13215

DOCKET NUMBER
PROD. & UTIL. FAC. 50-336-OLA

9/11/92

Dear Judge Smith,

I've enclosed the August 13th LTR "Amendment to Intervention and Hearing Request" as mentioned in our conversation of 9/10/92. As I told you, I suspected that it was not received since it was not mentioned in NU reply that we received on 9/10/92. Also I had not received a copy from the Board with your stamp. I have enclosed three copies for all the Judges since you said that Judge Kline did not have it either. It was mailed 8/14/92 from Waterbury, CT addressed to the Atomic Safety & Licensing Board. Certificate of mailing below.

Sincerely
Mary Ellen Mancini

Affix two here in stamps or meter postage and post mark. Inquire of Postmaster for current

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USNRC

'92 SEP 15 P2:02

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of

NORTHEAST NUCLEAR ENERGY COMPANY

(Millstone Nuclear Power Station,
Unit No. 2)

Docket No.(s) 50-336-OLA

CERTIFICATE OF SERVICE

CCMN Memo 9/11/92 withAug13LTR
CTDHS MEMO 9/8/92
Lieberman,Dodd LTR 9/10/92
NU LTR with Attchments 9/10/92

I hereby certify that copies of the foregoing have been served upon the following persons by U.S. mail, first class, except as otherwise noted and in accordance with the requirements of 10 CFR Sec. 2.712.

Office of Commission Appellate
Adjudication
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Administrative Judge
Ivan W. Smith, Chairman
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Administrative Judge
Charles N. Kelber
Atomic Safety and Licersing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Administrative Judge
Jerry R. Kline
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Edwin J. Reis, Esq.
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Docket No. 50-336-OLA

Mary Ellen Marucci
104 Brownell Street
New Haven, CT 06511

Michael J. Pray, AIA
87 Blinman Street
New London, CT 06320

Rosemary Griffiths
39 South Street
Niantic, CT 06357

Joseph M. Sullivan
17 Laurel Street
Waterford, CT 06385

Office of the Secretary
Attn: Docketing and Service
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Mary Ellen Marucci
(Signature)

Dated at New Haven CT this
11 day of September 1992

104 Brownell St
(Address)
New Haven CT 06511

CCMN

Information is Power!

P.O. Box 1491
New Haven, CT.
06506-1491
1-800-475-2266

Co-Operative Citizen's Monitoring Network, Inc.

13 AUGUST, 1992

ATOMIC SAFETY AND LICENSING BOARD PANEL
UNITED STATES NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C.

RE: DOCKET NO. 50-336-OLA,,ASLBP 92-665-02-OLA
MILLSTONE POWER STATION UNIT II, SPENT FUEL POOL REDESIGN

AMENDMENT TO INTERVENTION AND HEARING REQUEST:

ON AUGUST 3RD WE RECEIVED YOUR PANEL'S SCHEDULE FOR FILING OUR ADDITIONAL REQUESTS FOR HEARING AND INTERVENTION WHICH WE INTEND TO COMPLETE BY THE AUGUST 14TH DEADLINE. WE FEEL THAT WE HAVE SUFFICIENT CAUSE TO ASK FOR A HEARING BASED ON THE REDESIGN NOT ONLY NOT MEETING THE SPENT FUEL POOL NRC DESIGN SPECIFICATIONS (SAFETY STANDARDS), BUT ON IT ALSO MAKING THE POOL MORE DANGEROUS RATHER THAN LESS DANGEROUS FROM THE CONDITION NOTED IN THE LER#92-003-00.

HOWEVER, BECAUSE OF VACATIONS WE ARE UNABLE TO REACH EITHER OF OUR TWO EXPERTS WHO WILL BE FILING CONTENTIONS. ONE IS EXPECTED BACK ON AUGUST 13TH AND THE OTHER ON AUGUST 16TH. ADDITIONALLY, WHILE WE HAVE BEEN ABLE TO GET SOME INFORMATION FROM NORTHEAST UTILITIES THAT OUR EXPERTS WILL NEED TO LOOK AT BEFORE SUBMITTING THEIR QUESTIONS AND AFFIDAVITS, WE ARE UNABLE TO GET FROM NORTHEAST UTILITIES THE CONFIRMING CALCULATIONS BECAUSE THEY ARE CLAIMING THAT THE CALCULATIONS THEY DID WERE NOT USED IN THE REDESIGN OF THE POOL AND REFUSE TO GIVE THEM TO US.

WE NOW NEED TO GET THESE CALCULATIONS FROM THE QUALITY ASSURANCE COMPANY THAT CHECKED HOLTEC'S CALCULATIONS THAT WERE USED TO REDESIGN THE POOL BUT NU DID NOT TELL US THE NAME OF THE QUALITY ASSURANCE COMPANY.

NU CONTINUES TO USE THIS POOL AT MAXIMUM CAPACITY IN REGION A AND IN SEPTEMBER PLANS TO USE THE POOL FOR A NEW FUEL MOVEMENT INTO THE REACTOR. BECAUSE OF THIS, WE AGREE WITH YOU THAT DELAYS ARE NOT APPROPRIATE. HOWEVER, WE ARE UNFORTUNATELY CAUGHT IN CIRCUMSTANCES BEYOND OUR CONTROL. BUT WE DO EXPECT THAT OUR EXPERTS WILL BE FILING THEIR CONTENTIONS WITHIN TEN

(10) DAYS.

AS STATED ABOVE, WE FEEL THAT WE HAVE SUFFICIENT REASON TO BELIEVE THE REDESIGN NOT ONLY DOES NOT BRING THE POOL UP TO NRC SAFETY STANDARDS, BUT IN FACT REDUCES SAFETY IN THAT POOL. WE FEEL THAT YOU ARE ASKING US TO PROVE OUR CONCERNS AGAINST THIS REDESIGN WITHOUT BENEFIT OF HEARING OR PRE-HEARING DISCOVERY. WE HAVE THEREFORE TAKEN IT UPON OURSELVES TO FIND OUT AS MUCH AS WE CAN SO THAT WE WILL BE INFORMED.

BECAUSE WE TAKE THIS MATTER MOST SERIOUSLY, WE HOPE HOLTEC AND NU WILL COOPERATE BY PROVIDING US WITH THE INFORMATION WE NEED AND THAT YOU WILL GRANT A HEARING SOON.

NU HAS AGREED TO PROVIDE US WITH INFORMATION ABOUT THE AMOUNT OF RADIOACTIVITY (IN CURIES PER ISOTOPE) IN A TYPICAL ASSEMBLY THAT HAS UNDERGONE 85% BURNUP WILL HELP THE PUBLIC TO UNDERSTAND THE POTENTIAL RISKS IN THE EVENT OF AN ACCIDENT.

THE NRC HAS TRADITIONALLY RULED THAT ANY REQUESTS FOR DESIGN CHANGES TO THE SPENT FUEL POOLS DOES NOT CONSTITUTE A SIGNIFICANT HAZARDS RISK. THEREFORE OUR REQUESTS FOR HEARING AND INTERVENOR STATUS, WHETHER GRANTED OR DENIED, WOULD IN NO WAY AFFECT THE COMPANY FROM PROCEEDING AS IF NO SIGNIFICANT HAZARD EXISTED.

THE DEADLINE FOR ASKING FOR A HEARING WAS MAY 28,1992 SO WE MOVED QUICKLY AND REQUESTED NOT ONLY A HEARING AND INTERVENOR STATUS, BUT THAT AN EXTENSION BE ALLOWED SO THAT THE USE OF THE SPENT FUEL POOL WOULD NOT BE ALLOWED UNTIL WE HAD TIME TO SUBMIT EXPERT WITNESS AND OUR CONCERNS. WE ASKED FOR A 10 DAY EXTENSION. JOHN STOLTZ OF NRC DENIED OUR REQUEST AND WE WERE INFORMED THAT THE NRC WOULD DELIVER THE AMENDMENT TO THE SPENT FUEL POOL ON MAY 29TH AT NOON.

LATER THAT DAY WE SPOKE AGAIN WITH MR. STOLTZ HE SAID THAT A FINAL RULING WOULD BE MADE TO ADDRESS SOME OF THE CONCERNS WE AND SEVERAL OTHER PEOPLE MADE AND THAT DECISION WOULD BE MADE MONDAY OR TUESDAY (JUNE 1 OR 2).

WE FEEL, BECAUSE OF THE ENORMITY OF THE DAMAGE TO LIFE AND PROPERTY A SPENT FUEL POOL RELEASE ACCIDENT CAN CAUSE, THAT OUR REQUEST FOR AN EXTENSION OF 10 DAYS IS NOT UNREASONABLE. THE ERRORS FOUND IN THE DESIGN AND OPERATION OF THE SPENT FUEL POOL IN FEBRUARY 1992 TERRIFY US. A CRITICALITY COULD HAVE OCCURRED IF OTHER PROBLEMS HAD OCCURRED AT THE SAME TIME, ALLOWING A CHAIN REACTION TO BEGIN IN THE WASTE AND COULD HAVE RESULTED IN RELEASE OF THE RADIOACTIVITY OF THAT POOL WHICH IS AT LEAST FOUR TIMES THE RADIOACTIVITY OF AN OPERATING NUCLEAR PLANT CAUSING DESTRUCTION MUCH GREATER THAN CHERNOBYL.

THE FACT THAT THE PROPOSED CORRECTIVE ACTIONS WERE NOT BEING TESTED, AND THE MATHEMATICAL CORRECTIONS PROPOSED BY THE COMPANY AND THE ORIGINAL DESIGNER (ABB-COMBUSTION ENGINEERING) WERE NOT BEING INDEPENDENTLY ANALYZED, DOES NOT SEEM APPROPRIATE.

THAT THE POOL CAPACITY HAD ALREADY BEEN INCREASED IN 1986 AND IN 1988 BY RACKING THE FUEL CLOSER TOGETHER AND BY AN EXPERIMENTAL PROGRAM OF RECONCENTRATING THE SPENT FUEL BEFORE REracking, MAKE THAT POOL AN ONGOING EXPERIMENT.

WE WERE FURTHER SHOCKED BY THE COMPANY'S REQUEST, GRANTED BY THE NRC ON MAY 20, 1992, THAT ALL CRITICALITY MONITORS BE REMOVED FROM THAT PARTICULAR POOL. IN OCTOBER OF 1991, THE NRC GRANTED NU'S REQUEST THAT ALL CRITICALITY MONITORS BE REMOVED FROM ALL OF THEIR SPENT FUEL POOLS. IN ACTUALITY THEY WERE NEVER THERE.

THIS SPECIFIC REQUEST FOR REMOVAL OF THE CRITICALITY MONITORS WAS GRANTED ON MAY 20, 1992 AFTER THE MILLSTONE II POOL WAS FOUND TO HAVE AND ERROR OF 5% IN ITS KEFF.CALCULATIONS BRINGING IT CLOSE TO INVOKING A CRITICALITY PROBLEM POSSIBLY RESULTING IN A CHAIN REACTION.

CRITICALITY MONITORS ARE, IF WE UNDERSTAND CORRECTLY, NEUTRON FLUX MEASURING EQUIPMENT AND THEY NEVER WERE USED IN THAT POOL OR ANY OTHER POOL OF NU OWNERSHIP IN CONNECTICUT. THIS MEANS THAT THE UNIT II POOL IS PART OF AN EXPERIMENT.

NU'S ATTORNEY, NICHOLAS REYNOLDS, TOLD US ON JULY 15 THAT THE COST OF USING THE POOL FOR SPENT FUEL STORAGE DID NOT INCREASE THEIR COSTS SIGNIFICANTLY, BUT PLACING MONITORS IN THE POOL WOULD BE A COST HE FELT WOULD NOT BE JUSTIFIED BECAUSE THE COST PROBABLY COULD NOT BE PASSED ON TO THE RATEPAYERS.

IN ADDITION TO THE RISK OF CRITICALITY IN THAT POOL, THERE IS ALSO A RISK OF COOLANT WATER LOSS AND A CHEMICAL REACTION OCCURRING, RELEASING VAST AMOUNTS OF CESIUM 137 AND STRONTIUM 190. THIS RISK OCCURS EVERY TIME THE FUEL IS MOVED INTO OR OUT OF THE REACTOR CORE. BETWEEN JUNE 26 AND JULY 4, 1992, NU MOVED ALL OF THE FUEL OUT OF THE REACTOR SO THEY COULD BEGIN REPLACEMENT OF THE STEAM GENERATORS. ON REFUELING THEY WILL MOVE BACK 2/3 OF THE OLD FUEL AND 1/3 WILL BE NEW FUEL OF A MUCH HIGHER ENRICHMENT THAN HAS EVER BEEN USED IN THAT PLANT.

WHEN WE SPOKE TO JOHN STOLTZ, WE TOLD HIM THAT THE RISK, EVEN IF VERY SMALL, WAS UNJUSTIFIED BECAUSE THE DAMAGE WOULD BE EXTREMELY LARGE AND THERE WERE OTHER METHODS OF FUEL STORAGE THAT WOULD NOT ENTAIL THESE RISKS. HE INFORMED US THAT NO PLANT WOULD BE CONSIDERED FOR DRY CASK STORAGE UNTIL IT RAN OUT OF SPACE IN ITS POOL. WE FEEL THAT FOR THE SAFETY OF CONNECTICUT AND SURROUNDING STATES THAT THIS MATTER NEEDS TO BE IMMEDIATELY INVESTIGATED AND THESE RISK BEARING, DOWNLOADING, LOADING AND USE OF THIS POOL BE INVESTIGATED BEFORE THIS PLANT IS ALLOW TO CONTINUE BUSINESS AS USUAL.

INSTEAD OF ALLOWING PUBLIC INPUT INTO THE PROCESS, AN NRC OFFICIAL TOLD US THAT THEY WERE "NOT GOING TO DO ANYTHING THAT WOULD STOP THE PROCESS" AT MILLSTONE. THEIR DELAY HAS NOT RESULTED IN ANY CHANGES BEING MADE. WE WERE TOLD THAT THEY WERE GOING TO CONSIDER THE CONCERNS THAT A FEW OF US HAD EXPRESSED TO

THEM, BUT NO HEARING WOULD BE HELD PRIOR TO THEIR RULING.

STOLTZ, WHO IS THE PROJECTS DIRECTOR FOR THE NRC, TOLD A MEMBER OF NUCLEAR INFORMATION RESOURCE SERVICE (NIRS) THAT IT WAS TOO LATE TO FILE A REQUEST FOR HEARING OR TO SUBMIT COMMENTS. THERE MAY BE OTHERS WHO TRIED TO INTERVENE AND WERE NOT ACCEPTED BECAUSE OF LATENESS IN FILING.

ON MAY 25TH AFTER RECEIVING THE FR, A MESSAGE WAS LEFT FOR MICHAEL PRAY, ONE OF OUR MEMBERS WHO LIVES NEAR THE PLANT, TO CONTACT OUR COORDINATOR. ON MAY 27TH HE RETURNED THE CALL AND WAS GIVEN THE INFORMATION LISTED IN THE FR SO THAT HE COULD REQUEST A HEARING AND INTERVENE. ON MAY 28TH HE CALLED AGAIN TO TELL OUR COORDINATOR THAT THE NUMBER GIVEN HIM WAS NOT OPERATIONAL.

HE WAS GIVEN MR. STOLTZ'S NUMBER WHICH HAD BEEN OBTAINED EARLIER THAT DAY WHILE FILING FOR AN EXTENSION AND HAD FOUND THE NUMBER GIVEN IN THE FR WAS INVALID. HE SAID LATER THAT HE HAD CALLED MR. STOLTZ AND EXPLAINED TO HIM THAT HE WOULD BE SENDING HIS LETTER THE NEXT DAY BUT DID NOT HAVE TIME TO HAVE IT NOTARIZED AND THAT HE WOULD SEND HIS NOTARIZED COPY ON JUNE 3RD. MR. STOLTZ DID NOT TELL HIM THAT IT WOULD NOT BE ACCEPTED.

MR. PRAY FEELS HIS REQUEST WAS TIMELY, BUT IT MAY NOT HAVE BEEN CLEAR FROM HIS LETTER THAT HE DID NOT HAVE ANY INFORMATION ABOUT THIS UNTIL MAY 27TH. THERE IS NO WAY HE COULD HAVE COMPLIED WITH THE DEADLINE AND STILL PRESENT AN ACCURATE ASSESSMENT OF HIS CONCERNS.

OUR LIBRARY USUALLY IS 3 TO 6 WEEKS BEHIND IN GETTING THE FEDERAL REGISTER. THE FR ONLY SERVES THOSE WITH MORE SOPHISTICATED SKILLS THAT KNOW ABOUT AND HOW TO USE THIS PUBLICATION. IT SEEMS THAT NEITHER THE UTILITIES NOR THE LOCAL PAPER OF RECORD ARE REQUIRED TO INFORM THE LOCAL PUBLIC, THE RATEPAYERS OR THE SHAREHOLDERS OF THESE LICENSE CHANGES, OR DESIGN ERRORS.

WE AS AN ORGANIZATION, BEING TOTALLY VOLUNTEER AND LESS THAN ONE YEAR OLD NEED TO DEPEND UPON OUR MEMBERSHIP AND GENERAL PUBLIC TO LET US KNOW WHEN THEY ARE CONCERNED ABOUT CONDITIONS OR PLANNED SITUATIONS AFFECTING THEIR HEALTH, SECURITY AND WELL BEING. WE NEED TO BE SURE THAT THEY WILL KNOW ABOUT MATTERS THAT MUST COME BEFORE YOUR COMMISSION THAT AFFECT THEM.

ALSO, IF THE NRC STAFF DECIDES THAT NO SIGNIFICANT HAZARDS RISK EXISTS, THEY ARE THE ONLY ONES A CITIZEN CAN GO TO TO ASK FOR A HEARING. THIS WILL THEN PUT THE STAFF IN A POSITION OF RULING ON THEMSELVES THAT A RISK DOES EXIST, AND THEY NEED TO MAKE THAT DECISION BEFORE A HEARING CAN BE HELD.

IF THEY RULE FINALLY THAT NO SIGNIFICANT HAZARD EXISTS, THEN A HEARING WILL NOT BE HELD BEFORE THE LICENSE IS ISSUED. IT SEEMS INAPPROPRIATE THAT SIGNIFICANT RISKS ARE BEING TAKEN BY STAFF WITHOUT RECOURSE AVAILABLE TO THE PUBLIC CONCERNING THEIR SAFETY

BY INDEPENDENT JUDICIAL REVIEW. THIS IS TRULY A CASE OF THE FOX BEING IN CHARGE OF THE HENHOUSE.

THE PANEL THAT THIS MATTER IS NOW BEFORE IS CHOSEN INTERNALLY. IF THEIR DECISION IS NOT FELT BY THE PUBLIC TO ALLOW ACCESS TO A HEARING, THE ONLY REVIEW THAT IS EXTERNAL AND JUDICIAL ASKS ONLY WHETHER THE NRC FOLLOWED THEIR PROCEDURES CORRECTLY, AND NOT IF THE NRC PROTECTED THE SAFETY AND PUBLIC INFORMATION RIGHTS OF THE CITIZENS.

THE NRC PANEL AND STAFF RULINGS CAN BE REVIEWED BY THE COMMISSION. BUT IF THE COMMISSION RULES AGAINST THE SAFETY OF THE PEOPLE, THE NEXT STEP IS ONLY PROCEDURAL AND WILL NOT GIVE THE PUBLIC A FORUM FOR ADDRESSING THEIR SPECIFIC SAFETY CONCERNS OR EVEN THE SATISFACTION THAT SUCH CONCERNS WERE PROPERLY ADDRESSED.

IN THIS MATTER BEFORE THE PANEL, WE WERE TOLD BY GUY VISSING, NRC THAT NO SIGNIFICANT INCREASE IN RISK WAS CREATED BY THE PROPOSED DESIGN CHANGE BUT HE WOULD NOT TELL HOW MUCH THE RISK WOULD BE INCREASED OR WHAT THE ACTUAL RISK WAS IF THE PLANT MET DESIGN SPECIFICATIONS, OR WHAT THE RISK WAS AT THE TIME THE COMPANY DISCOVERED DESIGN ERRORS.

WE WERE BEING ASKED TO TRUST THAT THE NRC KNEW WHAT SIGNIFICANT WAS, AND TOLD WE DID NOT HAVE THE RIGHT TO REQUEST THE INFORMATION. SUBSEQUENTLY, WE WERE NOT PROVIDED WITH THE REQUESTED INFORMATION.

MR. VISSING AND STOLTZ SPENT 2 DAYS AND A WEEKEND FINALIZING THEIR REVIEW OF OUR CONCERNS, WHICH BASICALLY WERE IF THE POOL WAS OUT OF COMPLIANCE, HOW COULD THE NEW DESIGN PUT IT INTO COMPLIANCE BY FORCING ALL THE FUEL THAT WAS IN THE REACTOR TO BE STORED IN 2/3RDS OF THE SPACE THAT WAS ALLOWED WHEN IT WAS OUT OF COMPLIANCE

OUR MEMBERS AND OTHERS HAVE ADVISED TO PERSONALLY FILE THEIR COMMENTS, REQUESTS FOR HEARINGS AND INTERVENOR STATUS, AND PETITION FOR HEARING PRIOR TO ANY FURTHER USE OF THE MILLSTONE II POOL EVEN THOUGH THEY MAY CONTINUE TO BE TOLD THAT THEY WILL NOT BE ACCEPTED. AS PREVIOUSLY STATED, WE HAVE REASON TO BELIEVE THAT THE PUBLIC WAS NOT LEGALLY NOTICED.

IT SEEMS THAT EVERY POSSIBLE EFFORT HAS BEEN MADE TO KEEP THE PUBLIC IN THE DARK. THE COPY OF THE FEDERAL REGISTER OF APRIL 28 SENT TO A MEMBER OF DON'T WASTE CONNECTICUT DID NOT CONTAIN THE NOTICE PAGES WHERE THE NOTICE OF OPPORTUNITY FOR HEARING SHOULD HAVE BEEN LOCATED.

THE NUMBER LISTED IN THE FEDERAL REGISTER FOR THOSE TO CALL IF THEY WERE FILING IN THE LAST TEN DAYS OF THE NOTICE PERIOD WAS INVALID.

THE CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF RADIATION CONTROL COULD NOT TELL US WHEN THEY RECEIVED NOTICE

OF THE PROPOSED LICENSE CHANGE REQUEST OR WHEN IT APPEARED IN THE FEDERAL REGISTER.

IT TOOK A CALL TO THE LAW FIRM OF RECIED FOR NU, DAY, BERRY AND HOWARD TO GET THE UTILITY TO MAIL US A COPY OF THEIR REQUEST FOR LICENSE AMENDMENT. THEY SENT US A COPY OF THE AMENDMENT, BUT WITHOUT THE NRC NOTICE.

WE RECEIVED THE NU APPLICATION ABOUT MAY 10. WE AGAIN CALLED THE DEP AND WERE TOLD THAT THEY DO NOT KEEP RECORDS OF NRC CALLS UNLESS THEY HAVE A NEED TO ACT ON IT. THE PERSON WE SPOKE TO SAID THE DEPARTMENT DID NOT FEEL ANY NEED TO ACT.

WE CALLED THE NRC TO GET THE DATE THAT THEY WOULD GIVE NOTICE FOR THE HEARING. FINALLY, ON MAY 21 WE WAS TOLD BY THE OFFICE OF A MR. NELVIN THAT IT HAD BEEN NOTICED IN THE APRIL 28 FR. HIS SECRETARY DID NOT WANT TO SEND US A COPY. WE HAD TO EXPLAIN THAT OUR LIBRARY WAS LATE IN RECEIVING THE FR AND WE MIGHT GET IT SOONER IF SHE MAILED IT. IT WAS RECEIVED THE MAY 26 MAIL.

WE KNEW WHAT WE WERE LOOKING FOR, AND KNEW THE TIME FRAME IN WHICH IT MIGHT HAVE BEEN NOTICED. IN MID-MAY WE KNEW IT WOULD BE NOTICED AFTER 16 APRIL.
WE ALSO ALERTED "DON'T WASTE US" THAT IT WOULD APPEAR IN THE FR APRIL 1 OR LATER, AND TO LOOK FOR IT. THEY DID A SEARCH IN MID-MAY AT TWO LOCATIONS IN THE GREATER D.C. AREA AND DIDN'T FIND IT.

IT SEEMS THE RULE OF LAW AT THE FEDERAL LEVEL IS OFTEN CIRCUMVENTED BY ADMINISTRATIVE SETTLEMENTS BEHIND CLOSED DOORS AND THE PUBLIC CONSTANTLY SHUT OUT,NOT ONLY FROM THE PROCESS, BUT ALSO FROM NECESSARY INFORMATION RELEVANT TO MAINTAINING A DECENT STANDARD OF LIFE. IT FURTHER SEEMS THAT IF THE PUBLIC IS NOTIFIED OR ALLOWED A HEARING, IT IS AFTER THE DEED IS DONE AND SIGNED.

APPEARANCES GIVE RISE TO CONCERNS THAT THIS INDUSTRY INTENDS TO CONTINUE TO MAKE THE WASTE, BUT NOT ASSUME LIABILITY.

THE RISK ASSUMPTIONS MADE BY THE COMPANY AND THE NRC ARE BASED MORE ON COST IN DOLLARS AND POLITICAL POWER THAN ON DANGER OR DESTRUCTION OF HEALTH AND ENVIRONMENT. WHAT NU AND ITS REGULATORS SEEM TO BE DOING IS WASTING THE RESOURCES, INGENUITY, AND HEALTH OF THE PEOPLE BY DIVERTING THE PUBLIC FROM ITS RIGHT TO BOTH INFORMATION AND CONSENT.

NOW THAT NU HAS A LICENSE TO CONTINUE TO USE THEIR POOLS, THE ONLY THING WE CAN ASK YOU FOR IS IMMEDIATE ATTENTION TO REMOVE THIS ABILITY BY TAKING ACTION THROUGH AN APPEAL TO THE NRC LICENSE BOARD OR THE NRC NUCLEAR REACTOR REGULATIONS DIRECTOR, OR THROUGH AN INJUNCTION BY A FEDERAL COURT.

EACH POOL CAN CONTAIN THE RADIO-ACTIVITY OF UP TO TEN REACTORS AND EACH REACTOR HAS A POOL. JUST ONE FUEL POOL ACCIDENT RELEASING ITS RADIOACTIVITY WOULD EXCEED IN DAMAGE TO LIFE AND

PROPERTY THAT OF NAGASAKI, HIROSHIMA, HANFORD, AND CHERNOBYL COMBINED.

EVERY TIME MORE FUEL OR SPENT FUEL IS PLACED IN THESE POOLS, THE CONSEQUENCES OF A POOL ACCIDENT INCREASES. THE RISK GOES UP. AT EXACTLY AT WHICH POINT DOES THIS RISK BECOME SIGNIFICANT?

THOUGH THE RISK MAY THEORETICALLY REMAIN THE SAME FOR CERTAIN TYPES OF ACCIDENTS THAT WOULD LEAD TO A SPENT FUEL POOL RELEASE OF RADIOACTIVITY, THIS IS NOT TRUE FOR CRITICALITY. THE MORE THAT IS PLACED INTO THE POOL, THE GREATER THE RISK BECOMES FOR A CHAIN REACTION AND RELEASE OF HEAT AND RADIATION IN THE POOL AREA WHICH IN TURN WOULD CAUSE OTHER PROBLEMS TO OCCUR IN THE POOL.

IN SPITE OF, OR POSSIBLY BECAUSE OF, THE RISK INCREASING FOR A CRITICALITY ACCIDENT IN THE POOL, NU ASKED THE NRC TO REMOVE ITS LIABILITY FOR BEING OUT OF COMPLIANCE WITH 10 CFR 70.24(A) AND ASKED FOR AN EXEMPTION TO ALLOW IT NOT TO HAVE CRITICALITY MONITORS IN ITS POOLS. THE MONITORS IN THE POOL AREA ARE NOT NEUTRON FLUX MONITORS THAT WOULD BE NORMALLY USED TO PREDICT CRITICALITY, BUT GAMMA MONITORS WHOSE PRIMARY PURPOSE IS TO WARN OF RADIATION RISES SO THAT PERSONNEL CAN REMOVE THEMSELVES.

THE EXEMPTIONS GIVEN ON MAY 20 FOR THE MILLSTONE 2 POOL AND ON APRIL 24 FOR THE CT. YANKEE POOL WERE GIVEN AFTER THE PROBLEM OF CRITICALITY MEASUREMENTS SURFACED AT THE MILLSTONE 2 POOL AND DISCLOSED TO THE NRC ON FEBRUARY 14. IN FACT THEY MAY HAVE KNOWN OF THE KEFF ERROR PRIOR TO THE JAN. 31, 1992 NU FILING FOR THE MONITOR EXEMPTION. WE HAVE A PAPER DATED JAN. 17 THAT INDICATES THAT THEIR SHUTDOWN SCHEDULE WAS MOVED FROM APRIL TO JUNE.

THOUGH THE DANGER AND DAMAGE FROM OZONE DEPLETION AND ACID RAIN IS REAL, JUST AS REAL AS THE CHEMICALS AND BIOLOGICALS FROM OUR INDUSTRIES AND RESEARCH, IT DOES NOT JUSTIFY THE SUBSTITUTION OF ANOTHER DANGER FROM NUCLEAR POWER. THERE ARE CLEANER WAYS TO USE COAL, OIL, AND OTHER FOSSIL FUELS.

UNFORTUNATELY, IGNORANT AND GREEDY USE OF NUCLEAR OR FOSSIL FUEL HAS HAD A WARLIKE EFFECT ON THE PEOPLE IN "PEACETIME." WE HAVE ALL BECOME ENVIRONMENTAL REFUGEES OF ONE DEGREE OR ANOTHER.

WHAT WE ARE ASKING YOU TO DO IS TO HELP US TO AVERT A DISASTER AND TO HELP NEW ENGLANDERS TO GAIN FREEDOM FROM THAT STATUS OF ENVIRONMENTAL REFUGEES.

SINCERELY,

MARY ELLEN MARUCCI, COORDINATOR — CO-OPERATIVE CITIZENS MONITORING NETWORK

JOSEPH I. LIEBERMAN
CONNECTICUT

COMMITTEES:
ENVIRONMENT AND PUBLIC WORKS
GOVERNMENTAL AFFAIRS
SMALL BUSINESS

United States Senate

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September 10, 1992

Mr. James M. Taylor
Executive Director of Operations
Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Taylor:

We are writing to you concerning information we have received from one of our constituents, Mary Ellen Marucci, regarding the issuance of a design change in the spent fuel pool for Millstone Unit Number 2.

We are aware from previous correspondence that the NRC staff made a determination that the proposed license amendment did not involve a Significant Hazards Consideration and issued the design change in early June. While we are also aware that Ms. Marucci's request for a hearing on this matter is before the Atomic Safety and Licensing Board Panel, we wanted to bring to your attention the attached material, in particular the memorandum from a staff member of the Connecticut Department of Health Services.

Ms. Marucci is most immediately concerned with the need for immediate installation of criticality monitors in the Millstone spent fuel pool. We would appreciate if you would review the concerns raised on this issue as expeditiously as possible and report to us in detail, in accordance with the requirements of the Administrative Procedure Act assuming such review does not conflict with on-going administrative actions.

Sincerely,

Christopher J. Dodd

Joseph I. Lieberman

STATE OF CONNECTICUT

DEPARTMENT OF HEALTH SERVICES

To: David R. Brown

From: Carolyn Jean Dupuy

Date: September 8, 1992

Subject: Correspondence from Ms. Marucci, re: SPENT REACTOR POOL SAFETY

I have reviewed the packet of information from Mary Ellen Marucci which Commissioner Addiss forwarded to us and requested that we determine whether to forward in whole or part to DEP. The packet contained:

(1) materials from the Cooperative Citizen's Monitoring Network (CCMN), dated August 24, 1992, to the Administrative Judges of the Nuclear Regulatory Commission; these materials also contained affidavits from two nuclear physics experts, Dr. Gordon Thompson and Dr. Michio Kaku;

(2) a request for a 10-day extension, from August 14 to August 24 (which was granted), with letters from Ms. Marrucci to Northeast Utilities (NU) and the NU reply;

(3) attachments which represent the fission product load at t=0 and t=21 days for the reactor fuel; excerpts from the Final Safety Analysis Report of NU for Millstone II; and Benchmark Calculations by Holtec.

I recommend that we send the entire packet to DEP, as requested by Ms. Marucci.

There are important safety concerns related to the design and loading of the spent fuel assemblies in the spent fuel pool which some members of the scientific community do not feel are adequately addressed. Since the number of curies in a fully-loaded pool could approach the level in an operating reactor, and since accidents to date have involved multiple factors, it is important that the potential of criticality be seriously addressed, especially in light of a July 6, 1992 situation at the spent fuel pool, and the large number of assumptions upon which NU's analysis is based. The Conclusions and Recommendations section of Dr. Kaku's affidavit are attached, which highlight the concerns of the group and which detail certain requests to NU as well as the NRC.

The CCMN now is engaged in the hearing process with the NRC, so we can only take cognizance of the materials sent to us. The DHS does not have regulatory responsibility over the nuclear utility industry. This belongs to the NRC, with some notification oversight and response activities by the Department of Environmental Protection in accident scenarios.

It is to be hoped that the NRC will examine the materials provided by CCMN and that NU will provide information regarded as necessary for thorough safety assessment. If at some time in the future should these concerns not be sufficiently addressed, a possible route to be explored is that of a request to the U.S. General Accounting Office which reports on nuclear oversight matters to the Chairman of the U.S. Senate Committee on Governmental Affairs.

5314I

Phone:

29. In conclusion, I am not so optimistic that the rearranged spent fuel pool, when fully loaded in the future, will meet the criteria that $k_{eff} < .95$. Although the utility states that reducing fresh fuel in the spent fuel site can only reduce the neutron levels, I am not convinced. The assumptions behind the computer calculations are not sufficiently reliable, especially in the presence of the highly absorbing Boroflex boxes. In fact, many of the assumptions behind neutron transport theory begin to break down precisely because of the presence of highly absorbing thin walls. One's conclusions are only as valid as one's assumptions. Or, as they say in the industry, "garbage in, garbage out." This discussion is not purely academic, because the fission product inventory of the pool will eventually reach one billion curies, which is comparable to what is found in a nuclear power plant.

30. The previous reactivity study by CE done on the spent fuel pool was in error by 5%, mainly because of the difficulty in modeling the Boroflex boxes by the neutron diffusion equation. I am not convinced that the newer neutron reactivity study is sensitive enough to truly calculate the effect of neutron absorption by the Boroflex boxes, especially because of the degradation and unexpected erosion of the boxes (whose full extent has never been determined by the utility). The neutron reactivity calculations using Monte techniques studies have inherent uncertainties in them (given the assumptions inherent within the model) that may be too large to make reliable estimates of k_{eff} for the fully loaded pool.

31. Given the fact that more spent fuel will be stored at the site, near populated areas, with about one billion curies of fission products, I think that NU should model a more realistic accident scenario. It should abandon the simplistic single mode failure model (which has never happened in a major nuclear accident) and adopt a more flexible and realistic multimode failure/human failure model, which agrees more with the history of past nuclear melting incidents and fission product release accidents.

32. Specifically, a credible scenario exists in which the water level drops danger-

ously in the pool. For example, a fire or chemical explosion may cause an evacuation of the site, leading to a power failure. Without anyone monitoring the pool, one can imagine the water level dropping due to leaks, boil off, and evaporation as the temperature rises. It only takes about 10 hours to cause boiling within the spent fuel pool. When the fuel assemblies are uncovered, the temperature may be sufficient to cause hydrogen gas generation and then an explosion, dispersion large amounts of fission products into the environment.

33. In light of these difficulties, I would like to make several recommendations:

First, that the utility carry out a full-scale evaluation of the Boroflex boxes to check for new gaps as well as measure the rate of erosion. Until this is done, all computer programs are largely useless. The utility should also perform rigorous benchmark studies using Boroflex boxes with the the actual geometry found in the spent fuel pool, not just idealizations of the geometry.

34. Second, the utility should carry out the reasonable demands of citizens groups, such as releasing a copy of its neutron reactivity calculation, and placing neutron detectors around and inside the pool. This is reasonable, since detectors have a proven worth. For example, the presence of such a detector (which could measure the level of water at TMI) could have prevented an accident which has already cost GPU $1.5 billion. Neutron counters could give a rough indication of whether the pool had higher-than-expected neutron reactivity before an accident goes out of control.

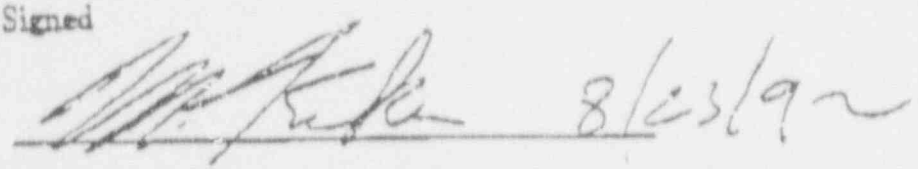
35. Third, the NU should be required to do a realistic analysis of a maximum credible accident, i.e. the release of 75% of the fission product inventory into the environment. Like existing studies of nuclear reactors, one should assume that all safety systems are somehow voided, and that large amounts of fission products escape into the environment in the form of a plume. Since the distribution of fission products is different from a conventional nuclear reactor, one should obtain different results for a spent fuel accident. The fact that, 50 years into the nuclear age, such as basic study

for a spent fuel site does not exist is a testament to the fact that nuclear waste has always been given low priority. However, now that nuclear power plants are gradually filling up spent fuel sites and are beginning to consolidate and repackage spent fuel, it is vital that such a study be done.

38. Until these recommendations are carried out, I cannot truthfully state that a fully loaded spent fuel pool in the new rearrangement is safe. On the contrary, it may even prove to be a health hazard.

I declare, subject to the pain and penalty of perjury, the foregoing is true and correct, to the best of my knowledge.

Signed



Michio Kaku, Ph.D

NORTHEAST UTILITIES
THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
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September 10, 1992
NL-92-618

Ms. Mary Ellen Marucci
104 Brownell Street
New Haven, Connecticut 06511

Dear Ms. Marucci:

Further to our conversation on September 4, 1992, I am enclosing the following documents pertaining to the use of Boraflex in the spent fuel racks.

1. E. J. Mroczka letter to the U.S. Nuclear Regulatory Commission "Millstone Unit No. 2 Spent Fuel Racks Poison Surveillance Coupon Boraflex Degradation" dated August 7, 1990.

2. E. J. Mroczka letter to the U.S. Nuclear Regulatory Commission "Millstone Unit No. 2 Spent Fuel Racks Boraflex Degradation" dated October 1, 1990.

3. E. J. Mroczka letter to the U.S. Nuclear Regulatory Commission "Millstone Nuclear Power Station, Unit No. 2 Request for Additional Information - Boraflex Degradation in Spent Fuel Pool Storage Racks (TAC No. 77726)" dated January 4, 1991.

Consistent with our conversation, it is my understanding that any future information needs you may have of Northeast Utilities or our contractors on this matter will be directed to my attention.

Very truly yours,

RM Kacich

Richard M. Kacich
Director-Nuclear Licensing

rmk

Enclosures

cc: Mr. Guy S. Vissing, U.S. Nuclear Regulatory Commission
NL Mem[illegible] File
Nuclear Records

NORTHEAST UTILITIES

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August 7, 1990

Docket No. 50-336
B13605
Re: Boraflex Degradation

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Gentlemen:

Millstone Unit No. 2
Spent Fuel Racks Poison Surveillance Coupon
Boraflex Degradation

On July 27, 1990, while preparing Millstone Unit No. 2 poison surveillance coupon #5 for routine examination, Northeast Nuclear Energy Company (NNECO) observed that the boraflex material in the area of the vent hole was missing. A visual examination of the remaining surveillance coupons revealed a similar situation existed in all the coupon samples. This was identified to the NRC Resident Inspector on July 30, 1990.

NNECO's initial assessment was that the deterioration mechanisms were probably due to a combination of radiation exposure and erosion induced by flow and gas generation exiting at the vent hole. Additionally, the erosion was probably limited to only the vent location.

The subject coupon (#5) was delivered to Combustion Engineering on July 30, 1990 for a more detailed examination, specifically the removal of the stainless steel shell encasements, so as to permit inspection of the entire boraflex sample.

This issue was the subject of a conference call with the NRC Staff on August 1, 1990 in which NNECO explained the circumstances and provided a preliminary assessment of the deterioration mechanisms. NNECO also provided a short-term action plan that conservatively addressed these observations (i.e., maintaining the spent fuel pool boron concentration greater than 1720 ppm and restriction of the loading pattern to a checker board configuration). These actions were at the time deemed prudent prior to receiving engineering information from Combustion Engineering.

On August 1, 1990, Combustion Engineering reported that the boraflex material was missing only in the immediate proximity of the vent hole and the remaining coupon appeared to be relatively intact and undamaged. Further testing and examinations are ongoing. Combustion Engineering's assessment based upon visual inspection of the material in the area under question was that the damage to the boraflex is due to flow-induced erosion.

On August 3, 1990, photographs of the subject boraflex coupons were presented to an independent consultant who has extensive experience in inspections and evaluation of boraflex material. NNECO was informed that several utilities have experienced erosion of the boraflex coupons in areas that are exposed to flow currents in the rack region of the spent fuel pool. In the consultant's opinion, based upon the photographs, the damage to the coupon was due to flow-induced erosion.

NNECO's determination, based upon the visual inspection of the surveillance coupon and utility experiences, is that the deterioration of the boraflex at the vent hole location is due to the accelerated radiation of the exposed boraflex in the coupon coupled with erosion induced by flow currents in the rack region of the spent fuel pool. Accelerated radiation surveillance has the sample coupons exposed to the most reactive discharged spent fuel on a cycle basis as opposed to long-term surveillance that accounts for fuel age and decay.

NNECO's conclusion is that this deterioration experienced in the surveillance coupon does not affect the calculated K_{eff} of the spent fuel racks and does not violate the Technical Specification requirement of $K_{eff} \leq .95$. The conclusion is based upon the fact that the vent hole in the spent fuel racks is above the active fuel region and, if the erosion exists at the vent hole location in the racks, it does not affect the current qualification to store spent fuel. Therefore, no restrictions need to be instituted with respect to storage of fuel in the spent fuel racks such as alternate checker board storage patterns or maintaining high soluble boron concentrations.

NNECO intends to continue to monitor the situation and collect additional intelligence on the deterioration mechanisms being experienced to further support our conclusion. Our efforts include continuation of the coupon surveillance program and visual inspection of the vent holes in a representative sample of the spent fuel racks.

NNECO trusts that the information in this submittal, most of which was provided to the NRC Staff in a conference call on August 6, 1990, is useful. Should you require any additional information, please contact us.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

E. J. Mroczka
Senior Vice President

cc: T. T. Martin, Region I Administrator
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2
P. Habighorst, Resident Inspector, Millstone Unit No. 2
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

NORTHEAST UTILITIES

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October 1, 1990

Docket No. 50-336
B13647
Re: Boraflex Degradation

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Gentlemen:

Millstone Unit No. 2
Spent Fuel Racks Boraflex Degradation

In a letter dated August 7, 1990,(1) Northeast Nuclear Energy Company (NNECO) detailed that on July 27, 1990, while preparing Millstone Unit No. 2 Poison Surveillance Coupon No. 5 for routine examination, it was observed that the boraflex material in the area of the vent hole was missing. A visual examination of the remaining surveillance coupons revealed that a similar situation existed in all the coupon samples. This was identified to the NRC Resident Inspector on July 30, 1990.

NNECO's initial assessment was that the deterioration mechanisms were probably due to a combination of radiation exposure and erosion induced by flow and gas generation exiting at the vent hole. Additionally, the erosion was probably limited to the vent location.

On August 24, 1990, at 0830 hours with the plant in Mode 1 at 100 percent power, during performance of neutron blackness testing, gaps were discovered in the boraflex neutron poison material in the Region I spent fuel storage racks. The neutron blackness testing was being performed as part of an investigation for an erosion problem of the boraflex surveillance coupons. Preliminary results from the blackness testing vendor indicate that of the 420 boraflex panels that were tested, 45 panels have a gap in the poison material and 3 panels have two gaps. The largest single measured gap is estimated to be 1.8 inches and the largest addition of two gaps in 1 panel was 1.9 inches. A prompt report of this event was made on August 24, 1990, pursuant to the requirements of 10CFR50.72(b)(1)(ii)(B), "Any event or condition that resulted in the condition of the nuclear power plant, including its principle safety barriers, being seriously degraded, or that resulted in the nuclear power plant being: (b) in a condition that was outside the design basis of the plant." In evaluating the safety consequences of this event, the Combustion Engineering criticality analysis assumed that the boraflex neutron poison material was completely intact. Since gaps were discovered in the

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(1) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Millstone Unit No. 2, Spent Fuel Racks Poison Surveillance Coupon, Boraflex Degradation," dated August 7, 1990.

boraflex material, the Region I spent fuel storage racks were considered, at that time, to be in a condition that was potentially outside of their design basis.

The boron concentration of the spent fuel pool at the time of the event was approximately 2023 ppm, and the fuel assemblies stored in the Region I spent fuel storage racks were arranged in a two-out-of-four storage pattern (checkboard). There were no safety consequences as a result of this event since the K_{eff} of the spent fuel pool was maintained less than 0.95 as required by the plant Technical Specifications.

The spent fuel storage racks were manufactured by Combustion Engineering. The Region I storage racks contain 384 storage cells designed for fuel assemblies with a maximum enrichment of up to and including 4.5 weight percent U-235. Each storage cell in Region I contains a poison insert box. Each poison insert box consists of four boraflex panels which are enclosed between two stainless steel sheet panels.

The specific cause of the gaps is unknown, but is believed to be caused by a restraint of the boraflex material coupled with irradiation-induced shrinkage. Combustion Engineering has completed an analysis which confirms that the K_{eff} is less than 0.95 for 2.7-inch gaps located at the same axial elevation throughout all of the Region I spent fuel storage racks for fuel assemblies with a maximum enrichment of 4.5 weight percent U-235. There were no safety consequences as a result of this event since the K_{eff} of the spent fuel pool was maintained less than 0.95 as required by the plant Technical Specifications. An increased surveillance program is currently under review and additional investigations are being performed to determine the root cause of the gaps and the potential for the gap size to increase.

On September 21, 1990, a follow-up notification call was made to the NRC Operations Center that retracted NNECO's prompt report because of the conclusions reached above. This letter is being sent to the NRC Staff for information purposes and requests no specific action to be taken by the Staff.

If you have any questions regarding this information, please contact my Staff directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

FOR: E. J. Mroczka
Senior Vice President

BY: C. F. Sears
C. F. Sears
Vice President

cc: T. T. Martin, Region I Administrator
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

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January 4, 1991

Docket No. 50-336
A09150

Re: Boraflex Degradation

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Gentlemen:

Millstone Nuclear Power Station, Unit No. 2
Request for Additional Information
Boraflex Degradation in Spent Fuel Pool Storage Racks (TAC No. 77726)

In a letter dated October 1, 1990,(1) Northeast Nuclear Energy Company (NNECO) submitted information to the NRC Staff regarding Millstone Unit No. 2's Boraflex degradation in the spent fuel pool storage racks. In reviewing this information, the Staff requested additional information in a letter dated November 15, 1990.(2) The following are responses to the questions raised by the Staff.

NRC Question #1

Preliminary results from the blackness tests indicate that 45 panels had a gap in the Boraflex material with the largest single measured gap approximately 1.8 inches wide. What was the total accumulated gamma radiation to these panels at the time of the blackness tests? What additional gamma dose will be accumulated by the Boraflex panels before the next blackness testing and what additional shrinkage (gap size) could this cause?

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(1) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, "Millstone Unit No. 2, Spent Fuel Racks Boraflex Degradation," dated October 1, 1990.

(2) G. S. Vissing letter to E. J. Mroczka, "Request for Additional Information concerning Boraflex Degradation in Millstone 2 Spent Fuel Pool Storage Racks (TAC No. 77726)," dated November 15, 1990.

NNECO Response

The total accumulated gamma radiation to the panels containing gaps was between 5.9 x 10^9 and 2.3 x 10^{10} rads gamma, depending on the service of the rack cell with the gaps.

The spent fuel racks have recently experienced the discharge associated with end of Cycle 10 spent fuel. A conservative method of estimating the additional exposure is the average value at 1.1 x 10^7 rads/day for 1 year storage. NNECO is still evaluating the frequency criterion associated with the follow-up blackness testing program.

NNECO contends that little or no further increase in gap sizes to the tested cell locations are expected. This is due to the fact that Boraflex shrinkage significantly reduces and/or ceases to occur at gamma saturation levels beyond 5 x 10^9 rads gamma. All of the cells tested, wherein gaps were observed, have seen this exposure level and beyond; therefore, they are at or approaching the saturation level.

NRC Question #2

It is reported that the results of the CE criticality analysis confirms that the K-eff of the spent fuel pool is less than 0.95 for 2.7-inch gaps located at the same axial elevation throughout Region 1 for the fuel assemblies enriched to 4.5 weight percent U_{235}. Since the present fuel assemblies stored in Region 1 are arranged in a two-out-of-four storage pattern (checkerboard), was this the configuration assumed in the CE criticality analysis? How much margin existed between the calculated K-eff and 0.95? As a result of previous Question 1 above, could gaps larger than the 2.7 inches assumed in the criticality analysis occur with further irradiation?

NNECO Response

The CE criticality analysis assumed 4.5 w/o U_{235} fuel arranged in a 4-out-of-4 storage configuration as originally reviewed and licensed by the NRC. The only difference in the analysis was the incorporation of the axial gaps.

The 2.7-inch gap criteria resulted in a K-eff = .95.

It is possible that larger than 2.7-inch gaps could occur in the untested locations with further irradiation. However, of the 420 panels inspected, only 45 panels contained gaps; 37 of which had gaps less than 1 inch, 7 had gaps between 1 inch - 1¼ inches, and 1 panel contained a 1.8-inch gap. All of the gaps encountered were randomly distributed axially throughout the panels.

Additionally, the average gap size experienced by other nucl utilities utilizing Boraflex has been less than 1 inch, consistent with our results.

The follow-up future blackness testing program will provide the confirmation of gap formation and size in the untested cells. However, should additional reanalysis be required, a redevelopment of the criticality model to account for the different gap sizes, axial locations and panels containing the gaps would eliminate the very conservative nature of the current analysis and thereby permit incorporation of gaps larger than 2.7 inches should they occur.

Please contact us if you have any additional questions.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

E. J. Mroczka
Senior Vice President

cc: T. T. Martin, Region I Administrator
G. S. Vissing, NRC Project Manager, Millstone Unit No. 2
P. Habighorst, Resident Inspector, Millstone Unit No. 2
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3