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To:
Hubert Miller

*** YELLOW ***

For Signature of:
Dyer, NRR

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Description:
EXPLANATION OF REGULATORY REVIEW PROCESS OF PROPOSED POWER UPRATE AT VERMONT YANKEE

Assigned To:
DLPM

Contact:
MARSH, LEDYARD (TAD) E

Special Instructions:

Union of Concerned Scientists

Citizens and Scientists for Environmental Solutions

March 12 2004

Mr. Hubert J. Miller, Regional Administrator
United States Nuclear Regulatory Commission Region I
475 Allendale Road
King of Prussia, PA 19406-1415

SUBJECT: EXPLANATION OF REGULATORY REVIEW PROCESS OF PROPOSED POWER UPRATE AT VERMONT YANKEE

Dear Mr. Miller:

During the Region I breakout session conducted on Friday, March 12, 2004, at the Nuclear Regulatory Commission's Regulatory Information Conference, you committed to providing the public with a description of the review process for the proposed power uprate at Vermont Yankee (VY) during the upcoming annual assessment meeting. You indicated that this public discussion might also be supplemented by a meeting arranged by Tad Marsh of the NRC's Office of Nuclear Reactor Regulation.

As an advocate of an Independent Safety Assessment (ISA) being conducted at VY before any operation above the currently licensed power level, I am very interested in hearing this description. You may not be aware that prior to joining UCS in October 1996, I was on the power uprate project for the two boiling water reactors at the Susquehanna Steam Electric Station between 1990 and 1992. Among my tasks on that project were the design reviews for the condensate, feedwater, liquid radwaste, spent fuel pool cooling, turbine building ventilation, containment atmosphere dilution, and river water makeup systems. I also worked on the Salem II restart project in 1996. Among my tasks on that project were vertical slice inspections of the spent fuel pit cooling and safety injection systems. As you are probably aware, since joining UCS I was appointed by the NRC to the Federal Advisory Committee Act panel established to evaluate the pilot program for the revised reactor oversight process and have been invited numerous times by the Commission to present our views on the efficacy of the agency's reactor oversight process.

My experience leads me to believe that an Independent Safety Assessment is the best regulatory tool the NRC has to ensure that Vermont Yankee can operate safely at the proposed uprated power levels. More to the point, I firmly believe that safety cannot be adequately assured by the NRC *without* an Independent Safety Assessment. I will detail the primary reasons for my position with the hope that Region I or NRR will address them, should you disagree, in the upcoming public meeting(s).

1. Unlike many other Region I reactors (Pilgrim, Peach Bottom Units 2 and 3, Calvert Cliffs Units 1 and 2, Nine Mile Point Unit 1, Millstone Units 2 and 3, Indian Point Unit 3, FitzPatrick, and Salem Units 1 and 2), Vermont Yankee has not undergone a rigorous system review in the past twenty years. From my onsite experience at Salem Unit 2 and knowledge of comparable efforts at the other reactors, I know that the safety-related systems at these reactors were subjected to extensive, multi-faceted reviews that identified literally thousands of design, maintenance, and operations problems. Vermont Yankee is more likely to have undetected system problems than these other Region I reactors because it has not had such extensive "find and fix" efforts.

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2. The NRC's Reactor Oversight Process (ROP) is currently significantly impaired. In March 2002, the ROP did not indicate any Performance Indicator (Figure 1) or Inspection Findings (Figure 2) with greater-than-green significance at the Davis-Besse nuclear plant in Ohio. After that reactor shut down, the NRC issued:

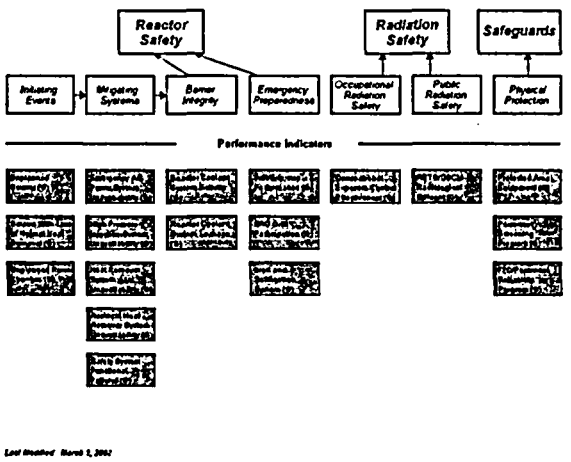

Figure 1

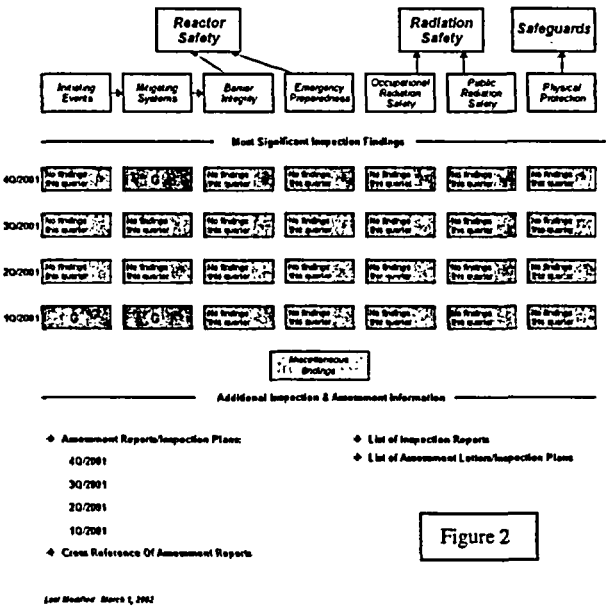

Figure 2

a. A RED finding of high safety significance for multi-year performance deficiencies that allowed a football-sized hole to form in the reactor vessel head. Source: NRC letter dated May 29, 2003 (EA-03-025)
b. A YELLOW finding for the containment sump screens being vulnerable to clogging which would disable the recirculation mode of the emergency core cooling system, the high pressure injection system, and the containment spray system. Source: NRC letter dated October 7, 2003, (EA-03-131)
c. A WHITE finding for the high pressure injection system being vulnerable to disabling by waterborne debris clogging the hydrostatic bearing. Source: NRC letter dated March 5, 2004 (EA-03-172)

All of these findings, plus plenty of other safety system problems, existed for many, many years prior to March 2002. Thus, the ROP missed all of these system problems repeatedly.

The NRC chartered a Lessons Learned Task Force (LLTF) to evaluate the agency's regulatory performance at Davis-Besse. The Commission accepted 49 of the 51 recommendations made by the LLTF to prevent another Davis-Besse. The NRC staff briefed the Commission about the status of implementing the 49 recommendations on February 26, 2004. Only 16 of 49 (32.6 percent) had been completed.

Until all of the 49 recommendations made by the LLTF to prevent another Davis-Besse are completed, the ROP cannot be relied upon to provide accurate assessments of safety levels at Vermont Yankee.

3. The review process for extended power uprate licensing amendments is currently impaired. I attended a public meeting on March 4, 2004, between the NRC staff and the Boiling Water Reactor Owners Group (BWROG). The BWROG informed the NRC staff that they had assembled and reviewed experience reports from 11 of the 13 boiling water reactors (BWRs) in the US and abroad that had extended power uprates. The BWROG told the NRC staff, "12 INPO

entries considered to be significant" and that "All of the events that the BWROG classified as significant were caused by vibrations except one." (Source: Slide 10 of the BWROG's March 4, 2004, presentation).

Of the 11 BWRs reporting data, there were 11 significant events caused by vibration at the extended power uprate conditions. This experience does not suggest that Vermont Yankee is 100 percent likely to also encounter a significant event caused by vibration after extended power uprate, but it also does not provide any basis to conclude that such an event will be unlikely. The fact that BWR after BWR encounters the very same problem – namely, significant events caused by vibration – is prima facie evidence that neither the industry nor the NRC really understands what is causing these significant failures and how to prevent them from recurring.

Furthermore, the NRC's review process for extended power uprate licensing amendments ignores its own regulatory guidance. For example, Paul Blanch discovered that in November 2003,[1] the NRC staff issued Revision 3 to Regulatory Guide 1.82, "Water Sources for Long-Term Recirculation Cooling Following a Loss-of-Coolant Accident." The guidance applicable to boiling water reactors begins on page 1.82-7 of this recently revised regulatory guide. The following page contains this paragraph:

> *Predicted performance of the ECC [emergency core cooling] and the containment heat removal pumps should be independent of the calculated increases in containment pressure caused by postulated LOCAs in order to ensure reliable operation under a variety of possible accident conditions. For example, if proper operation of the ECCS or the containment heat removal system depends on containment pressure above a specified minimum amount, operation of these systems at a containment pressure less than this amount (resulting, for example, from impaired containment integrity or operation of the containment heat removal systems at too high a rate) could significantly affect the ability of the system to accomplish its safety function. However, for some operating reactors, credit for containment accident pressure may be necessary. This should be minimized to the extent possible.*

Regulatory Guide 1.82 does not absolutely preclude taking credit for containment pressure during an accident. But the NRC's safety evaluation report for extended power uprate at the Brunswick nuclear plant, which took credit for containment pressure, failed to discuss Regulatory Guide 1.82 and how credit for containment pressure was being "minimized to the extent possible."

Thus, using an impaired power uprate license amendment review process and an impaired reactor oversight process at a nuclear plant that has never had rigorous system reviews is not likely to assure adequate safety levels at the uprated power level. It might ultimately find the problems, such as when big pieces of metal shake loose and break as at Quad Cities or when gaping holes are finally discovered as at Davis-Besse, but that's way too late.

The regulatory tool the NRC should use – at least until it corrects all of the regulatory deficiencies that allowed it to miss so many warning signs for so long at Davis-Besse – is the Independent Safety Assessment. If I owned Vermont Yankee, I'd welcome an Independent Safety Assessment as a means to verify that my reactor is not likely to repeat the significant events encountered at other BWRs after extended power uprate or identify a potential problem before I have to shut down and fix it *a la* Quad Cities. If I lived around Vermont Yankee, I'd welcome an Independent Safety Assessment because I'd

[1] On March 11, 2004, Entergy held a press conference at Vermont Yankee during which they had the audacity of claiming Mr. Blanch did not know the current regulations. Since Entergy's license amendment request for extended power uprate at Vermont Yankee failed to discuss Regulatory Guide 1.82 at all, whether the current revision or its previous incarnations. Mr. Blanch should not be faulted for lack of knowledge about NRC's regulations.

want the NRC's best regulatory tool instead of a patchwork array of impaired tools. If I regulated Vermont Yankee, I'd be picking team members for the Independent Safety Assessment.

I look forward to Region I's presentation on why using an impaired power uprate license amendment review process and an impaired reactor oversight process at a nuclear plant that has never had rigorous system reviews is adequate. I hope that your presentation will address my three concerns. If so, I'll gladly consider the information provided by the NRC and re-consider my position on the need for an Independent Safety Assessment at Vermont Yankee prior to operation at extended power uprate conditions.

Sincerely,

<Original signed by>

David Lochbaum
Nuclear Safety Engineer
Washington Office