

Duxbury Nuclear Advisory Committee  
February 5, 1993

Secretary Samuel Chilk  
Nuclear Regulatory Commission  
16 G 15  
Washington, DC 20555

Re: COMMENTS AND QUESTIONS REMAINING AFTER NRC PUBLIC  
MEETING HELD AT PLYMOUTH, MASS (FEBRUARY 3, 1993)

Dear Secretary Chilk:

Last Wednesday evening, February 3, 1993, Mr. Hehl and other representatives of the U.S. Nuclear Regulatory Commission met with concerned members of the public regarding a current safety issue:

- \* Faulty Reactor Vessel Water Level Instrumentation

A second safety issue was also addressed at the meeting:

- \* Faulty Motor Operated Valves

We greatly appreciated the opportunity further to understand these issues. To this end, we ask the NRC to answer promptly each of the attached questions.

To insure that there is no misunderstanding of the question or answer, we ask that each question be answered in the format presented; if the NRC staff feels that further explanation is required, this can be noted in the format provided.

Further, you will note a formal FOIA request is also attached. This format was suggested at the meeting as the appropriate vehicle to obtain the information requested.

Comments

On August 31, 1992 Thomas T Martin and other representatives of the NRC came to Plymouth to discuss the Water Level Instrumentation. This meeting was held in such a manner to encourage public confidence in the NRC as "regulators".

In contrast, the February 3, 1993 meeting was held and conducted by Mr. Hehl in such a way to discourage any confidence in the NRC as regulators and to encourage the old perception of the NRC as mere "promoters" of industry. It was very clear that the staff had been "well-rehearsed" and automatically responded to questions with a memorized "script". They were actors giving a very poor performance. Please make special note of one bright light, Ashok Thadani, who both in the August and February meeting "broke from script" and replied with intelligence and honesty. A pity he was the only NRC representative displaying either quality.

You should also be aware that the public not only didn't appreciate the "medium"; we didn't appreciate the "message".

Regarding Water level Instrumentation, Pilgrim has demonstrated over and over again that it has this problem. It is not "hypothetical" (like some other BWORG's) nor is it "minor" and "fixed" like NU's Millstone Plant. In August, we were promised the research would be completed by fall (1992) and we could look forward to a "fix" in this up-coming outage, spring 1993. As a result of a so-called "secret meeting" between Chairman Selin and the BWORG, an apparent deal was cut. The time table was pushed forward to a promised resolution at Pilgrim in spring 1995.

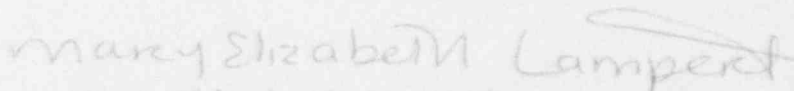
Regarding Motor Operated Valves, Pilgrim has demonstrated over the years difficulty with valves. The NRC found 20% of those tested in a "generic" study defective. Ashok Thadani at the Plymouth meeting last Wednesday acknowledged that the motor operated valves were a greater safety concern than the condensate pot. To allow the industry 5 years to study the problem is unacceptable.

These problems compound one another. I have an antique house which is constantly cracking, leaking or demonstrating some other challenge. Money has to be spent, maintenance performed regularly to keep this "Old House" in working order. The same is true for Pilgrim's "Old House"-- and for the other "antique plants" or "dinosaurs" as they have come to be known by the public. TLC. You do not address these issues by "cutting deals", redefining regulations, providing waivers to enable the Utility to "save a buck" at the expense of public safety and confidence. This certainly is a short-sighted approach and should tell you why the public is not supportive of nuclear power. Further, this approach is

clearly unsuited to the philosophy and "Hope" of the new Clinton Administration.

I look forward to a timely response to the attached questions and FOIA. We, as a Committee, look forward to the NRC coming back to Plymouth in July or August 1993 to update us on your findings. Please do not repeat last Wednesday's performance and, as in August 1992, send back your "first string".

Sincerely,



Mary Elizabeth Lampert  
Chairman

Please make copies for each Commissioner, William Taylor, T.T. Martin, David Williams (IG) and Mr. Thadani.

Duxbury Nuclear Advisory Committee  
February 6, 1993

RE: QUESTIONS REGARDING WATER LEVEL INSTRUMENTATION AND MOTOR  
OPERATED VALVES AT THE PILGRIM NUCLEAR POWER STATION

SOME ISSUES OF CONCERN

1. Operability of condensate pot
2. Redundant water level instrumentation
3. Water injection systems
4. Timing of remedial action

"OPERABILITY"

QUESTIONS BASED ON MOST RECENT NRC REPORT (Docket No. 50-293)  
dated December 1992; Subject: Pilgrim Inspection 92-23

Section 8.0--8.1.5 of the report, entitled Reactor Water  
Level Instrumentation Spiking, included the following:

I. On October 23-24, 1992 during depressurization at  
approximately 350 psig spiking occurred. The

"spiking observed during the October 24 depressurization  
was similar to that experienced during recent reactor  
shutdowns. Although the spiking began at lower  
pressures and was initially of lesser amplitude, the  
signature of the spiker recording traces was essentially  
identical to the previous occurrences." (8.1.3 Midcycle  
Outage Reactor Shutdown and Depressurization, page 15).

"Past corrective actions to improve condensate chamber  
and steam drain line performance by addressing  
thermodynamic performance appeared to be minimally  
effective." (Id., pg. 15)

QUESTIONS:

1. Based on this, is it fair to say that, during the  
October 23-24 shutdown, the condensate pot did not accurately  
measure the water level in the reactor?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

2. Is it fair to say that the "spiking" seen in October 23-24 shutdown was different from what was seen in previous shutdowns both in terms of the pressure at which it began and in amplitude, and similar to other occasions in that the condensate pot did not function adequately.

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

3. Is it fair to say that the so-called "corrective actions" taken by BECO before October 23, 1992 did little or nothing to eliminate the "spiking" problem?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

II. On November 20, BECO presented a status report to the NRC. The report summarized data from the October 24 shutdown, when spiking occurred.

" The Issue Team (BECO) found that instrumentation response during reactor depressurization was consistent with recent shutdowns, and the characteristic spiking signature was repeatable. Spiking observed during the October 24, 1992 shutdown was bounded by previous operability analyses which assumed the presence of noncondensable gases in the referenc. legs. Therefore, the licensee concluded that the level instrumentation remained operable throughout the October 24th shutdown" (8.1.5 Issue Status (Operability Determination Following October 24, 1992 Shutdown)), pg. 16)

"The BECO Issue Team concluded that the level instrumentation response during recent Pilgrim shutdowns was consistent with the noncondensable gas theories presented to the NRC staff by the ... BWROG, and was similarly consistent with the theories developed by the licensee contracted specialist...The Issue Team also concluded that the instrumentation spiking observed at Pilgrim would not affect either the limiting FSAR transient and accident analysis or the operability evaluations and conclusions of the plant-specific safety assessment (as well as the BWROG generic safety assessment) in response to NRC Generic letter 92-04."

"The NRC staff also independently reviewed the bases for BECO's operability determination, and agreed with its conclusion." (pg. 17)

QUESTIONS:

1. Given the undisputed underlying fact, that the condensate pot didn't give accurate readings, and that the extent to which the readings are inaccurate varies from event to event, what is the basis for saying that the "instrumentation response ... was consistent"? The only thing that seems consistent is that it was wrong!

Please explain \_\_\_\_\_

2. For example, the amount of "spiking has varied considerably both between the "A" and "B" legs and at different times. Spiking on March 26, 1992, reported in the NRC Report, May 27, 1992, No. 50-293/92-04) stated, "...on March 26.. the "B" reference leg instrumentation experienced a spike of positive nineteen inches (from +29 to +48 inches); and, the spiking on October 24, 1992 as reported in NRC report Docket No 50-293, stated the "B" reference leg instrumentation spiked 29 inches (from 21 inches to 51 inches; and the A was at a different number at each occasion.

At the February 3, 1993 meeting Mr. McDonald (NRC Resident Inspector) showed a slide that effectively stated low pressure spikes became less predictable, "Low pressure spikes were more irregular and remained present longer". However, the next line on the slide read, "Instrument behavior was predictable and repeatable".

A. I also hear the NRC has agreed with Pilgrim that the maximum error is 14 inches. How can this be?

Please Explain \_\_\_\_\_

B. To further complicate matters I understand BECO used the same consultants as NU and their error was 37 feet.

Please explain all these apparent inconsistencies.

3. Is it really fair for BECO to say, and for the "NRC staff independently [to] agree", that because you know there's a problem, it becomes a non-problem simply because it's always a problem? If you follow this reasoning, the real problem would be if the water level gauge now gave an accurate measurement.

Please explain \_\_\_\_\_

4. How does the NRC define "operability". This all might make some sense if the "error" in the condensate pot readings were always the same. For example, if the fuel gauge in my car always reads 1/4 tank higher than actual, I know how to adjust. But it makes no sense if both the pressure which the error occurs and the magnitude of the error vary-if all I know about my fuel gauge is that it's wrong, but I don't know when or by how much, I'm likely to spend a lot of time walking to a gas station.

Please explain \_\_\_\_\_

5. On October 30, 1992, T. T. Martin advised the Duxbury Nuclear Affairs Committee that several NRC regulations "would require a reactor shutdown if the reactor vessel water level instrumentation were inoperable." Is this still true? In making this statement, what meaning did the NRC attribute to the word "inoperable?"

State Criteria \_\_\_\_\_

III. Causes "Spiking"---Configuration Reference Legs + Leaks

The NRC report also said

"... the licensee concluded that the primary cause of level spiking was noncondensable gases coming out of solution during reactor depressurization."

and that

"the volume of noncondensable gases present within the reference legs is significantly influenced by reference leg configuration and by the presence of very small leaks in the reference legs and components. These relatively minor reference leg fitting leaks provide a slow and persistent flow which causes the gases to migrate down the reference legs." (8.1.4. Corrective Actions)

QUESTIONS:

1. This report gives two principal causes for the problem - the configuration of the reference leg and leaks.

a. Do you know whether these are the only causes?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

b. Do you know to which, if either, is the major cause?

Yes \_\_\_\_\_

No \_\_\_\_\_

See Explanation \_\_\_\_\_

c. What is being done to fix

(i) the leaks \_\_\_\_\_

(ii) the reference leg configuration, \_\_\_\_\_

and WHEN? \_\_\_\_\_

2. We've been told the "Condensate Pot" is a generic problem.

a. What reports has the NRC received of "very small leaks" (similar to those described by BECO) at other BWR plants, and to what extent have these other plants had "spiking" problems similar to those endemic at Pilgrim?

b. Is the configuration of the reference leg at other BWR plants the same as that at Pilgrim, and to what extent have any plants having such reference legs had "spiking" problems?

c. What "corrective" actions have been taken at any other plant, and when?

3. On what basis did the "licensee", i.e., BECO, conclude that "the primary cause of level spiking was noncondensable gases coming out of solution during depressurisation"? Did the licensee attribute this cause to any particular defect?

Please Explain \_\_\_\_\_

4. The NRC Report, May 27, 1992 (No. 50-293/92-04), reporting on the March 26, 1992 spiking often cited Tech Specs. However, the NRC Report (Docket No. 50-293/92-23) dated December, 1992, reporting on the October 23-24 spiking stated, "NRC inspection...have identified no violations of Pilgrim license conditions." Why the discrepancy?

Please Explain \_\_\_\_\_



## REDUNDANT WATER LEVEL INSTRUMENTATION

BECO has stated that there are 15 or so other gauges which can be used to determine water level. This leads me to a number of questions, directed largely to determining the extent to which these "other gauges" really do what the condensate pot is supposed to do.

### QUESTIONS:

1. Exactly what is the condensate pot supposed to measure and under what circumstances?

Please Explain \_\_\_\_\_

2. Is there any other particular instrumentation that precisely replicates what the condensate pot is supposed to do?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

3. If so, what is it?

Please Explain \_\_\_\_\_

4. If not, what other instrumentation, if any, approximates redundancy? What are the primary purposes of that instrumentation?

Please Explain \_\_\_\_\_

5. To the extent that other instrumentation is supposed to give an indication of "anomalous" condensate pot readings, please explain how that other instrumentation shows that the condensate pot reading is "anomalous". Precisely can (or should) an operator do to determine the actual water level in the reactor? What is the potential for error or inconsistency?

Please Explain \_\_\_\_\_

6. How long does it take for an operator to "read" the condensate pot measurement? In contrast, how long would it take for an operator to "read" the 15 other instruments and, from them, determine that the condensate pot measurement was "anomalous?"

Please Explain \_\_\_\_\_

7. If the operators are required to read a lot of "information" and make calculations, what does this allocation of time mean in terms of their attention to other expected duties? What are they not able to do?

Please Explain \_\_\_\_\_

8. The operators were not adequately trained to "read" the other instrumentation. Please up-date us on the status of their training \_\_\_\_\_

9. To re-cap, is the other "instrumentation" truly redundant? And, most importantly and remembering that the reactor would have to be shut down if the condensate pot were "inoperable", do the other systems combined or individually really replicate what the condensate pot is intended to do?

Please Explain \_\_\_\_\_

## WATER INJECTION SYSTEMS

I. We understand that, in the past, both the High Pressure Injection System (HPCI) and it's back-up system RIC1 experienced problems at Pilgrim.

### QUESTIONS

1. What is the current status of these two systems?

Please Explain\_\_\_\_\_

2. When is the last time there was a problem with either?

\_\_\_\_\_

3. Is either system intended to operate, automatically, in response to the sensed water level in the reactor? If so,

(i) How do the systems compensate for inaccurate readings from the condensate pot?

Please Explain\_\_\_\_\_

(ii) Does "spiking" have the effect of preventing either system from operating?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

II. We also understand that Low Pressure Injection System (LPCI) kicks-in about at the point where the condensate pot starts giving troubles.

### QUESTIONS:

1. Would you also explain this, including what LPIS is supposed to do, the extent to which there has ever been a problem with it, and the extent (if any) to which its operation relates to measured water levels in the reactor.

Please Explain\_\_\_\_\_

2. In particular, can inaccurate readings from the condensate pot prevent LPCI from "kicking-in" to provide core coolant or effect LPCI in any other way?

Please explain \_\_\_\_\_

111. MOV's

Questions

1. With respect to Motor Operated Valves (MOV's), has Pilgrim and the NRC determined that all ECCS will function under design conditions?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

2. Has Pilgrim performed an operability determination which clearly demonstrates that all of these MOV's will operate under design or accident conditions?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

3. Is it true Pilgrim has experienced a few losses of offsite power during the past few years.

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

4. What will happen if Pilgrim loses offsite power and their onsite power also fails.

Please Explain \_\_\_\_\_

5. Is it fair to say that this event is probable?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

6. Has Pilgrim demonstrated that they can maintain the plant in a safe condition should this event occur?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

7. Is it true the NRC issued a Generic Letter (89-10) informing all licensees that nearly 20% of the motor operated valves (MOV's) are not expected to perform properly when required; and, this was based upon testing by NRC staff

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

8. Is it also true, the letter required each licensee to develop a plan and in the next 5 years, demonstrate the operability of all safety related MOV's.

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

A. What specific steps have the NRC and Pilgrim taken to demonstrate that these emergency cooling systems will operate under accident conditions?

Please Explain \_\_\_\_\_

B. Why has the NRC allowed utilities 5 years for this very significant problem before they have to demonstrate operability? This appears to be in conflict with NRC Regulations.

Please Explain \_\_\_\_\_

C. Has Pilgrim performed an operability determination as required by GL 91-18 for all MOV's

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

D. If Pilgrim has not performed an operability determination as required by GL 91-18 for all MOV's, Why?

Please Explain \_\_\_\_\_

"TIMING"

1. What is the time schedule for resolving the water level instrumentation issue at Pilgrim?

Please Explain\_\_\_\_\_

2. When is testing to be completed?

Please Explain\_\_\_\_\_

3. When are proposed modifications supposed to be reported to the NRC for its review?

Please Explain\_\_\_\_\_

4. By what date are the problems supposed to be fixed?

Please Explain\_\_\_\_\_

5. Will the NRC take any action if they aren't fixed on time?

Please Explain\_\_\_\_\_

6. I am curious as to when this level spiking was first discovered by Pilgrim and when it was reported to the NRC. The water level instrumentation issue has been around a long time; and Pilgrim seems to be the "leader" in the field by having had the most problems with this device.

Please Explain\_\_\_\_\_

7. Is it fair to say, according to regulation, the condensate pot would be considered a "defect"?

\_\_\_\_\_  
Yes

\_\_\_\_\_  
No

\_\_\_\_\_  
See Explanation

8. Is it true defects are supposed to be promptly reported to the NRC in accordance with 10CFR Part 21 for suppliers of equipment?

            
Yes

            
No

            
See Explanation

9. Is it true this regulation requires a report within 60 days?

            
Yes

            
No

            
See Explanation

10. When did General Electric first report this under Part 21, and did they meet the 60 day requirement?

            
Yes

            
No

            
See Explanation