ENCLOSURE 4

Testimony of Dr. Steven M. Long

before the

Maryland Commission on Intergovernmental Cooperation

Chairman Byrnes, Chairman Maurer, members of the Commission, my name is Steve Long. I am the Director of Maryland's Power Plant Siting and Research Program.

Mr. Easter has asked me to address five specific questions for you today. Each of these touches upon one or more very complex issues in a general manner, so that complete response to each would require voluminous testimony. However, in my responses to follow, I have held my remarks to brief overviews, except when there is a specific point to be made concerning intergovernmental cooperation.

1. What is the status of the Three Mile Island Clean-Up?

The current condition of the power plant is as follows. The containment building has about 650,000 gallons of highly contaminated water in the floor of the lower level. There is about 1 curie of radioactive material (mostly Cs-137) per gallon in this water. Present depth is approximately 7.7 feet. Due to the continued leakage of water from the reactor coolout system, the water level in the building is still rising but now at a very small rate. The water has now covered some equipment, such as electrical value actuators, rendering them inoperable or unreliable. This situation does not appear to constitute any immediate threat. The Metropolitan Edison Company is presently designing a Submerged Demineralizer System to decontaminate this water. The Nuclear Regulatory Commission must approve such a system before the Company can use it, however, and the Commission has not yet made any decision as to the type of system which should be used for this portion of the clean-up. The NRC intends to withhold this decision until their programmatic environmental impact statement has been completed. A draft of this statement is scheduled for this month, with the final statement due in the fall. This schedule appears optimistic to us.

The air inside the containment building is contaminated with about 57,000 Ci of an inert radioactive gas, Kr-85. The Metropolitan Edison Company wishes to vent this gas to the outside atmosphere in a controlled manner so that workers may enter the building without cumbersome protective clothing and breathing apparatus. The NRC has agreed to consider the venting option prior to its completion of the programmatic environmental impact statement, and has been soliciting and considering public comment on a separate environmental assessment since March. The NRC's decision on the Krypton-85 removal may be forthcoming at any time, now, but their staff does not seem to think that the venting could occur before this fall. Maryland has submitted written comments favoring the venting of the Krypton gas in a manner controlled to minimize the resultant dose to the local population.

Because of the long delay since it requested to vent the containment building, the Company has sought permission from the NRC to have workers in protective apparel enter the containment building through an airlock. Permission was finally granted for this, but the attempted entry on May 21st was thwarted when the airlock's inner door was found to be stuck, probably due to corrosion.

Outside the containment building, about 470,000 gallons of radioactive water was accumulated during the accident, and the auxiliary building and fuel handling building were contaminated. By October, 1979, the auxiliary building water had accumulated to a volume which threatened to exceed available tankage in Unit 2. At that time, the NRC approved the use of a decontamination system known as EPICOR II. The NRC's decision was preceded by an environmental assessment. At this time, the EPICOR II system has decontaminated about 311,000 gallons of the auxiliary building water. Our own sampling of EPICOR II output verifies that this system is producing water of a quality similar to that in normal discharges from an operating nuclear power plant. Actual discharge of the decontaminated water is currently prohibited until 1982 or the time that the NRC's programmatic environmental impact statement is completed.

Canisters of ion exchange resins, containing the radioactivity removed from the water by EPICOR II, are now being stored on the southern end of the island in a newly constructed interim storage facility. The EPICOR II system was not designed to permit "solidification" of these resins in the filtration system "liners". However, the NRC has decided not to allow the liners to be shipped off-site on public highways without solidification. The liners are presently accumulating on the island and the storage area is being expanded to accommodate them while a suitable solidification process is designed and approved.

In the course of this status update, I have mentioned several areas of intergovernmental contact which it would be useful to describe to this Commission. In staff level contacts and working relationships with both the NRC and the utility company, we have enjoyed an excellent degree of cooperation from all concerned. Beginning early in the course of the accident, Maryland has been able to arrange for exchanges of technical information and radiological samples on a very prompt and informal basis through those individuals actually responsible for conducting the pertinent activities. More recently, a Maryland State employee has been cleared for unescorted access to TMI so that he may sample pertinent items, himself. This sort of contact has proven essential to our proper handling of the situation. Early in the accident, formal channels of communication proved too slow and ad hoc channels involving nontechnical people proved too inaccurate. The lesson learned is clear: when the chips are down, it is essential that information be exchanged from one technical person to another, with no one in between who doesn't understand precisely what the information means and how it is to be used. Any mechanisms developed for emergency response to future accidents will be substantially flawed if they fail to provide for this type of direct communication among the responsible individuals actually performing the work.

Our one communication impasse during the accident illustrates my point. Herold Denton (NRC) was worried that the hydrogen bubble in the primary coolant system might accumulate enough oxygen to explode, and was apparently seriously considering early depressurization of the coolant system to remove the bubble. He was apparently very isolated from competent technical advisors, many of whom were trying to give him the word that calculations showed the oxygen could not accumulate in the bubble. He was also seriously isolated from us here in Maryland. Our own modelling had shown us that no public protection measures would be necessary for Maryland citizens unless a major core-melt accident occurred. We were satisfied that this was not probable, unless the primary coolant loop was depressurized and the bubble blocked the coolant pumps. In order to be prepared, we therefore desired to get the earliest possible

notification should Denton make the decision to depressurize, but were concerned that we would not be notified. This is also a lesson which must be applied to our planning for future emergencies: local and state civil defense authorities must be kept informed of command decisions by whoever is actually in charge of the reactor operations, regardless of whether that person thinks any particular command is of interest to the civil defense personnel. Substantial progress has been made in our emergency planning since March, 1979, as I'm sure General Brooks will describe, later this afternoon. Although the federal government has participated in a heavy-handed manner to require this progress, it has yet to participate in the actual planning by providing the states with even an outline of an emergency plan of its own. It is still not clear what role the NRC would play or with whom they would choose to communicate during any future accidents.

Intergovernmental liaison between Maryland and the Nuclear Regulatory Commission itself has been much less productive than communication with the NRC staff. Governor Hughes' letter to Chairman Ahearne did not succeed in obtaining additional commitments for liaison with Maryland beyond what is strictly required by law or regulation, however several of the Governor's requests were agreed to by the Commission during dealings with other entities prior to their written response to Governor Hughes. We believe that those requests which the Commission did not grant are now adequately covered by working relationships developed at the respective staff levels. Cooperation has been very good with the NRC staff on Commission-directed activities such as preparation of the programmatic environmental impact statement, the various environmental assessments, and related informational meetings. Maryland's technical comments are clearly being considered by the staff, and their responses will be presented to the Commission. Very informal working arrangements have developed in several important areas such as the modelling of the radiological impact of TMI releases on Chesapeake Bay. The NRC staff group developing this part of the environmental impact statement has met with our radioecology people several times to go over existing data and discuss the model as it is being developed.

On the basis, it appears that our excellent working level relationships with NRC staff will ensure that Maryland's technical views are adequately considered by the Nuclear Regulatory Commission. However, the Commission itself does not appear inclined to formally recognize these relationships nor provide any assurances that Maryland will be dealt with in any other manner than what is strictly required by law or regulation.

2. What environmental impact has Three Mile Island had on Maryland to date?

During the accident, about 13,000,000 curies of radioactive inert gases and about 14 curies of radioactive iodine were released to the atmosphere. Sampling of the atmosphere in Maryland failed to detect this gas at any time with the exception of one sample at one station between March 30 and April 1, 1979. The levels were extremely low, and could not be definitely attributed to TMI because of the close proximity to Peach Bottom Atomic Power Station. Doses from the level detected would be about 0.000003 millirem to the whole body, and about 0.003 millirem to the thyroid gland of an infant due to the inhalation pathway, alone. Since we did not detect radioiodine in local milk, this pathway was not included in the dose calculation.

At the time of the accident, discharges of water from the radwaste system at TMI Unit 2 were discontinued. However, because of some leakage to normally clean systems, some radioactivity was discharged to the Susquehanna River. We arranged through the NRC to obtain samples of the discharges and tabulated the totals over the period of the accident. Most of the radioactivity in the discharge water was dissolved inert gases (mostly Xe-133), but there was also about 0.25 Curie of I-131.

Our sampling of the river water detected the dissolved Xe-133 as far down river as Holtwood Dam, but not below in Maryland. We were unable to detect any of the other radioactive materials from the discharge of any point we sampled in the river.

Since the accident, we have extensively sampled fish, shellfish, aquatic plants and bottom sediments in Holtwood Reservoir, Conowingo Reservoir, the lower Susquehanna, the Flats, and the Upper Chesapeake Bay. Based upon this sampling, we conclude that neither the normal operations of TMI nor the accident in 1979 have had detectable radiological impact in Maryland waters. This is not surprising, since water borne releases from TMI before and during the accident were quite small, and there have been no releases from Unit 2 since last summer. To provide contrast, I'll mention that the same sampling quite clearly shows the levels of natural radioactivity, the fallout from nuclear explosions conducted in the atmosphere, and the influence of the releases from the Peach Bottom plant. In other words, whatever level of radiological impact did occur in Maryland from TMI's accident is negligible.

3. What storage facility is accepting Three Mile Island's nuclear waste?

At present, the Hanford, Washington low level radioactive waste disposal facility is accepting TMI Unit 2 low level wastes, and it appears Hanford will accept EPICOR II "liners", also. As I mentioned previously, the EPICOR wastes are presently being held on the island pending solidification to NRC's approval. It is worthy of note that TMI Unit 1 wastes are still being shipped to Barnwell, S.C., but Unit 2 wastes are not accepted there. This means that Unit 2 wastes will not be transported through Maryland.

The damaged nuclear fuel in TMI Unit 2 is classified as high level waste. Presently, there is no high level waste repository because the federal government has failed to establish one yet. Further, since President Carter ordered the cessation of spent fuel reprocessing in the spring of 1977, there has been no place to ship used fuel in good condition. It is unclear just how long the damaged fuel may be stuck on Three Mile Island under these circumstances. The federal government's failure to make any substantial progress on nuclear waste disposal during the past 20 years renders their current schedules noncredible.

4. What can Maryland do to expedite removal of radioactive waste from Three Mile Island?

With regard to the high level wastes, the damaged fuel, there is an option for the federal government to accept it as soon as it can be removed and packaged. It can be handled along with similar federal wastes created in our military weapons production facilities and nuclear ship propulsion systems. In commenting on the scope for the NRC's programmatic environmental impact

statement, Maryland has requested that this option be considered. I understand that it will be addressed, but have no hint as to what the NRC staff may recommend nor what the Commission may decide.

With regard to the low level wastes, disposal is not now blocked, but could be by either the Washington State government or the Hanford operators. There is an interesting lesson to be learned from the difficulty with disposal of the EPICOR II "liners": the clean-up operation must be conceptually planned in a comprehensive manner, from start to disposal, so that the outputs of each step will be compatible with each successive step. At the time the EPICOR II system was designed, the NRC had not decided that the resins must be solidified before shipment. By the time the NRC approved the use of EPICOR II and added the solidification requirement, the Company did not have enough time to rebuild the system before the water accumulation rate forced them to begin using it.

In order to speed up the TMI clean-up and waste removal, Maryland would need to make the NRC not only work faster, but also to be thorough. I don't know how to force any federal agency to be fast and thorough at the same time. However, I do know how to urge them and how to help them, so this is the approach that has been taken by Maryland's technical staff and executive branch administrators. By providing data and comments expeditiously, assisting the NRC in setting up public meetings, and by taking our own radiological data to establish an independent viewpoint and help bridge the credibility gap, I believe we have materially aided in expediting an adequately planned clean-up.

Unfortunately, some others have chosen to threaten the NRC with lawsuits and to demand unreasonable criteria be applied to the clean-up process and its planning by the NRC. This appears to me to have resulted in considerable delay and uncertainty in the process. In my opinion, the Nuclear Regulatory Commission's reticence to make any commitment on planning procedure or clean-up method is greatly exacerbated by their recognition that almost any action on their part will be challenged on procedural grounds. These challenges may block actions in some cases, and in any case tend to force the NRC never to turn back once they start something. Because the clean-up cannot be planned in final detail from start to finish without information that can only be obtained by starting some parts of the process, there is no easy way for the NRC to show compliance with the National Environmental Quality Act. NEPA was designed to create awareness of environmental impacts associated with new plans prior to government commitments. It was not designed for speed in emergencies, nor was it designed for situations where events created the commitments, and the federal actions considered constitute a clean-up operation. This is not intended to mean that environmental consideration is unimportant in planning the TMI clean-up; it is intended to warn you than insistence on the NRC's compliance with the most strict interpretations of NEPA will create a slow if not impossible situation.

5. Should Maryland take any action to facilitate increased storage of spent fuel from Calvert Cliffs Power Plant so as to safeguard its continued operation beyond 1987?

Baltimore Gas and Electric Company has made application to the Nuclear Regulatory Commission for two license amendments. The first would allow the use of new fuel racks in the spent fuel pool, accommodating enough fuel to last until 1987. The second requests to change the fuel assemblies so as to have

an 18-month fuel cycle instead of the current 12-month cycle. This, together with the new racks would allow the Company to go to April 1991 before losing the ability to unload a full core in the event of an accident, and until October 1993 before the spent fuel pool is full. Maryland does not need to take any action to facilitate these changes.

Sometime prior to 1991, BG&E would have to decide if still further Company action was needed to guarantee continued operation of their Calvert Cliffs Nuclear Power Plant. One such option is to build an additional spent fuel storage pool on site in a separate building.

If BG&E should choose this option, it is not clear to me whether the Maryland Public Service Commission would need to authorize it by issuance of a Certificate of Public Convenience and Necessity. Article 78, Section 54H(a) of the Annotated Code of Maryland requires an electric company to obtain a Certificate for any modification to "the facilities at an electric generating station or the change in the fuel used by the station, which would result in any change of air emissions from the station". This last provision on fuels applies only if there would be an increase in emissions beyond the levels considered by the PSC as the basis for granting the Certificate at time of construction.

Should the PSC hold hearings on a new spent fuel storage facility, Article 43, Section 689B(b) of the Annotated Code would seem to prohibit such storage. However, in a recent opinion (No. 80-021) the Maryland Attorney General has declared this portion of the Maryland law to be preempted by the federal Atomic Energy Act. Therefore, the PSC would not appear to be required by law to deny such an application from BG&E.

It is worthwhile to point out to this Commission that Maryland's position as expressed in Article 43, Section 689B is somewhat embarrassing. Basically, Maryland desires to continue to use nuclear power and generate radioactive wastes, but will not even consider disposal, storage or reprocessing within its borders. In considering the various aspects of intergovernmental cooperation, the effects of this self-serving policy on our dealings with other governments should be considered.

That completes the answers to my assigned questions. I would like to thank you for the opportunity to address this Commission.

If you have any questions, I would be pleased to try to answer them, now.

COMMENTS ON NUCLEAR WASTE MANAGEMENT AND DISPOSAL

BEFORE THE MARYLAND COMMISSION ON INTERGOVERNMENTAL COOPERATION

By E. L. "Monte" Conner, Nuclear Regulatory Commission

June 3, 1980

OUTLINE

A. Introduction

B. Nuclear Regulatory Commission's Responsibility

   1. Nuclear Reactor Regulation

      a. Licensing of Facility

      b. Review of Proposed Changes

      c. Issuance of Technical Specifications

   2. Nuclear Materials Safety and Safeguards

      a. Control of Fuel Shipments

      b. Safeguards Evaluation

   3. Inspection and Enforcement

      a. On-site Coverage

      b. Ensures Compliance

C. Spent Fuel Pool Design

   1. Physical

   2. Criticality Safety

D. Past Licensing Action

   1. Areas of Review

   2. Amendment Package

   3. Installation

E. Current Licensing Action

   1. Borated Rack Design

   2. Review Status

   3. Schedule

SPENT FUEL CAPACITY - CALVERT CLIFFS NUCLEAR POWER PLANT

	TYPE OF RACK	NO. OF FUEL ASSEMBLY	OPERATING THROUGH
ORIGINAL LICENSE	WIDE SPACE	410	1979
COMPACT RACKS	CLOSE CENTER		
AUTHORIZED JAN. 1978		1056	1984
INSTALLED TO DATE		728	1981
CURRENT APPLICATION	BORATED RACKS	1760	1989

ENCLOSURE 6