



# The INDIANA SASSAFRAS AUDUBON SOCIETY

of Lawrence - Greene - Monroe -  
Brown - Morgan & Owen Counties

50-546  
547

June 21, 1982

B. F. Youngblood, Chief  
Licensing Branch No. 1, DL  
Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Youngblood:

Sassafras Audubon is concerned as to whether Marble Hill Units 1 and 2 are being constructed with safety design features warranted as the result of reactor operating experience and increased knowledge of unresolved safety issues (USI). Our concern is related to many USI both recognized or nominated by the NRC staff and Advisory Committee on Reactor Safeguards, although only a few are addressed in this letter.

## Pressurized Water Reactor Steam Generator Tube Integrity

Public Service Indiana (PSI) mentioned in its 1978 Annual Report that 4 Westinghouse steam generators were on site. We assume that these generators are similar to the models that have been subject to chronic wastage and denting in operating pressurized water reactors (PWR's). Is this so? Will PSI be permitted to install these generators in Marble Hill Units 1 and 2, or will they be required to install a model with guaranteed resistance to such degradation?

## Thermal Shock/Embrittlement

Radiation "embrittlement" of reactor pressure vessels, particularly those of PWR's, is occurring more rapidly than expected. This is likely to reduce the capacity and life-expectancy of PWR's and make their pressure vessels susceptible to rupture and loss-of-coolant accidents. Will the reactor vessels at Marble Hill be composed of materials similar to those used in the present generation of nuclear plants, or will the reactor vessels be composed of materials insensitive to neutron bombardment of the vessel walls? Or will design modifications be made to lessen neutron radiation by other means? During construction?

## Seismic Design Criteria

Only recently the United States Geological Survey (USGS) has identified the deep fracture that caused the New Madrid earthquakes of 1811 and 1812, the one of February 7, 1812, being the strongest earthquake in recorded history of the United States. The USGS found a "rift where the earth is literally tearing apart", some 55 miles long in a northeast direction and with shifts of 3000 feet in the rock

formation more than a mile underground.

Seismologists have warned the public that the New Madrid rift represents a high risk earthquake area where another major quake is overdue. They also class the Lower Ohio River Valley, including the City of Evansville, as a zone of potentially heavy earthquake damage. Southern Indiana had a moderate earthquake near Vincennes in 1909, and has been shaken by three in recent years, 1968 (5.5 Richter), 1974 (4.7 Richter), and 1980 (5.1 Richter). Vincennes, Marble Hill, and Maysville, Kentucky, the latter at the epicenter of the 1980 earthquake, are on approximately the same parallel.

In its Marble Hill Safety Evaluation Report (1977), the NRC noted that earthquakes considered to be significant in the seismic design of Marble Hill are VII-VIII Modified Mercalli intensity near the site, and XI-XII Modified Mercalli intensity about 110 miles from the site, pending the outcome of ongoing research programs to determine the geologic, seismic, and tectonic characteristics of the Wabash Valley and the New Madrid Areas. The NRC concluded (page 2-26):

"Based on our review we conclude that the occurrence at the site of a Modified Mercalli intensity VI is a low probability event. Therefore, we concur with the applicants that eight per cent of the acceleration of gravity is an acceptable acceleration level for the operating basis earthquake, representing an earthquake which could reasonably be expected to affect the plant site during the operating life of the plant."

What are the results of the research program? Are NRC seismologists in agreement? What are the implications for Marble Hill? Has the IEEE Standards Committee responsible for seismic qualification guidance refined their current criteria for safety-related equipment? Does the NRC staff foresee revisions of requirements for Marble Hill in terms of support structures of steam generators, reactor coolant pumps, the pressurizer, and the reactor vessels?

#### Degradation of Threaded Fasteners in the Reactor Coolant Pressure Boundary

A significant number of incidents of degradation of threaded fasteners in the reactor coolant pressure boundary have been reported in the last several years. Extensive failure of threaded fasteners, combined with failure of detection, could result in a serious loss-of-coolant accident. Could not seismic shock waves weaken and contribute to failure of degraded studs?

Can the root cause of primary coolant leakage in this instance be effectively controlled? Will the NRC recommend and/or require studs more resistant to a corrosive environment and to stress-corrosion cracking? Can measures be taken during the construction of Marble Hill to prevent or lessen the possible occurrence of this problem?

#### Marble Hill as a Long-Term, High-Level, Radioactive Waste Storage Site

When PSI was granted a construction permit for Marble Hill, only a minimal amount of spent fuel, a total of one and two-third cores, approximately 340 spent fuel assemblies, was to be stored on site for any length of time. Now, it seems likely that all the spent fuel from Marble Hill will be stored on site, indefinitely.

A permanent, licensed government facility (or facilities) for the disposal of

commercial high-level radioactive wastes, for both spent fuel and the "activated" hulks which surrounded the cores, keeps receding into the distance. Away-From-Reactor (AFR) storage facilities are being opposed on a number of grounds, but if they become reality, are likely to be preempted for spent fuel from the plants currently operating.

The storage of Marble Hill's spent fuel on site, both during and after Marble Hill's operational phase, and the "mothballing" or "entombment" of the Marble Hill plants in situ, greatly enhances and prolongs the risks associated with nuclear accidents and major seismic events.

How will spent fuel be stored at Marble Hill? Will the foundation excavation for the spent fuel storage facility be extended to the same quality rock foundation as the reactor containment building? What will be the Seismic Category of construction? The New Madrid earthquake is supposed to have been around 6 on the Richter scale in magnitude of effect in the Marble Hill Area. Will Marble Hill be designed to withstand such a quake?

#### Environmental Qualification of Safety-Related Electrical Equipment

Public Service Indiana proposes, at present, to file an updated FSAR to the NRC in December 1982 to support a fuel load date for Unit 1 of June 1986. This schedule would appear to provide PSI ample time with which to comply with NRC criteria for environmental qualification of safety-related equipment prior to Hearings on an operating license for Marble Hill. Is this not so?

Sassafras Audubon agrees with former NRC Commissioner Bradford and Commissioner Gilinsky that specific seismic and dynamic criteria for qualification of electric equipment should have been included in the recent rule. Will seismic and dynamic qualification <sup>criteria</sup> for electric equipment be formulated by the NRC in time to be incorporated into the construction of Marble Hill?

#### Marble Hill a Replicate of Byron?

The Byron Nuclear Plant of Commonwealth Edison was the subject in 1980 of an audit of structural calculations for selected structures, and of an independent structural analysis of the containment structure and one other safety-related structure, to determine whether it was, in fact, being built to withstand natural phenomena and potential accidents, such as that of TMI-2.

Marble Hill is a sister plant of Byron and we would like to know the results of the study by E G and G Idaho Inc. Is the Report, or summary of the Report, available to the public?

PSI has asked that the NRC staff make optimum use of the replicate design of Byron in its review of Marble Hill. How far advanced is Byron in the construction-licensing process? How closely can Marble Hill replicate Byron? Does Byron have a seismic problem on the scale of Marble Hill?

PSI recently requested an exemption from 10CFR 50.34(g), a rule which requires applicants to evaluate differences from the standard review plan. What were the differences in question? Were they in any way related to the Byron design?

A Petition for Investigation was filed by the Consumer Counselor of Indiana with the Indiana Public Service Commission on April 28, 1982 requesting an investigation of Public Service Indiana's construction program, including its Marble Hill Project, and in particular an investigation of the effect of such a program on present and future rates. The Petition was granted and a Hearing on the cause will be held on October 14, 1982 in the Jeffersonville/New Albany area, as part of a series of Hearings on a PSI petition for approval of new rates for electric service.

The matters raised in this letter are an integral part of the present investigation of Marble Hill because they are concerned with its cost, as it will be reflected in present and future customer rates.

The information is needed now so that citizens may know whether safety-related modifications are being built-into the plants during construction, or postponed until crises develop as the result of accidents and/or degradation of equipment. Back-fitting, replacement of equipment, and repair of equipment, is more costly and difficult in a radioactive environment.

Yours sincerely,

*Mrs. David G. Frey*

Mrs. David G. Frey  
Energy Policy Committee, SAS  
2625 S. Smith Road  
Bloomington, Indiana 47401

cc: D. Eisenhut  
L. Parvin Price

Mrs. David G.-Frey  
2625 S. Smith Road  
Bloomington, Indiana 47401



B. F. Youngblood, Chief  
Licensing Branch No. 1, DL  
Nuclear Regulatory Commission  
Washington, D.C. 20555