Docket Nos. 50-295
and 50-304

Mr. Frederick G. Dudink
617 Nordic Court
Libertyville, Illinois 60048

Dear Mr. Dudink:

Your note to President Carter in mid November 1980 on the cracks at the Zion nuclear plant has been referred to this office for response. Your concern for your safety in light of the November 14-16, 1980 news articles is understandable, but we would like to explain the facts about the "cracks" and how an ongoing study concerning ultimate containment strength may have been misinterpreted.

On June 17, 1980, we held a meeting with the utility in our offices in Bethesda, Maryland. The meeting was to discuss the effects on the containment structure from pressure inside the containment. Our current study referenced a 1973 study on the containment structure in which the Sargent and Lundy Company reported finding fine surface cracks, the widest being 0.002 inches, on the outside concrete surface. This is the type of fine surface imperfection that occurs from thermal and drying shrinkage as concrete sets during construction. The 1973 report also measured these surface imperfections while the containment was pressurized to 54 pounds per square inch; there was no change in these imperfections during this or other tests at reduced pressure levels.

The study that has been going on for the past ten months is also investigating the response of the containment building to higher pressures. Calculations indicate that stress cracks would first appear in the concrete structure at about 92 pounds per square inch. This is some 40 pounds per square inch greater than we would expect inside the containment with the worst design basis accident. This is also the type of crack that would be of concern to us since it would be the first indication of significant containment stresses. It would not, however, be a failure that would release radiation to the atmosphere. The walls of the containment are 3' 6" thick prestressed concrete, the dome is 2' 8" thick prestressed concrete (both heavily reinforced), and the floor is 9' 0" thick reinforced concrete. The inside of the containment is covered with a 1/4" welded steel plate called the liner. Our study also indicated that over 140 pounds per square inch inside