interfere with the total toxic impact of chemicals, and should not be underestimated. For example, a smoker with damaged cilia in his lung passages will not be able to properly expel radioactive materials, and therefore could be subject to greatly increased health effects. Weather and temperature, for example, may also have favorable or deleterious consequences.

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Chlorinated Solvents

A solvent is typically a liquid that dissolves another substance, thereby forming a solution. A chlorinated solvent is one that is a chlorine compound. As chlorinated solvents move through the ground, the materials act as an oily liquid. Groundwater flowing in the soil will dissolve only a small portion of the contaminant and the rest enters and contaminates the groundwater.

A dioxin is a specific type of chlorinated solvent; dioxins are a group of 219 different toxic chlorinated solvents. These solvents are fat-soluble and therefore accumulate in the tissues of animals and humans in the food chain. Humans are typically exposed to these chemicals through the consumption of fish, meat, and milk. Dioxins are formed through the burning of chlorine-based compounds. Dioxins may be transported great distances if airborne. Materials that enter the water will bind to sediments and are transported along with marine wildlife through ingestion. Similarly, dioxins can settle on the leaves of plants and are ingested by animals.

Exposure results in a drop in sperm count, an increase in testicular and prostate cancer, endometriosis, and an increased risk of developing breast cancer. The toxicity of these chemicals varies but dioxins have similar potencies.[1] Results of exposure to dioxins create adverse health effects and vary depending on the level of exposure, time of exposure, and length of exposure. Typical effects as a result of exposure to large amounts of dioxin include skin rashes, skin discoloration, excessive body hair, and possibly mild liver damage. Cancer as a result of excessive dioxin exposure is a main concern in adults.

Although the carcinogenicity of chlorinated solvents remains unknown, cancer as a result of exposure is a great concern.

Carbon Tetrachloride

Carbon tetrachloride, also known as carbon chloride, methane tetrachloride, perchloromethane, tertrachloroethane, or benziform, is a clear liquid with a sweet smell that can be detected at low-levels. This synthetic chemical was most typically used in the production of refrigeration fluid and propellants for aerosol cans, as a pesticide, as

a cleaning fluid and degreasing agent, in fire extinguishers, and in spot removers. It is now only used in some industrial applications as a result of its harmful health effects. High-levels of exposure through inhalation and ingestion and possibly through exposure to the skin can cause liver, kidney, and central nervous system damage. The liver and kidney cells are damaged or destroyed by this chemical. Kidney and liver repair can occur when low-levels of exposure are stopped. High-levels of exposure affect the nervous system, including the brain. This chemical has been linked to brain cancer. Effects of exposure include: headaches, intoxication, dizziness, drowsiness, nausea, and vomiting, and can lead to coma and even death. The US DHHS has determined this chemical is a probable carcinogen. The MCL is set at 0.005 mg/L and the ACGIH TLV is set at 5 ppm. The NIOSH REL is set at 2 ppm or 12.6 mg/m^3.

Chloride
Chloride has a very low toxicity. Ingestion of large amounts of chloride may lead to fluid retention and altered acid-base balance. Chlorine as a gas or liquid is irritating and toxic. The main source of exposure is through the consumption of salt. Effects of long-term exposure are unknown.

Chlorobenzene
Chlorobenzene, also known as benzene chloride, was used to make other chemicals such as phenol and DDT. Currently, this chemical is used as a solvent to make other chemicals. This chemical is a strong narcotic with slight irritant qualities. Health effects from repeated low-levels of exposure are unknown. Symptoms of exposure include: irritation to the eyes, skin, and nose, drowsiness, incoordination, and central nervous system depression. The carcinogenicity of this chemical is unknown. The ACGIH TLV is set at 10 ppm.

Chloroform
Chloroform, also known as trichloromethane and methyl trichloride, is a colorless liquid with a pleasant, nonirritating odor and a slightly sweet taste. This chemical will burn only when it reaches very high temperatures. Initially, chloroform was used as an anesthetic. Currently, it is used to make other chemicals. Inhalation results in irritation to the respiratory tract, and effects on the central nervous system including headache, drowsiness, and dizziness. Results of inhalation may also lead to unconsciousness, liver injury, blood disorders, and even death. Ingestion results in severe burning to the mouth and

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