

July 9, 2004

Mr. Elroy R. McLeod  
4800 Paul Hance Road  
Huntingtown, MD 20639

Dear Mr. McLeod:

On behalf of the U.S. Nuclear Regulatory Commission (NRC), I am responding to your letter of February 23, 2004, to Chairman Nils J. Diaz concerning the hazards to the Calvert Cliffs Nuclear Power Plant (CCNPP) from the Cove Point liquid natural gas (LNG) facility. You were specifically concerned with the 36-inch natural gas pipeline that passes within 1.6 miles of CCNPP and with plans to expand the Cove Point LNG facility including the addition of another pipeline. You also provided information on the natural gas pipeline rupture and fire near Carlsbad, New Mexico on August 19, 2000.

One of the reports referenced in your February 23, 2004 letter (NTSB/PAR-03/01) identifies the safety issues associated with the design and construction of the pipeline, the corrosion control program, the adequacy of Federal safety regulations for natural gas pipelines, and the adequacy of Federal oversight of the pipeline operator. The report does not evaluate consequences of the accident (e.g., overpressure, thermal flux) that may pose a risk to the safe operation of CCNPP.

The other report you reference (Bulletin of the Seismological Society of America, Vol. 93, No. 4, pp. 1427-1432, August 2003) provides some estimates of the consequences of the Carlsbad pipeline accident. However, the NRC staff believes that the CCNPP hazards analysis remains valid. Specifically, this report identifies and estimates the magnitude of two consequences of the Carlsbad pipeline break accident: ground cratering due to initial pipeline blowout and subsequent natural gas cloud ignition.

The NRC staff's most recent review of the hazards analysis performed by Calvert Cliffs Nuclear Power Plant, Inc. (CCNPPI, the licensee for CCNPP), related to the operation of the Cove Point LNG facility is documented in a January 20, 2004, safety evaluation. The NRC review was conducted in response to a July 10, 2003, letter from CCNPPI informing the NRC that Dominion Cove Point LNG, LP, the current owner and operator of the Cove Point terminal, would resume importation of LNG at the facility in July 2003. The July 10, 2003, letter also stated that Dominion planned to construct an 850,000-barrel LNG storage tank (in lieu of the two 600,000-barrel storage tanks proposed earlier) and put it in service in the fall of 2004. CCNPPI stated that it performed a bounding evaluation and determined that its 1993 hazards analysis (approved by the NRC in August 1995) bounded the planned operation of the Cove Point facility. The NRC concluded that the licensee had demonstrated that the 1993 hazards analysis remains valid.

The June 1993 hazards analysis evaluated seven postulated accident scenarios related to the LNG facility, including a failure of the 36-inch natural gas pipe line at 1.6 miles from CCNPP. The analysis found that this postulated accident would result in a possible overpressure of 3 psi (threshold for structural damage) at a distance of 1.5 miles or more from CCNPP. The report concluded that the 3-psi overpressure would occur far enough from CCNPP site not to cause any damage impacting the safety of the units or the independent spent fuel storage installation (ISFSI).

The licensee's July 10, 2003, letter described the contingency measures that will be in effect during LNG operations. The Coast Guard will establish approach and docking procedures for the Cove Point facility. Other actions include the installation of an automatic ring-down phone and radio communication between the CCNPP control room and the Cove Point Monitor House, and a Letter of Agreement between Dominion Cove Point LNG, LP, and CCNPP addressing communications protocol.

The NRC staff has reviewed the information provided in your letter and the two attached reports on the natural gas pipeline rupture and fire near Carlsbad, New Mexico, on August 19, 2000. The NRC staff concludes that the CCNPP hazards analysis remains valid. The stated purpose of these reports indicate that they were not intended as hazard consequence analyses. As stated in the seismology report you provided, "Analysis of the seismic data has helped answer questions related to the fundamental nature of the accident and has affected the amount of legal damages that were awarded to families of the victims." The Energy Release section of the report states that "...it is unlikely that the entire crater volume was created during the blowout, and so the value given above is probably a gross overestimate." The consequence analysis in the CCNPP hazards analysis used Arthur D. Little's comprehensive consequence modeling package, SuperChems™, coupled with the U.S. Environmental Protection Agency's computer program DEGADIS for gas dispersion analysis. The NRC staff found that the licensee's bases and methodologies for calculating the estimated frequency of occurrence and the consequences of a gas fire and explosion are appropriate, the supporting data is relevant, and conservative assumptions were used.

The other consequence described in the Seismological Society's report, natural gas cloud ignition, can lead to deflagration and possible detonation. The energy yield of the natural gas cloud estimated in the report is such that an overpressure of 1 psi would be developed at a distance no greater than about 500 feet from the cloud. The report does not provide estimates of the radiant heat flux that would be created by the accident. It should be noted that the thermal heat flux for the onset of burn injuries is in the range of 1600 to 2000 Btu/hr-ft<sup>2</sup>. For a natural gas fire from a 36-inch, 1250 psi pipeline, the stand-off distance for sustaining a radiant heat flux of 1600 BTU/hr-ft<sup>2</sup> is about 1550 ft. The closest distance of the CCNPP from a natural gas pipeline is about 1.6 miles. The above estimates indicate that at this distance neither the overpressure nor the thermal heat flux would be sufficient to pose a significant hazard to the CCNPP.

The pipeline blowout, caused by the action of the escaping pressurized natural gas, and not the result of an explosion, resulted in cratering of the ground in the immediate vicinity of the pipeline. Hence, the equivalent to explosive force from the gas does not apply. The pipeline blowout and resulting cratering effect had no discernable effects at distances beyond a mile from the accident site. Hence, this aspect of the pipeline rupture would not pose any significant risk to CCNPP. It should be noted that the reported estimate of the energy expended in

E. McLeod

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creating the observed ground crater is described as being equivalent to 5,700 kg of TNT. This amount is equivalent to 5.7 metric tons, rather than the 1000 times larger quantity of 5.7 kilotons cited in your letter. This factor of 1000 error is then carried forward in your letter's bomb equivalence estimates for the Cove Point LNG facility.

I assure you that the NRC is very interested in the safe operation of CCNPP and hazards from the Cove Point LNG facility and any planned expansion. The CCNPP licensee is required to perform an analysis of any proposed changes to the Cove Point LNG facility, as was done for the design change from two 600,000-barrel storage tanks to one 850,000-barrel storage tank. Accordingly, CCNPP is required to evaluate the addition of another proposed pipeline. The NRC will review the analysis to ensure that the operation of CCNPP and the ISFSI will not be jeopardized by the operation of the Cove Point LNG facility.

I appreciate your concern for the safety of CCNPP, and the opportunity to respond to your concerns. I hope that you find this information useful, and if you have any further questions, please contact Richard Laufer at 301-415-3036.

Sincerely,

*/RA/*

J. E. Dyer, Director  
Office of Nuclear Reactor Regulation

Docket Nos. 50-317 and 50-318

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