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MAR 24 1982

The Honorable John Glenn
United States Senate
Washington, D.C. 20510

Dear Senator Glenn:

This is in response to your January 11, 1982 request that the Commission's staff provide its views on a fact sheet, "Notes on the Perry Nuclear Plant," and three media clippings from one of your constituents, Ms. Genevieve Cook.

During the licensing review of the Perry application, all of Ms. Cook's concerns that fall within the scope of our jurisdiction have been or are presently under review by the staff. Some of these concerns have been fully resolved to our satisfaction while others are awaiting further information or study. A few of these concerns were fully litigated during the construction permit hearing held from 1974 to 1977. All of the remaining concerns that are appropriate to the Commission's scope of review will be addressed during the operating license review which is currently underway. Some of these concerns have been admitted as contentions for an operating license hearing which is currently expected to begin in Painesville, Ohio, later this fall. Construction of the plant is not expected to be completed until late 1983.

Prior to the start of the operating license hearing, the staff will document the results of its safety and environmental review. A Draft Environmental Statement (DES) is scheduled to be issued in the next few weeks and finalized in a Final Environmental Statement (FES) this summer. A Safety Evaluation Report (SER) covering the bulk of our review is currently expected to be issued in May 1982. One or more supplements are likely to be required to resolve all issues. The first such supplement is targeted for issuance in July 1982. All of Ms. Cook's concerns that are within our scope of review will be addressed in these documents.

Notwithstanding the fact that our review is still in progress, we are enclosing responses to Ms. Cook's concerns consistent with this fact.

I hope this information will be helpful for you to respond to your constituent.

Sincerely,

(Signed) T. A. Rehm

William J. Dircks
Executive Director for Operations

Enclosure:
As stated

ELD
JThessin
3/24/82

no legal objection as revised

EDO
WJDircks
3/23/82

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ENCLOSURE

Commission's Staff Responses

to

Ms. Cook's Concerns about

the Perry Nuclear Plant

Comments on Perry Plant Concerns

Concern No. 1 and 2

There are four schools within three miles of the Perry reactors, two of them elementary. The Perry Township High School by the old Atomic Energy Commission regulations would be in the exclusion zone. Within 10 miles are the Madison high school, middle school, and a couple elementary schools. All roadways North of I-90 are two-lane, so that in case of accident and evacuation, long strings of school busses could be bogged down and stalled in traffic. Children, who are more susceptible to radiation injury than adults, would inevitably be forced to breathe considerable radiation-contaminated air. (9 schools within 5 miles; 32 schools within 10 miles; insufficient buses)

Access to I-90, the nearest major throughway, is midway of Madison at Route 528. Route 2 ends between Perry and Painesville and parallels the westerly exit or access to I-90. East-West traffic on I-90 with a northerly wind would be traveling for miles in radiation-contaminated air. There is no adequate North-South route out of the area. Lake County wants Cleveland Electric to cover the costs of disaster services.

Response

These concerns are associated with the Perry Plant Emergency Plan. The Plan in its current form, Appendix 13A to the Final Safety Analysis Report (FSAR), addresses the evacuation of school children and area evacuation routes. These matters were discussed at the prehearing conference in Painesville, Ohio on June 2, 1981. The applicant is aware of these concerns and is assisting the local communities in the development of the local emergency plan to resolve them. For evacuation routing, the applicant has indicated that the Ohio State Highway Patrol and local police forces will be mobilized to maintain traffic flow and exclusion from some roadways, if necessary. The Emergency Plan must meet our requirements prior to issuance of an operating license for power levels above 5%.

The Emergency Plan has been admitted as a contention to the operating license hearing (expected to begin in November 1982). The Lake County Board of Commissioners have been granted status as a party to this proceeding. Their primary interest in the proceedings is in regard to the development and financing of the local off-site emergency plan.

Concern No. 3

Highways to and from the reactor site are inadequate for the 40,000 to 45,000 cu. ft. of low-level radioactive wastes which must be transported away each year. On-site storage would be most unsuitable in the Perry area with its ground water problems.

Response

Based on experience to date at operating nuclear plants, the staff has no reason to expect that the hauling of Perry low level wastes will be a major safety or traffic problem. Low level radioactive waste will be

typically enclosed in 50 or 200 cu. ft. containers for shipment. A normal truck could easily transport four-200 cu. ft. containers, each approximately 5' x 5' x 8' in size. At that rate, the annual low level waste could be removed in 50 to 57 separate truck trips. This number of truck shipments should not significantly impact local traffic.

The applicant has proposed only temporary on-site storage of low level waste while awaiting shipment to off-site repositories. Thus, the leak-tight containers should prevent any low level waste from entering the groundwater during this temporary storage period.

Concern No. 4

Construction of the reactors at Perry was halted several times because of seriously sub-standard workmanship in safety related areas. Inspection of the work was found to be inadequate and unreliable with forged inspector initials on work which had not been inspected. There is no assurance that the Perry reactors could be operated safely without serious malfunction. No quality assurance.

Response

The issue of quality assurance during the Perry plant construction has been admitted as a contention for the operating license hearing. The contention has been restricted by the Hearing Board to the specific quality assurance implications arising from the February 1978 stop work order. At that time with the plant in the initial stages of construction, the Commission found major deficiencies in several areas of construction activity which indicated a major breakdown in the quality assurance program. Construction at the Perry plant was halted until Cleveland Electric Illuminating demonstrated that these deficiencies had been overcome.

We are aware of the recent events in regard to quality assurance that have led to press articles. These two events concerned the welding of liner plates in the suppression pool and the installation of electrical cable. In these instances, either the contractor or CEI reported or detected the defects early and corrective action was taken. In both events, stop work orders were issued, one by Newport News (the containment steel erector) and the other by CEI to L.K. Comstock (the electrical contractor). A number of allegations have been made regarding these events. During the NRC investigation of the allegations, some QA problems in the electrical area have been identified. An NRC enforcement action is presently under consideration and a team inspection has been scheduled to provide further details. In the meetings with the applicant on these matters, CEI has been cooperative and responsive in making corrections.

Concern No. 5

Because of the underground high water table level (16 inches below the surface), Perry is to use a porous cement blanket and pumping system instead of stronger foundation walls. The complete system is untried--only parts of it--and there is the unanswered question as to whether the soft shale under the cement blanket could erode and block the pores. Failure of the pumping system could threaten the stability of the reactor building, according to NRC engineer, David Lynch.

Response

This concern relates to the underdrain system, a system designed to draw down the groundwater level at the site. The system was required after an analysis in 1974 of the dynamic stability of safety-related structures indicated that the safety factor against overturning during a seismic event was insufficient. This insufficiency was due to the buoyancy forces associated with the normal groundwater level. The staff requires a minimum safety factor of about 1.5 during the Operating Basis Earthquake (OBE) and about 1.1 during the Safe Shutdown Earthquake (SSE). The underdrain system was a fully litigated issue resolved at the Perry construction permit hearing.

The normal groundwater elevation at the Perry site is 618 feet, msl. The underdrain system will maintain the groundwater at an elevation of 568 feet, msl, under normal conditions and will maintain the groundwater at an elevation of about 594 feet, msl, under worst case assumptions. With a groundwater level of 594 feet, msl, the safety factor for the safety-related structures against overturning during the postulated Operating Basis Earthquake (OBE) ranges from 1.8 to 4.4 and from 1.1 to 2.5 during the Safe Shutdown Earthquake (SSE). All of these values are within the acceptable limits which were established by the staff.

The porous concrete blanket is not the load bearing member for the plant foundation. The plant is supported by means of appropriately designed reinforced concrete members. The porous concrete blanket was placed in and around these supporting members to offer a path for water flow. An elaborate system involving Class A fill is placed around and beside the porous concrete to act as a filter blanket to protect the porous concrete from infiltration of fine particles present in Class B fill and existing subsoils (includes the soft shale mentioned in the concern).

The Technical Specifications for operation of the plant will require that if the water level in the pressure relief underdrain manholes exceeds elevation 570.0', the Commission shall be notified of the fact and remedial action taken. If the water level exceeds elevation 580.0', the reactors will be required to shut down and emergency actions taken to reduce the water level. Note that these controls are initiated well below the 594.0' level that has been shown to be acceptable.

Concern No. 6

The Perry facility is in earthquake area, which runs diagonally through the Buffalo area, Lake Erie, northern Ohio, and angles down to Missouri. Any quake activity could disrupt the pumping system and building stability. The Perry site has a rock fissure, which has been filled 30 feet across with cement, running diagonally across the entire site from southeast to northwest. The extent of the fissure was unknown at the time it was declared to be of glacial origin. A second and different rock fissure is in the floor of the tunnel which runs out under Lake Erie.

Response

The geological fault or anomaly at the Perry site (on land) was a fully litigated issue during the construction permit hearing. Specifically, it was determined that the faults and other irregularities in the shale at the site (a) are nontectonic in origin, (b) are the result of glacial activity, and (c) cannot be expected to cause earthquakes. Since the CP stage hearing, similar faults were discovered in the vicinity of the intake and discharge tunnels under Lake Erie. In a letter dated November 30, 1981, the staff's consultant from the United States Geological Survey has concluded that these faults are also non-capable. Therefore, based on the available information, the staff presently believes that the seismology of the Perry location has been appropriately considered in the plant's design.

Concern No. 7

The Perry utilities have petitioned the NRC for permission to triple the size of its spent-fuel storage faciliti With no federal program demonstrated as feasible for long-term storage of spent reactor fuel, we have no assurance that the Perry spent-fuel assemblies will ever be moved from the site. According to a German study this past year, a loss of coolant in a spent-fuel storage pool, either from disruption of supply or destruction of storage pool walls from earthquake or settling, could result in a more widespread accident than a reactor meltdown. The storage pools lack the built-in safety systems which would mitigate the effects of a serious reactor accident. The inadequate roads combined with population evacuation efforts would greatly hamper emergency assistance in the area under such circumstances.

Response

This concern was addressed at the prehearing conference for the operating license hearing. The spent fuel pool is a steel lined, concrete pool inside a thick reinforced concrete building. These structures are designed to withstand the worst postulated seismic event for the Perry site. Since the intervenor did not identify any fault with the pool design or mechanism for loss of coolant, the Board has rejected this issue from the hearing. The staff's evaluation of the spent fuel pool, including its size and design, will appear in the Safety Evaluation Report (SER) which is expected to be issued in May 1982.

Concern No. 8

In case of accident utility insurance liability is limited under the Price-Anderson Act to the grossly inadequate $650 million [sic] limit. People in the area are unable to get personal insurance which will cover either property damage or health damage from radiation exposure. It is very difficult to prove that cancers, leukemia, or birth defects years later have resulted from such radiation exposure. The 20 year statute of limitations would further limit efforts to secure just restitution. People living within a 50 mile radius of the Perry reactors would bear most of the costs of an accident, both physically and financially.

Response

Under the Price-Anderson Act there is a system of private funds and Government indemnity totaling up to $560 million to pay public liability claims for personal injury and property damage resulting from a nuclear incident. The Act requires licensees of commercial nuclear power plants having a rated capacity of 100,000 electrical kilowatts or more to provide proof to the NRC that they have financial protection in the form of private nuclear liability insurance, or in some other form approved by the Commission, in an amount equal to the maximum amount of liability insurance available at reasonable cost and on reasonable terms from private sources. That financial protection, presently $530 million, is composed of primary private nuclear liability insurance of $160 million available from two nuclear liability insurance pools--American Nuclear Insurers (ANI) and Mutual Atomic Energy Liability Underwriters (MAELU), and a secondary retrospective premium insurance layer up to $5 million per power reactor licensed to operate per incident but not in excess of $10 million for a single reactor in any year. With 74 commercial reactors operating under this system, the secondary insurance layer totals $370 million. The difference of $30 million between the financial protection layer of $530 million and the $560 million liability limit is the present Government indemnity level. Under the present system, indemnity will be phased out as more commercial reactors are licensed and participate in the retrospective premium system. At the time the primary and secondary financial protection layers by themselves provide liability coverage of $560 million, Government indemnity will be eliminated. Then the liability limit would increase, without any cap on the limit, in increments of $5 million for each new commercial reactor licensed. The present limitation of liability of $560 million was established by the Congress so that if an incident occurred requiring the Government to pay $500 million in indemnity (above the $60 million in liability insurance available from the pools when the Act was enacted in 1957), the Federal budget would not be greatly disturbed yet there would be a sure supply of funds to pay public liability claims resulting from the incident. Because the limitation was not meant to reflect the worst possible accident that could occur at a nuclear power plant, the fact that various technical reports issued over the years acknowledge that a nuclear accident could cause damages exceeding the liability limit has not led Congress to raise the limitation.

The comment pertaining to the inability for members of the local population to buy radiation insurance relates to the fact that property insurance policies are written with a "nuclear exclusion" clause that does not provide coverage for damage resulting from a nuclear accident. The question of the "nuclear exclusion" in an individual's homeowner's policy has been raised numerous times over the last few years. While the Price-Anderson Act does not prohibit private insurers from offering this type of insurance, the standard fire and property insurance policies have contained the nuclear exclusion since 1959. Our understanding of this exclusion is that the insurers consider that property damage caused by a nuclear accident would be covered by nuclear liability insurance maintained by NRC facility licensees and that coverage for the same property damage should be excluded from the conventional homeowner's policy to avoid duplication of insurance. Thus, if a property owner suffered damage to his property because of a nuclear accident, the compensation would come through nuclear liability insurance or Government indemnity as provided under the Price-Anderson Act.

Finally, we agree that there may be difficulty in proving that cancers have resulted from radiation exposure and that the cancer latency period in many cases exceeds 20 years. It should be noted, however, that the 20 year statute is only a minimum and only applies in the event of an extraordinary nuclear occurrence (ENO). If a state has a longer statute of limitations for radiation-induced injury, as many states do, then the longer state statute takes precedence. While it may be correct to state that people living within a 50 mile radius of the Perry reactors would bear many of the health and property costs arising out of an accident, in the event of a nuclear incident involving damages in excess of the limitation of liability, "the Congress will thoroughly review the particular incident and will take whatever action is deemed necessary and appropriate to protect the public from the consequences of a disaster of such magnitude", 42 U.S. C. 2210(e).

Concern No. 9

If the Price-Anderson Act were rescinded, there is no assurance that the CAPCO utilities could meet the costs of such an accident as that at Three Mile Island without being bankrupted.

Response

Any answer to this concern would be speculative on the part of the Commission. However, the financial capabilities of the Cleveland Electric Illuminating Company and CAPCO to cover the costs of operation, including the costs of reasonable foreseeable contingencies, for the Perry plants is an admitted contention in the operating license hearing that is scheduled to begin this fall.

Concern No. 10

The operating record of American reactors has been poor, operating an average of about 51% of the time. With Davis-Besse it has averaged about 32%. These long shutdown periods have caused millions of dollars to be spent for replacement power, which in all instances the customers have had to pay. In addition, maintenance and repair from malfunctions, defective components and design, and defective workmanship have added to customer costs. Mishaps of these types are amazingly common--totalling 2,800 and 2,900 in 1977 and 1978. These have resulted in long shutdown periods and heavy costs to consumers.

Response

The operating performance of nuclear power plants has been the subject of numerous discussions. The Perry plants are boiling water reactors (BWRs). An article published in the September 1981 issue of Nuclear Engineering International indicated that the average annual load factor (worldwide) for BWRs was 59.2%. Due to refueling outages, demand for power and other factors, individual load factors will vary from year to year. In the noted reference, the annual load factor for BWRs varied from 27.1% to 88.8%.

The operating record of Davis-Besse has no bearing on the future performance of the Perry plant. Even there, the situation appears to be improving since on January 14, 1982, Davis-Besse officials reported that their reactor had generated power 67 percent of the time during 1981. Cleveland Electric Illuminating has a financial interest in the Davis-Besse plant through CAPCO but has no association with the management or operation of the plant.

In summary, the operating performance of any nuclear plant can vary widely from year to year and the prediction of an annual load factor is difficult.

Concern No. 11

To date, nuclear utilities have no way of estimating the costs of transportation and storage of radioactive wastes, long-term. Nor do they have any way of estimating the eventual costs of moth-balling, entombing, or dismantling reactors after their period of service, to say nothing of the costs of radiation monitoring in perpetuity.

Response

As stated in response to concern No. 9, the financial capabilities of the utility to operate the Perry plant is an admitted contention to the hearing. All of the above items including decommissioning will be addressed at that hearing.

Concern No. 12

The recent malfunction of the hydraulic control-rod system at Browns Ferry focused attention on a GE boiling water reactor design fault. Failure of a shut-down system is a critical safety defect. Both Perry reactors are GE boiling water type.

Response

The Browns Ferry event resulted in an extensive review of the BWR scram discharge system by the staff. From that review, several actions have been recommended by the Commission to reduce the perceived risks associated with this system. These actions will be implemented at Perry. Furthermore, the safety issues involved with pipe breaks in this system have been admitted as a contention for the Perry operating license hearing.

Concern No. 13

Letter by Ms. Cook published in the October 18, 1981 edition of The Plain Dealer (Cleveland, Ohio) captioned "China Syndrome Revisited."

Response

Most of the concerns listed in the article were addressed at the prehearing conference in June 1981. A proposed contention on the issue of pressure vessel cracking was discussed at the prehearing conference and no basis was found to admit it. An issue concerning the emergency core cooling system (ECCS) was admitted as a contention and the full scale 30 degree sector steam test that was performed to demonstrate the adequacy of the ECCS system will be addressed at the hearing. The concern of water hammer in a PWR is not appropriate to the Perry BWR.

Concern No. 14

General articles on Toxic Chemical Air Pollutants

Response

Except for the area of radioactive releases, the control of air pollutants is under the jurisdiction of other Federal and/or State agencies. There is little reason to believe that coatings (plastics, epoxies or acrylic latex) if used in the construction of the Perry plant would differ significantly in composition or quantity from any other general non-nuclear facility under construction.

With respect to radioactive releases, nuclear power reactors in the United States must comply with certain NRC regulatory requirements in order to operate. The permissible levels of radiation in unrestricted areas and the radioactivity in effluents to unrestricted areas are spelled out in 10 CFR Part 50, Appendix I, Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As Is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents. These regulations specify limits on levels of radiation in the Station's effluent releases to the air and water (above natural background). They also state that no member of the general public in unrestricted areas shall receive a radiation dose to the total body due to Station operation of more than 3 mrems from liquid effluents, 5 mrems from noble-gas effluents, and/or 15 mrems from radioiodines and particulates. These radiation dose limits are established to be consistent with considerations of the health and safety of the public.

FROM:
Sen. John Glenn

TO:
Chairman Palladino

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Req views on notes fm Genevieve Cook on Perry Nuclear Plant

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Incoming: Sen John Glenn, Const Ref

From: Genevieve Cook

To: Palladino Date 1/11/82

Subject: req the views of the Comm's staff on the views of the Comm's staff in re to lic proceedings for Perry nuc plant

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NRC 32 ACTION SLIP

United States Senate

COMMITTEE ON
GOVERNMENTAL AFFAIRS
SUBCOMMITTEE ON ENERGY, NUCLEAR
PROLIFERATION AND GOVERNMENT PROCESSES
WASHINGTON, D.C. 20510

January 11, 1982

The Honorable Nunzio J. Palladino
Chairman
United States Nuclear Regulatory
Commission
Washington, D.C. 20555

Dear Mr. Chairman:

I have received the attached fact sheet, "Notes on the Perry Nuclear Plant" from one of my constituents, Ms. Genevieve Cook.

The document raises what appear to be a number of troubling issues concerning this facility. Undoubtedly many of these matters are being addressed in the course of the Commission's licensing proceedings for the Perry plant. I would greatly appreciate the views of the Commission's staff on these matters and any other pertinent information you can provide.

Best regards.

Sincerely,

John Glenn

John Glenn

JG/lst

Enclosure

~~Dupe to~~
~~8204010285~~

PERRY NUCLEAR PLANT (Cleveland Metroarea within 45 miles)

1. There are four schools within 3 miles of the Perry reactors, 2 of them elementary. The Perry Township High School by the old Atomic Energy Commission regulations would be in the evacuation zone. Within 10 miles are the Madison high school, middle school, and a couple elementary schools. All roadways north of I-90 are two-lane, so that in case of accident and evacuation, long strings of school buses could be bogged down and stalled in traffic. Children, who are more susceptible to radiation injury than adults, would inevitably be forced to breathe considerable radiation-contaminated air.
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7. The Perry utilities have petitioned the NRC for permission to triple the size of its spent-fuel storage facilities. With no federal program demonstated as feasible for long-term storage of spent reactor fuel, we have no assurance that the Perry spent-fuel assemblies will ever be moved from the site. According to a German study this past year, a loss of coolant in a spent fuel storage pool, either from disruption of supply or destruction of storage pool walls from earthquake or settling, could result in a more widespread accident than a reactor meltdown. The storage pools lack the built-in safety systems which would mitigate the effects of a serious reactor accident. The inadequate roads combined with population evacuation efforts would greatly hamper emergency assistance in the area under such circumstances.

8. In case of accident utility insurance liability is limited under the Price-Anderson Act to the grossly inadequate $650 million limit. People in the area are unable to get personal insurance which will cover either property damage or health damage from radiation exposure. It is very difficult to prove that cancers, leukemia, or birth defects years later have resulted from such radiation exposure. The 20 year statute of limitations would further limit efforts to secure just restitution. People living within a 50 mile radius of the Perry reactors would bear most of the costs of an accident, both physically and financially.

9. If the Price-Anderson Act were rescinded, there is no assurance the the CAPCO utilities could meet the costs of such an accident as that at Three Mile Island without being bankrupted.

10. The operating record of American reactors has been poor, operating an average of about 51% of the time. With Davis-Besse it has averaged about 32%. These long shutdown period have caused millions of dollars to be spent for replacement power, which in all instances the customers have had to pay. In addition, maintenance and repair from malfunctions, defective components and design, and defective workmanship have added to customer costs. Mishaps of these types are amazingly common--totalling 2,800 and 2,900 in 1977&8. These have resulted in long shutdown periods and heavy costs to consumers.

11. To date, nuclear utilities have no way of estimating the costs of transportation and storage of radioactive wastes,long-term. Nor do they have any way of estimating the eventual costs of moth-balling, entombing, or dismantling reactors after their period of service, to say nothing of the costs of radiation monitoring in perpetuity.

The recent malfunction of the hydraulic control-rod system at Browns Ferry focused attention on a GE boiling water reactor design fault. Failure of a shut-down system is a critical safety defect. [illegible] boiling water [illegible].

Under Construction 2½ yrs. (Limited Utility work-phase I, II, III) Before construction permit granted.

Letters

'China Syndrome' revisited

The problem of metal failure in water-cooled nuclear reactors

The ominous problem of reactor vessel cracks after years of metal deterioration from radiation and intense heat (PD, Sept. 27) is not a new issue. Nor is the possibility of its resulting in a loss-of-coolant accident and consequent meltdown of the reactor core.

In fact, more than 10 years ago this threat was the basis for the British rejection of the American water-cooled reactor as unsafe. Parliament's decision was in accord with the recommendation of Sir Alan Cottrell, British chief scientist and an internationally respected metallurgist. His opinion was supported by a resolution signed by more than 2,200 British scientists. Sir Alan cited the fact that there had been no experience with the effect on the reactor vessel of 40 years of operation — the projected lifetime of a reactor, now reduced to 30 years. He was especially concerned with metal embrittlement.

This same issue was among those raised during the U.S. Atomic Energy Commission hearings in 1971-73 on the Interim Criteria, which were regulations of the AEC that permitted continued licensing of power reactor construction before the safety research had been completed. Dr. Henry Kendall, a nuclear physicist at Massachusetts Institute of Technology, served as a witness for a coalition of more than 40 citizens groups known as the National Intervenors. He testified that researchers had not yet identified all the defects, mishaps or malfunctions which could initiate a meltdown accident.

This point was well illustrated in three serious nuclear events: the Fermi-I partial meltdown, the Brown's Ferry fire, and the Three Mile Island episode. In fact, Victor Gilinski of the U.S. Nuclear Regulatory Commission (NRC) commented that TMI focused attention on "long ignored safety problems" (Bulletin of the Atomic Scientists, January 1980).

Dr. Kendall's doubts of the reliability of the emergency core cooling systems (ECCS) under accident conditions were shared by 28 AEC and Oak Ridge scientists and engineers in a prepared statement at the AEC hearings. In fact, there were over 100 questions brought out which no one could answer. The ECCS, a computer design, has not yet been adequately tested, although some preliminary experiments were begun in December 1978 at the LOFT test reactor in Idaho (LOFT — loss of fluid test). The ninth test recently reported by the NRC was "to study an excessive cooldown event in a pressurized water reactor."

This experiment is concerned with one of two unanswered questions pertinent to the reactor vessel and core under accident conditions: How much damage to the reactor vessel and core would result from the thermal shock of cold emergency coolant flooding an overheated reactor at 3,000 to 5,000 degrees? How much damage would be caused by the water hammer effect of the sudden loss of pressurized reactor cooling water? No one knows yet. It is deplorable that the construction of so many U.S. reactors was permitted before this required safety research was done.

During 1980 more than 3,800 "abnormal events" were reported among our 70 operating reactors. Yet despite this, Congress is working on an interim licensing authorization bill, which would permit new reactors to start low-level operation before the operating license evaluation hearings are held. Citizen participation in the hearings is to be further restricted. Is this a case of "here we go again"? Obviously we haven't learned.

GENEVIEVE S. COOK
Westlake

Federal Judge to EPA: TOXICS TESTING REQUIRED

In a ruling handed down on January 9th, U.S. District Court Judge Lawrence Pierce (S.D.N.Y.) ruled in favor of NRDC, and put the Environmental Protection Agency (EPA) on a schedule to issue requirements for the testing of 38 widely-used chemicals designated by an expert interagency committee* as potentially high-risk and therefore high priority candidates for testing.

NRDC had filed the suit in April of 1979 as part of our long-standing fight for effective testing and control of hazardous substances *before* they are used in manufacturing, included in consumer products or released into the environment.

Judge Pierce issued an initial opinion and partial judgment in the case on February 4, 1980, ruling that the Toxic Substances Control Act required EPA to act on the designated chemicals within twelve months after receiving the committee's priority list. EPA received the first list of ten chemicals over three years ago but had failed to require testing for any of them.

Since Judge Pierce's February 1980 ruling, NRDC attorneys have worked with EPA staff to help bring the EPA into compliance with the law. Based upon advice from independent advisors and an internal review, EPA submitted to the Court an expedited schedule for action on the priority chemicals.

"We brought the law suit to protect public health from potentially toxic chemicals," said Ross Sandler, Senior Attorney, "the same concern that prompted Congress to pass the Toxic Substances Control Act. The Act states that testing is the first step to separate chemicals that present serious health threats from those which do not. When EPA violated the Congressional statute and let testing deadlines pass, it increased public health risks because testing which could be the basis for setting public health policy did not begin. Judge Pierce's Final Judgment and Order — and EPA's new expedited schedule for testing — represent a significant victory for public health protection because they hold EPA to reasonable time deadlines for its decisions on testing."

As a result of pressures generated by the law suit, EPA recently proposed testing requirements for one chemical and one category of chemicals on the priority list. NRDC and the Environmental Defense Fund (EDF) submitted comments on the proposal to EPA on behalf of Environmental Action, Inc., Friends of the Earth, International Molders and Allied Workers Union (Health and Safety Department), National Audubon Society, National Wildlife Federation, Sierra Club, and the Urban Environment Conference.

Senior Attorney Jacqueline Warren expressed support for EPA's long-overdue efforts to begin identifying hazardous chemicals and compounds through testing. She also commended EPA for adopting a "category" approach, which would permit the agency to regulate structurally related chemicals based on evidence of toxicity of representative members of the group. "We have long maintained that — with some 40,000 chemicals already on the market and hundreds of new ones being introduced each year — chemical-by-chemical regulation can never adequately protect the public's health," she said.

*Made up of Scientists from the Council on Environmental Quality, the Environmental Protection Agency, the National Cancer Institute, the National Institute of Environmental Health Sciences, the National Institute for Occupational Safety and Health, the National Science Foundation, the Occupational Safety and Health Administration, and the Commerce Department.

Natural Resources Defense Council

The Growing Threat From Toxic Chemical Air Pollutants

David Doniger

WE ARE NOW BEGINNING to suffer the severe, delayed consequences of the post-World War II boom in exposure to toxic chemicals. The slow epidemic of cancer, genetic mutations, birth defects, respiratory diseases, nervous disorders, and a host of other killing and disabling illnesses—all linked to toxic exposure in a growing number of cases—have become a frightening part of daily life in many parts of America. Even more frightening is that things may well get worse, for today's cancers are the result of exposure 15 to 40 years ago.

Cancer is a latent disease. It typically shows itself only years after exposure to its causes. Chemical use and chemical air pollution have multiplied by leaps and bounds in the last 30 years. Production of cancer-causing vinyl chloride, a gas used to make a major plastic, for example, rose 24-fold between 1950 and 1977. The same period saw an eight-fold growth in production of benzene, a cause of leukemia and other blood diseases. The health effects of the increase in chemical volume should continue to grow through 1990 and 2000.

There is hope, however. Most scientists agree that the vast majority of cancer cases—some say 90 percent—are preventable. They agree that toxic chemicals account for a large percentage of cancer. Controlling cancer-causing air pollutants is one necessary step against this disease.

The Clean Air Act has long contained special provisions for controlling toxic air pollutants, but EPA has taken little action. Section 112 of the law requires EPA to set highly protective standards for so-called hazardous air pollutants that come from chemical plants, factories, smelters, and other industrial facilities. (The Clean Air Act also mandates control of toxic pollutants from motor vehicles. See related story on diesels.) A hazardous air pollutant, according to the law, is one that "may reasonably be anticipated" to cause death or very serious disease. EPA is required to maintain an up-to-date list of such pollutants. Within a year of adding a substance to the list, EPA is required to establish standards for controlling its emissions which will protect the public health with "an ample margin of safety."

Yet, in 10 years EPA has brought only four hazardous air pollutants under control: asbestos, beryllium, mercury, and vinyl chloride. Three others—benzene, arsenic, and certain radioactive pollutants—have been added to the list, but there are no standards for them yet. For years EPA has been considering action on serious hazards such as coke oven emissions, polycyclic aromatic hydrocarbons (a class of carcinogens from inefficient combustion), and cadmium, but the agency keeps avoiding any decisions. Moreover, EPA has never undertaken any organized screening of the other 100 or more air pollutants that may cause cancer, nor of the chemicals that could cause other effects as well.

For more than two years, the Natural Resources Defense Council and other environmental organizations have been pressing EPA to take action. Recently, EPA has shown signs of wanting to do a better job. In 1979 the agency proposed a general policy for future regulation of cancer-causing air pollutants. EPA is promising a modest (though undefined) increase in the number of pollutants it will control. At the same time, however, it is proposing to retreat from the high degree of public protection the Clean Air Act guarantees. The agency plans to set standards that fall far short of requiring the maximum emission control industries could achieve. Even this modest proposal has drawn the heavy opposition of chemical makers and other industries. By the end of 1980, EPA still had taken no action, and under the new Administration, EPA is likely to be even less aggressive.

Yet as EPA procrastinates, the hazards multiply and the need for protective action grows. Congress is now beginning a major review of the Clean Air Act. The danger from toxic chemical air pollutants is one of the most important issues the legislators face. Here are the three basic elements of an effective, reasonable program to protect the public from toxic pollutants:

A legally binding process for screening, listing, and controlling a meaningful number of hazardous air pollutants. The first step needed to protect the public is to make a complete, up-to-date candidate list of all chemicals that potentially are hazardous air pollutants. This list should start with all the substances which have been identified as human or animal carcinogens, and which have been monitored in industrial emissions or the ambient air. It should be expanded to include substances which cause or contribute to the other serious diseases of concern.

From this list EPA should be required to select, within one year, the "top 50" substances of highest priority and officially list them as hazardous air pollutants. There should also be a specific, binding schedule for setting standards to control the emissions of these top 50 hazardous air pollutants from all their major sources. As EPA sets standards for these priority pollutants, the agency should add new pollutants to the top 50 list from the candidates.

Reaffirming the goal of protecting health with an ample margin of safety. Safe levels of exposure to pollutants that cause cancer and certain other effects cannot be identified, with today's science. Where safe levels cannot be identified EPA's goal should be the eventual elimination of exposure, by totally enclosing equipment that uses these chemicals, or by substituting safer ones for them.

A major flaw in EPA's current action is that the agency has abandoned this goal. Instead, it has taken upon itself the burden of showing which pollution controls are technologically and economically feasible. EPA also proposes to assume the burden of showing what levels of exposure to carcinogens are unreasonable and should be curtailed. The Clean Air Act, however, requires EPA to set standards in a quite different and more protective manner. At a minimum, the law places the burden of proof on industry to show what hazardous air pollutant emissions they cannot eliminate, not on EPA to show what currently can be eliminated. This shift in the burden is the only way to assure that standards will call forth improvements in pollution control technology.

These standards should be viewed only as interim measures. They should be reviewed and updated periodically to reflect improvements in technology.

Ending excessive use of unreliable methods for quantifying risks of diseases such as cancer. Estimates of the risks of a given exposure are highly uncertain. They can be in error by hundreds or thousands of times. Estimates of exposure itself may be off by a dozen times or more. Such techniques may be useful in setting the priorities about which chemicals should be regulated first. But there is no room for using these techniques at the stage of deciding what degree of emission control is needed. The estimates are just too coarse and uncertain. Yet with their appearance of mathematical precision, they can seriously mislead.

A precedent for this kind of program is the provision added to the Clean Water Act in 1977 for controlling 129 specific toxic water pollutants by the mid-1980s. Nothing less will protect the public from the toxic chemicals industry is dumping into the air we breathe. □

David Doniger is a senior project attorney for the Natural Resources Defense Council and author of The Law and Policy of Toxic Substances Control published by Resources for the Future and Johns Hopkins University Press.

Despite 20 years of effort, we still have:

1. No standards for chemical emissions
2. No monitoring for chemical pollutants. No studies of inter-reactions in air or of heat-decomposition products--phosgene gas, carbon monoxide, cyanide compounds.
3. Human toll from continual exposure in the workplace and in neighboring areas:
   a. Increased heart & cancer death rates
   b. Damaged lungs, livers, kidneys, and central nervous systems
   c. Brain-damaged children. Strokes
4. Only regulation for handling complaints: "Odors & nuisances", which industry wants phased out. Is violence to be only defense?
5. Pre-testing requirement being lost out in the gutting of OSHA
6. We absorb gases & vapors directly into the blood stream through the lungs--the basic principle of inhaled anesthetics.

WE NEED HELP ! ! !

Also: Coatings — built-on, sprayed-on, baked-on — plastics, epoxies, acrylic latex

United States Senate

COMMITTEE ON
GOVERNMENTAL AFFAIRS
WASHINGTON, D.C. 20510

OFFICIAL BUSINESS

John Glenn
U.S.S.

The Honorable Nunzio J. Palladino
Chairman
United States Nuclear Regulatory
Commission
Washington, D.C. 20555

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MAR 2 4 1982

The Honorable John Glenn
United States Senate
Washington, D.C. 20510

Dear Senator Glenn:

This is in response to your January 11, 1982 request that the Commission's staff provide its views on a fact sheet, "Notes on the Perry Nuclear Plant," and three media clippings from one of your constituents, Ms. Genevieve Cook.

During the licensing review of the Perry application, all of Ms. Cook's concerns that fall within the scope of our jurisdiction have been or are presently under review by the staff. Some of these concerns have been fully resolved to our satisfaction while others are awaiting further information or study. A few of these concerns were fully litigated during the construction permit hearing held from 1974 to 1977. All of the remaining concerns that are appropriate to the Commission's scope of review will be addressed during the operating license review which is currently underway. Some of these concerns have been admitted as contentions for an operating license hearing which is currently expected to begin in Painesville, Ohio, later this fall. Construction of the plant is not expected to be completed until late 1983.

Prior to the start of the operating license hearing, the staff will document the results of its safety and environmental review. A Draft Environmental Statement (DES) is scheduled to be issued in the next few weeks and finalized in a Final Environmental Statement (FES) this summer. A Safety Evaluation Report (SER) covering the bulk of our review is currently expected to be issued in May 1982. One or more supplements are likely to be required to resolve all issues. The first such supplement is targeted for issuance in July 1982. All of Ms. Cook's concerns that are within our scope of review will be addressed in these documents.

Notwithstanding the fact that our review is still in progress, we are enclosing responses to Ms. Cook's concerns consistent with this fact.

I hope this information will be helpful for you to respond to your constituent.

Sincerely,

(Signed) T. A. Rehm

ELD
JThessin
3/4/82

no legal objection as revised

William J. Dircks
Executive Director for Operations

EDO
WJDircks
3/ /82

Enclosure:
As stated

OFFICE		DL:LB#2/PM	DL:LB#2/BC	DL:AD/L	DL:DE	NRR	NRR
SURNAME		DHouston:kw	ASchwencer	RTedesco	DCEisenhut	HRDenton	EGCase
DATE		2/16/82	2/16/82	2/14/82	3/17/82	3/ /82	3/ /82

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ENCLOSURE

Commission's Staff Responses

to

Ms. Cook's Concerns about

the Perry Nuclear Plant

Comments on Perry Plant Concerns

Concern No. 1 and 2

There are four schools within three miles of the Perry reactors, two of them elementary. The Perry Township High School by the old Atomic Energy Commission regulations would be in the exclusion zone. Within 10 miles are the Madison high school, middle school, and a couple elementary schools. All roadways North of I-90 are two-lane, so that in case of accident and evacuation, long strings of school busses could be bogged down and stalled in traffic. Children, who are more susceptible to radiation injury than adults, would inevitably be forced to breathe considerable radiation-contaminated air. (9 schools within 5 miles; 32 schools within 10 miles; insufficient buses)

Access to I-90, the nearest major throughway, is midway of Madison at Route 528. Route 2 ends between Perry and Painesville and parallels the westerly exit or access to I-90. East-West traffic on I-90 with a northerly wind would be traveling for miles in radiation-contaminated air. There is no adequate North-South route out of the area. Lake County wants Cleveland Electric to cover the costs of disaster services.

Response

These concerns are associated with the Perry Plant Emergency Plan. The Plan in its current form, Appendix 13A to the Final Safety Analysis Report (FSAR), addresses the evacuation of school children and area evacuation routes. These matters were discussed at the prehearing conference in Painesville, Ohio on June 2, 1981. The applicant is aware of these concerns and is assisting the local communities in the development of the local emergency plan to resolve them. For evacuation routing, the applicant has indicated that the Ohio State Highway Patrol and local police forces will be mobilized to maintain traffic flow and exclusion from some roadways, if necessary. The Emergency Plan must meet our requirements prior to issuance of an operating license for power levels above 5%.

The Emergency Plan has been admitted as a contention to the operating license hearing (expected to begin in November 1982). The Lake County Board of Commissioners have been granted status as a party to this proceeding. Their primary interest in the proceedings is in regard to the development and financing of the local off-site emergency plan.

Concern No. 3

Highways to and from the reactor site are inadequate for the 40,000 to 45,000 cu. ft. of low-level radioactive wastes which must be transported away each year. On-site storage would be most unsuitable in the Perry area with its ground water problems.

Response

Based on experience to date at operating nuclear plants, the staff has no reason to expect that the hauling of Perry low level wastes will be a major safety or traffic problem. Low level radioactive waste will be

typically enclosed in 50 or 200 cu. ft. containers for shipment. A normal truck could easily transport four-200 cu. ft. containers, each approximately 5' x 5' x 8' in size. At that rate, the annual low level waste could be removed in 50 to 57 separate truck trips. This number of truck shipments should not significantly impact local traffic.

The applicant has proposed only temporary on-site storage of low level waste while awaiting shipment to off-site repositories. Thus, the leak-tight containers should prevent any low level waste from entering the groundwater during this temporary storage period.

Concern No. 4

Construction of the reactors at Perry was halted several times because of seriously sub-standard workmanship in safety related areas. Inspection of the work was found to be inadequate and unreliable with forged inspector initials on work which had not been inspected. There is no assurance that the Perry reactors could be operated safely without serious malfunction. No quality assurance.

Response

The issue of quality assurance during the Perry plant construction has been admitted as a contention for the operating license hearing. The contention has been restricted by the Hearing Board to the specific quality assurance implications arising from the February 1978 stop work order. At that time with the plant in the initial stages of construction, the Commission found major deficiencies in several areas of construction activity which indicated a major breakdown in the quality assurance program. Construction at the Perry plant was halted until Cleveland Electric Illuminating demonstrated that these deficiencies had been overcome.

We are aware of the recent events in regard to quality assurance that have led to press articles. These two events concerned the welding of liner plates in the suppression pool and the installation of electrical cable. In these instances, either the contractor or CEI reported or detected the defects early and corrective action was taken. In both events, stop work orders were issued, one by Newport News (the containment steel erector) and the other by CEI to L.K. Comstock (the electrical contractor). A number of allegations have been made regarding these events. During the NRC investigation of the allegations, some QA problems in the electrical area have been identified. An NRC enforcement action is presently under consideration and a team inspection has been scheduled to provide further details. In the meetings with the applicant on these matters, CEI has been cooperative and responsive in making corrections.

Concern No. 5

Because of the underground high water table level (16 inches below the surface), Perry is to use a porous cement blanket and pumping system instead of stronger foundation walls. The complete system is untried--only parts of it--and there is the unanswered question as to whether the soft shale under the cement blanket could erode and block the pores. Failure of the pumping system could threaten the stability of the reactor building, according to NRC engineer, David Lynch.

Response

This concern relates to the underdrain system, a system designed to draw down the groundwater level at the site. The system was required after an analysis in 1974 of the dynamic stability of safety-related structures indicated that the safety factor against overturning during a seismic event was insufficient. This insufficiency was due to the bucyancy forces associated with the normal groundwater level. The staff requires a minimum safety factor of about 1.5 during the Operating Basis Earthquake (OBE) and about 1.1 during the Safe Shutdown Earthquake (SSE). The underdrain system was a fully litigated issue resolved at the Perry construction permit hearing.

The normal groundwater elevation at the Perry site is 618 feet, msl. The underdrain system will maintain the groundwater at an elevation of 568 feet, msl, under normal conditions and will maintain the groundwater at an elevation of about 594 feet, msl, under worst case assumptions. With a groundwater level of 594 feet, msl, the safety factor for the safety-related structures against overturning during the postulated Operating Basis Earthquake (OBE) ranges from 1.8 to 4.4 and from 1.1 to 2.5 during the Safe Shutdown Earthquake (SSE). All of these values are within the acceptable limits which were established by the staff.

The porous concrete blanket is not the load bearing member for the plant foundation. The plant is supported by means of appropriately designed reinforced concrete members. The porous concrete blanket was placed in and around these supporting members to offer a path for water flow. An elaborate system involving Class A fill is placed around and beside the porous concrete to act as a filter blanket to protect the porous concrete from infiltration of fine particles present in Class B fill and existing subsoils (includes the soft shale mentioned in the concern).

The Technical Specifications for operation of the plant will require that if the water level in the pressure relief underdrain manholes exceeds elevation 570.0', the Commission shall be notified of the fact and remedial action taken. If the water level exceeds elevation 580.0', the reactors will be required to shut down and emergency actions taken to reduce the water level. Note that these controls are initiated well below the 594.0' level that has been shown to be acceptable.

Concern No. 6

The Perry facility is in earthquake area, which runs diagonally through the Buffalo area, Lake Erie, northern Ohio, and angles down to Missouri. Any quake activity could disrupt the pumping system and building stability. The Perry site has a rock fissure, which has been filled 30 feet across with cement, running diagonally across the entire site from southeast to northwest. The extent of the fissure was unknown at the time it was declared to be of glacial origin. A second and different rock fissure is in the floor of the tunnel which runs out under Lake Erie.

Response

The geological fault or anomaly at the Perry site (on land) was a fully litigated issue during the construction permit hearing. Specifically, it was determined that the faults and other irregularities in the shale at the site (a) are nontectonic in origin, (b) are the result of glacial activity, and (c) cannot be expected to cause earthquakes. Since the CP stage hearing, similar faults were discovered in the vicinity of the intake and discharge tunnels under Lake Erie. In a letter dated November 30, 1981, the staff's consultant from the United States Geological Survey has concluded that these faults are also non-capable. Therefore, based on the available information, the staff presently believes that the seismology of the Perry location has been appropriately considered in the plant's design.

Concern No. 7

The Perry utilities have petitioned the NRC for permission to triple the size of its spent-fuel storage facilities. With no federal program demonstrated as feasible for long-term storage of spent reactor fuel, we have no assurance that the Perry spent-fuel assemblies will ever be moved from the site. According to a German study this past year, a loss of coolant in a spent-fuel storage pool, either from disruption of supply or destruction of storage pool walls from earthquake or settling, could result in a more widespread accident than a reactor meltdown. The storage pools lack the built-in safety systems which would mitigate the effects of a serious reactor accident. The inadequate roads combined with population evacuation efforts would greatly hamper emergency assistance in the area under such circumstances.

Response

This concern was addressed at the prehearing conference for the operating license hearing. The spent fuel pool is a steel lined, concrete pool inside a thick reinforced concrete building. These structures are designed to withstand the worst postulated seismic event for the Perry site. Since the intervenor did not identify any fault with the pool design or mechanism for loss of coolant, the Board has rejected this issue from the hearing. The staff's evaluation of the spent fuel pool, including its size and design, will appear in the Safety Evaluation Report (SER) which is expected to be issued in May 1982.

Concern No. 8

In case of accident utility insurance liability is limited under the Price-Anderson Act to the grossly inadequate $650 million [sic] limit. People in the area are unable to get personal insurance which will cover either property damage or health damage from radiation exposure. It is very difficult to prove that cancers, leukemia, or birth defects years later have resulted from such radiation exposure. The 20 year statute of limitations would further limit efforts to secure just restitution. People living within a 50 mile radius of the Perry reactors would bear most of the costs of an accident, both physically and financially.

Response

Under the Price-Anderson Act there is a system of private funds and Government indemnity totaling up to $560 million to pay public liability claims for personal injury and property damage resulting from a nuclear incident. The Act requires licensees of commercial nuclear power plants having a rated capacity of 100,000 electrical kilowatts or more to provide proof to the NRC that they have financial protection in the form of private nuclear liability insurance, or in some other form approved by the Commission, in an amount equal to the maximum amount of liability insurance available at reasonable cost and on reasonable terms from private sources. That financial protection, presently $530 million, is composed of primary private nuclear liability insurance of $160 million available from two nuclear liability insurance pools--American Nuclear Insurers (ANI) and Mutual Atomic Energy Liability Underwriters (MAELU), and a secondary retrospective premium insurance layer up to $5 million per power reactor licensed to operate per incident but not in excess of $10 million for a single reactor in any year. With 74 commercial reactors operating under this system, the secondary insurance layer totals $370 million. The difference of $30 million between the financial protection layer of $530 million and the $560 million liability limit is the present Government indemnity level. Under the present system, indemnity will be phased out as more commercial reactors are licensed and participate in the retrospective premium system. At the time the primary and secondary financial protection layers by themselves provide liability coverage of $560 million, Government indemnity will be eliminated. Then the liability limit would increase, without any cap on the limit, in increments of $5 million for each new commercial reactor licensed. The present limitation of liability of $560 million was established by the Congress so that if an incident occurred requiring the Government to pay $500 million in indemnity (above the $60 million in liability insurance available from the pools when the Act was enacted in 1957), the Federal budget would not be greatly disturbed yet there would be a sure supply of funds to pay public liability claims resulting from the incident. Because the limitation was not meant to reflect the worst possible accident that could occur at a nuclear power plant, the fact that various technical reports issued over the years acknowledge that a nuclear accident could cause damages exceeding the liability limit has not led Congress to raise the limitation.

The comment pertaining to the inability for members of the local population to buy radiation insurance relates to the fact that property insurance policies are written with a "nuclear exclusion" clause that does not provide coverage for damage resulting from a nuclear accident. The question of the "nuclear exclusion" in an individual's homeowner's policy has been raised numerous times over the last few years. While the Price-Anderson Act does not prohibit private insurers from offering this type of insurance, the standard fire and property insurance policies have contained the nuclear exclusion since 1959. Our understanding of this exclusion is that the insurers consider that property damage caused by a nuclear accident would be covered by nuclear liability insurance maintained by NRC facility licensees and that coverage for the same property damage should be excluded from the conventional homeowner's policy to avoid duplication of insurance. Thus, if a property owner suffered damage to his property because of a nuclear accident, the compensation would come through nuclear liability insurance or Government indemnity as provided under the Price-Anderson Act.

Finally, we agree that there may be difficulty in proving that cancers have resulted from radiation exposure and that the cancer latency period in many cases exceeds 20 years. It should be noted, however, that the 20 year statute is only a minimum and only applies in the event of an extraordinary nuclear occurrence (ENO). If a state has a longer statute of limitations for radiation-induced injury, as many states do, then the longer state statute takes precedence. While it may be correct to state that people living within a 50 mile radius of the Perry reactors would bear many of the health and property costs arising out of an accident, in the event of a nuclear incident involving damages in excess of the limitation of liability, "the Congress will thoroughly review the particular incident and will take whatever action is deemed necessary and appropriate to protect the public from the consequences of a disaster of such magnitude", 42 U.S. C. 2210(e).

Concern No. 9

If the Price-Anderson Act were rescinded, there is no assurance that the CAPCO utilities could meet the costs of such an accident as that at Three Mile Island without being bankrupted.

Response

Any answer to this concern would be speculative on the part of the Commission. However, the financial capabilities of the Cleveland Electric Illuminating Company and CAPCO to cover the costs of operation, including the costs of reasonable foreseeable contingencies, for the Perry plants is an admitted contention in the operating license hearing that is scheduled to begin this fall.

Concern No. 10

The operating record of American reactors has been poor, operating an average of about 51% of the time. With Davis-Besse it has averaged about 32%. These long shutdown periods have caused millions of dollars to be spent for replacement power, which in all instances the customers have had to pay. In addition, maintenance and repair from malfunctions, defective components and design, and defective workmanship have added to customer costs. Mishaps of these types are amazingly common--totalling 2,800 and 2,900 in 1977 and 1978. These have resulted in long shutdown periods and heavy costs to consumers.

Response

The operating performance of nuclear power plants has been the subject of numerous discussions. The Perry plants are boiling water reactors (BWRs). An article published in the September 1981 issue of Nuclear Engineering International indicated that the average annual load factor (worldwide) for BWRs was 59.2%. Due to refueling outages, demand for power and other factors, individual load factors will vary from year to year. In the noted reference, the annual load factor for BWRs varied from 27.1% to 88.8%.

The operating record of Davis-Besse has no bearing on the future performance of the Perry plant. Even there, the situation appears to be improving since on January 14, 1982, Davis-Besse officials reported that their reactor had generated power 67 percent of the time during 1981. Cleveland Electric Illuminating has a financial interest in the Davis-Besse plant through CAPCO but has no association with the management or operation of the plant.

In summary, the operating performance of any nuclear plant can vary widely from year to year and the prediction of an annual load factor is difficult.

Concern No. 11

To date, nuclear utilities have no way of estimating the costs of transportation and storage of radioactive wastes, long-term. Nor do they have any way of estimating the eventual costs of moth-balling, entombing, or dismantling reactors after their period of service, to say nothing of the costs of radiation monitoring in perpetuity.

Response

As stated in response to concern No. 9, the financial capabilities of the utility to operate the Perry plant is an admitted contention to the hearing. All of the above items including decommissioning will be addressed at that hearing.

Concern No. 12

The recent malfunction of the hydraulic control-rod system at Browns Ferry focused attention on a GE boiling water reactor design fault. Failure of a shut-down system is a critical safety defect. Both Perry reactors are GE boiling water type.

Response

The Browns Ferry event resulted in an extensive review of the BWR scram discharge system by the staff. From that review, several actions have been recommended by the Commission to reduce the perceived risks associated with this system. These actions will be implemented at Perry. Furthermore, the safety issues involved with pipe breaks in this system have been admitted as a contention for the Perry operating license hearing.

Concern No. 13

Letter by Ms. Cook published in the October 18, 1981 edition of The Plain Dealer (Cleveland, Ohio) captioned "China Syndrome Revisited."

Response

Most of the concerns listed in the article were addressed at the prehearing conference in June 1981. A proposed contention on the issue of pressure vessel cracking was discussed at the prehearing conference and no basis was found to admit it. An issue concerning the emergency core cooling system (ECCS) was admitted as a contention and the full scale 30 degree sector steam test that was performed to demonstrate the adequacy of the ECCS system will be addressed at the hearing. The concern of water hammer in a PWR is not appropriate to the Perry BWR.

Concern No. 14

General articles on Toxic Chemical Air Pollutants

Response

Except for the area of radioactive releases, the control of air pollutants is under the jurisdiction of other Federal and/or State agencies. There is little reason to believe that coatings (plastics, epoxies or acrylic latex) if used in the construction of the Perry plant would differ significantly in composition or quantity from any other general non-nuclear facility under construction.

With respect to radioactive releases, nuclear power reactors in the United States must comply with certain NRC regulatory requirements in order to operate. The permissible levels of radiation in unrestricted areas and the radioactivity in effluents to unrestricted areas are spelled out in 10 CFR Part 50, Appendix I, Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion "As Low As Is Reasonably Achievable" for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents. These regulations specify limits on levels of radiation in the Station's effluent releases to the air and water (above natural background). They also state that no member of the general public in unrestricted areas shall receive a radiation dose to the total body due to Station operation of more than 3 mrems from liquid effluents, 5 mrems from noble-gas effluents, and/or 15 mrems from radioiodines and particulates. These radiation dose limits are established to be consistent with considerations of the health and safety of the public.