

Testimony of Peter A. Bradford
Public Oversight Panel for the Vermont Yankee Reliability Assessment
House Committee on Natural Resources and the Senate Finance Committee
Vermont Legislature
March 19, 2009

My name is Peter Bradford. I currently chair the Oversight Panel of the Vermont Yankee comprehensive reliability assessment, created in Section 6 of Act 189, enacted by the General Assembly in June 2008. All of the currently serving panel members are with me. The Oversight Panel consists of Arnold Gundersen, appointed by Senate President Peter Shumlin; William Sherman, appointed by Governor Jim Douglas; and me. I was named by then Speaker Gaye Symington. Dr. Fred Sears was chosen by the Panel as was David Lochbaum, who took full part in the Panel's work until February 17. Dr. Lawrence Hochreiter, originally chosen by Governor Douglas, passed away in September 2008. Our report is dedicated to his memory.

We have rotated the chairmanship among the statutory appointees to the panel since its creation, so the title carries no special distinction. Mr. Gundersen and Mr. Sherman have also served as chair.

Each of my colleagues is an accomplished nuclear engineer with extensive experience in nuclear plant technology and operation. As I have done throughout

~~our Panel's existence, I will defer to their technical virtuosity in responding to your~~

questions today. My statement on behalf of the Panel draws extensively from our Executive Summary. We each concurred in that as in the Report itself.

Mr. Sherman and Mr. Gundersen will deliver individual statements, and we will respond to your questions in our individual capacities.

Act 189 required a comprehensive vertical audit and reliability assessment of the Vermont Yankee Nuclear facility. The reliability assessment was performed by Nuclear Safety Associates (NSA) under contract to the Vermont Department of Public Service (DPS), and summarized in the report *Reliability Assessment of the Vermont Yankee Nuclear Facility*. That Report was completed and made public on December 22, 2008.

The Panel's work encompassed four major tasks, consulting with DPS on the choice of the audit team for the reliability assessment, consulting with DPS on the scope of the reliability assessment, giving feedback during weekly calls with DPS and sometimes NSA during the course of the assessment and reviewing the final NSA report.

I want also to be clear as to what we did not do. We were not involved in the writing of the NSA reliability assessment itself, though following its submission to the Public Service Board in December, we did ask NSA a number of questions that

~~resulted in supplementation of their report.~~

We did not participate in interviews of Vermont Yankee personnel. We did not conduct our own separate assessment of Vermont Yankee. To fully understand existing reliability-related conditions at Vermont Yankee and the challenges to reliability that the plant faces, one must read our Report together with the NSA reliability assessment.

The Panel was involved in the choice of NSA as the auditors, and we took an active role in defining the scope of the assessment, recommending specific attention to systems that had experienced significant operational shortcomings. These were the main transformer and the cooling towers. While NSA was performing its assessment in the last four months of 2008, the Panel participated in weekly status conference calls. We met approximately monthly during that time and more frequently during the drafting of our report. The Panel also recommended that credit be taken for the Nuclear Regulatory Commission (NRC) team inspection of the electrical system, and for periodic tests performed on portions of the containment system. In addition, the Panel asked for a management/corporate review and a sister-plant review. All of the Panel's recommendations for the scope of the assessment were accepted and are reflected in the NSA reliability assessment.

NSA employed a team of 30 inspectors who had no association with Entergy or Vermont Yankee within the past three years, a level of inspection for reliability unprecedented in Vermont Yankee's history.

After performing the reliability assessment, the NSA team's overall conclusion was that VY is operated reliably and that the current level of reliability can be maintained through an extended operating period provided that the areas identified by the NSA report are effectively addressed. The Panel agrees with the audit team's principal conclusions, though we have additional areas of emphasis as spelled out in our report.

The five goals and objectives of Act 189 are stated in Section 2 of the Act, summarized as follows:

1. Assess the conformance of the Vermont Yankee facility to design and licensing bases;
2. Identify relevant deviations, exemptions, or waivers from regulatory requirements applicable to Vermont Yankee and applicable to new nuclear reactors, and verify whether adequate operating margins are retained;

~~3. Assess the facility's operational performance, and the facility's reliability for~~

continued power production, giving risk perspectives where appropriate;

4. Evaluate the effectiveness of licensee self-assessments, corrective actions, and improvement plans; and

5. Determine the causes of and conclusions from significant operational shortcomings.

These goals were met, as set forth in the Panel's findings and the conclusions in our report.

In reaching our findings and conclusions, we considered three questions:

The first of these is "Does the Reliability Assessment meet the intent of Act 189?"

We conclude the General Assembly's overall intent in Act 189 has been met.

Notwithstanding this overall conclusion, we found a number of areas in which the NSA team could have improved its work. The audit team did an adequate job.

However, individual Panel members are aware of documentation that they might have expected the audit team to discover and review, but it did not.

As to management, ENVY management needs to do a more effective job of

~~leading Vermont Yankee in changes to further improvement and in effectively~~

applying procedures and processes. ENVY management attention and leadership for the changes recommended by the Report are extremely important as the ENVY workforce changes with retirement and replacements of long term employees. ENVY management needs to assure adequate resources are allocated to the reliability of nonsafety-related systems.

As to the Equipment Reliability Index (which contains a mix of historic and predictive indicators), ENVY ranks in the bottom quartile. This low ranking is troubling to the Panel.

As to the condenser, the pending state and federal decisions on operation after 2012 have held up decisions to commit substantial sums to re-tube or replace the condenser. The increased probability of reliability problems from the condenser will now extend into the early years of extended operation, if granted.

As to the main steam isolation valves, the Panel is concerned about significantly increased leakage that was discovered in the 2008 refueling outage.

As to flow accelerated corrosion, NSA was unable to complete the requested scope

~~due to an ongoing NRC investigation of a safety-related allegation. Therefore the~~

NSA report did not benefit by review of this area.

As to the preventative maintenance process, programs should be put in place to eliminate ENVY's higher-than-expected preventative maintenance backlog.

As to staffing turnover issues, VY is experiencing higher staff vacancies and turnovers than in its earlier history. This staff turnover is a new challenge to VY, and it makes other recommendations, such as procedure quality, adherence to procedures, and change management all the more important.

As to use of operating experience, ENVY must use operating experience more proactively, specifically in non-safety areas, to maintain reliable performance.

As to corrective actions – ENVY's corrective action process should be modified so that Corrective Action Requests cannot be closed based on open Work Orders.

The second question that we considered is “Are the transformer fire and cooling tower collapse events indications that VY will not perform reliably in the future?”.

~~These events are not precursors of unreliable operation in the future. VY has had~~
very good historical performance, and events resulting in decreased power
production occur from time to time in all nuclear plants. Still, Vermont Yankee
has recently suffered significant operational shortcomings in these two areas. Our
report cautions against a “less than desirable management commitment to
reliability”, and management action is necessary to address items such as
procedures, at-risk designs, operational experience, and needed resources.

**The third question is “What steps must VY take to avoid operational
shortcomings like the transformer fire and cooling tower collapse in
order to maintain and improve its reliable performance?”**

Entergy and Entergy Vermont management must be committed to a high standard
of reliable performance, to be shown by management’s satisfactorily addressing
the items in the NSA Report and the Panel Report. Furthermore, it is important to
establish a verification process to see that improvements are accomplished and the
commitment to reliability remains high.

The Panel’s overall conclusion is that acceptable reliability of VY for operation
beyond 2012 is possible if the recommendations of this report and the NSA Report
are taken. We also discuss several reliability issues not covered in the NSA

~~assessment. These included the proposed ENEXUS reorganization, the possibility~~

of long duration outages, the interplay between reliability considerations and the expectation of benefit from continued operation, and the interplay between reliability and certain governance issues.

On this last topic, we concluded that there must be a credible and public verification put in place to assure the recommendations are implemented satisfactorily and in a timely manner. No report written in 2009 can provide firm assurances as to events between now and 2032. Effective verification is a critical check against the complacency that can sometimes come between very good past performance and a very good future,

This verification should be accomplished through strengthened government institutions characterized by

- high professional competence commensurate with the tasks at hand,
- domination neither by specific proponents nor by specific opponents of nuclear power,
- resources adequate to effective performance at ENVY's expense,
- periodic effective reports of verification, with reports available to the public,

~~and the ability for public interaction and recourse through structured,~~
credible and established institutions.

Also, because there are always risks for reliability from changes in management philosophy or from unexpected technical causes, the PSB and general assembly should assure that an adequate benefit is provided to Vermonters for operation beyond 2012.