Testimony of Peter A. Bradford[1]
Senate Committee on Environment and Public Works
Subcommittee on Clean Air and Nuclear Safety
Wednesday, May 5, 2010

"Nuclear Regulatory Commission Oversight Hearing"

I've arranged my testimony in four parts.

The first deals with the interplay between the NRC licensing process and the cancellations, cost overruns and delays that have afflicted nearly all of the license applications pending before the Nuclear Regulatory Commission.

The second part deals with the experience of citizen intervenor groups in the NRC licensing process as revised since the last round of nuclear power plant construction.

The third part remarks on areas of potential safety concern.

The fourth part, included at the Subcommittee's request, reflects on Vermont's recent experience with tritium leakage at the Vermont Yankee nuclear power plant.[2]

The NRC licensing process and the problems facing new nuclear plants

As recently as a year ago, the NRC website page entitled "Expected New Nuclear Power Plant Applications" listed a total of 23 applications covering 34 new reactors. Of these, 19 covering 29 units had been received, with the rest expected in 2009 and 2010.

A year later, the list of applications received is down to 17 applications for 26 units.[3] None of the four expected applications have materialized, and none are now expected before 2011. Furthermore, the pace of the new applications toward actual construction is even slower than these changes suggest. Almost all of the plants have fallen well behind their original schedules. Most of them have seen significant escalations in their cost estimates. Several have been suspended and are not being actively pursued.

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[1] Adjunct Professor, Vermont Law School; Former Chair, New York and Maine utility regulatory commissions; former Commissioner, U.S. Nuclear Regulatory Commission.

[2] I am one of three members of Vermont's statutory Public Oversight Panel overseeing an audit of the reliability of the Vermont Yankee. However, I am not testifying on the Panel's behalf. Indeed, the Panel has not yet completed its review of issues arising from the tritium leakage.

[3] The NRC delists applications that have been received but later cancelled.

I have addressed the reasons for these developments elsewhere.[4] For purposes of this hearing it is enough to note that the NRC licensing process is not the cause of these delays and cancellations. The cost increases have nothing to do with licensing. The decline in demand and the falling cost of alternatives clearly have nothing to do with the NRC. Customer backlash against rising rates, as has manifested itself in Florida and South Carolina is independent of the NRC. Unwillingness by Wall Street and by vendors to assume economic risk is not traceable to the NRC. Yet these are the basic reasons why the "nuclear renaissance" has slipped into reverse gear, sustained almost entirely by the hope of taxpayer backed loan guarantees.

An enduring myth arising from the last round of nuclear construction is that the dramatic cost overruns of the 1970s and 1980s were caused by regulation and by delays brought on by litigation in licensing proceedings. No serious study of the causes of power plant delays (and there were several) confirms this, but the myth persists.

Then as now, the basic cause of the delays was economic, as utilities stretched out construction schedules in the face of high interest rates and declining demand. In addition, some major plant specific mishaps = the Brown's Ferry fire, the seismic equipment fiasco at Diablo Canyon, the sinking generator building at Midland, the quality assurance breakdown at Zimmer and of course Three Mile Island – contributed greatly. Blaming the NRC licensing process, which in its day licensed more plants than the next several countries combined, is a road to measures that neither fix the real problems nor guard against expensive and controversial repetition.

Instead, Congress should assure that the incentives it offers for new reactors do not replicate the 2008 gold rush to the NRC's doors, overwhelming the goals of the revised licensing process and the NRC's own goals for sound regulation.

The experience of citizen intervenor groups in the revised NRC licensing process

As the subcommittee knows, the NRC licensing process has undergone major revision in the last decade. A primary goal of these revisions has been to assure the early resolution of as many issues as possible, and to avoid relitigation of issues that the Commission has resolved as to generic reactor designs. To this end, the Commission has provided for combined construction permits and operating licenses (COLs) referencing generic designs approved through separate rulemaking proceedings. By itself, this new process is potentially sensible, but it does impose great responsibility on applicants to provide complete applications at the outset and to respond comprehensively to NRC questions. To date, this process has not gone smoothly.

The main difficulty is that individual COL applications are being reviewed before the generic designs which they reference have been finalized or approved. This situation, which results

4 "The Nuclear Renaissance Meets Economic Reality" Bulletin of the Atomic Scientists, November 2009, pp. 60-64 http://www.vermontlaw.edu/Documents/IEE/20100109_bradfordArticle.pdf.

largely from the deadlines for subsidy eligibility that were incorporated in the Energy Policy Act of 2005, is the reverse of the process contemplated when the new licensing rules were adopted. This unexpected development has had inefficient and burdensome consequences, requiring participants in the COL proceedings to guess at the outcome of the ongoing design proceedings. To further complicate matters, some applicants have changed their minds as to the type of design that they intend to build, laying waste to a good deal of the work to that point.

A second goal of the revised licensing process - about which the Commission has generally not been candid – has been to reduce the ability of the public to question either applicants or the NRC staff. A potential weakness of most regulatory processes – in banking, housing, coal mine safety and oil drilling, as well as nuclear regulation – is the extent to which they rely almost exclusively on information provided by the regulated entities. To some extent, this is inevitable, but if regulators compound it by treating other potential sources of information – citizen groups, whistleblowers, state governments – with hostility, they are asking for trouble.

The NRC has done this with new rules – some adopted by a divided Commission - that prohibit cross examination by parties to its proceedings in most circumstances, as well as by sharply curtailing discovery rights. Given that the government has never adopted the recommendations for assistance to qualified intervenors that were part of the independent reviews of the Three Mile Island accident, most intervenor groups lack the resources to hire teams of experts to conduct their own license reviews. They are heavily dependent on discovery and cross examination.

The Commission's actions in this area do not save time and expense. They were adopted against the strong recommendation of the Commission's own licensing board chairman.[5] It is difficult to avoid the conclusion that their real purpose is to avoid embarrassment to the industry and to the staff. Needless to say, this is absolutely inconsistent with the agency's core principles of good regulation – independence, openness, efficiency, clarity, and reliability - as highlighted in the Subcommittee's April 28 letter of invitation. It is also inconsistent with the behavior of an agency wise enough to welcome the skeptical function that an informed public can provide in an era of such widespread regulatory failure.

The new licensing process was always going to make public involvement more complicated. By separating design review from individual licensing proceedings, it assured that many issues would be resolved before the public at specific sites were aware that their interests were affected. Compounding these effects by hamstringing public involvement in the licensing proceedings themselves was never wise. It has now been compounded by the unintended rush of COL applications ahead of generic design reviews.

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[5] Memorandum from G. Paul Bollwerk, III, Chief Administrative Judge, to NRC Commissioners, re: ASLBP Comments on SECY-00-0017, "Proposed Rule Revising 10 CFR Part 2 – Rules of Practice (February 10, 2000) ("ASLBP Memorandum").

The fairness of the resulting proceedings would be an excellent area for close Congressional review in the years ahead.

Areas of potential safety concern

I have not been personally involved in the safety regulation of nuclear power plants for many years. In preparation for this hearing I did consult with David Lochbaum, a nuclear engineer who has worked in nuclear power plants and for the NRC. He is currently in charge of the reactor safety program at the Union of Concerned Scientists. I urge the subcommittee to hear from Mr. Lochbaum directly. The issues that he flagged as being of current concern include

- Pressure boundary leakage – Recently at Davis-Besse – the same plant that experienced potentially catastrophic vessel head degradation in 2002 – water again leaked from metal tubes passing through the vessel head. Apparently the NRC again did not enforce the license condition requiring shutdown within six hours of discovery of pressure boundary leakage. The same failure of enforcement has occurred at other pressurized water reactors.
- Fire protection – During my term on the NRC, we adopted fire protection regulations arising from the 1975 fire at Brown's Ferry in Alabama. Few, if any reactors comply with them today. The NRC has since moved to options based more on risk assessment but here too compliance remains a problem at many plants. Congressional oversight requiring compliance by a date certain would be a useful indication that this crucial area needs to be brought to closure.

Mr. Lochbaum also flagged the issue of groundwater protection as being of generic concern because the NRC has not enforced its general design criteria requiring that releases of radioactivity can only be by controlled and monitored pathways. This issue is discussed further in my testimony relating to Vermont Yankee.

Vermont's recent experience with tritium leakage at the Vermont Yankee nuclear power plant

At the subcommittee's request, this potion of my testimony discusses the events surrounding the highly publicized tritium leakage at Vermont Yankee. Because the events in question are still under review by several state entities – including the Public Oversight Panel on which I serve – my comments should be regarded as subject to change in light of subsequent information. They should also not be taken as representing the views of the Public Oversight Panel or any other body.

Although tritium leakage has been problem at many nuclear reactor sites, the Vermont Yankee case has captured by far the most attention. There are three interrelated reasons for this. First, Entergy's Vermont Yankee personnel had repeatedly assured the state of Vermont – at times under oath - that it had no underground piping system that carries radionuclides. Second, the leaking tritium – though not detected offsite – progressed rapidly from insignificant quantities to much larger concentrations, even as Entergy searched for the source and admitted the existence of the piping systems whose existence it had previously denied. And finally the Vermont Senate, alarmed by the first two events voted overwhelmingly against approving operation of the plant after its current license expires in March, 2012.

Entergy has recently released a report prepared by an outside law firm. That report "did not find that any Entergy personnel or representative intentionally misled third parties about the existence of underground piping at VY that carries radionuclides. Although the Investigator did not find a basis to substantiate intentional wrongdoing…, the Investigator found that certain ENVY personnel failed at timed to clarify understandings and assumptions and therefore allowed statements to be made that were incomplete or inaccurate when viewed in a context different from (the one in which the statements were originally made)."

Entergy has also reassigned several of the individuals involved in these misstatements.

The action by the Vermont Senate arises from circumstances that are, as far as I know, unique to the state of Vermont. As a result of an agreement reached between Vermont and Entergy in 2002, when Entergy acquired the plant, operation after March, 2012 requires a certificate of public good from the State of Vermont. Vermont law prohibits issuance of such a certificate without legislative approval, which must come from both houses of the legislature independently. Thus the Senate vote alone is sufficient to withhold the needed approval. The House has not acted. It is possible for the issue to be revisited during the 2011 legislative session.

For purposes of today's hearing, these events do not directly involve the NRC. The concentrations of tritium detected in the wells at the plant did rise above levels requiring reporting both to NRC and to EPA, and reviews at both the state and federal levels are continuing.

The NRC has recently announced further review of its initiatives in the area of groundwater protection. While the existing regulatory framework may be adequate, enforcement under it clearly leaves something to be desired. Adequate knowledge of plant configurations and pathways in the oldest units has always been a problem, especially in systems not directly relevant to safety. The public's tolerance for leaks of radionuclides from systems whose potential to leak radionuclides is denied by plant management before the event is inevitably low, even when public safety is not directly threatened by the leaks,

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The cusp between high developmental hopes and the mundane and expensive requirements of regulatory diligence is a dangerous place. All around us now – from the housing and financial sector collapses to the Big Branch coal mining disaster to the spreading oil in the Gulf of Mexico, we see consequences of insufficient precaution in the face of risks that were know or knowable. The nuclear industry has shown that it is not immune. It will be kept safe by diligence and care, not by goals that emphasize growth, subsidy and governmental preference for a particular, well-established technology.