

T. Marley

Mr. Thomas T. Martin
Regional Administrator, Region I
U. S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

9/24/93

Dear Mr. Martin,

My name is Jack Keenan and I am writing to you to discuss a serious event which recently occurred at Millstone Unit 2. As you know I was the Unit Director at Millstone Unit 2 until recently, and would like to share some of my experiences and thoughts surrounding the time period of this event. I believe this transfer of information would be informative for the NRC in understanding and working with the nuclear industry toward the common goal of safe conservative plant operation in the future. NU and the people at NU have been firmly committed to this principle for as long as I been with this company's nuclear program starting in 1973. I believe that's what makes my sharing this experience within NU, the NRC, and the industry so important to me personally. Some of the more recent pressures ongoing in this industry are forcing changes in behavior and clearly these changes require close management attention to ensure the message is properly interpreted and appropriately acted upon by all those in the nuclear organization.

I would like to start by describing my actual experiences as well as thoughts and reactions to the events and conditions surrounding 2-CH-442. It is not my intention to defend the actions that were taken, only to be factual as to what happened and why.

In late May the valve was observed to have a small steam leak described as a wisp. I and my staff saw no immediate safety significance or threat to the continued operation of the unit caused by the small leak in the short term. We did address the valve and stud material to ensure it was not susceptible to rapid deterioration by a primary system steam leak. We took some time to review what options were available, including shutting the unit down to preform a gasket replacement repair. The results of our review indicated that the gasket replacement option would take 7-10 days, and at that time it probably meant going to reduced inventory with considerable decay heat. Another option was that this valve type was a good candidate for a leak injection type repair.

Given our desire to keep the unit on line and stay away from the undesirable condition of reduced inventory, we picked a familiar option often used on secondary side valves of leak injection repair. I now realize that most of us were so familiar and comfortable with this process that we did not fully appreciate the answers we got to the "what if" questions concerning the injection of an unisolable RCS valve. I now realize that this is where we headed down a dangerous path based on a comfort derived from historical data not based on a good appreciation of what could be the eventual outcome of this specific case. The easy and safest method is the use of a body to bonnet clamp which proved to be impractical over the short term in this case due to the shape and configuration of the valve. So we decided to do a normal body to bonnet joint injection.

The first few injections were not successful but we had seen similar results in the

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past and again felt comfortable continuing the injections. This appears to be the second opportunity for myself or others in the NU organization to step back for a minute and ask ourselves if what we were doing really made sense given the fact that this was a unisolable primary system valve. The technical experts indicated that what we were doing was safe by a significant factor of safety with a high confidence level. Given this we continued to inject as the leak decreased and finally stopped. This was the condition we expected to be in for some time, so our confidence level that we were in the safe zone increased. This was further reinforced since the valve remained leak free for the next three weeks as we prepared a custom made clamp which we believed would be the longer term fix until an outage that allowed repair. Any discomfort people may have had seemed to be relieved during this period.

In late July the valve again showed signs of leakage and additional injections were used to stop the leak. At this point I believe that as the valve leakage became more persistent, I and the Unit 2 Staff became more convinced that we had a safe and proven method of repair. We were now too close to the problem, and I allowed myself to become over involved in the day to day issues and facts without taking the time to move back and view the big picture. We continued to rely on strong technical justification proven by a successful track record of valve injection repairs.

For some time now I have been asking why did this turn out the way it did. It's clear that I and those involved in the repair of 2-CH-442 were very focused on plant operations, which for good reason has become a strong utility message of the 1990's. Cost per kilowatt-watt hour will determine the successful utilities of the future. This fact is true but must be delivered very carefully to the nuclear industry. The message has often been that we need to do some things different then we did them in the past if we expect to get different results in the future. I believe that applied to this case where we felt we were doing things a little different but felt we were ensuring safety at the same time. This, in some cases, is a difficult judgment to make , especially for those directly involved in the day to day issues. In this case it is clear that the line that divides the principles of safe, conservative operation with taking an unacceptable risk was crossed.

My desire to be a player in helping the corporation meet its goals is strong as it should be. 1993 has been advertised as the year NU will turn the corner with its nuclear organization by running their plants safely with high capacity factors. I believe this changing environment did play a key factor leading up to the 2-CH-442 experience. I and the MP2 Team tried to hard to deliver, to not disappoint our management. Instead we did just the opposite when we didn't shut the unit down in a more timely manner. NU was learned a valuable lesson. John Opeka is spreading it across the whole organization in spades. It's a difficult way to get smarter, but it is history now and should be utilized by as many as possible to gain from. This is the primary reason why I am writing you this letter. A great deal will be said and much will be written about this event and the performance of Millstone 2. I am concerned the basic message could be watered down or clouded by additional data or debate. The basic message is clear. The nuclear industry will continue to change based on the pressures of the environment surrounding them and as of today cost competitiveness is a major issue. The nuclear executives and managers need to be very, very careful on how this change is carried out. To move toward higher capacity factor or lower cost

per kilowatt-hour goals without first ensuring the principles of safe, conservative nuclear power plant operations are firmly entrenched in all aspects of the nuclear organization would be a major mistake. Additionally, these new goals should be accompanied by a reaffirmation, a clear strong message of management commitment to back conservative decisions regardless of their impact on production goals. These messages can't just be words that are spoken or show up on paper, they need to be lived day to day, part of the fiber that makes up the leaders of the nuclear business.

I did not write in order to preach to you; I'm sure there is nothing new here that you are not already aware of. I often think back to the moment I heard that the leak had rapidly increased and knew in an instant that we had made ourselves vulnerable to an unacceptable condition. I will always remember the strong and emotional feelings I experienced as I watched this leak on the TV monitor in the control room. The next two hours were difficult ones, as we reduced power and then pressure to ensure there would not be a more serious event, often glancing to the TV screen for assurance. I have learned greatly from this experience. The safety of the public and ultimate success of the nuclear industry depends on our ability to run the plants safely. I strongly believe it is important that I take whatever actions that are within my power to ensure the lessons learned from this event are wide spread and effective in preventing future similar events. In this cause I have provided you with my perspective as I see it now and offer my assistance in anyway I can help the nuclear industry learn from this experience. I am willing to travel to King of Prussia to work with or assist your staff in any way you may desire.

Lastly I request that this letter not become a public document, as I see no constructive outcome of the news media getting a copy of it. Thank you for your considerations.

Sincerely,


Jack Keenan

9/27/93 ~ 1615
Called Jack Keenan to inform him must either
return document to him or must put in PDR. Told
him could not share document with other NRC
personnel without putting in PDR. He still desires
we have opportunity to benefit from his lessons
learned and authorized putting into PDR if
necessary. 